

Helmholtz-Zentrum für Ozeanforschung Kiel

KIEL276 Time Series Data from Moored Current Meters

Madeira Abyssal Plain

33°N, 22°W, 5285 m water depth

March 1980 – April 2011

Background Information and Data Compilation

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> Berichte aus dem GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel

Nr. 13 (N. Ser.)

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Summary

This report is thought as a user's guide containing back ground information of the 31 years long physical data record from mooring site KIEL276 in the Madeira Abyssal Plain, nominal location 33°N, 022°W at 5285 m water depth. It comprises meta and physical data for all 28 individual moorings deployed from 1980 to 2011, processing methods, and steps for the physical data, namely current speed and direction, and temperature collected at significant depths all over the water column. Spikes are removed, and data are checked for consistency and quality. Some corrections were applied as compared to earlier versions, in particular to instrument depths; however, these corrections do not affect scientific results published earlier in the literature. Nevertheless, for the reason of future consistency we recommend to use the present data and meta data set for further analysis.

By publishing this report, the data set at highest available data rate and the essential meta data along with this report will be submitted to international data centres for open and public access and use, in particular to the new *World Data System*'s (WDS) centre PANGAEA and the *Ocean Sites* data centre (CORIOLIS). In addition, the data set along with further associated meta data like, e.g., log sheets of mooring deployments has been electronically archived at the *GEOMAR Helmholtz Centre for Ocean Research Kiel*, Kiel, Germany, where it can be accessed through the institute's data centre (see <u>www.geomar.de</u>; contact <u>datamanagement@geomar.de</u>).

Zusammenfassung

Mit diesem Bericht wird Hintergrundinformation zu den physikalischen Daten der 31 Jahre langen Zeitreihe von 1980 bis 2011 auf der Verankerungsposition KIEL276 im Madeira Becken auf nominell 33°N, 22°W bei 5285 m Wassertiefe, vorgelegt. Für jede der 28 einzelnen Verankerungen werden die Metadaten sowie Einzelheiten zur Aufbereitung und Archivierung der gemessenen physikalischen Daten (Strömung, Temperatur, Druck, Salzgehalt), gegeben, die durch verankerte Geräte an signifikanten Tiefen der gesamten Wassersäule gewonnen wurden. Die gemessenen Daten wurden in physikalische Einheiten überführt, Fehler beseitigt, und alle Daten auf Konsistenz und Qualität überprüft. Im Vergleich zu früheren Versionen wurden einige Korrekturen angewendet, insbesondere hinsichtlich der Einsatztiefen von Geräten. Jedoch haben diese Korrekturen keinen Einfluß auf früher veröffentlichte wissenschaftliche Ergebnisse. Wir raten allerdings, aus Gründen künftiger Konsistenz diese hier vorliegende Version bei weiteren Analysen zu benutzen.

Mit der Veröffentlichung dieses Berichts wird der Datensatz zusammen mit den wichtigsten Metadaten an internationale Datenzentren gegeben zur freien öffentlichen Nutzung: PANGAEA des neuen *Welt Daten Systems* (WDS) und CORIOLIS für ,*Ocean Sites*'. Der Datensatz sowie alle relevanten und zusätzlich vorhandenen Metadaten, wie z.B. Protokolle von Verankerungsauslegungen, sind in elektronischer Form (PDF) am *GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel* in Kiel archiviert und über das Datenzentrum des Instituts zugänglich (s. www.geomar.de; Kontakt <u>datamanagement@geomar.de</u>).

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1. Introduction

1.1 **Project summary**

Background

A mooring site at 33°N, 022°W at 5285 m water depth in the Madeira abyssal plain – later known as KIEL276 (Fig. 1.1) - was first occupied as part of the North East Atlantic Dynamic Studies (NEADS, see Dickson et al., 1985) in 1977 for almost one year. The major goal of NEADS was to measure and compare the ocean's meso-scale activity in several regions of the North East Atlantic far away from coasts and at key depth levels of the water column (see Dickson et al., 1985). After some mooring losses in these early years of long-term moorings at this and other sites, the site was re-occupied 2 1/2 years later in March 1980 and operated as part and later as adjoined project of the German long-term research programme Warmwater-sphere (SFB133) dealing with the thermocline circulation and associated processes in the North Atlantic (see Krauß, 1996a, 1986b) funded by the German Research Foundation (DFG). Away from direct surface influences, current meters were distributed over the water column to cover the cores of the major water masses: North Atlantic Central Water between nominal 200 m and 700 m; Mediterranean outflow water around 1000 m; upper North Atlantic Deep Water around 1500 m; North Atlantic Deep Water around 3000 m; near bottom water about 50 m above the bottom. Some early publications deal with the regional mean circulation and its variability in the deep (> 2000 m) ocean and on scales up to two years (Dickson et al., 1985), within the whole water column on scales up to ten years (Müller and Siedler, 1992), with the variability in the Mediterranean water tongue (Zenk and Müller, 1988; Siedler et al., 2005), and with the variability in the main thermocline on time scales up to almost 30 years (Fründt et al., 2013).

After completion of the SFB133 programme, the mooring was maintained as part of the German contribution to the then new international *Joint Global Ocean Flux Study (JGOFS)* and funded by the *German ministry for science*, BMBF. Particle traps (Kremling et al., 1996) were added from 1993 on, and thus the mooring became interdisciplinary. The main aim was to measure and to understand vertical fluxes of biogenic material of oceanic origin and its variability on annual and longer time scales (e.g. Waniek et al., 2005). However, not only particles that origin from oceanic processes, but also lithogenic material was detected at depths of 2000 m, and despite the large distance fro the African coast its origin was determined within the Sahara desert (Chavanac et al., 2007; Brust and Waniek, 2010; Brust et al., 2011).

The combined physical and bio-geo-chemical measurements at KIEL276 are now on-going as part of the long-term measurements within the international and multidisciplinary *Ocean Sites* programme. It presently is funded by the *German Research Foundation* (DFG) and operated under the responsibility of the *Leibniz-Institut für Ostseeforschung in Rostock-Warnemünde, (IOW)*, Germany. Table 1.1 overviews past and present responsibilities.

Table 1.1: Overview on KIEL276 major time periods, principalinvestigators, and responsible institute for mooring techniquesand data; for abbreviations see glossary.

Mooring ID	Time period	Responsible for				
from / to	from / to	Science (PI)	Mooring & Data			
V264-01	1980	T.J. Müller	IfM			
	1980					
V276-01	1980	T.J. Müller	lfM			
V276-13	1993					
V276-14	1993	J.J. Waniek &	lfM			
V276-20	2000	T.J. Müller				
V276-21	2001	J.J. Waniek &	IOW			
V276-24	2005	T.J. Müller				
V276-25	2005	J.J. Waniek	IOW			
V276-27	2011 & on-going					

Goal of this report

After 31 years of sampling and analyzing data from KIEL276, we feel it worth to summarize the available 31 year physical data set. This report therefore is designed as a user's source of information and guide to the measurement and processing of the physical data obtained between 1980 and 2011 at site KIEL276, 33°N, 022°W, 5285 m water depth, and to the processed data itself. In particular, we summarize the

- **key meta data** for all moorings and hydrographic casts taken close to mooring sites during mooring deployment and / or recovery cruises
- physical data from moored current meters at highest data rate available
- **hydrographic data** close to mooring locations during deployment / recovery cruises interpolated to same vertical scales

Methods and processing of particle trap (Kremling et al., 1996) data are dealt with in the scientific literature (e.g. Waniek et al., 2005; Brust et al., 2011).

As a result of consistency checks, some information as given in earlier papers, is slightly improved. In particular, instrumental depths were reviewed taking into account that future analysis may need best estimates of absolute temperature depth relations (see Sec. 2.4). Improvements of instrument depths, however, do not affect earlier scientific results as all of those were related to currents and to temperature variability, and these do not rely significantly on vertical scale changes of less than 50 m.

1.2 Data summary

Overview

This section aims at providing the user a quick overview of

- what kind of data do exist
- where can data be accessed
- which kind of original meta data like handwritten logs do exist in electronic form (PDF), and where can they be accessed
- which are the relevant reports, and where can they be accessed

Data Sets

The data set stems from

- Moored current meter data, 1980 2011
- CTD casts, one Nansen cast, and two XBT drops close to mooring site during deployment / recovery cruises
- Moored particle trap data, 1993 2011

In this report, the physical data from current meters and hydrographic casts at the mooring site during mooring deployment / recovery cruises are described (Tab. 1.2). Particle trap data were dealt with in a number of publications (e.g., Waniek et al., 2005; Brust et al., 2011) and are available at the World Data System's centre PANGAEA (www.pangaea.de)

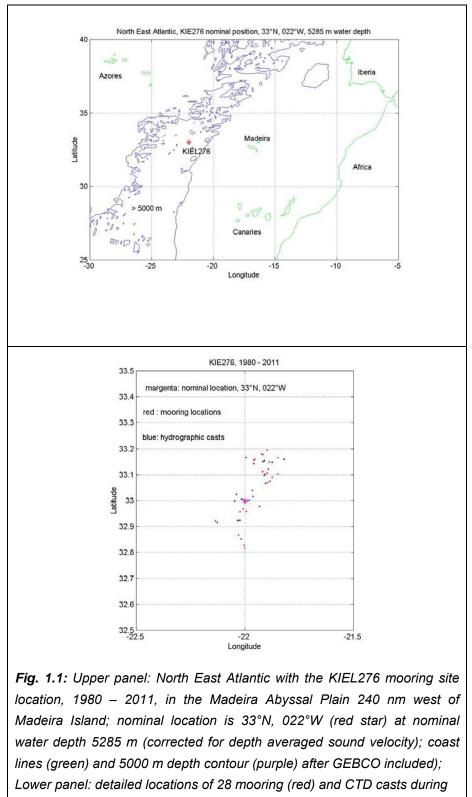
Moored current meter data, Aanderaa RCM (1980 – 2011)

The following current meter sets are the basic input data (Fig 1.2; Tab. 1.2) for checking and re-processing as described in section 4 of this report; delivery of result to data centres as ASCII data files for each current meter:

- V264-01, V276-01 through V276-09: for these moorings, raw data are lost; processed data at sampling interval in MK4 ASCII format are available (MK4 level); data sets checked and re-processed as described in section 4;
- V276-13, V276-14: only processed low pass filtered (36 h half power period) daily averages are available in MK4 ASCII format (MK4 level); data checked and reprocessed as described in section 4.
- V276-10 to V276-12 and from V276-15 on: for these moorings raw data are available; converted and processed as described section 4.
- V276-20: mooring deployment failed; no data

Moored 50 m thermistor cable data (1980-1994)

The cables were 50 m long and equipped with 11 thermistors at equal distances. Cable and recorder were attached to the mooring line within the main thermocline. Data recording often completely failed, and in many other cases data quality is poor. After conversion of raw data to physical units and de-spiking, these data are stored only at the GEOMAR data centre and available there on request.



mooring cruises (blue).

Moored Acoustic Doppler Profiling Current meter (ADCP, 2001/2002)

On a single occasion (mooring V276-21, 2001-2002) an RDI 150 kHz upward looking ADCP was moored in the top buoy at designed 163 m depth. Deployment file and raw data are available the GEOMAR data centre.

Hydrographic casts (1980 – 2011)

CTD casts were taken whenever possible during deployment cruises close to deployment / recovery of moorings. In some few early cases, no reliable CTD data is available or data are lost; in one of these cases, a *Nansen bottle* cast and in two other cases XBT drops replace the CTD data. All data are part of the K276 data set and as such delivered to data centres; they are also part of complete hydrographic cruise data sets and as such also available at data centres along with other casts from the cruise.

Particle trap data (1993 – 2011)

All data available will be delivered in 2014 to the *World Data System*'s centre PANGAEA (<u>www.pangaea.de</u>).

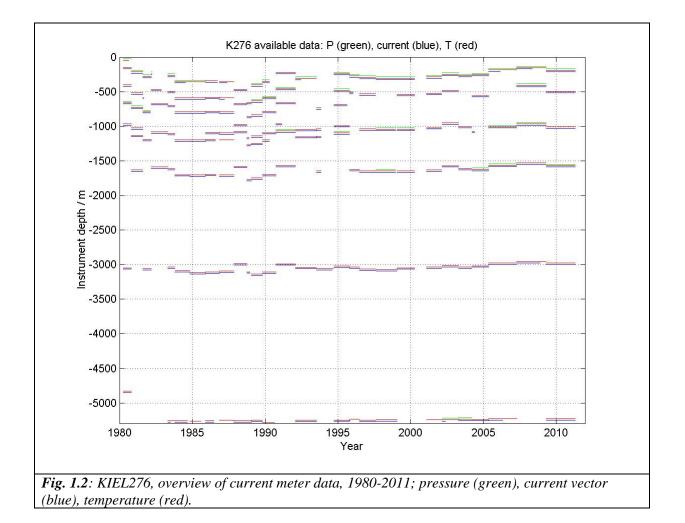


Table 1.2: Overview of K276 moored Aanderaa current meter (RCM4/5/7/8), Aanderaa thermistor cable TR4/5/7/8), and trap data; all physical data are re-processed from highest available resolution and lowest available pre-processing level, and then delivered to data centres (trap data in 2014).

			KIEL276						
Mooring ID		Aanderaa RCM4/5/7/8 and TR4/5/7/8 data							
				1	traps				
		data centres							
		for checking & p	rocessing						
V264-01		processed at		checked,	n/a				
V276-01 to		sampling interval		sampling interval					
V276-09									
V276-10 to	raw			processed,	n/a				
V276-12				sampling interval					
V276-13			processed low-	checked,	n/a				
			pass filtered	low-pass filtered					
			daily averages	daily averages					
V276-14			processed low-	checked,	yes,				
			pass filtered	low-pass filtered	separate				
			daily averages	daily averages	mooring L1				
V276-15 to	raw			processed,	yes				
V276-17				sampling interval					
V276-18	raw			processed,	n/a				
				sampling interval					
V276-19	raw			processed,	yes				
				sampling interval					
V276-20		M	ooring deployment fa	ailure, no data					
V276-21 to	raw			processed,	yes				
V276-27				sampling interval					

Data access

After processing, consistency and quality check of physical data from moored current meters, and on completion of this report, the physical data set along with hydrographic casts taken close to the mooring site during mooring cruises, and along with this report will be submitted to international data centres (Tab. 1.2).

The above processed physical data set along with additional meta information (Tab. 1.2, Appendix A1, Appendix A2) from the moorings is also archived at

- **GEOMAR Physical Oceanography Research Unit**: All meta data in digitized form (PDF); all measured data, both, raw and processed; access through the institute's data centre (<u>datamanagement@geomar.de</u>). The set consists of:
 - o relevant data and cruise reports
 - mooring design input and design sketches corrected for deployment & recovery logs
 - mooring sketch with nominal depths, re-drawn as from logs and static mooring model
 - instrumental start and stop logs
 - o bridge logs
 - o calibration information
 - o raw data as copied from tapes or data storage units (DSU)
 - o calibrated and processed data sets, at sampling rate if available
 - o this report

Table 1.2: KIEL276 data as submitted to international data centres after publishing this report; physical and trap data as from moored instruments; CTD casts close to the mooring site during mooring cruises; electronic versions (PDF) of deployment / recovery logs and of and RCM start / stop logs also at Geomar Physical Oceanography data bank.

	World Data	Ocean	GEOMAR
	System	Sites	Physical Oceanography
	PANGAEA		data bank
This report	Yes	Yes	Yes
Mooring cruise reports	No	No	Yes
Mooring design information	No	No	Yes
Aanderaa Recording Current	Yes	Yes	Yes
Meter (RCM) data			
ADCP data	No	No	Yes
(solely V276-21, raw data)			
Aanderaa 50 m Thermistor cable	No	No	Yes
data			
Particle trap data	Yes	No	No
	(complete 2014)		
CTD Mooring site data	Yes	Yes	Yes
Mooring deployment logs	No	No	Yes
RCM start/stop logs	No	No	Yes

Cruise reports (Appendix 3)

All cruise reports associated with KIEL276 mooring deployment and / or recovery are available either on-line at the publishing institute or on request at the GEOMAR Physical Oceanography data bank.

2 KIEL276 moorings

2.1 Overview

Mooring information (Appendix A01)

All basic information for individual moorings is summarized in Appendix A01; it contains information from cruise logs on

- Mooring codes
- Position (decimal, positive to North and East); early deployments used transit satellites with a single fix every 3 to 4 hours at that latitude (33°N); later GPS, once the codes were free for non-military use
- Water depth measured by single beam echo sounder (RVs METEOR II, POSEIDON) or central beam of multi-beam systems (RVs METEOR III, MARIA S. MERIAN); depths corrected for by vertically integrated sound velocity as determined from CTD (Fig. 2.1)
- Magnetic anomaly at the mooring position for deployment time as from sea charts
- Date, ship and cruise of deployment / recovery
- Existence and electronic (PDF) availability of bridge and deck logs during launching / recovery
- CTD cast files taken close to the mooring site during the mooring cruises

Data information from moored instruments (Appendix A02)

All sources for archived physical data from moored Aanderaa current meters RCM4/5 and RCM7/8, are listed in Appendix A02; it contains information on

- Existence and status of each mooring's meta information in a text file
- Existence of static mooring model results, in particular a final sketch with *nominal depths*, taking into account information from deployment and recovery logs, and from static mooring model; note, instrument nominal depths need further checks to get instrument depth (Sec. 2.4)
- Existence and electronic availability (PDF) of start & stop logs of instruments
- Existence of raw data as mirrored from recording media (tape or data storage unit) to processing computers
- Status of processed data (see Sec. 4).

Also, Appendix A02 shows a column with the number of particle traps within each mooring.

Moored instruments & sensors (Appendix A05)

Current meters: Initially, the basic instrumentation consisted of Aanderaa RCM4/5 current meters which nominally were placed in the upper thermocline at about 250 m and 500 m depth, the Mediterranean water tongue around 1000 m, upper North Atlantic Deep water (1500 m), North Atlantic Deep Water (3000 m) and 50 m above the bottom (from V276-01 on). From 1989 on, RCM4/5 were replaced by RCM7/8, completing this process in 1993. These current meters measured a *quasi-vector-average* of current speed and direction.

Only in 2001/2002, V276-21, carried an upward looking ADCP which was implemented to the upper buoyancy.

Temperature sensors were standard for all current meters. Until 1994, up to two Aanderaa 50 m thermistor cables (TR4/5 and TR7/8) were attached to the mooring line within the thermocline.

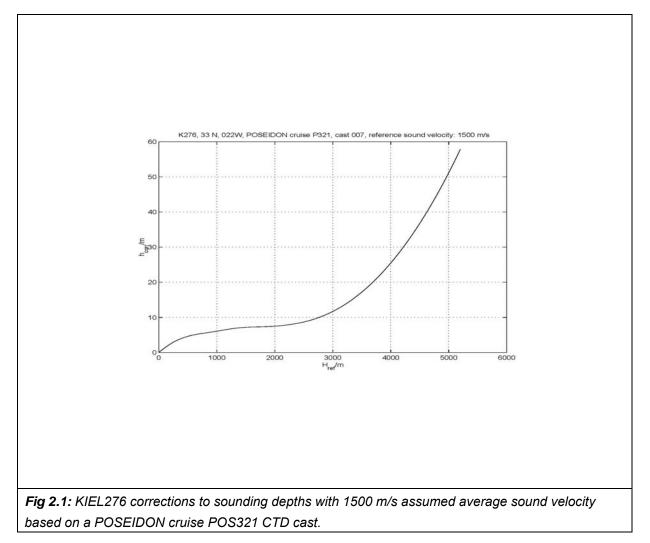
Conductivity sensors were attached to some RCM within the Mediterranean Water level during the initial phase adding information on salinity.

Pressure sensors on the top instruments were implemented whenever sensors were available; they helped estimating actual instrument depths (see sec. 2.4) and vertical mooring motion.

Particle traps were added from 1993 on; up to four particle traps were added with changing number and depths depending on resources and scientific objectives being addressed.

Relevant cruise and data reports (Appendix A03)

All relevant reports from mooring cruises, both, internal und public is given in Appendix A03; they can be accessed through the addresses listed in A03. Some of them also present first results from recovered KIEL276 instrumentation.



2.2 Mooring design

Mooring components

Mooring components used in KIEL276 changed only slightly over the years. The major buoyancy, wire and rope components are

- Top buoyancy, pressure rated up to 300 dbar; at the end of this range, it starts loosing buoyancy due to non-elastic compression.
- Deep sea buoyancy made of two half spheres of glass balls, sheltered by plastic caps (Benthos, later also Nautilus); this type of buoyancy is stable until rated pressure (6000 dbar); may implode by shock.
- Steel wire, 8 mm, coated, upper thermocline, withstands fish-biting.
- Stainless low torsion steel wire, 8 mm, coated, upper thermocline, can be re-used; withstands fish-biting.
- Kevlar low torsion rope, 11 mm, coated, deeper parts of the thermocline, can be reused.
- Nylon ropes, 11mm diameter, 2700 kp breaking load, jacket, low weight, also known as *METEOR rope*, for depths larger than about 1500 m (low risk of fish-biting); about 10% stretching under forces given by KIEL276 mooring design, re-use not recommended.

Shackles and rings are made of zinced steel with high (3200 kp) breaking load; thus they function as an anode to protect other metal ends of connected components from corrosion without becoming too weak themselves over a 2-year period.

For all components, their form, dimensions and weight in water is known and used to design the mooring. The effect of stretching of steel wire and Kevlar rope is small (although not zero) and neglected when compared to the much larger effect on nylon ropes, the latter being about 10% of length under given forces of more than 300 kp (Zenk, 1981; Schröder, 1982).

Mooring design basics

Mooring design is static, although since 1982 the computer programme also allows to estimate the effect of horizontal non-zero current profiles on depths, elongations and horizontal displacements of mooring components. The design uses the *Physical Oceanography Research Unit's* computer programme *Integrated Mooring Package (IMP)* which was developed over many years and in several steps, starting with the transfer of the original *Woods Hole Oceanographic Buoy Groups* programme package for static single point moorings (Moller, 1976) to metric units and to non-zero current profiles (Schröder, 1982). Kiel mooring components were implemented, e.g. the above mentioned *METEOR* nylon rope and its elongation under stretching forces (Engelmann, 1972; Zenk, 1981; Schröder, 1982). Finke and Siedler (1986) estimated drag coefficients of some Kiel mooring components. The programme package was transferred for the use with MATLAB[®] by Helmbrecht (2001). It

also allows for simulating a mooring's motions under the time series of measured currents (Helmbrecht, 2002).

In the 1980's and 1990's, the FORTRAN[®] model results (Schröder, 1982) were transferred to mooring sketches manually. With the invention of the MATLAB[®] based version (Helmbrecht, 2001), the mooring sketch is created by the computer programme.

2.3 Logs

Formatted logs with handwritten notes were kept while preparing and switching the RCM on and off, and during mooring deployment and recovery. These logs are digitized (PDF copies) and are available as noted in Appendices A01 and A02 in at the GEOMAR data base.

RCM

These logs contain information on

- Type of instrument
- Sensors attached and their settings, e.g. temperature and pressure range chosen
- Battery type and voltage (under 100 $\boldsymbol{\Omega}$ resistance) before deployment and after recovery
- Recording interval set
- Date and (external) time (UTC) of switching on, begin of first and last record taken; this information is used to correct for clock drifts, usually of the order of some minutes over a year
- Times of deployment (into water) and recovery (on deck)

Mooring launch & recovery

A bridge log was kept by the watch officer, and a detailed mooring log on deck on the mooring design sketch. Any design changes were noted and together with the actual corrected water depth transferred to the input for the mooring design programme to result in the final design sketch showing 'nominal depths as from logs and static mooring programme'.

2.4 Instrument depths

Terminology

Instrument depths are estimated in several steps. When using pressure records, these are converted to depths and *vice versa* (UNESCO, 1983) for consistent comparison. The following terminology is used:

- *Designed* depths are the depths in mooring designs before deployment and before corrections for actual water depths and finally used mooring components.
- Nominal depths are estimated from the mooring design including relevant information from the mooring's deployment and recovery logs, in particular changes during the deployment process. They are predicted by the static mooring programme IMP (see sec. 2.2)
 - o using corrected best estimated water depth at the estimated mooring location
 - assuming zero currents throughout the water column, i.e. no tilt and stretching of the mooring line due to currents ,
 - o using mooring components as logged in the deck launch and recovery logs.

To keep track, *nominal depths* are kept and are denoted as such in meta files and comment lines of data files.

Instrument depths, after further statistical and heuristic inspection from initial temperature and pressure differences to deployment CTD casts, are finally determined (see Sec. 2.4 below); they reflect best estimates at the start of a record, they are filed and recommended for scientific use with the data. They do not reflect any changes of instrument depths during the mission period, be it temporal diving of the mooring due to strong current events or permanent non-elastic elongation of nylon ropes after strong stretching forces or buoyancy loss on top of the mooring (see below). Such changes need special treatment, may include subjective aspects, and therefore are left to the user.

Error sources in estimating depths

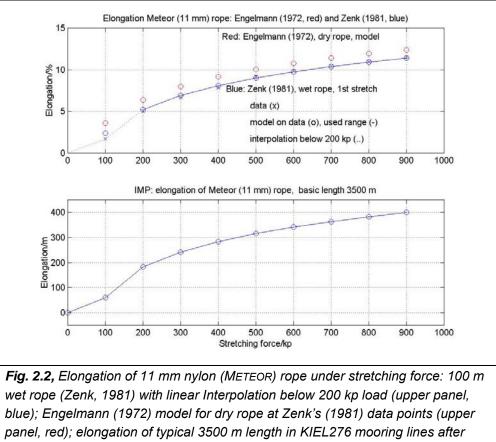
Systematic errors in depth estimates mostly result from errors in lengths of ropes and wires, and in buoyancy other than assumed or logged. Such errors are singular for a certain mooring, and only they are dealt with here.

Stretching of wires and ropes: Within a KIEL276 mooring, typically about 3500 m of nylon rope were used between the bottom and about 1500 m depth (low risk of fish-biting), and steel wire or Kevlar above (higher risk of fish-biting). Although not zero, the elongation of steel wires and Kevlar ropes under stretching forces is low as compared to that of nylon ropes, and so is the error in stretching. Therefore, under the given stretching forces and overall lengths any stretching of steel wires and Kevlar ropes is (ca. 1300 m total) neglected as compared to that of the nylon ropes (ca. 3000 m total). For the type of nylon rope used in KIEL276 moorings (METEOR rope), the elongations under stretching forces were measured ashore experimentally with a short and dry length by Engelmann (1972, see Schröder, 1982) and later with a 100 m wet length by Zenk (1981, see Schröder, 1982). They both used a

power law which gave similar coefficients at forces larger than 200 kp, with Engelmann's coefficients leading to about 1% higher stretch (35 m) less depths in the thermocline for typical KIEL276 lengths (Fig. 2.2). It was not noted in the designs which coefficients of the two models were used. We therefore re-calculated all mooring designs using Zenk's (1981) more reasonable coefficients for wet ropes and added a linear interpolation to zero below 200 kp stretching force to end up with consistent *nominal instrument depths* according to design, deployment logs and modelling. However, a systematic error of 1% in the elongation estimate of used nylon (METEOR) rope may remain. Note also, that stretching may be non-elastic under strong forces, leading to permanently higher elongations, e.g. after strong current events.

Lengths of wires and ropes: Steel wires and Kevlar ropes were used at individual lengths up to 200 m. Lengths of steel wires and Kevlar ropes are metered once they are configured, either by the manufacturer or in the institute. They are coiled individually in portion lengths of 10 m, 20 m, 30 m, 50 m, 100 m and 200 m. From individual length differences and individual coiling, it is rather unlikely that large errors in lengths of up to 200 m will not be detected by the handling personnel, either in the laboratory while preparing a mooring or at sea during deployment. The situation is similar for short nylon ropes, but different for long nylon lengths (300 m, 500 m, 1000 m). Such long lengths are not metered but configured and delivered by the manufacturer based on a weight to length relation for dry rope. A 1% error in this relation corresponds to 35 m length error plus roughly 10% stretching under given forces, i.e. nominal depths maybe estimated 30 m too low or 40 m too high.

Buoyancy: Glass ball buoyancy is rated to 6000 m depth. Except by implosion, its buoyancy is stable over time once it is determined. However, the major buoyancy on top of the mooring which is rated to depths of 300 m only, may loose buoyancy by non-elastic compression, e.g. through a mooring's diving during strong current events. Each buoy's buoyancy was calibrated before it's first deployment. Any later buoyancy loss is unknown and may lead to systematic and unknown errors, i.e. stretching forces being too low as compared to the assumed in the design programme. The most significant effect of this error will be too high estimates of the elongation of the nylon rope. For KIEL276 moorings, the top buoyancy force ranges between 300 kp and 800 kp. In this range we estimate about 0.008% less elongation by kp less buoyancy on top (Figure 2.2). A 10% (35 kp) loss of buoyancy on top and 3500 m long nylon rope would then result to 10 m larger instrument depths above the nylon rope, decreasing to 0 m at its lower end.



Zenk's (1981) model with interpolation below 200 kp load (lower panel).

Estimating instrument depths

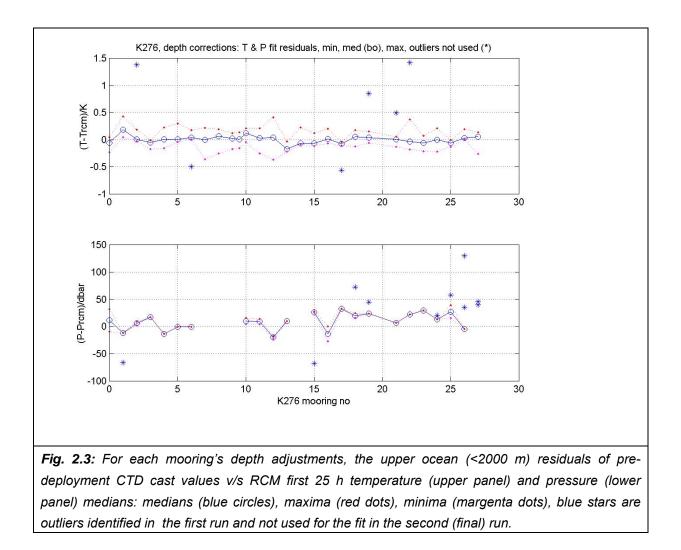
As noted above, significant systematic errors in depth estimates of order 10 m and more may most likely result from length errors in long (>300 m) pieces of nylon rope, and / or from loss of buoyancy of the top buoyancy element. Long nylon ropes in KIEL276 moorings usually (with few exceptions) are used at nominal depths larger than a depth z_n , where z_n =2000 m is typical (low risk of fish biting at larger depths) at the KIEL276 mooring site. The method to *best estimate instrument depths*, assumes:

- RCM temperature and pressure records at depths less *z_n a-priori* do not have an offset error as wire and Kevlar have almost zero elongation, pieces are short (less 200 m) and therefore large errors in lengths can easily be detected by eye-inspection during cruise preparation and mooring deployment. Therefore the risk of systematic errors is expected to be small.
- Current meters at depths less z_n are arranged *a-priori* as logged during deployment with depth differences between them fixed (wire and Kevlar pieces less 200 m).
- RCM temperature and pressure record median values of the first 25 hours characterize the ocean's internal state on a time scale (< 3 days) close to the date and time of deployment.

- From the above, RCM pressure and temperature first 25 h median values at depths less z_n maybe compared with the CTD deployment cast, thereby also enabling to detect singular offset errors in RCM records or in logged lengths of wires above z_n .
- Temperature and pressure differences between RCM first 25 h median and CTD maybe be combined to a single average through normalization based on the RCM sensor's measurement range.
- Starting close to the surface, the minimum of the sum of normalized absolute differences (after ignoring outliers in a 2^{nd} run) at depths less z_n defines the optimal instrument depths. Instrument depths larger than z_n are adjusted by linear interpolation between the bottom and the uppermost depth of nylon rope larger z_n .
- Reasonable results were achieved with he following parameters:
 - o 2000 m upper ocean depth z_n , which is the maximum depth to assume sufficient accurate RCM temperature measurements in sufficient large vertical temperature gradients
 - According to the mooring design and logs, a deep (long nylon rope) array with linear stretch correction between the bottom and the upper nylon end, and an upper fixed array with non-stretchable mooring components where depth correction is constant.
 - half range temperature (12°C) and full range pressure (6000 dbar) values for normalization
 - 0.45°C and 50 dbar error bounds to flag (and ignore) outliers in temperature and pressure differences for the 2nd run.

For each mooring, the result is output in figures and tables. Nominal depths, corrections and (best estimates of) instrument depths are tabulated in Appendix A04 for each mooring and instrument. Overall statistics for the upper ocean based on (27 individual) mooring statistics are summarized in Figure 2.3 and in Table 2.1.

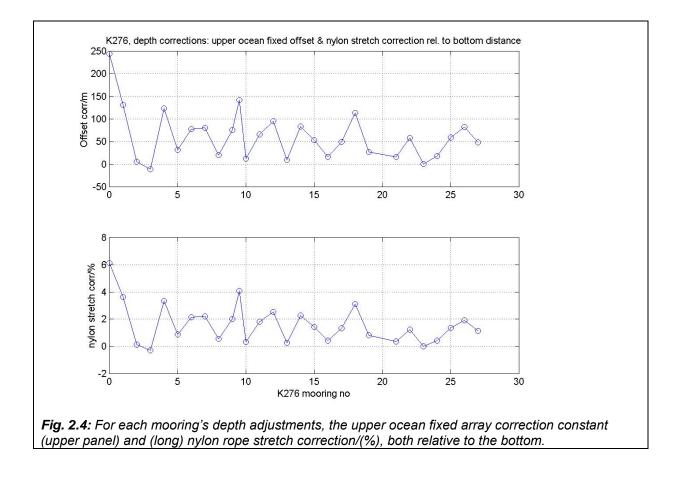
The final temperature differences of pre-deployment CTD to the first 25 h RCM median (mean) is 0.01 °C, i.e. less than resolution (0.02 °C) on average (Tab. 2.1, Fig. 2.3) with standard deviation less 0.1 °C and absolute differences less 0.5 °C. There are 6 outliers of which three (mooring numbers 19, 21, 22) are due to a single RCM (S/N 10550); the other three stem from different instruments. These corresponding six temperature records were offset corrected to match the record start to the pre-deployment CTD cast.



For pressure, the median (mean) is close to zero for moorings number 0 (V264-01) to 6 (V276-06) and from 10 to 13 (V276-10 to V276-13). Moorings V276-07 and V276-08 had no pressure sensor. For mooring V276-09, the record of the uppermost RCM is lost with the top buoy and the top RCM. From mooring V276-18 on, the median increases to an overall value of ~10 dbar, probably due to uncertain linear range calibrations of sensors from mooring number V276-18 on. However, the low corresponding residuals in temperature provide confidence in the result of depth corrections for these moorings. The pressure sensor outlier in mooring V276-01 is due to (non-linear) adaption of the sensor in (nominal) 700 m to in-situ pressure within the first 600 records (25 d). These first 600 pressure records are set dummy. All pressure records were offset corrected to match the record start to the best estimate of instrument depth.

The basic depth correction parameter now is a stretch correction factor applied to nominal bottom distances; this results in zero correction at the bottom and maximum correction at the upper (long) nylon rope end. This maximum correction is then applied as constant towards the surface (Fig. 2.4; App. A04). The maximum – and exceptional large - RCM depth corrections of more than 200 m towards the surface were applied to mooring V264-01, the reason being errors in nylon rope lengths due to a failure of the length meter used (see App.

05, V264-01 for details). Note, that nearly all corrections are positive towards the surface, i.e. less instrument depths, and only two are slightly negative, indicating a systematic problem in the exact determination of nominal lengths of the nylon rope.



Note

• All depth corrections to achieve best estimate of instrument depth as from log sheets and from static mooring model, and from RCM first day statistics against deployment CTD. All pressure and temperature corrections made are noted in comment lines of data header lines.

Comparison with instrument depths published earlier

Re-investigation of mooring design and deployment logs and the method described above to estimate actual initial instrument depths coherently throughout all moorings, results in differences to depth estimates published earlier. However, as discussed below these differences are sufficient small not to change the scientific results published so far.

<u>Barotropic tides</u>: A single paper (Siedler and Paul, 1991) deals with high frequency variability in the subtropical North East Atlantic, namely barotropic tides. As barotropic tides do not depend on depth, changes (or errors) in instrument depth estimates will not change the results.

Tab. 2.1: RCM best depth estimates; overall upper ocean z<=2000 m statistics as derived from individual mooring statistics.

Р, Т	: best pres	sure estimate for	RCM; CTD pre	deployment cast temperatuere at P
PRCM	: RCM first	25 h median press	sure	
TRCM	: RCM first	25 h median tempe	erature measu	rement
Corr_of	f: offset/m	correction applied	d to (nominal) bottom distance of RCM
Corr_st	r: stretch f	actor coefficient	applied to (nominal) bottom distance of RCM
	(T-TRCM)/K	(P-PRCM)/dbar	Corr_off	Corr_str
median	0.01	10.0	56	1.013
mean	0.01	9.2	62	1.016
std	0.07	15.3	55	0.015
std*2	0.14	30.5	110	0.029
min	-0.37	-27.0	-11	0.997
max	0.43	39.0	244	1.061

<u>Low-frequency variability</u>: All other papers published so far treat low-frequency (<1/2 d^{-1}) variability, i.e. on quasi-geostrophic time-scales in the region.

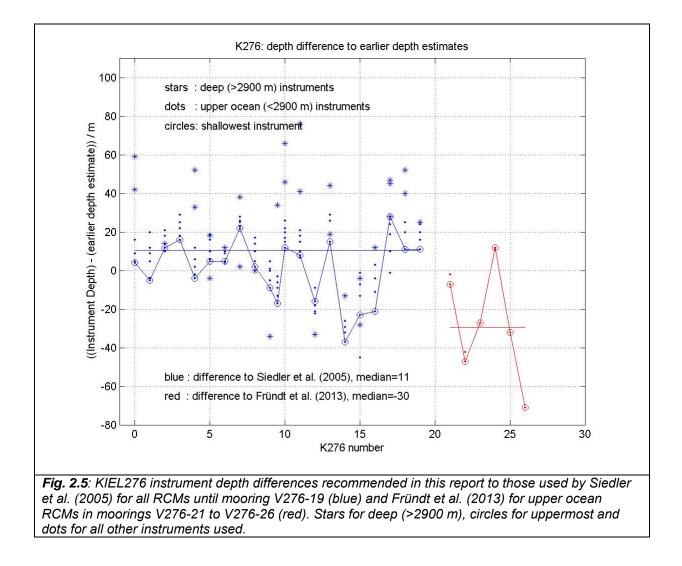
Published instrument depths: Siedler et al. (2005) listed instrument depths (their Tab. 1). Their list encompasses moorings V264-01 to V276-19 and RCMs at all depth levels that provided data. For an analysis of upper thermocline fluctuations, Fründt et al. (2013) used one to two RCM records from the upper thermocline from each mooring until mooring V276-26 and tabled instrument depths from this level (their Tab. 1). Their depths are identical to the respective ones of Siedler et al. (2005) until V276-19. The combined set of instrument depths used by Siedler at al. (2005) and by Fründt et al. (2013) is the most complete one published so far. These depths therefore are treated as being typical and representative. They are listed along with instrument depths as recommended in this report in Appendix A04, and for each mooring, differences of recommended instrument depths (this report) to those published by Siedler et al. (2005) and Fründt et al. (2013) are displayed in Figure 2.5.

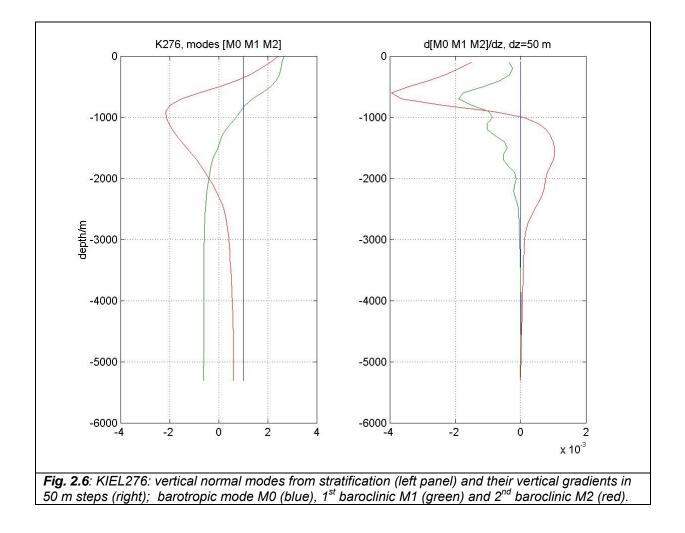
Overall, instrument depth differences are less +/- 70 m (Fig. 2.5), and only deep ocean differences (stars, >2900 m) exceed +/- 45 m. Inspection of logs shows, that the major reason for the observed differences is subjective adjustment of instrument depths. Neither a systematic nor a coherent method of adjustment covering all moorings has been used so far. However as discussed below, the depth differences are sufficient small to not affect the scientific results in earlier papers with respect to both, temperature and current records.

Temperature records: No temperature records from the deep (>2900 m) ocean have been analyzed scientifically so far. Temperature records from the upper ocean were used in the

papers by Siedler et al. (2005) and Fründt et al. (2013). Here, the authors have adjusted the temperature records directly to depths of investigation by linear corrections to CTD casts taken close to mooring deployment and / or recovery. This individual sensor approach creates coherent links between records in terms of averages, and as variances do not change much with small depth changes of less 70 m, the papers' scientific results do not depend on this adjustment.

Current records: Daily averages of low pass filtered current measurements from all or from part of then available depths of moorings V264-01 through V276-19 were used by Zenk and Müller (1988), by Müller and Siedler (1992), Waniek et al. (2000), Waniek et al. (2005), Siedler et al. (2005) and Fründt et al. (2013). Müller and Siedler (1992) interpolated measured currents to depths of investigation using a 3 mode quasi-geostrophic or a 2 mode Empirical Orthogonal Function (EOF) decomposition into time and depth dependant parts at KIEL276 and other sites of the subtropical eastern North Atlantic. At all sites, such a decomposition explains about 90% of record variances and therefore was accepted to represent each record. The barotropic mode (Fig. 2.6 for KIEL276) is constant with depth and therefore insensitive to changes (or errors) in depths (Fig. 2.6, left panel). The 1st and 2nd baroclinic modes changes over 50 m steps at a given depth sum up to less than 1% amplitude change (Fig. 2.6, right panel) in currents at all depths. We conclude that changes of less than 100 m by depth adjustments would result in a change of current amplitude of less than 2% and therefore would not change the scientific results in the above papers.





3 KIEL276 CTD data

Casts

During all mooring cruises, hydrographic (mostly CTD) casts were obtained close to the nominal mooring location (see map in Fig. 1.1, summary in Tab. 3.1) in order to acquire vertical profile data for comparison with data from moored instruments. The CTD's used onboard were of type *Kiel Multisonde* until 1981 and in 1985, *Neil Brown's MKIIIB*, *Falmouth Scientific's ICTD*, and Sea Bird's 911.

Table 3.1: Summary of CTD cast at KIEL276; No corresponds to setting of mooring;M2T is R/V METEOR II, MSM is R/V MARIA S MERIAN.

00CTD conductivity bad, no salinity, M2T05301CTD conductivity bad, no salinity, M2T056	
02 Nansen cast replaced bad CTD during M2T057	
03 M2T060 CTD casts lost; replaced at KIEL276 by XBT file 072, drop 06	57
04 to 28 CTD casts for V276-04 (M2T064) to V276-28 (MSM018) deployments	

Calibration

All CTD temperature and pressure sensors were checked and eventually corrected for calibration of temperature and pressure sensors in the laboratory at IfM Kiel (now GEOMAR); for electrical conductivity (salinity) sensors the manufacturer's calibration were used during the cast. Generally, *in-situ* samples were taken, to measure *in-situ* salinity in a *Guildline AUTOSAL* salinometer which was then used for *in-situ* calibration of the CTD's conductivity cell and finally salinity. During some cruises, however, no samples were taken; in these cases, salinity was offset-calibrated against the stable relation of potential temperature and salinity in the deep North East Atlantic Ocean (Saunders, 1986); such adaption is marked in the files.

Processing

In a first step, raw data of all casts from a cruise (usually taken at 16 Hz rate, ca. 16 data cycles / m) were converted from binary code to ASCII applying the basic (manufacturer's) calibration. Next, the following processing steps were performed (see Müller, 1999) using UNESCO (1988) computational formulas:

- spikes were removed
- data were reduced to lowering parts of the cast
- a time constant shift was applied where necessary
- the basic calibration for temperature and pressure sensors was corrected using the laboratory calibration, and for the conductivity cell's using the in-situ calibration with Standard Sea Water (SSW)
- a low pass filter was applied with a ca. 2 dbar response
- low-pass cosine filter over 10 dbar
- interpolation to appropriate pressure scale relative to sampling, nominally 2 dbar
- check of static stability using potential density
- salinity was recalculated

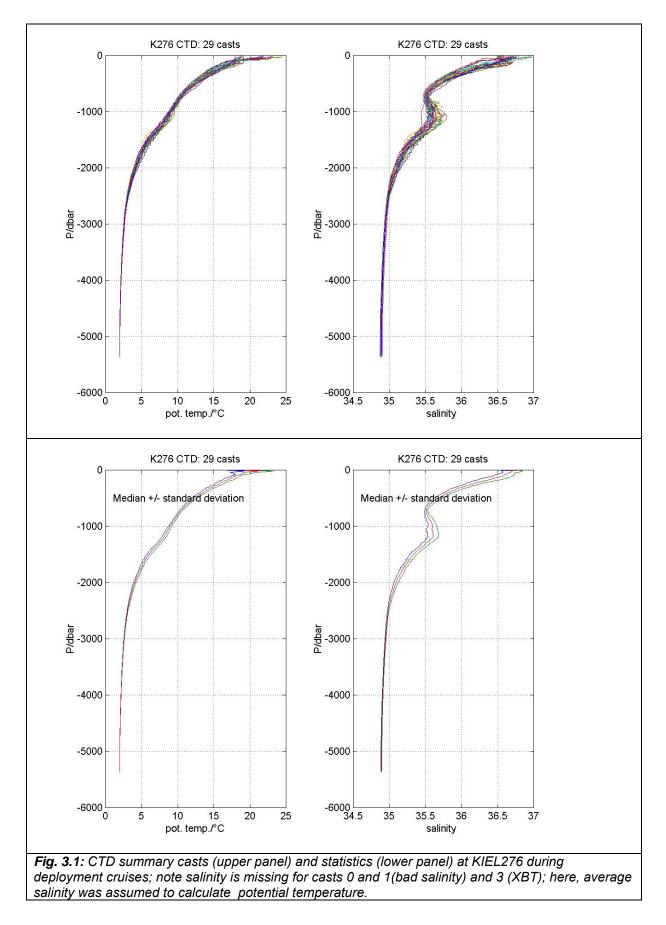
 check of calibration using Saunders (1986) relation of potential temperature and salinity for the deep (< 3°C) North East Atlantic.

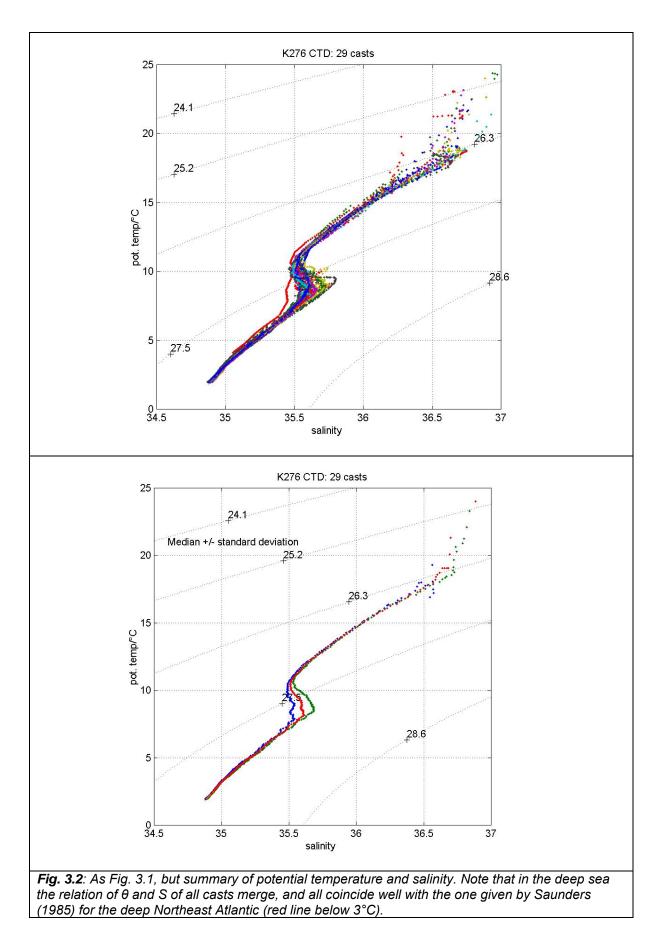
For each deployment cruise, the single deep cast which is closest in space and time to the mooring was extracted, processed as above and transferred to MATLAB and ASCII files $K276_hydro_iii.ext$, 000<=iii<=028, with ext=MAT and ext=CTD, respectively. The casts are 'smooth' and statically stable. Only cast 28 is slightly instable in the deep sea. The deep salinity of all casts fit to Saunders (1986) relation better than 0.005 (Fig. 3.1.1). For more details see the cruise reports and comments in the file headers.

We recommend this set of CTD data shall be used for comparison with the current meter data set. Summary plots of casts in Figures 3.1 and relations of potential temperature and salinity in Fig. 3.2. For each cast, note the comments in the files.

Tab. 3.2: KIEL276 CTD casts during mooring cruises: nominal location 33° 00.0'N, 022° 00.0' W. CTD casts processed. Quality of calibration checked with Saunders' (1986) relation and found acceptable (error less 0.005); for some casts salinity was offset calibrated to meet the relation (see cruise reports). Quality of profiles checked with static stability of potential density anomaly. Casts 0 and 1 have no salinity, cast 3 was replaced by a Nansen cast; cast 4 is lost and replaced by a near-by XBT drop (no 67). Cast 28 processed with manufacturer's (Sea Bird) software to 1 dbar basket averages; cast 28 is slightly statically instable in the deep sea.

irector	y: 2_k2	76_moor:						ment cruise 76_mooring		s_CTD_	XBT/k276/
	276_hydi	_									
	000 to										
ile num	bers coi	rrespon	d to	moor	ing de	eploy	yments V2	54-01 (000) and V	276-01	(001)
	28 (028)										
-						EOR I	III; POS:	POSEIDON;	MSM: M	ARIA S	MERIAN
nax is	maximum	pressu	re of	E cas	t						
ile Sta	t Cast		Date		Hour	Min	Tatitudo	Longitude	Donth	Dmox	Cruise Remark
LIE SLA	L LASL	YYYY		= DD	hh	mm	North	East	m	dbar	
		1111	141141	שש	1111		NOT CIT	East		upar	
0 18	0 3	1980	3	31	12	0	32.1017	-21.8483	5280	500	M2T53-D no salinit
1	51	1980	10	17	17	48	32.1183	-21.8033	5280	3494	M2T56-1 no salinit
2 54	2 1	1981	7	26	20	42	33.1500	-21.9167	5280	2533	M2T57-1 Nansen cas
3 06	7 67	1982	3	4	1	5	33.0700	-21.8950	5280	807	M2T60-3 XBT file 7
4 31	51	1983	4	17	2	45	33.1600	-21.8200	5280	5332	M2T64-6
5 73	1 1	1983	10	20	12	45	33.1533	-21.9100	5280	5000	POS104-C
6 22	93	1984	10	26	13	50	33.1217	-21.8917	5280	5368	M2T69-5
7 52	9 21	1985	11	16	18	30	33.1567	-21.9600	5280	5269	POS124
8 29	66	1986	10	31	21	51	33.1435	-21.9587	5280	4998	MET04-2
980	35	1987	11	5	23	26	33.1470	-21.8738	5280	5320	MET06-1
10 5	9 50	1989	1	14	3	2	33.0980	-21.9108	5280	5288	MET09-2
11 91	1 3	1989	10	27	18	25	33.0667	-21.9050	5280	5360	MET11-2
12 61	55	1990	9	25	18	5	33.1563	-21.9098	5280	5368	MET14-1
13 3	7 14	1992	1	27	21	25	32.9150	-22.1267	5280	5320	POS189-1
14 50	19	1993	7	12	19	б	32.9983	-22.0467	5280	5352	POS200-8
15 76	4 4	1994	9	18	12	50	32.9236	-22.0330	5280	3998	POS202
16 88	4 98	1995	10	15	12	23	33.0393	-21.9650	5280	4576	POS212-4
17 17		1996	6	25	2	36	33.0050	-22.0167	5280		MET36-2
18 48		1997	8	7	0	44	33.0167	-21.9633	5280	3980	POS231-3
19 1		1999	1	24	20	25	33.0010	-21.9995	5280	5360	POS247-2
20 5		2000	4	12	16	45	32.9781	-21.9329	5280		POS259-1
21 6		2001	2	1	15	2	32.9983	-22.0000	5280		POS268
22 1		2002	2	19	17	20	32.9247	-22.0219	5280		POS283-2
23 7		2003	4	20	11	56	32.8530	-22.0183	5280		POS297
24 1		2004	3	16	18	19	33.0058	-22.0107	5280		POS308
25 18		2005	5	8	17	49	33.0007	-21.9814	5280		POS321
26 25		2007	4	10	5	28	32.9999	-22.0005	5280		POS349
27 00		2009	4	26	15	54	33.1655	-21.9951	5280		POS383
28 00	4 4	2011	4	21	17	8	33.0246	-22.0393	5280	5301	MSM18-1





4 KIEL276 moored instruments

4.1 Instrumentation, processing and archiving

Instrumentation of moorings differed for each setting. It depended on availability of instruments and sensors, specific scientific questions, and sometimes on deployment conditions. Also, different instruments need different processing steps, and over 30 years computers and formats and even methods changed. Some earlier processing of physical data is documented in cruise reports (see App. 03) or in data reports (Müller, 1981; Müller and Zenk, 1983; Müller, 1984; Müller et al., 1987; Müller et al. 1990). We here aim at providing a homogenous set of physical data from KIEL276 by harmonizing the meta data information and partly re-processing necessary steps. For a quick overview see data sources, processing and submission to data centres see Table 4.1 and Appendix A05; for details see this section.

In 1980 the series started solely with Aanderaa RCM4/5 current meters (Aanderaa, 1978). In the main thermocline these were supplemented from the second deployment (V276-01) in late 1980 to 1995 (V276-15) by Aanderaa thermistor cables of 50 m length. Replacement of the RCM4/5 by *quasi-vector-averaging* RCM7/8 (Aanderaa, 1987) started in 1989 (V276-10) and was completed in 1993 (V276-15). Only for a single setting (V276-21), a 150 kHz upward looking ADCP was mounted on the top buoy.

From 1994 (V276-14) on, particle traps made by *Howaldt Werke Deutsche Werft* (HDW) and *Salzgitter Elektronik* (SE) were added; first in a separate mooring (L1) close to V276-14, and then implemented into KIEL276 moorings as standard from 1994 (V276-15) on.

Detailed information on instrumentation, instrument depths and data return for each mooring is available in Appendix A02 and on the cover pages for each mooring in Appendix 06.

4.2 Aanderaa current meters RCM4/5 and RCM7/8

Sensors

Standard sensors provide time information, temperature, current direction and speed sensor. Additionally, a conductivity and pressure sensor, both with different ranges can be mounted.

- **Time basis:** for the RCM4/5, the time basis is taken from the recording interval as set by the user and the number of records between the instrument's start and stop; for the RCM7/8 it is taken from the instrument's internal clock which stores date and time once a day before each day's first record, and from the recording interval as set internally.
- Temperature is measured at the instrument's housing. Mostly, the *Low Range* option (-2.1°C to 21°C) was chosen. From the 3000 m depth level on and deeper, the *Arctic Range* (-2.1°C to 5.6°C) option was chosen and archived where available; in these cases no pressure sensor could be mounted. For temperature calibration, Aanderaa claims the second and third order coefficients, (*C* and *D* in Tab. 4.2), to be the same

for a chosen range for all sensors while offset and slope define range and resolution. At the institute, early calibrations were tabulated for computational reasons. Range end point calibrations correspond to raw values N=0 and N=1023 and were filed in headers of MK4 data files. With the 2^{nd} and 3^{rd} order coefficients, *C* and *D*, being known and constant, the complete set of coefficients has been recovered and were used where needed. Files created later, have the complete set of coefficients in their header's comment part.

- **Temperature sensor stability:** inspection shows: (i) calibrated temperature records in the deep sea differ by less 0.2 K to all other records in the deep sea, and (ii) te*mperature calibration stability* within a record of up to two years length is better than 2 mK/a for all record lengths available; any drift within a record therefore is much less than the sensor resolution, 20 mK and 7.5 mK, for the low and arctic ranges, respectively; therefore no drift correction with respect to CTD casts is needed and is not applied
- **Conductivity** measurements together with temperature and pressure (or the instrument's depth) provide salinity; some conductivity calibrations are just by *Range* as logged in the respective instrument's start logs. Derived salinity often shows strong and non-linear drift; salinity therefore is archived, but no further processing attempt was made.
- **Pressure** sensors were used in the upper ocean to monitor instrument depth and mooring motion. Lack of funding limited availability of sensors. Lack of time and personnel limited laboratory calibration from about 1999 on, and therefore many conversions of raw data to physical units just could use *linear-range-calibrations* as logged in the respective instrument's start logs; if so, it is noted in the mooring's detailed meta data (Appendix 06), and these records without further adjustments to offset and range only give estimates of events in mooring motion. Few pressure records show non-linear adaption to environmental pressure which however is obvious in the pressure record plots
- Current direction & Speed: direction is measured by a magnetic compass at the end of each measuring interval while speed is measured as an integral counting revolutions of the rotor over the same measuring interval. For the RCM4/5, the measuring interval is the recording interval as set by the user. For the RCM7/8, each recording interval consists of several measuring intervals to deliver *quasi-vector-averaged* values of direction and speed. In KIEL276 moorings, the recording interval was set to 2 h, and initially (from 1989, V276-10 on) an average of 100 individual measurements (1 in 72 s) was taken over the recording interval (Aanderaa, 1987). Due to problems with battery power, this rate was reduced to 50 individual measurements (one in 144 s) from 1991, V276-12, on. Bio-fouling at KIEL276 is significant only in the ocean's upper 150 m and decreases very quickly downwards; it affects mostly the rotor, but only in few cases bio-fouling led to cut the record. The (average) direction needs correction for earth's horizontal magnetic anomaly component as noted in bridge logs taken from sea charts. In some cases, anomalies

were not noted in the logs; these were interpolated between mooring deployments (Appendx 01).

Data sources for archiving & file formats

For an overview see Table 4.1 below. Data sources for further inspection and processing to files for archiving are:

- V264-01 and V276-01 through V276-09: For these first settings, raw data as mirrored from the storage medium to ASCII computer files, are lost; processed data at recording interval on the MK4 level are available as ASCII files (internal MK4 format of the then IfM Kiel). For consistency with later data sets, these were transferred to ASCII files (internal PH3 format) with the following adjustments (Pre1-level):
 - Meta information in header adjusted w/r to position; water depth; nominal depths as from mooring logs and static mooring model (see sec. 2.4). Deviations from older values are small and are not significant for scientific results already published (see discussion in sec. 2.4).
 - East and North components of currents were re-transferred to measured current direction and speed.
 - Any temperature corrections in MK4 reverted in PH3 (Tab. 4.3 below).
- V276-10 through V276-12, V276-15 through V276-19, V276-21 through V276-27: raw data are available and processed (re-processed) to create ASCII (internal PH3 format) data files at sampling interval (Pre1-level).
- V276-13 and V276-14: For data of these two settings, only low pass (49 h filter length, 36 h half power response) filtered daily averages are available. Data sources are internal MK4 ASCII formatted files which were transferred to PH3 formatted ASCII data for consistency, with adaption of meta information in the header (Pre1-level).

Processing

Processing used *'home-made'* institutional FORTRAN^R and MATLAB^R software written for data processing of moored Annderaa RCM and TR. The result is stored in computer dependent binary coded files and in ASCII files (Tab. 4.1). Processing steps include

- creation of an ASCII meta information file V276ii.txt where ii is the KIEL276 deployment number. This file contains data on
 - o deployment and recovery times, and cruises
 - o mooring position and water depth
 - o instrumentation with nominal depths as from mooring logs and static model
 - o information on eventual problems with the mooring
 - information on problems with data
- MK4 level data: source were raw data which now are lost; detailed steps below
- Pre1-level data: source is either MK4 data or raw data; detailed steps as below; output to PH3 formatted ASCII and MAT files
- Pre2-level data: source is pre1-level data; some additional adaption and corrections are made; *nominal depth* replaced by *best estimate of instrument depth* (Sec. 2.4)

MK4-level

- **Input**: on this level, all raw data are from RCM4/5 as mirrored from data storage tape to ASCII computer files
- **Raw data conversion :** Conversion of raw data to physical units of temperature,, conductivity, pressure, current direction and speed used
 - the calibration instructions of the manufacturer (Aanderaa, 1978, 1987)
 - the calibration sheets accompanying each new instrument (see Tab. 4.2)
 - \circ $\,$ any re-calibration of sensors at the institute's calibration lab
 - \circ $\$ linear range calibrations if no better information is available
- **Time basis**: start time (instrument's switch on) as from log; stop time from start time, sampling interval and number of records; control as from instrument's switch off time if available; time offset correction from start time; time drift correction from start and stop time if controlled externally; final start time, stop time and sampling interval to header information; time basis for records created linearly between start and stop time using number of records.
- **Speed & direction**: replace zero speed readings by 1/2 of the offset calibration coefficient; decompose to East and North components
- **Spikes**: detect spikes using a running median filter over typically 9 records with typically 0.05K, 5 cm/s; replace spikes by associated median
- **Temperature**: corrections as in Table 4.3
- Salinity: replaces conductivity if measured
- Edit suspicious data and header information as necessary
- **Dummy** values were set where data are bad or not measured
- **Output** to MK4 binary and ASCII formatted files at sampling interval
 - **Header** information as from logs and processing steps including dates and times of start and stop of the time series along with the time interval of storage
 - Records with pressure, current East- and North components, temperature, salinity

Pre1-level

- **Input:** either MK4 or raw data
- Processing

From start and stop time, for each record create decimal day referred to a reference year, i.e. day 0.0 refers to 1st January, 00:00 UTC of the reference year

- **MK4** input
 - Add missing information for PH3 output
 - Current direction and speed re-calculated from components
 - Revert temperature corrections applied for MK4 (Tab. 4.3)
- Raw data input
 - Create header information from logs; nominal depth as from logs and static mooring model
 - Data processed as for MK4-level
- MK4 and raw data input
 - Choose *arctic range* temperature if available for deep sea records
 - Check correct speed conversion factor within a mooring line for consistency by comparing standard deviations of fluctuations around the M2 tidal signal in band-pass filtered speed data; fluctuations decrease slightly with depth reflecting higher oceanic variability in the thermocline; standard deviations differ less than a factor 2 from depth average standard deviations. The spectral peaks are all within the frequency band of the M2 tide at highest spectral resolution.
- Output to PH3 formatted ASCII and MAT files at sampling interval
 - Header information as from logs and processing steps
 - **Records** with reference year, decimal day, pressure, current direction, current speed, temperature, salinity

Pre2-level

- Input: PH3 formatted pre1-level data files
- Processing
 - Depth: instrument depth set to 'best estimate' as from logs, static mooring model and first day's data statistics compared to deployment CTD casts (Sec. 2.4); 'nominal depth' kept as comment in header
 - **Pressure**: all records adapted such that first day's median matches instrument '*best- depth-estimates*' (Sec. 2.4, App. 04).
 - Temperature: thermocline temperature records which first day's median differ more than +/- 0.45 K from deployment CTD were offset-adapted to match deployment CTD (Sec. 2.4); deep sea temperature records corrected such that first day's median matches pre-deployment CTD casts if available (Sec. 2.4, App. 04); all corrections commented
 - **Speed:** speed values at zero or 1/2 offset calibration value are set to dummy and interpolated in time; interpolation keeps trailing dummies.
- Output: PH3 formatted ASCII and MAT files
 - **Header** information as from logs and processing steps with instrument's *'best depth estimate'* in header and *'nominal depth'* in comment
 - **Records** with reference year, decimal day, pressure, current direction, current speed, temperature, salinity

KIEL276 M Dat	•	Raw data ASCII	MK4 level	Pre1 level	Pre2 level	Archived ***
Format		matrix	MK4	PH3	PH3	RODB
From	То					
V264-01	-	No	Yes	Yes	Yes	Yes
V276-01	V276-09	No	No Yes		Yes	Yes
V276-10	V276-12	Yes		Yes	Yes	Yes
V276-13*	V276-14*	No	Yes	Yes	Yes	Yes
V276-15	V276-19	Yes		Yes	Yes	Yes
V276-20**	-	-		-	-	-
V276-21	V276-27	Yes		Yes	Yes	Yes

 Table 4.1: RCM4/8 and RCM7/8 data sources, processing steps and data formats; raw data as mirrored from tape or data storage unit (DSU).

(*) for data from moorings V276-13 and V276-14 ,only low pass filtered daily averages available

(**) mooring failed, no data

(***) Data initially are archived at GEOMAR data centre and submitted to the *World Data System*'s centre PANGAEA and to *Ocean Sites*' data centre at CORIOIS. (Appendix A05)

Table 4.2: RCM4/5 and RCM7/8 polynomial calibration coefficients used in KIEL276 moorings: $P=A+B^*N+C^*N^2+D^*N^3$ with N as the 10-bit recorded raw value, and P the physical value; note that speed calibration of the RCM4/5 depends on the setting of R (rotor revolutions per count) and on the sampling interval, t/s.

	Unit		Α	В	С	D
Speed	Cm/s	RCM4/5	1.5	42*R/t	0	0
		RCM7/8	1.1	0.2906	0	0
Direction	°N	RCM4/5	1.5	0.3490	0	0
		RCM7/8	1	0.3500	0	0
Temperature	°C	Arctic range	Sensor	Sensor	-1.601e-007	7.911e-011
			dependent	dependent		
		Low range	Sensor	Sensor	-1.344e-006	1.937e-009
			dependent	dependent		
Conductivity	mS/cm		Sensor	Sensor	0	0
			dependent	dependent		
Pressure	dbar		Sensor	Sensor	Sensor	Sensor
			dependent	dependent	dependent	dependent

Mooring ID	Instrument ID	Temperature	Temperature
		corrections as of	corrections
		22-SEP-1993	reverted
V264-01	V264-01_007	0.13	Y
	V264-01_008	0.19	Y
V276-01	V276-01_005	0.14	Y
	V276-01_009	0.43	Y
V276-02	V276-02_003	1.28	Y
	V276-02_004, No. 7	0.09	Y
	V276-02_004, No. 11	-0.04	Y
	V276-02_008	0.23	Y
V276-03	V276-03_005	0.50	Y
V276-04	V276-04_005	-0.11	Y
	V276-04_008	0.45	Y
	V276-04_009	0.11	Y
	V276-04_010	0.20	Y
V276-05	V276-05_006	0.30	Y
	V276-05_008	0.25	Y
	V276-05_009	0.06	Y
	V276-05_010	0.02	Y
V276-06	V276-06_004	-0.30	Y
	V276-06_005, No. 1	0.85	Y
	V276-06_005, No. 2-9	0.80	Y
	V276-06_007	0.15	Y
	V276-06_008	0.15	Y
	V276-06_009	0.10	Y
	V276-06_010	0.03	Y

Table 4.3: Individual temperature corrections as of 22-SEP-1993 and copied from printed log. Corrections were reverted for this report to create consistent data sets throughout the whole KIEL276 data set, e.g. for estimating instrument depths from temperature and pressure measurements.

4.3 Other Aanderaa instruments

Thermistor cables TR4/5, TR7/8

Aandeaa thermistor cables of 50 m length were used from V276-01 until V276-15 in the main thermocline. Data sources, raw data conversion, calibration and processing as for Aanderaa RCM (see sec. 4.2) pre1-level; data kept on pre1-level for archiving at GEOMAR data centre.

Pressure recorders and inclinometers

Some early moorings carried pressure recorders and/or inclinometers on the mooring's top with high sampling rates (30 s) in order to monitor the mooring's deployment phase. These data are not archived and lost.

4.4 Acoustic current meters

Early single beam Acoustic vector averaging current meters

Proto types made by NBIS were implemented in moorings V276-02 and V276-04 to V276-06. Data return was poor. Those data that could be read from storages clearly showed that the internal algorithm that changed current components from instrument coordinates to earth coordinates was wrong. As the instrument did not store the original measurements they could not be reverted from the wrongly transformed data. Data were not used nor archived, and now are lost.

Acoustic Doppler Current Profiler

In a single deployment, V276-21, 2001 to 2002, an upward looking ADCP, 150 kHz, made by RDI was mounted in the top buoy at nominal 163 m depth. ADCP ping data as stored internally by the instrument are available in the archive together with the deployment and recovery log. These data are singular in the whole set and have therefore not been processed yet.

4.5 Particle traps

Particle traps were added in 1993, starting with 4 traps in a separate mooring (L1) close to the existing V276-14 (1993/1994). From 1994 (V276-15) on, traps were merged with the current meter mooring. Lack of funding left a data gap from end of 1997 to early 1999 (V276-18).

All particle trap data were evaluated by the institute's JGOFS group and later at the *Leibniz-Institut für Ostseeforschung, Warnemünde (IOW)*; they are documented and archived at the IOW and available at the *World Data System*'s centre PANGAEA. In this report, we only adjust the estimates of measurement depths to the level *nominal depths as from logs and static mooring model*. These are used in the meta data and in the mooring sketches (Appendix A05). Deviations from trap depth estimates used earlier are small and do not affect scientific results already published (see Section 2.4).

Acknowledgements

The KIEL276 mooring site for more than 30 years could only be run with the support by numerous institutions and persons: The former Institut für Meereskunde in Kiel (now GEOMAR) and later the Leibniz-Institut für Ostseeforschung in Warnemünde (IOW) provided through and basic funding the support personnel sources. Deutsche Forschungsgemeinschaft (DFG) and the Bundesministerium für Forschung (BMBF) through project funding and ship time. From 2001 to 2005, part of the scientific analysis and of the planning processes was performed while one of the authors (JJW) was affiliated at the National Oceanography Centre, Southampton, UK. We thank Gerold Siedler and Detlef Schulz-Bull for their scientific guidance and advise over many years. In particular, we thank the technicians involved in the two institutes, and the ship crews for their work at sea.

References

AANDERAA Instruments (1978): Operating manual for the recording current meter model 4. *Techn. Descr.* 119, Bergen, 1978.

AANDERAA Instruments (1987): Operating Manual, Recording Current Meter, Models 7 & 8, *Techn. Descr.* No. 159, Dec. 1987.

BRUST, J., D.E. SCHULZ-BULL, T. LEIPE, V. CHAVAGNAC, J.J. WANIEK, J.J. (2011): Descending particles: from the atmosphere to the deep ocean: A time series study in the subtropical NE Atlantic, *Geophys. Res. Lett.*, *38*, *L06603*, doi:10.1029/2010GL045399.

BRUST, J., WANIEK, J. J. (2010): Atmospheric dust contribution to deep-sea particle fluxes in the subtropical Northeast Atlantic, Deep Sea Research, Part I, 57, 988-998.

CHAVAGNAC, V., WANIEK, J.J., ATKIN, D., MILTON, J.A., LEIPE, T., GREEN, D.R., BAHLO; R., HAYES, T.E.F., SCHULZ-BULL, D.E. (2007), Anti-Atlas Moroccan Chain as the source of lithogenic-derived micronutrient fluxes to the deep Northeast Atlantic Ocean, Geophys. Res. Lett., 34, L21604, doi: 10.1029/2007GL030985.

DICKSON, R.R., W:J: GOULD, T.J. MÜLLER, C. MAILLARD (1985): Estimates of the mean circulation in the deep (>2000 m) layer of the eastern North Atlantic. *Progr. Oceanogr.*, 14, 103-127.

ENGELMANN, H. (1972): Untersuchungen an Komponenten für Tiefwasserverankerungssysteme. Kieler Meeresf. XXVIII/2, 119-129.

FINKE, M., and G. SIEDLER, 1986: Drag Coefficients of Oceanographic Mooring Components. *J. Atmos. Oceanic Technol.*, 3, 255–264. doi: http://dx.doi.org/10.1175/1520-0426(1986)003<0255:DCOOMC>2.0.CO;2

FRÜNDT, B, T.J. MÜLLER, D.E. SCHULZ-BULL, J.J. WANIEK (2013): Long-term changes in the thermocline of the subtropical Northeast Atlantic (33°N, 22°W), Progress in Oceanography, Volume 116, September 2013, Pages 246-260, ISSN 0079-6611, http://dx.doi.org/10.1016/j.pocean.2013.07.004. (http://www.sciencedirect.com/science/article/pii/S0079661113001109)

HINZ, K, L. HASSE, F. SCHOTT (1991): Subtropischer Tropischer Atlantik, Reise Nr. 14/1-3, Maritime Meteorologie und Physikalische Ozeanographie, 17.September – 30. Dezember 1990, Meteor-Berichte 91-3, 58 S.

HELMBRECHT, L. (2001): IMP Integrated Mooring Package, Vers. 1.0, Dec. 2001. Int. Ber., Inst. Meeskd. Univ. Kiel, , unpublished manuscript, 48 pp.

HELMBRECHT, L. (2002) Entwicklung einer Verankerungssimulation als Designhilfe und zur Verbesserung der Datenanalyse (Diplomarbeit), Christian-Albrechts-Universität, Kiel, Germany, 118 pp

KNOLL, M., T.J. MÜLLER, G. SIEDLER (1998): ESTOC/CANIGO cruises with FS Poseidon cruise 202/1, 212, 233, 237/3. . *Ber. Institut für Meereskunde, Univ. Kiel*, Nr. 302, 78 S.

KREMLING, K., U. LENTZ, B. ZEITSCHEL, D.E. SCHULZ-BULL, J.C. DUINKER, J.C. (1996): New type of time series sediment trap for the reliable collection of inorganic and organic trace chemical substances. *Rev. Sc. Instr.* 67 (12), 4360-4363.

KRAUß, W. (1996a) *The Warmwatersphere of the North Atlantic Ocean* Gebr. Bornträger, Berlin, Stuttgart, 446 pp.

KRAUB, W. (1996b) Comments on the development of our knowledge of the gerenal circulation of the North Atlantic Ocean The Warmwatersphere of the North Atlantic Ocean. Bornträger, Berlin, Stuttgart, pp. 1-31.

MEINCKE, J., E. MITTELSTAEDT (KOORDINATOREN), K. KREMLING, W. ZENK, P. KOSKE (1985): Forschungsschiff Meteor, Reise 69, Nordostatlantik 84, NOAMP III, Berichte der wissenschaftlichen Leiter, Techn. Ber. 1-85, Inst. Meereskunde Univ. Hamburg.

MIENERT, J., G. GRAF, C. HEMLEBEN, K. KREMLING, O. PFANNKUCHE, D. SCHULZ-BULL (1998): Nordatlantik 1996, Cruise No. 36, 6 June – 4 November 1996, Meteor Berichte 98-2, 320 pp.

MOLLER, D.A. (1976): A Computer Program for the Design and Static Analysis of Single Point Subsurface Mooring Systems. W.H.O.I. *Techn. Rep.* Ref. No. 76-59.

MÜLLER, T.J. (1981): Current and temperature measurements in the North-East Atlantic during NEADS, *Ber. Inst. f. Meereskunde Kiel*, Nr. 90, 100 S.

MÜLLER, T.J. and ZENK, W. (1983): Some Eulerian current measurements and XBTsections from the North East Atlantic October 1980 - March 1982 - A Data Report - *Ber. Inst. f. Meereskunde Kiel*, Nr. 114, 145 S.

MÜLLER, T.J. (1984): Eulerian current measurements from the North East Atlantic, March 1982 - October 1983, A Data Report. *Ber. Inst. f. Meereskunde Kiel*, Nr. 127, 98 S.

MÜLLER, T. J., M. FINKE, W. DASCH, R.R. WITTSTOCK (1987) *Hydrographic and current measurements in the North-East Atlantic Ocean : data report F. S. Meteor cruises 69/5 and 69/6, October to November 1984* Berichte aus dem Institut für Meereskunde an der Christian-Albrechts-Universität Kiel, 166. Institut für Meereskunde, Kiel, Germany, 99 pp. DOI 10.3289/IFM_BER_166.

MÜLLER, T.J., G. SIEDLER, W. ZENK (1988): Forschungsschiff "METEOR", Reise Nr. 6. ATLANTIK 87/88 - Fahrtabschnitte Nr. 1 - 3, Oktober - Dezember 1987. Berichte der wissenschaftlichen Leiter. *Ber. Inst. f. Meereskunde*, Nr. 184, 77 S.

MÜLLER, T.J. and G. SIEDLER (1992): Multi-year current time series in the eastern North Atlantic Ocean. *J. Mar. Res.*, 50, 63-98.

MÜLLER T.J. (1999): Determination of Salinity. In: Grasshoff, K., K. Kremling and M. Ehrhardt (Eds.): *Methods of seawater analysis,* 3rd completely rev. and extended ed., Weinheim: New York, Chester, Brisbane, Singapore, Toronto, Wiley-VCH, Ch. 3, 41-73.

MÜLLER, T.J., J. XU, O. LLINAS, E. PEREUZ-MARTELL (1990): Hydrographic and Current Observations in the North-East Atlantic Ocean - Data Report F.S. POLARSTERN Cruise ANT IV/1b, F.S. POSEIDON Cruise 124, B.O. TALIARTE Cruise XIV, September to December 1985. *Ber. Inst. f. Meereskunde Kiel*, Nr. 202, 105 S.

ROETHER, W., M. SARNTHEIM, T.J. MÜLLER, W. NELLEN, D. SAHRHAGE (1990): Südatlantik-Zirkumpolarstrom, Reise Nr. 11, 3. Oktober 1989 - 11. März 1990. *METEOR-Berichte*, Universität Hamburg, 90-2, 169 S.

SAUNDERS, P.M (1986): The Accuracy of Measurement of Salinity, Oxygen and Temperature in the Deep Ocean. *Journ. Phys. Oceanogr.* 16, 1, 189-195,1986.

SCHRÖDER, M., (1982): Das statische Verhalten von Einpunktverankerungen bei Anströmung. Ber. Inst. Meereskd. 108.

SIEDLER, G. (Koordinator), H. PETERS, D. SCHNACK, H. WEIKERT (1983): Forschungsschiff "METEOR", Reise Nr. 64, Ostatlantik – Biozirkel, Ostatlantik – Warmwassersphäre, Januar – Mai 1983. Berichte der wissenschaftlichen Leiter, Inst. Meereskd. an der Univ. Kiel, 106 S.

SIEDLER, G., H. SCHMICKLER, T.J. MÜLLER, H.-W. SCHENKE, W. ZENK (1987): Forschungsschiff " METEOR", Reise Nr. 4, *Berichte der wissenschaftlichen Leiter. Inst. f. Meereskunde Kiel*, Nr. 173, 123 S.

SIEDLER, G. UND PAUL, U. (1991) *Barotropic and Baroclinic Tidal Currents in the Eastern Basins of the North Atlantic* Journal of Geophysical Research, 96 (C12). pp. 22259-22271. DOI 10.1029/91JC02319

SIEDLER, G., L. ARMI, T.J. MÜLLER. (2005): Meddies and decadal changes at the Azores Front from 1980 to 2000. *Deep-Sea Research II*, 52 (3-4), 583-604.

UNESCO (1983): Algorithms for computation of fundamental properties of seawater, UNESCO technical papers in marine science, 44, 1983.

WANIEK J., W. KOEVE AND R. PRIEN (2000): Trajectories of sinking particles and the catchment areas above sediment traps in the northeast Atlantic, J. Marine Res., 58:6, p. 983-1006.

WANIEK, J.J., SCHULZ-BULL, D.E., BLANZ, T., PRIEN, R., OSCHLIES, A., MÜLLER, T. (2005): Interannual variability of deep water particle flux in relation to production and lateral sources in the northeast Altantic. *Deep-Sea Res. I*, 52(1), pp. 33-50.

WANIEK, J.J. (2011): RV MARIA S. MERIAN, Cruise Report MSM18/L1 Particle dynamics in the subtropical and tropical Northeast Atlantic 2011, 59 pp., DFG Senatskommission für Ozeanographie.

ZENK, W. (1981): Dehnungsversuche an Polyamidseilen (11 mm "Meteor-Leine"). *Techn. Ber.*, Inst. Meereskd., unpublished manuscript, 13 pp.

ZENK, W. and T.J. MÜLLER (1988): Seven-year current meter record in the eastern North Atlantic. *Deep-Sea Res.*, 35,(8), 1259-1268.

ZENK W., T.J. MÜLLER, G. WEFER (1989): BARLAVENTO-Expedition, Reise Nr. 9, 29. Dez. 1988 - 17. März 1989. *METEOR-Berichte*, Universität Hamburg, 89-2, 238 S.

Glossary

Institutions

- BMBF: Bundesministerium für Forschung
- DFG: Deutsche Forschungsgemeinschaft
- IfM: Institut für Meereskunde, Kiel, Germany, until 2002
- IFM-GEOMAR: Leibniz-Institut für Meereswissenschaften, Kiel, Germany, 2003 2011
- GEOMAR Helmholtz-Zentrum für Ozeanforschung, Kiel, Germany, since 2012
- NOCS: National Oceanography Centre, Southampton, UK

Mooring identifications

- V26401 and V27601 through V27627: identification for a mooring; 'V' stands for the German word for 'mooring' (Verankerung); a 3-digit number identifies a mooring site; if a site is occupied several times, a 2-digit running number is attached. In the case of KIEL276, the second setting received a new number (V27601 instead V26402) which was kept against this rule. In texts, for easier reading sometimes, e.g. V27601, is replaced by V276-01.
- K276 instead KIEL276 sometimes is used in graphics.
- KIEL276 numbers, 0, 1, 2, 27, sometimes are used in graphics or tables for moorings V264-01, V276-01, V276-02,....V276-27, respectively.

Instrumentation

- RCM: Recording Current Meter, made by Aanderaa, Norway
- ADCP: Acoustic Doppler Profiler, made by RD Instruments, USA .

Physical measures

- SPD: current speed/(cm/s)
- DIR: current direction/degree relative to North, counted clockwise from North
- UC, VC: current components, positive towards East and North
- T: temperature/°C; for CTD casts, the scale, IPTS68 or ITS90 is given in the cast headers; for RCM measurements, accuracy is not sufficient to distinguish the scales
- P: pressure/dbar relative to the sea surface;
- S: practical salinity, IPSS78

KIEL276

KIEL276 Time Series Data

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

March 1980 – April 2011

Appendix A01: Mooring Inventory

KIEL276, NE Atlantic current meter moorings, 1980 to 2011, with particle traps since 1992; nominal location is 33.0° N, 022.0°W, Madeira Abyssal Plain (240 nm west of Madeira), nominal water depth is 5285 m

Remark 1: All dates and locations after bridge logs. All water depths corrected for sound velocity⁽¹⁾.

Remark 2: KPO is *Kiel Physical Oceanography* mooring ID, introduced in 2011and assigned also to earlier moorings

Status: 23-OCT-2012

					KIEL276 M	ooring inform	nation					
Code	;	Navigat	ion (bridge	e log)	log) Launching						Recovery	
Traditional	KPO	Position	Water	Mag.	Date	Ship	Bridge	Deck	CTD	Date	Ship	
		(bridge log)	Depth ⁽¹⁾	Dev.		Cruise	log ⁽³⁾	log ⁽³⁾	file		Cruise	
		Latitude	(m)	°E			(master)	(scientist)				
		Longitude					status	status				
V264-01	629	33° 06.1' N 021° 50.9' W	5280	not logged	31.03.1980	Meteor II M2T053-D	3	3	M2T53_D_180 (no Salinity)	17.10.1980	Meteor II M2T056-1	
V276-01	630	33° 09.9'N 021° 50.9'W	5295	-14 MK4 files	17.10.1980	Meteor II M2T056/1	3	3	M2T056_1_005 (no Salinity)	27.07.1981	Meteor II M2T057-1	
V276-02	632	33° 04.75'N 021° 53.05'W	5290	-13 MK4 files	27.07.1981	Meteor II M2T057/1	hard to read, no copy	3	M2T057_1_542	02.03.1982	Meteor II M2T060-3	
V276-03	633	33° 11.67'N 021° 53.88'W	5288	-12.3	05.03.1982	Meteor II M2T060/3	3	3	M2T060_3_4_072 (XBT T7, 760 m)	17.04.1983	Meteor II M2T064/6	
V276-04	635	33° 10.6'N 021 55.0'W	5288	-12.3	19.04.1983	Meteor II M2T064/6	3	3	M2T064_6_7_001	19.10.1983	Poseidon POS104-0	
V276-05	636	33° 10.8'N 021° 55.4'W	5285	-13.5	20.10.1983	Poseidon POS104-c	3	3	POS104_731	25.10.1984	Meteor II M2T69-5	
V276-06	642	33° 09.5'N 021° 57.3'W	5290 (deck log)	-11.7 MK4 files	26.10.1984	Meteor II M2T69-5	3	3	M2T069_5_6_003	16.11.1985	Poseidor POS124	
V276-07	658	33° 08.5'N 021° 57.6'W	5288	-11.7 MK4 files	17.11.1985	Poseidon POS124	3	3	POS124_049	31.10.1986	Meteor II MET004-2	
V276-08	660	33° 06.7'N 021° 55.1'W	5276	-11.7	01.11.1986	Meteor III MET004-2	3	3	MET004_006	06.11.1987	Meteor II MET006	
V276-09	666	33° 05.4'N 021° 52.5'W	5287	-12	06.11.1987	Meteor III MET006	3	3	MET006_005	14.01.1989	Meteor II MET009-	
V276-10	671	33° 06.4'N 021° 53.8'W	5281 (HS)	-12 (interp.)	14.01.1989	Meteor III MET009-2	3	3	MET009_050	27.10.1989	Meteor II MET011-2	

					KIEL276 Mo	oring informa	ation				
Code		Navigation (br	ridge log)			Recovery					
Traditional	KPO	Position	Water	Mag.	Date	Ship	Bridge	Deck	CTD	Date	Ship
		(bridge log)	Depth ⁽¹⁾	Dev.		Cruise	log ⁽³⁾	log ⁽³⁾	file		Cruise
		Latitude	(m)	°E			(master)	(scientist)			
		Longitude					status	status			
V276-11	678	33° 06.2'N 021 54.3'W	5272	-11 (interp.)	27.10.1989	Meteor III MET011-2	3	3	MET011_2_003	25.09.1990	Meteor III MET014-1
V276-12	685	33° 08.95'N 021° 53.25'W	5335 (HS)	-11	25.09.1990	Meteor III MET014-1	3	3	MET014_1_005	27.01.1992	Poseidon POS189-1
V276-13	719	32° 55.30'N 022° 08.17'W	5279	-10.6	28.01.1992	Poseidon POS189-1	3	3	POS189_003	11.07.1993	Poseidon POS200-8
V276-14 & L1	739	32° 59.63'N 022° 00.10'W	5282	-11.7	01.07.1993	Poseidon POS200-8	3	3	POS200_8_009	17.09.1994	Poseidon POS202
V276-15	757	32° 57.41'N 022° 01.30'W	5277	-10.5	18.09.1994	Poseidon POS202	3	3	POS202_004	14.10.1995	Poseidon POS212/4
V276-16	775	33° 00.14'N 021° 57.85'W	5274	-10.3	15.10.1995	Poseidon POS212/4	3	3	POS212_098	24.06.1996	Meteor III MET036-2
V276-17	781	33°00.0'N 022° 00.0'W	5294	-10	28.06.1996	Meteor III MET036-2	3	3	MET036_2_003	06.08.1997	Poseidon POS231-3
V276-18	826	32° 59.5'N 021° 59.9'W	5277	-10	07.08.1997	Poseidon POS231-3	3	3	POS231_002	24.01.1999	Poseidon POS247-2
V276-19	855	32° 58.1'N 022° 00.5'W	5271	-9.5	25.01.1999	Poseidon POS247-2	3	3	POS247_007	13.04.2000	Poseidon POS259-1
V276-20	856	Mooring line br lower part lost;	0	,	14.04.2000	Poseidon POS259-1	0	3	POS259_015	14.04.2000	Poseidon POS259-1
V276-21	912	32° 55.5'N 022° 01.5'W	5272	-10	02.02.2001	Poseidon POS268	3	3	POS268_003	19.02.2002	Poseidon POS283-2

					KIEL276 Mo	oring informa	ation				
Code		Navigation (b	ridge log)				Launchi	ng		Recovery	
Traditional	KPO	Position	Water	Mag.	Date	Ship	Bridge	Deck	CTD	Date	Ship
		(bridge log)	Depth ⁽¹⁾	Dev.		Cruise	log ⁽³⁾	log ⁽³⁾	file		Cruise
		Latitude	(m)	°E			(master)	(scientist)			
		Longitude					status	status			
V276-22	938	32° 52.10'N 022° 01.75'W	5275	-9 (interp.)	22.02.2002	Poseidon POS283-2	3	3	POS283_019	20.04.2003	Poseidon POS297
V276-23	957	32° 49.65'N 022° 00.20'W	5264	-7.3	22.04.2003	Poseidon POS297	3	3	POS297_013	16.03.2004	Poseidon POS308
V276-24	1083	32° 49.1'N 022° 00.0'W	5270	-9.0	17.03.2004	Poseidon POS308	3	3	POS308_012	06.05.2005	Poseidon POS321
V276-25	1084	33° 00.0'N 021° 59.9'W	5273	-8.6	08.05.2005	Poseidon POS321	3	3	POS321_007	10.04.2007	Poseidon POS349
V276-26	1085	33° 00.01'N 021° 59.98'W	5271	-9.5	17.04.2007	Poseidon POS349	3	3	POS349_005	27.04.2009	Poseidon POS383
V276-27	1086	32°57.55'N 021°59.55'W	5276	-9 (as 2007)	28.04.2009	Poseidon POS383	3	3	POS383_007	21.04.2011	Merian MSM018-1
V276-28		33°05.58'N 021°58.90'W	5244		24.04.2011	Merian MSM018-1			MSM018_1_004		

Remarks

(1) Water depth estimated from measured sounding depth assuming average 1500 m/s sound velocity plus 55 m local correction estimate from Matthew Tables and CTD cast 007 during Poseidon cruise POS321 in 2005. HS is HYDROSWEEP (multibeam) corrected depth on R/V METEOR.

(2) Nominal depths are from static model results, using deployment & recovery log information

(3) Log status index: (0) unknown; (1) GEOMAR buoy group, (2) with TJM; (3) scanned or other digital form

KIEL276 Time Series Data

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

March 1980 – April 2011

Appendix A02: KIEL276 data information

Remark: KPO is *Kiel Physical Oceanography* mooring ID, introduced in 2011and assigned also to earlier moorings

Status: 23-OCT-2012

		KIE	EL276 data i	nformation	
Moorii Code				nt meters ⁽¹⁾ 4/5/7/8/9/11	Traps
Traditional	KPO	start/stop /proc logs ⁽²⁾	raw data from tape/DSU	processed data available	
V264-01	629	3	Lost	at sampling interval	none
V276-01	630	3 partly lost	Lost	at sampling interval	none
V276-02	632	3	Lost	at sampling interval	none
V276-03	633	3	Lost	at sampling interval	none
V276-04	635	3	Lost	at sampling interval	none
V276-05	636	3	Lost	at sampling interval	none
V276-06	642	3	Lost	at sampling interval	none
V276-07	658	3	Lost	at sampling interval	none
V276-08	660	3	Lost	at sampling interval	none
V276-09	666	3	Lost	at sampling interval	none
V276-10	671	3	Y	at sampling interval	none
V276-11	678	3	Y	at sampling interval	none
V276-12	685	3	Y	at sampling interval	none
V276-13	719	3	Lost	daily averages	none
V276-14 & L1	739	3	Lost	daily averages	traps moored separately

		KIEI	L276 data in	formation	
Moori Cod	e			nt meters ⁽¹⁾ /5/7/8/9/11	Traps
Traditional	КРО	start/stop /proc logs ⁽²⁾	raw data from tape/DSU	processed data available	
V276-15	757	3	Y	at sampling interval	4 traps
V276-16	775	3	Y	at sampling interval	4 traps
V276-17	781	3 start only	Y	at sampling interval	3 traps
V276-18	826	3	Y	at sampling interval	none
V276-19	855	3	Y	at sampling interval	2 traps
V276-20	856	no data fro	m V276-20, <i>i</i>	April 2000 to February 2001	
V276-21	912	3	Y	at sampling interval	1x2 traps 1 trap
V276-22	938	3	Y	at sampling interval	1x2 traps 1 trap
V276-23	957	3	Y	at sampling interval	1x2 traps 1 trap
V276-24	1083	3	Y	at sampling interval	2 traps
V276-25	1084	3 start only	Y	at sampling interval	2 traps
V276-26	1085	not logged	Y	at sampling interval	2 traps
V276-27	1086	not logged	Y	at sampling interval	2 traps

1) ADCP: solely V276-21 had an upward looking 150 kHz ADCP on the top buoy;

(2) Log status index: (0) unknown; (1) GEOMAR buoy group, (2) with TJM; (3) scanned or other digital form

KIEL276 Time Series Data

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

March 1980 – April 2011

Appendix A03: KIEL276 mooring cruise reports

Table A03: KIEL276 deployment cruise reports; internal reports are available through the GEOMAR data centre; public reports are available at the publishing institution and/or on-line at GEOMAR's library (<u>www.geomar.de</u>) or at the Senatskommssion für Ozeanographie der Deutschen Forschungsgemeinschaft (SkfOz, <u>http://www.dfg-ozean.de</u>; PS is the cruise's Principal Scientist.

	r	-	ĸ	IEL276 depl	oyment cruise reports		
No	Mooring	De	Deployment cruise		Internal report at	Public repo	rt
	ID	Ship	ID	PS	GEOMAR data centre	Reference	on-line at
0	V264-01	Meteor II	M2T053-D	Werner	M2T53_C_D_report.pdf		
1	V276-01	Meteor II	M2T056-1	Seiler	M2T56_1_report.pdf		
2	V276-02	Meteor II	M2T057-1	Zenk	M2T57_1_report.pdf		
3	V276-03	Meteor II	M2T060-3	Siedler	M2T60_3_report.pdf		
4	V276-04	Meteor II	M2T064/6	Siedler		Siedler et al. (1983)	GEOMAR
5	V276-05	Poseidon	POS104-c	Zenk	POS104_C_D_report.pdf		
6	V276-06	Meteor II	M2T69-5	Zenk	M2T69_5_report.pdf	Meincke et al. (1985)	
7	V276-07	Poseidon	POS124	Müller	POS124_report.pdf		GEOMAR
8	V276-08	Meteor III	MET004-2	Müller	MET04_report.pdf	Siedler et al. (1987)	SKfOz
9	V276-09	Meteor III	MET006	Siedler	MET06_1_report.pdf	Müller et al. (1988)	SKfOz
10	V276-10	Meteor III	MET009-2	Müller	MET09_2_3_report.pdf	Zenk et al. (1989)	SKfOz
11	V276-11	Meteor III	MET011-2	Müller	MET11_2_report.pdf	Roether et al. (1990)	SKfOz
12	V276-12	Meteor III	MET014-1	Hasse	MET14_1_report.pdf	Hinz et al. (1991)	SKfOz
13	V276-13	Poseidon	POS189-1	Müller	POS189_1_report.pdf		
14	V276-14	Poseidon	POS200-8	Müller	POS200_8_report.pdf		
15	V276-15	Poseidon	POS202	Müller	POS202_report.pdf	Knoll et al. (1998)	GEOMAR
16	V276-16	Poseidon	POS212-4	Müller	POS212_report.pdf	Knoll et al. (1998)	GEOMAR
17	V276-17	Meteor III	MET036-2	Kremling		Mienert et al. (1998)	SKfOz
18	V276-18	Poseidon	POS231-3	Waniek	POS231_3_report.pdf		
19	V276-19	Poseidon	POS247-2	Müller	POS247_2_report.pdf		
20	V276-20	Poseidon	POS259-1	Müller	POS259_1_report.pdf		
21	V276-21	Poseidon	POS268	Schulz-Bull	lost		
22	V276-22	Poseidon	POS283-2	Schuz-Bull	POS283_report.pdf		
23	V276-23	Poseidon	POS297	Blanz	POS297_report.pdf		
24	V276-24	Poseidon	POS308	Schiebel	POS308_report.pdf		
25	V276-25	Poseidon	POS321	Müller	POS321_report.pdf		
26	V276-26	Poseidon	POS349	Waniek	POS349_report.pdf		
27	V276-27	Poseidon	POS383	Waniek	POS383_report.pdf.		
28	V276-28	Merian	MSM018-1	Waniek		Waniek (2011)	SKfOz

KIEL276 Time Series Data Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

March 1980 – April 2011

Appendix A04: RCM Instrument depths

Tab. A04.1: RCM best depth estimates result (see section 2.4 for method). Normalization factors used were the pressure approximate maximum range, p_norm= 6000 dbar and the low temperature half range, t_norm=12 °C. For a second run, residuals P-PRCM and T-TRCM between pre-deployment CTD cast and first 25 h RCM records larger 50 dbar and 0.45°C, respectively, were flagged 1 and not used in a second run. Note, residuals after the second run maybe smaller. Dummies are -9999.

<pre>RCM depth info; all depths rounded and in m RCM_z : corrected (best) depth estimate for RCM RCM_ID : instrument identification within mooring (from top) Nom_z : nominal depths as from design & deployment log C_z : depth correction applied (relative to surface) C_off : offset/m correction applied to (nominal) bottom distance of RCM C_str : stretch factor coefficient applied to (nominal) bottom distance of RCM P, T : best pressure estimate for RCM; CTD pre deployment cast temperatuere at P PRCM : RCM first 25 h median pressure TRCM : RCM first 25 h median temperature measurement P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_off C_str P-PRCM P_flag T-TRCM T_flag z_S_ v26401 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640103 1409 623 -242 244 1.000 -9999 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 62 942 2640105 4570 1183 -241 244 1.000 -9999 0 0.044 0 92</pre>
RCM_z: corrected (best) depth estimate for RCMRCM_ID: instrument identification within mooring (from top)Nom_z: nominal depths as from design & deployment logC_z: depth correction applied (relative to surface)C_off: offset/m correction applied to (nominal) bottom distance of RCMC_str: stretch factor coefficient applied to (nominal) bottom distance of RCMP, T: best pressure estimate for RCM; CTD pre deployment cast temperatuere at PPRCM: RCM first 25 h median pressureTRCM: RCM first 25 h median temperature measurementP_flag=1 if PRCM is not used for RCM best depth estimate (spike or deep sea)Z_S_F: instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626)RCM_zRCM_IDRCM_IDS/NNom_zC_zC_dot124 2640101 1407266-2422441.000281 26401031409623-2422441.000318000.0260000000000000000000000000000000010140710-24210010-9999100<
<pre>RCM_ID : instrument identification within mooring (from top) Nom_z : nominal depths as from design & deployment log C_z : depth correction applied (relative to surface) C_off : offset/m correction applied to (nominal) bottom distance of RCM C_str : stretch factor coefficient applied to (nominal) bottom distance of RCM P, T : best pressure estimate for RCM; CTD pre deployment cast temperatuere at P PRCM : RCM first 25 h median pressure TRCM : RCM first 25 h median temperature measurement P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and</pre>
<pre>Nom_z : nominal depths as from design & deployment log C_z : depth correction applied (relative to surface) C_off : offset/m correction applied to (nominal) bottom distance of RCM C_str : stretch factor coefficient applied to (nominal) bottom distance of RCM P, T : best pressure estimate for RCM; CTD pre deployment cast temperatuere at P PRCM : RCM first 25 h median pressure TRCM : RCM first 25 h median temperature measurement P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_off C_str P-PRCM P_flag T-TRCM T_flag z_S_ v26401 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640103 1409 623 -242 244 1.000 -9999 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 62</pre>
C_z : depth correction applied (relative to surface) C_off : offset/m correction applied to (nominal) bottom distance of RCM C_str : stretch factor coefficient applied to (nominal) bottom distance of RCM P, T : best pressure estimate for RCM; CTD pre deployment cast temperatuere at P PRCM : RCM first 25 h median pressure TRCM : RCM first 25 h median temperature measurement P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_d4010 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 622
C_off : offset/m correction applied to (nominal) bottom distance of RCM C_str : stretch factor coefficient applied to (nominal) bottom distance of RCM P, T : best pressure estimate for RCM; CTD pre deployment cast temperatuere at P PRCM : RCM first 25 h median pressure TRCM : RCM first 25 h median temperature measurement P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_off C_str P-PRCM P_flag T-TRCM T_flag z_S_ v26401 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9.99 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 62
C_str : stretch factor coefficient applied to (nominal) bottom distance of RCM P, T : best pressure estimate for RCM; CTD pre deployment cast temperatuere at P PRCM : RCM first 25 h median pressure TRCM : RCM first 25 h median temperature measurement P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_off C_str P-PRCM P_flag T-TRCM T_flag z_S_ v26401 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9.999 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 62
P, T : best pressure estimate for RCM; CTD pre deployment cast temperatuere at P PRCM : RCM first 25 h median pressure TRCM : RCM first 25 h median temperature measurement P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_off C_str P-PRCM P_flag T-TRCM T_flag z_S_ v26401 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9.399 0 -0.064 0 122 381 2640103 1409 623 -242 244 1.000 31.8 0 -0.060 0 626
PRCM : RCM first 25 h median pressure TRCM : RCM first 25 h median temperature measurement P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_dot1 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9999 0 -0.064 122 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 622
TRCM : RCM first 25 h median temperature measurement P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_d4010 1407 266 -242 24 2640102 2025 370 -242 128 2640103 1409 623 -242 244 1.000 -9999 0 -0.064 0 127 381 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 626
P_flag =1 if PRCM is not used for RCM best depth estimate (spike or deep sea) T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_d4010 1407 266 -242 244 1.8 2640102 2025 370 -242 244 1.000 -9.99 0 -0.064 0 122 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 626
T_flag =1 if TRCM is not used for RCM best depth estimate (spike or deep sea) Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_off C_str P-PRCM P_flag T-TRCM T_flag z.S_s v26401 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9999 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 626
Z_S_F : instrument depths as in Siedler et al. (2005, V27601 to V27619) and Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_off C_str P-PRCM P_flag T-TRCM T_flag z_S_ v26401 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9999 0 -0.064 0 122 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 622
Fründt et al. (2013, V27621 to V27626) RCM_z RCM_ID S/N Nom_z C_z C_off C_str P-PRCM P_flag T-TRCM T_flag z_s v26401 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9999 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 626
RCM_z RCM_ID S/N Nom_z C_z C_off C_str P-PRCM P_flag T-TRCM T_flag z_S_ v26401 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9999 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 622
v26401 24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9999 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 62
24 2640101 1407 266 -242 244 1.000 -9.3 0 0.026 0 -999 128 2640102 2025 370 -242 244 1.000 -9999 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 62
128 2640102 2025 370 -242 244 1.000 -9999 0 -0.064 0 12 381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 62
381 2640103 1409 623 -242 244 1.000 -9999 0 -0.231 0 37 636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 62
636 2640104 4030 877 -241 244 1.000 31.8 0 -0.060 0 62
942 2640105 4570 1183 -241 244 1.000 -9999 0 0.044 0 92
3025 2640107 4563 3156 -131 0 1.061 -9999 1 0.167 1 296
4812 2640108 4564 4839 -27 0 1.061 -9999 1 0.179 1 477
v27601
190 2760103 2104 320 -130 132 1.000 -11.8 0 0.049 0 19
495 2760105 2105 625 -130 132 1.000 -9999 0 0.191 0 49
702 2760108 3827 832 -130 132 1.000 -66.1 1 0.293 0 69
1004 2760109 2320 1134 -130 132 1.000 -9999 0 0.426 0 99
1107 2760110 1626 1237 -130 132 1.000 -9999 0 0.150 0 109
1611 2760111 2712 1740 -129 0 1.036 -9999 0 0.173 0 159
v27602
255 2760201 1409 260 -5 5 1.000 9.5 0 0.004 0 24
560 2760203 2527 565 -5 5 1.000 -9999 0 1.382 1 55
766 2760205 2528 771 -5 5 1.000 1.8 0 -0.023 0 74
1170 2760206 673 1175 -5 5 1.000 -9999 0 0.184 0 114
3034 2760208 4562 3037 -3 0 1.001 -9999 1 -9999 1 302
v27603
210 2760301 94 199 11 -11 1.000 17.2 0 -0.048 0 19
446 2760303 1484 435 11 -11 1.000 -9999 0 -0.012 0 422
651 2760304 1485 639 12 -11 1.000 -9999 0 -0.176 0 622
1057 2760305 131 1045 12 -11 1.000 -9999 0 -9999 0 103
1564 2760306 2317 1552 12 0 0.997 -9999 0 -9999 0 153
v27604
677 2760405 1409 798 -121 123 1.000 -9999 0 -0.074 0 67 1001 2760405 1409 798 -121 123 1.000 -9999 0 -0.074 0 67
1081 2760406 2025 1202 -121 123 1.000 -9999 0 -0.158 0 107 1507 2760406 4050 1202 -121 123 1.000 -9999 0 -0.158 0 107
1587 2760408 4352 1708 -121 0 1.034 -9999 0 0.159 0 157 2012 2760408 4555 2007 14 0 1.034 -9999 0 0.159 0 157
3013 2760409 4565 3087 -74 0 1.034 -9999 1 0.074 1 298
<u>5237 2760410 5327 5239 -2 0 1.034 -9999 1 -9999 1 518</u>

RCM_z	RCM_ID	S/N	Nom_z	Corr z Cor	r off Cor	r str P	-PRCM F	flag T-TRCM	T flag	z_S_F
v27605		,							5	
	2760502	776	364	-32	32	1.000	-0.6	0 0.00	6 0	327
566	2760504	6051	598	-32	32	1.000	-9999	0 -0.02	0 0	560
	2760505	5882	801	-31	32	1.000	-9999	0 -0.04	4 0	760
1176	2760506	6682	1207	-31	32	1.000	-9999	0 0.28	0 0	1160
1679	2760508	6161	1710	-31	0	1.009	-9999	0 0.29	8 0	1660
3068	2760509	5881	3087	-19	0	1.009	-9999	1 -999	91	3050
5236	2760510	6160	5236	0	0	1.009	-9999	1 -999	9 1	5340
v27606										
	2760602	673	409	-77	77	1.000	-0.3	0 0.01		327
	2760603	2528	642	-76	77	1.000	-9999	0 0.06		562
	2760604	7330	845	-76	77	1.000	-9999	0 -0.49		764
	2760607	7343	1253	-76	77	1.000	-9999	0 0.00		1168
	2760608	6681	1756	-76	0	1.021	-9999	0 0.17		1670
	2760609	6678	3138	-46	0	1.021	-9999	1 0.06		3080
	2760610	6160	5242	-1	0	1.021	-9999	1 -999	9 I	-9999
v27607	0000001	6150	400	0.0	0.0	1 000		0 000	o o	200
-	2760701	6158	402	-80	80	1.000	-9999	0 -999		300
	2760702 2760703	7656	636	-79	80	1.000	-9999	0 0.21		534
	2760703	7927 7654	840 1144	-79 -79	80 80	1.000 1.000	-9999 -9999	0 0.04 0 -0.35		736 1040
	2760705	7654 7928	1144 1247	- 79 - 79	80 80	1.000	-99999	0 -0.35 0 -999		1040 1142
	2760706	7928	1247 1751	-79	80	1.000	-99999	0 -0.04		1644
	2760707	4565	3133	-48	0	1.022	-99999	1 0.86		3047
	2760709	6161	5238	-1	0	1.022	-9999	1 -999		5235
v27608	2700709	0101	5250	±	0	1.022	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	± ,,,,	· ·	5255
	2760801	6679	352	-20	20	1.000	-9999	0 -0.25	6 0	330
	2760802	131	585	-20	20	1.000	-9999	0 0.19		560
	2760803	7330	789	-19	20	1.000	-9999	0 -0.21		760
	2760805	4354	1093	-19	20	1.000	-9999	0 0.04		1060
	2760806	4564	1196	-19	20	1.000	-9999	0 0.08		1160
	2760807	5881	1699	-19	0	1.005	-9999	0 0.09		1670
3070	2760808	6121	3082	-12	0	1.005	-9999	1 0.02	6 1	3070
5231	2760809	4563	5231	0	0	1.005	-9999	1 -999	9 1	-9999
v27609a	a									
441	2760902	7924	516	-75	75	1.000	-9999	0 -0.17	3 0	450
	2760903	7624	719	-74	75	1.000	-9999	0 0.02	5 0	650
	2760905	5252	1024	-74	75	1.000	-9999	0 0.08	9 0	950
	2760906	2317	1125	-74	75	1.000	-9999	0 0.11		1050
	2760907	6159	1629	-74	0	1.020	-9999	0 -0.06		1550
	2760908	7656	3012	-46	0	1.020	-9999	1 0.02		3000
-	2760909	6160	5240	-1	0	1.020	-9999	1 -999	9 1	-9999
v276091										
	2760902	7924	773	-140	142	1.000	-9999	0 0.04		650
	2760903	7624	977	-140	142	1.000	-9999	0 -0.03		850
	2760905	5252	1281	-140	142	1.000	-9999	0 -999		1150
	2760906	2317	1384	-140	142	1.000	-9999	0 0.13		1250
	2760907 2760908	6159 7656	1887 2171	-140	0 0	1.041 1.041	-9999	0 -0.15 1 -999		1750 3050
	2760908	7656 6160	3171 5240	-87 -2	0	1.041	-9999 -9999	1 -999 1 -999		3050 -9999
v27610	2100303	0100	5240	-2	U	T.04T	- 2222	<u>_</u> <u>_</u> _ <u>_</u> _ <u>_</u> _ <u>_</u> _ <u>_</u> _ <u>_</u> _ <u>_</u> <u>_</u>		- 2777
	2761001	8412	391	-12	12	1.000	15.9	0 -0.04	3 0	367
	2761001	2528	624	-12	12	1.000	4.1	0 0.01		595
	2761002	7343	827	-12	12	1.000	-9999	0 0.15		800
	2761005	7928	1132	-12	12	1.000	-9999	0 -999		1100
	2761005	8295	1234	-12	12	1.000	-9999	0 0.20		1200
	2761007	7927	1738	-12	0	1.003	-9999	0 0.11		1700
	2761008	4570	3123	-7	0	1.003	-9999	1 0.10		3050
	2761009	9310	5231	0	0	1.003	-9999	1 -999		5185
v27611										
	2761101	9726	394	-66	66	1.000	4.1	0 -0.03	9 0	320
	2761102	7330	627	-65	66	1.000	13.8	0 0.01	1 0	555
765	2761103	6051	830	-65	66	1.000	-9999	0 0.21	3 0	755
	2761105	7924	1135	-65	66	1.000	-9999	0 0.05		1055
1173	2761106	9727	1238	-65	66	1.000	-9999	0 0.20	6 0	1155
	2761106 2761107	7925	1741	-65	0	1.018	-9999	0 -0.25		1655

DOM -	DOM TO	0 /N	Nom		~ff 0.	D	DDOMD	flog		flee	- 0 5
RCM_z	RCM_ID 2761108	S/N 6160	Nom_z 3126	Corr_z Corr_ -40	_011_00	1.018	-9999	_iiag 1		_llag 1	z_S_F 3045
	2761108	9728	5267	-40	0	1.018	-9999	1		1	5190
v27612	2/01109	9120	5207	-T	0	1.010	-	T	-9999	Ŧ	5190
	2761201	9313	294	-95	95	1.000	-9999	0	-0.033	0	215
	2761201	2528	527	-94	95	1.000	-22.6	0	0.078	0	455
	2761202	7343	730	-94	95	1.000	-9999	0	0.104	0	645
	2761205	6681	1035	-94	95	1.000	-9999		-0.369		-9999
	2761205	9323	1138	-94	95	1.000	-17.5		-0.001	0	1065
	2761200	7927	1641	-94	0	1.025	-9999	0	0.408	0	1565
_	2761208	4570	3025	-58	0	1.025	-9999	1		1	3000
v27613	2,01200	1070	5025	50	Ŭ	1.025		-	0.122	-	5000
	2761301	131	294	-9	9	1.000	10.0	0	-0.035	0	270
	2761305	7928	1035	-9	9	1.000	-9999		-0.224	0	1000
	2761306	9311	1138	-9	9	1.000	-9999		-0.168	0	1100
	2761308	2317	3025	-6	0	1.003	-9999	1		1	3000
	2761309	9345	5229	0	0	1.003	-9999	1	-9999	1	5185
v27614				-	-			_		_	
	2761403	10659	795	-82	83	1.000	-9999	0	0.228	0	750
	2761405	9820	1100	-82	83	1.000	-9999		-0.064	0	1050
	2761406	9727	1203	-82	83	1.000	-9999		-0.084	0	1150
	2761407		1706	-82	0	1.023	-9999		-0.068	0	1650
	2761408		3087	-50	0	1.023	-9999		-0.002	1	3050
v27615	2,01100	10000	5007	50	U	1.025		1	0.002	-	5550
	2761501	9813	270	-53	53	1.000	27.9	0	-0.034	0	240
	2761503	9816	510	-53	53	1.000	25.1		-0.068	0	470
	2761504	9833	715	-52	53	1.000	-9999		-0.115	0	670
	2761506	9821	1021	-52	53	1.000	-9999	0	0.120	0	970
	2761508		1127	-52	53	1.000	-67.9		-0.091	0	1120
	2761511	9344	3034	-32	0	1.014	-9999	1		1	3030
	2761513	9312	5227	-1	0	1.011	-9999	1		1	5320
v27616	2/01919	/JIZ	5227	±	0	1.011	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-	5520
	2761601	10501	265	-16	16	1.000	-27.0	0	-0.051	0	270
	2761603	9726	505	-16	16	1.000	0.6	0	0.083	0	500
	2761604		1012	-16	16	1.000	-9999		-0.070	0	1000
	2761604		1612	-16	0	1.000	-9999	0	0.200	0	1600
	2761607		3022	-10	0	1.004	-9999	1	0.008	1	3000
	2761709		5213	0	0	1.004	-9999	1		1	5185
v27617	2/01/09	10502	5215	0	0	1.001	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-	5105
	2761701	11348	318	-49	50	1.000	32.9	0	-0.071	0	270
	2761703		559	-49	50	1.000	-99999		-0.038	0	500
	2761705	9833	1068	-49	50	1.000	-9999		-0.564	1	1000
	2761706	9821	1673	-49	0	1.013	-9999		-0.110	0	1600
	2761708	9345	3075	-30	0	1.013	-9999	1		1	3000
	2761709	9312	5233	-1	0	1.013	-9999	1		1	5185
v27618	2/01/09	/JIZ	5255	±	0	1.015	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-	5105
	2761801	10501	393	-112	113	1.000	24.3	0	-0.126	0	270
	2761803		1132	-112	113	1.000	15.9	0	0.054	0	1000
	2761804		1736	-111	0	1.031	72.4	1		0	1600
	2761805		3120	-68	0	1.031	-9999	1		1	3000
	2761806		5227	-2	0	1.031	-9999	1		1	5185
v27619		20002	2001	-	Ŭ			-		-	0100
	2761901	10551	303	-22	22	1.000	28.0	0	-0.144	0	270
	2761902		538	-22	22	1.000	-9999	0	0.128	0	500
	2761903		1042	-22	22	1.000	48.5	0	0.002	0	1000
	2761903		1646	-22	22	1.000	-9999	0	0.853	1	1600
	2761906		3040	-15	0	1.000	-9999	1	0.041	1	3000
v27621		10000	2010	10	Ŭ	2.007		-	0.011	-	2000
	2762102	10554	279	-16	16	1.000	6.6	0	0.006	0	270
	2762103		514	-16	16	1.000	-9999	0	0.051	0	500
	2762104		1014	-15	0	1.003	-9999		-0.135		-9999
	2762105		1621	-13	0	1.003	-9999	0	0.495		-9999
	2762107		3024	-8	0 0	1.003	-9999	1	0.078		-9999
	2762109		5222	0	0	1.003	-9999	1			-9999
v27622			2222	5	U	2.000		1		-	
	2762202	10554	281	-58	58	1.000	22.0	0	-0.032	0	270
	2762202		516	-58	58	1.000	-9999		-0.177	0	500
150	1,02200	10011	310	50	50	1.000		0	···/	0	200

RCM z	RCM_ID	S/N	Nom_z	Corr_z Cor	r off Com	r str P	-PRCM P	flag 7	Г-TRCM Т	flaq	zSF
_	2762204		984	-54	0	1.013		0		-	-9999
	2762205		1594	-46	0	1.013		0	1.419	1	-9999
	2762207		3020	-28	0	1.013		1			-9999
5223	2762209	10558	5224	-1	0	1.013		1		1	-9999
v27623											
243	2762301	10554	244	-1	1	1.000	29.7	0	-0.062	0	270
979	2762303	10578	980	-1	0	1.000	-9999	0	-0.210	0	-9999
1588	2762304	10550	1589	-1	0	1.000	-9999	0	0.075	0	-9999
3013	2762306	10555	3013	0	0	1.000	-9999	1	0.026	1	-9999
5214	2762308	10558	5214	0	0	1.000	-54.6	1	-9999	1	-9999
v27624											
229	2762401	10554	227	2	-2	1.000	40.3	0	-0.100	0	217
534	2762402	10581	532	2	-2	1.000	-9999	0	-0.375	0	523
1049	2762403	10578	1047	2	-2	1.000	-9999	0	-9999	0	-9999
1600	2762404	10558	1598	2	0	0.999	30.5	0	-9999	0	-9999
2996	2762406	10555	2995	1	0	0.999	-9999	1	-9999	1	-9999
5220	2762408	10550	5220	0	0	0.999	-9999	1	-9999	1	-9999
v27625											
162	2762501	10554	220	-58	59	1.000	15.4	0	-0.129	0	194
983	2762503	8411	1041	-58	0	1.014	57.4	1	-0.057	0	-9999
1542	2762504	10558	1592	-50	0	1.014	39.0	0	-0.001	0	-9999
2957	2762506	10555	2988	-31	0	1.014	-9999	1	0.033	1	-9999
5211	2762508	9812	5212	-1	0	1.014	-9999	1	0.002	1	-9999
v27626											
130	2762601	10554	212	-82	83	1.000	-4.3	0	0.011	0	201
385	2762602	10558	467	-82	83	1.000	129.9	1	0.052	0	456
943	2762603	8411	1024	-81	83	1.000	34.7	1	0.191	0	-9999
1506	2762604	9344	1577	-71	0	1.019	-9999	0	0.003	0	-9999
2933	2762606	10555	2977	-44	0	1.019	-9999	1	0.044	1	-9999
v27627											
168	2762701	9349	216	-48	49	1.000	39.7		0.138	0	-9999
474	2762702	5881	522	-48	49	1.000	-9999	0	-0.263	0	-9999
989	2762703	4562	1037	-48	0	1.011	-9999	0	0.129	0	-9999
1546	2762704	9932	1588	-42	0	1.011	45.8	1	-0.013	0	-9999
2958	2762706	9832	2984	-26	0	1.011	-9999	1	-0.034	1	-9999
5209	2762708	10578	5210	-1	0	1.011	-9999	1	-9999	1	-9999

A-priori corrections of instrument depths Z_S_F according to Siedler et al. (2005): V26401, 2640108: 4770 from 4707 (typo in Siedler et al., 2005)) V27615, 2761513: 5230 corrected from 5275 (water depth)

KIEL276 Time Series Data

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

March 1980 – April 2011

Appendix A05: RCM processing, archiving &data submission

Raw data:

- sampling on magnetic tape (RCM4/5) or data storage units (RCM7/8) as 10- bit integers valued from 0 to 1023
- mirrored to computer ASCII files for further processing using reading units.

Processed data

- create and up-date meta file in ASCII with general information on mooring: V276ii.txt, where ii denotes K276 mooring number
- transfer raw data to physical units using calibrations as provided either by the manufacturer or by the institute or by an instrument's log
- compare and adapt instrument start and stop times to external times by linear interpolation
- apply running median filter over typical 9 records allowing for deviations from the median of 5 dbar, 0.05 K, 5 cm/s.
- edit any suspicious data like remaining spikes and early sensor malfunctions like stops (rotor)
- include meta information to files:
 - o deployment & recovery dates, times, cruises
 - mooring position, water depth, earth's local magnetic anomaly at deployment time
 - record start & stop date / time, recording interval
 - o sensors & and their calibrations and physical units
 - instrument's best depth estimate from logs, static mooring model and first day's data statistics against deployment CTD cast; keep nominal depth as from logs and static mooring model in comment line
- store / copy results as ASCII files *.dat and MATLAB file *.mat by mooring and instrument in files under /pre1/, /pre2/ and /final/ level subdirectories.

Data archiving & submission

- archive data and any relevant meta information at the GEOMAR data centre <u>datamanegement@geomar.de</u>
- submit best estimate data and meta data to international data centres for free use in basic science
 - o World Data System's centre PANGAEA, <u>www.pangaea.de</u>
 - o Ocean Sites' data centre at CORIOLIS, www.oceansites.org

KIEL276 Time Series Data

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

March 1980 – April 2011

Appendix A06: KIEL276 meta data and data presentation

The following presentations for each by moorings shows on 5 pages:

- General information on:
 - o Mooring ID
 - o Dates and cruises of deployment & recovery;
 - Mooring location, water depth, earth's local magnetic anomaly at deployment time
 - Project and Principal Investigator (PI)
 - o Depths used in this part and in mooring sketch
 - $\circ \quad \text{Remarks on mooring} \quad$
 - o Remarks on data
- Mooring sketch
 - o all components and depths nominal as from logs and static mooring model
- Instrument and sensor information
 - o Nominal depths as from logs and static mooring model
 - o Serial numbers
 - File Identification
 - o Sampling rate
 - Sensor quality
- Low pass (49 h filter length, 36 h half power response) daily averages
 - o Time series plots of
 - Pressure
 - Upper ocean and deep ocean temperature
 - Current vector
 - o Statistics

KIEL276 Time Series Data

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V264-01

31-MAR-1980 - 17-OCT-1980

Mooring info *********	
General	
Mooring ID	: V264-01/KPO 0629
Deployed	: Date: 31-MAR-1980 Ship / Cruise: Meteor II, M53/D
Recovered	: Date: 17-OCT-1980 Ship / Cruise: Meteor II, M56/1
Latitude N	: 33.102
Longitude E	: -021.848
Water depth	: 5280 m (sounding 5225 m at 1500 m/s + 55 m correction)
Magn. Anom.	: -14 (as Oct 1980 for V27601); MK4 files were not corrected
	for.
PI	: T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

Mooring:

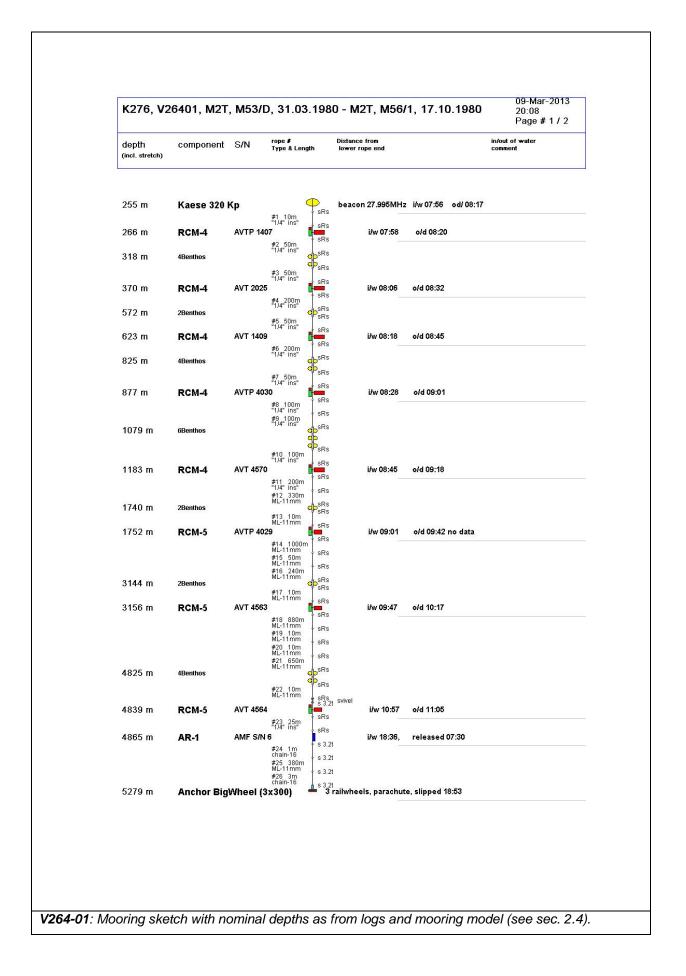
Immediately after deployment, the top of the mooring surfaced, with the radio transmitter on the top buoy in air. As the mooring could not be sighted, it was released. The radio transmitter became clearer, the mooring was sighted and recovery started from the bottom part until RCM5 04563 (3000 m designed depth). It was redeployed the same day with 155 m less nylon rope according to the deck log (145 m according to the master's log). The stretch for the nylon part is estimated in the model from buoyancy forces and averages to 9.66% of (un-stretched) length.

Instrumental nominal depths as modelled from logged mooring components (deck log with 155 m less nylon for the 2nd deployment) and (corrected) water depth, disagree with two pressure records of ca. 24 dbar at 228 m nominal depth and 633 dbar at 839 m nominal depth. The difference is 204 m for the upper and 211 m for the other instrument with only steel components between both. With all components as logged, a strecth of 15.34% for the nylon part is needed to match pressure and temperature records in the upper ocean, much too high or an extra nylon length of ca 175 m (unstretched) would be needed. It was reported after recovery (see Schröder, 1982, p. 50), that length the meter that was used to determine rope lengths before deployment showed slip, which may explain the observed too large lengths. As also the two deep ocean temperature records are too low by more than 0.15 K as compared to the CTD they give no hint where to implement such an extra (not logged) length. Therefore, an extra stretch of 6.1% was accepted and distributed equally over all long nylon lengths to match the RCM upper ocean records (see Müller & Waniek, 2013, sec. 2.4).

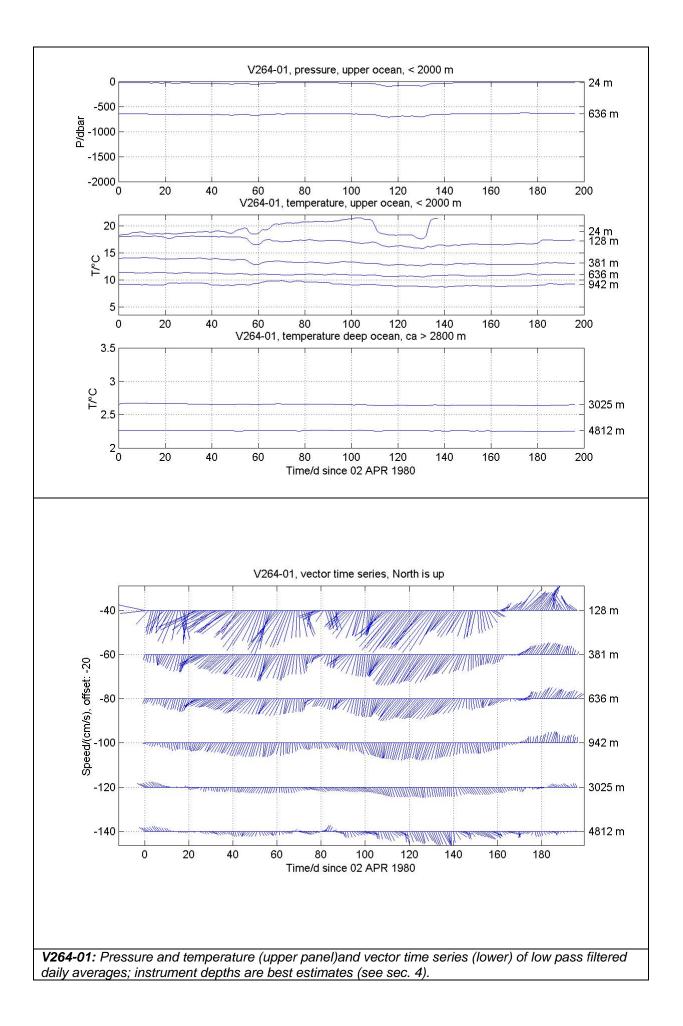
Data:

Raw data are lost. Data sources are MK4 ASCII files with pre1-level processed data at sampling rate with 'Magnetic Anomaly as in mooring V184' (position as KIEL276) noted a handwritten processing log. However, from instrument v264102, three handwritten raw data with calculated DIR are available for a check of the calibration formula for the direction measurement. Comparison with MK4 files shows that direction is indeed not compensated for magnetic anomaly in 264102. Comparision of directions of all records at sampling rate, shows high vertical directional coherence top to bottom between day 150 and 200 during a strong current event. It is therefore concluded that in all MK4 files direction is not yet corrected for magnetic anomaly (which is supported by some inconsistent comment lines throughout these files concerning rotation of the coordinate system). Taking -14° as local magnetic anomaly from October 1980 (V276-01), correction of $+14^{\circ}$ was applied to the input from MK4 files when transferring data to PH3.

Compiled by: T.J. Mueller Date: 08-FEB-2013



	hs are	e nomi	nal as	from	logs	and moo	ring model (see sec. 2.4.)
Depth Mo	or_ID	Туре	S/N	Sampl	ing	Sensor	Remarks
266 26	40101	RCM4	01407	3600	s	REF	bio-fouling, vane broken
						T_LR	ok, after record 3200 partly out of range (T > 21.47 °C)
						PRES	ok, median 34 dbar, minimum 24 dbar
						DIR	no data
						SPD	no data
370 26	40102	RCM4	02025	3600	s	REF	_
						T_LR	ok
						COND	ok
						DIR	ok
						SPD	ok
623 26	40103	RCM4	01409	3600	S	REF	
						T_LR	ok
						COND	ok
						DIR	ok
						SPD	ok
877 26	40104	RCM4	04030	3600	S	REF	
						T_LR	ok
						COND	ok
						PRES	ok, median 633 dbar,
						DIR	minimum 613 dabr ok
						SPD	ok
						SED	OK .
1183 26	40105	RCM4	04570	3600	S	REF	
						T_LR	ok
						COND	ok
						DIR	ok
						SPD	ok
1752 26	40106	RCM5	04029	3600	S	no data	
3156 264	0107 F	RCM5	04563	3600	S	REF	
						T_LR	ok
						DIR	ok
						SPD	ok
4839 264	0108 F	RCM5	04564	3600	s	REF	
			5 - 5 5 1	2000	~	T_LR	ok
						DIR	ok
						SPD	rotor stuck after 90 d,
							ok else



v26401 Depth Days		Mean			St	Mean StandDev.			Time Scale its			Fluxes Momentum Temperature			
		SPD	DIR		U	V	 T	 u	v	t		<dm></dm>			
24	138	NaN	NaN	NaN	NaN NaN	NaN NaN	19.4 1.1	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
128	197	9.5	212	0.72	-5.0	-8.0	17.1	13	17	28	34	38	-0.4	0.3	
					6.7		0.7								
381	197	6.7	209	0.80	-3.2	-5.9	13.3		17	31	14	34	-0.2	-0.1	
					3.8	5.1	0.4								
636	197	5.0	212	0.78	-2.7	-4.2	11.0	14	18	28	9	40	0.1	0.2	
	105	~ 4	100		3.2	3.7	0.2			1.0	-	1.0	0 1		
942	197	3.4	186	0.75	-0.3 1.4	-3.4 3.3	9.1 0.3		17	19	2	13	0.1	0.1	
3025 19	197	2.0	167	0.69	0.4	-1.9			16	31	-2	-38	-0.0	0.0	
5025	197	2.0	107	0.05	1.5	1.8		Ξ,	10	51	2	50	0.0	0.0	
4812	197	2.1	144	0.75	1.2	-1.7		12	14	20	-1	-30	0.0	0.0	
					1.5	1.9	0.0								
Legen Depth	ı :b m	easur	ed da	ta	instrume	ent dep	th as	fror	n log	gs, r	noorii	ng mod	lel and	L	
Days				ecord	and dir	reation									
srd, s			± .	,	lity of			vecto	or si	beed	/ mea	an sca	lar sp	eed)	
U, V					th compo					Jecu	/ 1100		itar op	ccu,	
Г				ature	-										
its	: i	ntegr	al ti	me scal	le (firs	st zero	cross	sing	of a	auto	correl	lation	funct	ion)	
1, V,	t :de	viati	ons f	rom ave	erage										
<11177> -	: n	noment	um fl	ux											
< md >					ntum flu										

Mooring V264-01: statistics from low pass filtered daily averages

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-01

17-OCT-1980 - 27-JUL-1981

Mooring informa *************								
General Mooring informat								
General								
Deployed	: V276-01/KPO 630 : Date: 17-OCT-1980 Ship / Cruise: Meteor II, M56/1 : Date: 27-JUL-1981 Ship / Cruise: Meteor II, M57/1							
Latitude N Longitude E	: 33.165							
Magn. Anom.	: 5292 m (corrected) : -14 (according to MK4 files) : KIEL276 time series station							
5	: T.J. Mueller							
Depths	: nominal as of logs and IMP static model							

Remarks

1) Mooring

Release failed during recovery trial on 27-JUL-1981 during Meteor II, cruise M57/1. Uppermost part recovered with steel buoy imploded and uppermost RCM damaged. Middle part with 8 instruments from 200 m designed depth down to 1100 m dredged and recovered the same day. Lower part with RCM 2712 at 1600 m with data until December 1981 dredged in March 1982 (MT2, M60/3); this later part of data (part B) is double to those from the follow-up mooring V276-02. Three Instruments at larger depths (3000 m, 4700 m, 5250 m) and the release are lost.

As the two pressure records both show no sudden increase and also less depth than designed or nominal, it is most likely that the steel buoy imploded during the first dredging exercise.

Recovery deck log is missing; only recovery information from reports of cruises Meteor II, M57/1 and Meteor II, M60/3.

All depths are nominal as from logs and static mooring model.

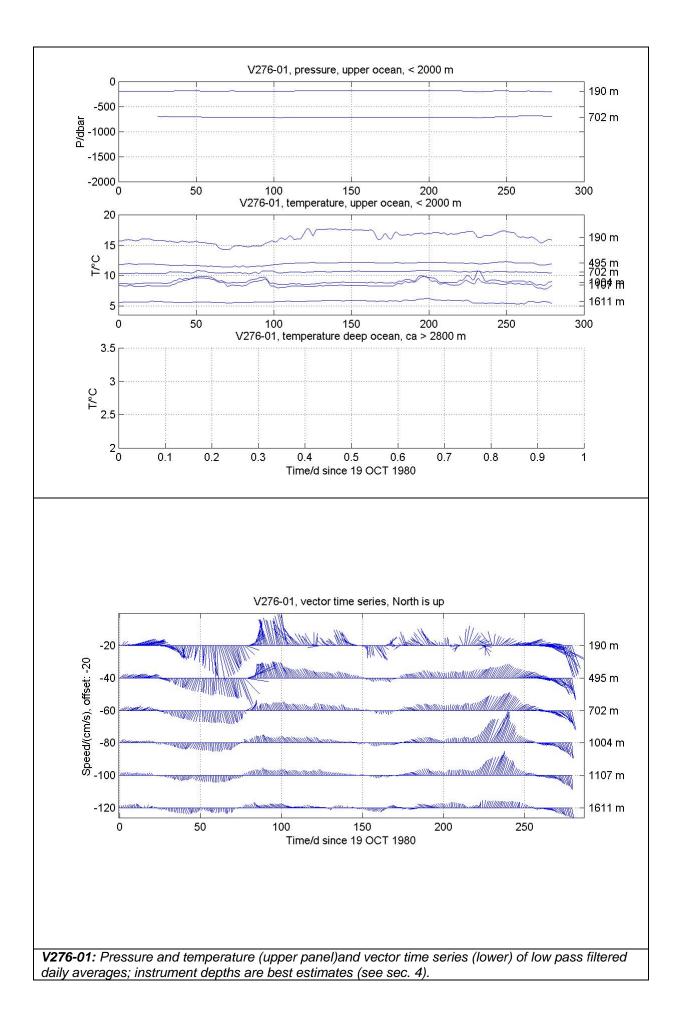
2) Data

Raw data and data at sampling rate are lost. Data sources are MK4 ASCII files at sampling rate and pre1-level processed data. RCM data, both at pre1-level and pre2-level processed and at sampling rates in V27601_iii.dat.

Compiled by: T.J. Mueller Date: 27-FEB-2012

depth (incl. stretch)	component	S/N	rope # Type & Lei	ngth	Distance from lower rope end		in/out of water comment
(incl. off offort)							
204 m	Kaaaa 220	V.,		Π.		ik., 10.10	
204 m	Kaese 320	кр	#1 10m "1/4" ins"	• sRs	eacon 27.995MHz	I/W 12:40	
215 m	RCM-4	AVTP 16	27	sRs sRs		lost	
317 m	3Benthos		#2 100m "1/4" ins"	sRs			
319 m	ATKR	Inclinom	eter 61	dp _{sRs}			
320 m	RCM-4	AVTLP 2		r sRs	i/w 12:	59	
322 m	ATKR	S/N 181/		sRs		string 50 m downwards	
			#3 300m KV-11mm	sRs sRs			
623 m	3Benthos						
625 m	RCM-4	AVTL 21		sRs	i/w 13:20		
627 m	ATKR	S/N 441/		sRs	ecorder, thermistor	chain 50 m downwards	
			#4 10m KV-11mm #5 190m KV-11mm	sRs			
828 m	3Benthos		KV-11mm	sRs			
830 m	ATKR	Inclinom	eter 62	sRs			
832 m	RCM-4	AVTP 38		sRs sRs	i/w 13:	35	
4400	0 0 4		#6 300m KV-11mm	CRC			
1133 m 1134 m	2Benthos RCM-4	AVT 2320	D	sRs	i/w 13:5	0	
			#7 100m KV-11mm	sRs			
1236 m 1237 m	2Benthos RCM-5	AVT 1626		op ^{sRs} sRs	i/w 13:5	6	
1207 11	ICOM-5		#8 200m KV-11mm	sRs		•	
			#9 300m KV-11mm	sRs			
1739 m 1740 m	2Benthos RCM-5	AVT 2712		op sRs sRs	i/w 14:0	05 dredged March 1	987
11 10 111	item-5		- #10 1250 ML-11mm	msRs	_		
3074 m	2Benthos	A)(T 034		op sRs sRs		1	
3075 m	RCM-5	AVT 2318	⊅ #11 1550 ML-11mm	m sRs		lost	
4726 m	2Benthos			op sRs sRs			
4727 m	RCM-5	AVT 3801		H		lost	
			#12 200m ML-11mm #13 100m	1			
			ML-11mm #14 100m	n ^e sRs			
			ML-11mm #15 80m ML-11mm	sRs			
5241 m 5242 m	1Benthos RCM-5	AVT 3802		sRs sRs		lost	
7616 III	I COMPS		#16 20m ML-11mm	sRs	-		
5265 m	2Benthos		ML-11mm		svivel		
5266 m	AR-1	854		s 3.2	i/w 16:00	release failed, lost	
			#17 20m ML-11mm	s 3.2			
E004	Angelene Die		#18 3m chain-16	s 3.2	ail wheels slipped '	10.02	
5291 m	Anchor Big	wneel (a	3x300)	- 31	all wheels slipped	16:03	

Instruments All depths are nominal	as from logs	and mooring model (see sec. 2.4.)
Depth Moor_ID Type S/		Sensor Remarks
215 2760101 RCM4 0162	7 3600 s	lost due to implosion of steel buoy
319 2760102 DLI 6	1 3600 s	inclinometer, data lost
320 2760103 RCM4 0210	4 3600 s	REF T_LR ok COND ok PRES ok, [med max min]=[197 194 210] dbar DIR ok SPD ok
322 2760104 TK50 181&	174 7200 s	recorder with 11 thermistors equally distributed 50 m downwards REF 11xT_LR ok
625 2760105 RCM4 02105	3600 s	REF T_LR ok COND ok DIR ok SPD ok
627 2760106 TK50 441&5	28 7200 s	recorder with 11 thermistors equally distributed 50 m downwards REF 11xT_LR
830 2760107 DLI 6	2 3600 s	inclinometer data lost
832 2760108 RCM4 03827	3600 s	REF T_LR ok PRES ok, 600 records (25 d) adaption time DIR ok SPD ok
1134 2760109 RCM4 0232	0 3600 s	REF T_LR ok DIR ok SPD ok
1237 2760110 RCM5 0162	6 3600 s	REF T_LR ok DIR ok SPD ok
1740 2760111 RCM5 0271	2 3600 s	instrument dredged in March 1982; data until Dec 1981; data used until 1st dredge in July 1981 REF T_LR ok DIR ok SPD ok
3075 2760112 RCM5 0231	8 3600 s	instrument lost
4727 2760113 RCM5 0380	1 3600 s	instrument lost
5242 2760114 RCM5 0380	2 3600 s	instrument lost



Г

Depth Days Mean						Mean		Tim	e Sc	ale	Fluxes				
-	-				St	StandDev.			its		Mome	entum	Temper	ature	
		SPD	DIR	STAB	 U	 V	 Т	 u	 v	t	<uv></uv>	 <dm></dm>	<ut></ut>	<vt></vt>	
190	280	2.2	77	0.23	2.2	0.5	16.3	18	13	29	-19	-24	-1.0	1.8	
					6.4	8.6	0.9								
495	280	1.5	60	0.23	1.3		11.9	16	15	33	-5	-14	-0.1	0.6	
					4.2	6.0	0.2								
702	280	1.3	48	0.26	1.0		10.6	24	17	25	-0	-1	-0.1	0.2	
					3.2	4.6	0.1								
1004	280	1.4	7	0.33	0.2	1.3	9.0	24	15	9	4	14	0.2	0.6	
					2.6	4.7	0.4				_	_			
1107	280	1.2	357	0.34	-0.1	1.2	8.6	24	15	10	2	9	-0.0	0.2	
					2.0	3.7	0.4	0.1		~ ~	-			0 1	
1611	280	0.6	299	0.23	-0.6			21	14	20	-1	-23	-0.2	0.1	
					1.9	2.3	0.2								
Legen	nd:														
Depth					instrume	nt dep	th as	from	log	s, r	noorir	ng mod	lel and		
			ed da												
Days		-		ecord											
			-		and dir					_			_		
S					lity of				-	eed	/ mea	an sca	lar sp	eed)	
U, V					th compo	nent o	t tlow	, cm	/s						
Г			-	ature					~		-		- ·		
its					le (firs	t zero	cross	ıng	oi a	uto	corre.	Lation	i funct	lon)	
	+ • do	viati	ons t	rom ave	eraqe										
					5										
	: n	noment	um fl	ux	ntum flu										

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-02

27-JUL-1981 - 02-MAR-1982

Mooring information

General

General	
Mooring ID	: V276-02/KPO 632
Deployed	: Date: 27-JUL-1981 Ship / Cruise: Meteor II, M57/1
Recovered	: Date: 02-MAR-1982 Ship / Cruise: Meteor II, M60/3
Latitude N	: 33.075
Longitude E	: -021.884
Water depth	: 5290 m (corrected)
Magn. Anom.	: -12.3 (bridge log, hard to identify, -13 according to MK4 files)
Project	: KIEL276 time series station
PI	: T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

All depths are nominal as from logs and static mooring model.

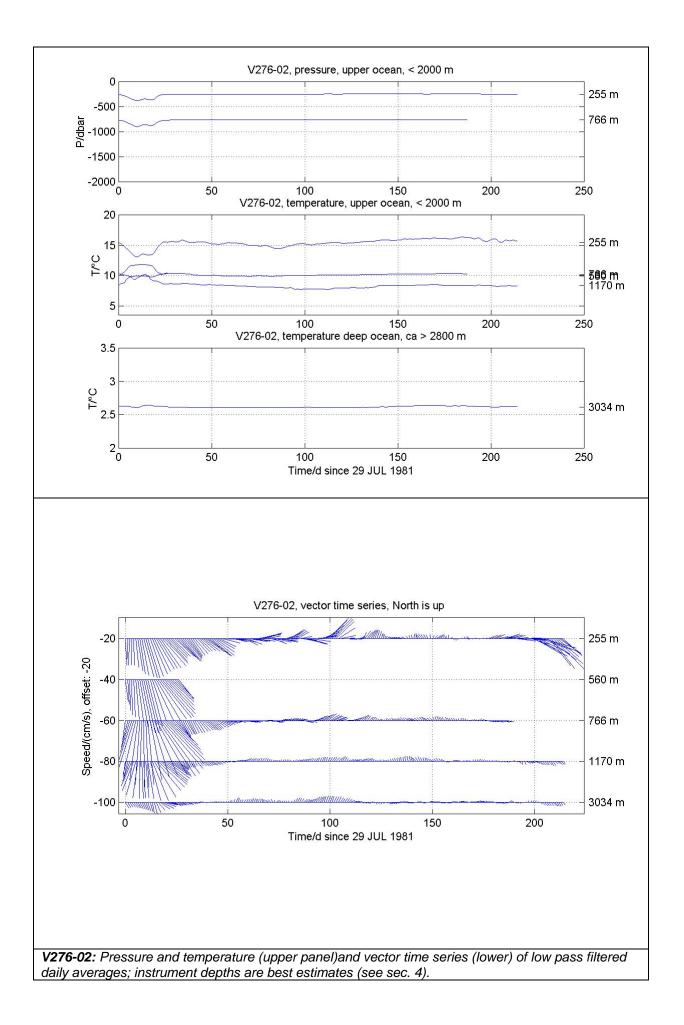
2) Data

Raw data are lost. Data sources are MK4 ASCII files at pre1-processing level and at sampling rate. RCM data, both at pre1-level and pre2-level, processed and at sampling rates in V27602_iii.dat.

Compiled by: T.J. Mueller Date: 27-FEB-2012

depth deck. stretchy component S/N Type # Length Belance from belance from from the service of the ser	Unique di antecho Componenti S/N Type & Length tower rope and comment 224 m Kaese 320 Kp 27.169MHz, channel 6 256 m Boentos 1000 File comment 260 m RCM-4 AVTLP 1409 File commission 260 m RCM-4 AVTLP 1409 File commission 260 m ATKR S/N 488647 File file 263 m Jaentos File file file 265 m RCM-4 AVTL2 2527 file file 266 m RCM-4 AVTL2 2527 file file 267 m ATKR S/N 488648 file file 769 m Jaentos file file file 769 m Jaentos file file file 1175 m RCM-4 AVTLP 2528 file file 1175 m RCM-4 AVT 673 file file 1175 m RCM-4 AVT 672 file file 3036 m Zaentos file file file 3037 m RCM-5 AVT 4552 file file 3038 m Zaentos file file file	Unipulation Comment Synthetic Type & Length Inversion Comment 224 m Kaese 320 Kp 27.159MHz, channel 6 27.159MHz, channel 6 256 m Bitenthos 84.11mm 98.9 104.119 260 m RCM-4 AVTLP 1409 Iversite 104.119 262 m ATKR S/N 485647 Iversite 104.1428 263 m Sterthos 107.2 m Sterthos 107.1527 Iversite 104.1428 266 m RCM-4 AVTL 2527 Iversite 104.1428 104.1428 266 m Sterthos 107.100 105.5 old 14.42 105.5 771 m RCM-4 AVTL 2528 Iversite Iversite Iversite 1174 m 20embos 107.100 108.9 Iversite Iversite 3036 m 20embos 107.100 108.9 Iversite 104.15.10 3038 m 20embos 117.100 108.9 104.12.56 104.14.26 3033 m 20embos 109.	Depuis ment. strated Common is strated Common is strated Common is strated Common is strated 224 m Kaese 320 Kp 27.159MHz, channel 6 strated strated 256 m Bisesthos 80 esthos if a 200 m if a 200 m 260 m RCM-4 AVTLP 1409 if a 200 m if a 200 m 262 m ATKR SN 485/647 if a 200 m if a 200 m 263 m 3berthos if a 200 m if a 200 m if a 200 m 265 m RCM-4 AVTL 2527 if w 19.22 of d 14.28 565 m RCM-4 AVTL 2527 if w 19.41 of d 14.42 1072 m Strathos if a 200 m if a 200 m if a 200 m 1174 m 2berthos if a 200 m if a 200 m if a 200 m 3036 m 2berthos if a 200 m if a 200 m if a 200 m 3037 m 2berthos if a 200 m if a 200 m if a 200 m 3038 m 2berthos if a 200 m if a 20 m if a 20 m 3038 m						Page # 1 / 2
256 m BBenthos 260 m RCM-4 AVTLP 1409 JW 19-22 o/d 14:19 260 m ATKR S/N 455/647 Bits Bits 563 m 3Benthos S/N 455/647 Bits Bits 565 m RCM-4 AVTL 2527 JW 19-21 o/d 14:28 567 m ATKR S/N 465/647 Bits Feeorder, thermistor string 50 m downwards 769 m 3Benthos Bits Bits Bits Bits 771 m RCM-4 AVTL 2527 JW 19-55 o/d 14:428 769 m 3Benthos Bits Bits Bits 771 m RCM-4 AVTL 2528 Bits Bits Bits 1072 m 2Benthos Bits Bits Bits Bits 1174 m 2Benthos Bits Bits Bits Bits 3036 m 2Benthos Bits Bits Bits Bits 3036 m 2Benthos Bits Bits Bits Bits	256 m BBenthos I/V 19:22 o/d 14:19 260 m RCM-4 AVTLP 1409 I/V 19:22 o/d 14:19 260 m ATKR S/N 485/847 I/V 19:22 o/d 14:19 263 m 3Benthos I/V 19:22 o/d 14:19 565 m RCM-4 AVTL 2527 I/V 19:41 o/d 14:28 567 m ATKR S/N 466/845 I/V 19:55 o/d 14:42 769 m 3Benthos I/V 19:25 o/d 14:42 771 m RCM-4 AVTL 2527 I/V 19:55 o/d 14:42 1072 m 2Benthos I/V 19:25 I/V 19:55 o/d 14:42 1174 m 2Benthos I/V 19:25 I/V 20:12 o/d 14:56 1175 m RCM-4 AVT 673 I/V 20:12 o/d 14:56 1175 m RCM-5 AVT 4562 I/V 20:34 o/d 15:10 1676 m 2Benthos I/V 21:05 o/d 14:51 I/V 21:05 o/d 14:51 3038 m 2Benthos I/V 20:02 I/V 21:05 o/d 14:51 3038 m 2Benthos I/V 20:02 I/V 21:05 o/d 14:51 3038 m 2Benthos I/V 20:02 I/V 21:05 o/d 14:51 3038 m 2Benthos I/V 20:02 I/V 21:05 o/d 14:51	256 m BBenthos BR3 John 260 m RCM-4 AVTLP 1409 John John 260 m RCM-4 AVTLP 1409 John John 260 m RCM-4 AVTLP 1409 John John 260 m ATKR S/N 480647 John John 260 m RCM-4 AVTL 2527 John John 563 m 3Benthos John John John 567 m ATKR S/N 486648 John John 769 m JBenthos John John John John 711 m RCM-4 AVTLP 2528 John John John John 1172 m ZBenthos John	256 m BBenthos BRS Well 260 m RCM-4 AVTLP 1409 BRS W 19-22 old 14:19 262 m ATKR SIN 486/847 BRS W 19-24 old 14:19 263 m 3Benthos BRS W 19-24 old 14:28 265 m RCM-4 AVTL 2527 BRS W 19:41 old 14:28 266 m 3Benthos BRS SRS SRS SRS 267 m ATKR SIN 486/648 SRS SRS 268 m SBenthos SRS SRS SRS 269 m 3Benthos SRS SRS SRS 267 m ATKR SIN 486/648 SRS SRS 268 m BRS SRS SRS SRS 269 m 3Benthos SRS SRS SRS 271 m RCM-4 AVT 673 SRS SRS SRS 28000 m 28000 m SRS SRS SRS SRS 3036 m 280		Type & Le				
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				5289 m Anchor B		📥 s 3.2t	3 railwheels, j	parachute slipped 00:24	
								a:	

epth	Moor_ID	Туре	S/N	Sampling	Sensor	Remarks
 60	2760201	RCM4	01409	3600 s	REF	
					T_LR	ok
					COND	ok
					PRES	ok
					DIR	ok
					SPD	ok
262	2760202	TK5() 485&64	7 7200 s	record	er with 11 thermistors equally
						distributed 50 m downwards
					REF 11√T IP	ck
					11xT_LR	ok
565	2760203	RCM4	02527	3600 s	REF	stop after 1600 cycles
					T_LR	ok
					COND	ok
					DIR	ok
					SPD	ok
567	2760204	тк50	486&648	7200 s	record	er with 11 thermistors equally distributed 50 m downwards
					REF	
					11xT_L	R ok
771	2760205	RCM4	02528	3600 s	REF	stop after 4785 cycles
,,,	2/00205	ICCI-III	02520	5000 5	T_LR	ok
					COND	bad, replaced by dummies
					PRES	ok
					DIR	ok
					SPD	ok
175	2760206 1	RCM4 (0673 3	600 s	REF	
					T_LR	ok
					DIR	ok
					SPD	ok
678	2760247	ACM	18 -9	999 s	FSI Aco	ustic Current Meter, S/N NB18;
						t usable due to systematic
						e error in rotating instrumental
						tion to earth coordinates;
						rotated by additional 26 degree, consistent with Aanderaa RCM
037	2760208 1	RCM5	04562	3600 s	REF	
551	2,002001		01002		T_LR	ok
					DIR	ok
					SPD	ok



v2760	2													
	Days		Mean			Mean	L	Time Scale				Flu	lxes	
						StandDev.			its				Temper	
		SPD	DIR	STAB	 U	 V	 Т	 u	v	t			<ut></ut>	
255	215	6.0	113	0.75		-2.3 6.0	15.4 0.7	17	20	20	-8	-22	-0.7	2.0
560	27	18.9	157	0.96		-17.4 5.6		6	5	4	4	25	-0.3	0.8
766	188	4.2	141	0.67	2.6	-3.3		8	18	13	-12	-12	0.5	-3.4
1170	215	1.7	135	0.50	1.2	-1.2 4.7		8	17	20	-5	-17	0.5	-1.9
3034	215	0.1	46	0.05		0.1	2.6	19	16	20	-1	-68	-0.0	-0.0
Days	:] r :]	measur Length	ed da of r	ecord				from	ı log	ıs, r	noorii	ng mod	lel and	
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/1177>	: 1	moment	um tl	11X										

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-03

05-MAR-1982- 17-APR-1983

Mooring information *******

General

Mooring ID	: V276-03/KPO 633
Deployed	: Date: 05-MAR-1982 Ship / Cruise: Meteor II, M60/3
Recovered	: Date: 17-APR-1983 Ship / Cruise: Meteor II, M64/6
Latitude N	: 33.195
Longitude E	: -021.898
Water depth	: 5288 m (corrected)
Magn. Anom.	: -12.3
Project	: KIEL276 time series station
PI	: T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

After a first deployment on 04-MAR-1982, the release was called for testing; it failed and released the mooring which was recovered immediately. On 05-MAR-1982, the mooring was launched a second time.

All depths are nominal as from logs and static mooring model.

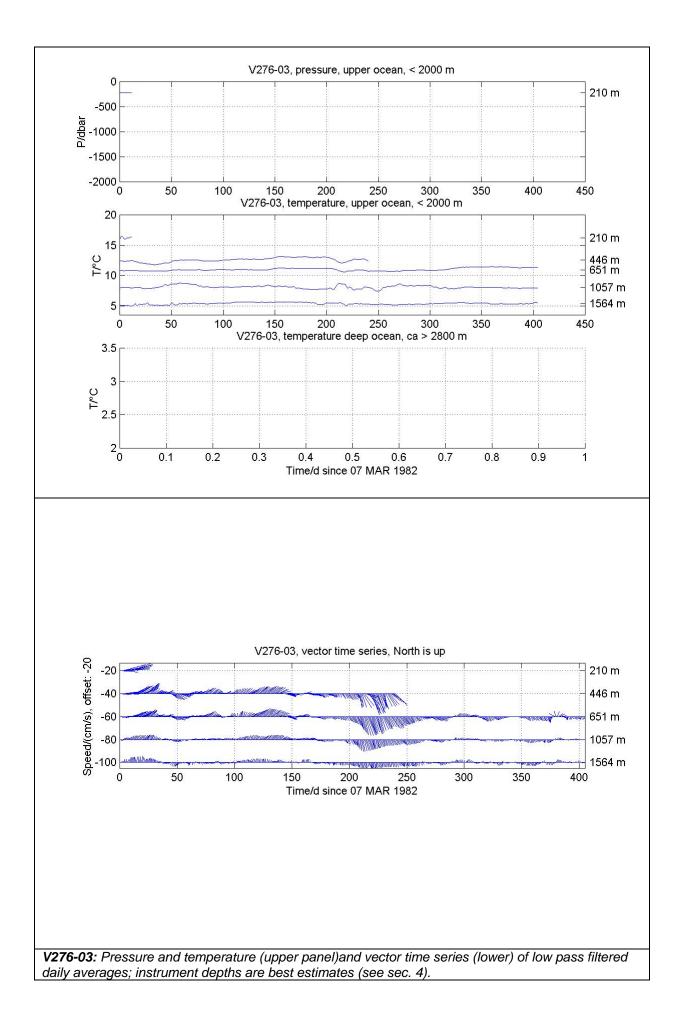
2) Data

Raw data are lost. Data sources are MK4 ASCII files at sampling rate and pre1-processing level. RCM data, both at pre1-level and pre2-level, processed and at sampling rates in V27603_iii.dat.

Compiled by: T.J. Mueller Date: 08-MAR-2012

09-Mar-2013 K276, V276-03, 05-MAR-1982, M2T M60/3 - 17-APR-1983 M2T, M64/6 20:31 Page # 1 / 2 in/out of water comment Distance from lower rope end rope # Type & Length depth component S/N (incl. stretch) 147 m Kaese 320 Kp beacon 27.045 MHz, i/w 07:36 o/d 09:17 #1 2m chain-16 SRS svivel ₩-15m sRs 155 m 5Benthos SRS #3_40m KV-11mm sRs 199 m RCM-4 AVTP 94 i/w 07:42 o/d 09:23 sRs recorder, thermistor string 50 m downwards sRs S/N 181/174 200 m ATKR #4 50m KV-11mm sRs #5_30m KV-11mm sRs #6 50m KV-11mm sRs ₩-100m sRs 432 m 4Benthos SRS_{2t} svivel AVTL 1484 435 m i/w 08:01 o/d 09:42 RCM-4 sRs #8, 100m KV-11mm sRs #9_100m KV-11mm SRS svivel 637 m 4Benthos P_{sRs} AVTL 1485 639 m RCM-4 i/w 08:15 o/d 09:52 sRs #10_200m KV-11mm sRs 840 m 4Benthos sRs #11_100m KV-11mm sRs #12_100m KV-11mm sRs 1042 m **6Benthos** PsRs 1045 m AVT L131 i/w 08:32 o/d 10:16 RCM-4 sRs #13_100m KV-11mm sRs #14_100m KV-11mm sRs 1247 m 3Benthos SRS #15_100m KV-11mm sRs #16 200m KV-11mm sRs 1550 m **3Benthos** SRS 1552 m RCM-5 AVT 2317 i/w 08:56 o/d 10:37 sRs #17_270m ML-11mm sRs #18_1000m ML-11mm sRs 2951 m 3Benthos sRs AVT 5881 o/d 11:06, flooded, no data 2954 m RCM-5 i/w 09:22 sRs #19_100m ML-11mm sRs #20_200m ML-11mm sRs #21_20m ML-11mm sRs #22 200m ML-11mm #23 500m ML-11mm sRs sRs #24 1000m ML-11mm sRs 5180 m 4Benthos SRS #25 50m ML-11mm SR3.2t svivel AVT 5882 5238 m RCM-5 i/w 10:12 old 11:52, flooded, no data ys 3.2t OC 178 AMF 115 released 08:47. o/d 11:52 5239 m AR-2 i/w 10:15 #26 0.8m chain-16 s 3.2t #27 40m ML-11mm #28 2m chain-16 s 3.2t s ³2^trailwheels, parachute, slipped 10:15 5287 m Anchor BigWheel (3x300) V276-03: Mooring sketch with nominal depths as from logs and mooring model (see sec. 2.4).

Instru	uments				
		nomi	nal as	s from logs	and mooring model (see sec. 2.4.)
Depth	Moor_ID	Гуре	S/N	Sampling	Sensor Remarks
199	2760301 1	RCM4	0094	3600 s	REF T_LR ok PRES 700 dbar range, ok DIR ok SPD rotor lost after 10 d
200	2760302 5	FK50	181 &	174 7200 s	recorder with 11 thermistors equally distributed 50 m downwards REF 11xT_LR ok
435	2760303 1	RCM4	01484	3600 s	last good record 30-OCT-1982 REF T_LR ok COND ok DIR ok SPD ok
639	2760304 1	RCM4	01485	3600 s	REF T_LR ok COND ok DIR ok SPD ok
1045 2	2760305 RG	CM4	00131	3600 s	REF T_LR ok COND ok DIR ok SPD ok
1552 2	2760306 R(СМ5	02317	3600 s	REF T_LR many spikes, ok DIR ok SPD ok
2954 2	2760307 R	CM5	05881	3600 s	housing flooded, no data
5238 2	2760308 RG	CM5	05882	3600 s	housing flooded, no data



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v2760	3													
Depth	Days		Mean			Mean				ale		Flu	xes	
					St	StandDev.			its		Mome	entum	Temper	ature
		SPD	DIR	STAB	U	V	T	u	v	t	<uv></uv>	<dm></dm>	<ut></ut>	<vt></vt>
210	12	17.8	80	0.99	17.6		16.2	2	2	2	3	45	-0.1	-0.0
			2.4 2.4 0.2											
446	241	5.7	98	0.75	5.6	-0.7	12.6	13	24	26	1	2	-0.5	-0.3
651	405	3.5	113	0.68	2.7 3.3		0.3 11.0	15	20	32	0	2	-0.3	0.1
051	405	3.5	113	0.00		$^{-1.4}_{4.5}$		15	20	54	0	2	-0.3	0.1
1057	405	1.6	112	0.57	1.5		8.1	27	28	12	1	5	0.1	0.1
1057	105	1.0	112	0.57		2.8		27	20	12	-	5	0.1	0.1
1564	405	0.4	150	0.18	0.2		5.4	7	20	27	0	0	0.0	0.0
					1.4	2.2	0.2							
Legen Depth	. :	measur	ed da	ta	instrume	ent dep	th as	from	ı log	ıs, r	noorii	ng mod	el and	
Days		length												
-			-		and din						/		1	1 \
s U, V					lity of th compo				-	eea	/ mea	an sca	lar sp	eea)
υ, ν Τ		mean t				JIIEIIC O	I IIOW	, сп	1/5					
			-		le (firs	st zero	cross	ing	of a	uto	orre	lation	funct	ion)
its		1110091				0 1010	01000		01 0					
		eviati	ons f	rom ave	eraqe									
	t :d	eviati moment			erage									

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-04

19-APR-1983 - 19-OCT-1983

Mooring information

General

Mooring ID	: V276-04/KPO 635
Deployed	: Date: 19-APR-1983 Ship / Cruise: Meteor II, M64/6
Recovered	: Date: 19-OCT-1983 Ship / Cruise: Poseidon, POS104
Latitude N	: 33.177
Longitude E	: -021.917
Water depth	: 5288 m (corrected)
Magn. Anom.	: -12.3
Project	: KIEL276 time series station
PI	: T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

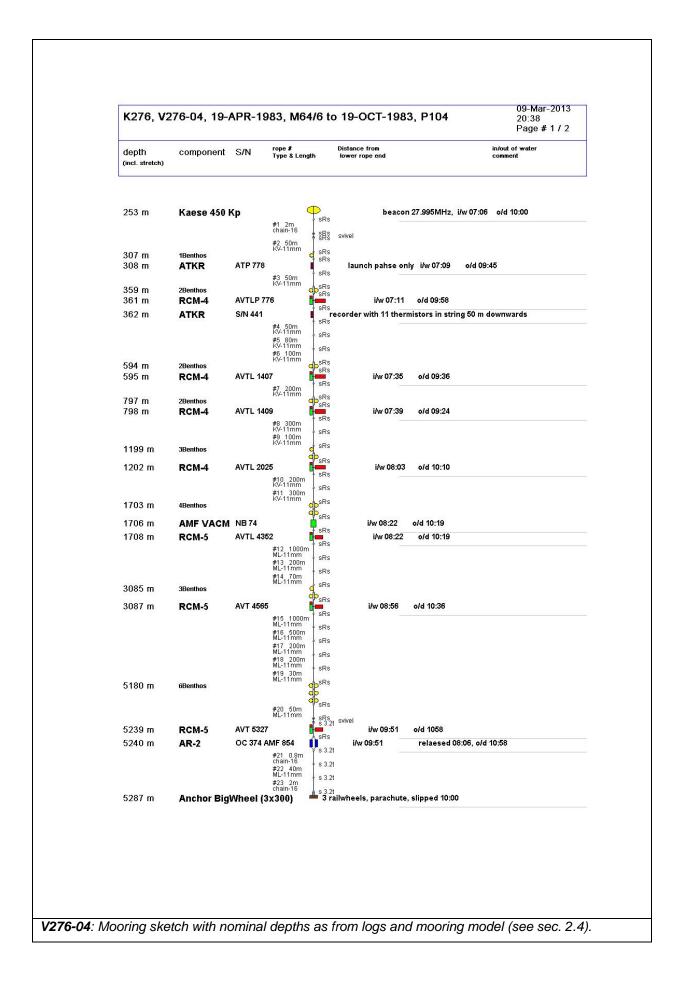
1) Mooring

Buoyancy of top element not noted in launch log. Topb buoys with 450 kp buoyancy had the maximum buoyancy available at that time in the mooring group. With such buoy and mooring components according to log of launch, all instrument nominal depths in static model from top to 1721 m are ca. 80 m deeper than in MK4 files and 50 m deeper than designed.

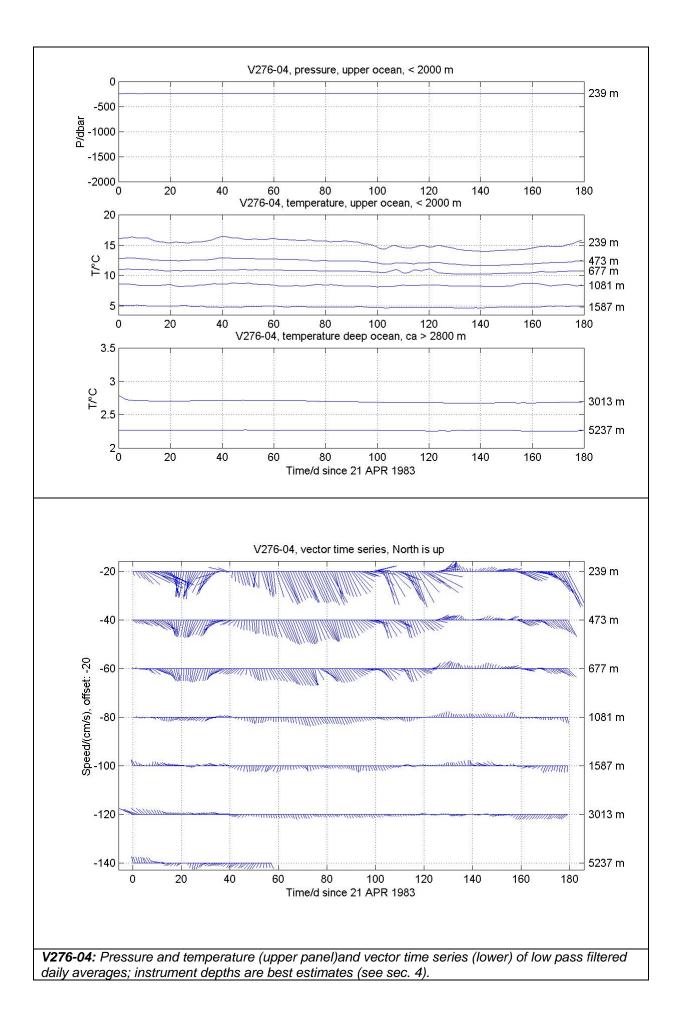
2) Data

Raw data are lost. Data sources are MK4 ASCII files at sampling rate and pre1-processing level. Data of uppermost T/P recorder S/N 778 were high resolution in time (300 s) to measure the mooring's adjustment to depth after the launch phase; data are lost. RCM data, both at pre1-level and pre2-level, processed and at sampling rates in V27604_iii.dat.

Compiled by: T.J. Mueller Date: 11-MAR-2012



	uments epths are nom	minal as	from logs	and mooring model (see sec. 2.4.)
Depth	Moor_ID Type	e S/N	Sampling	Sensor Remarks
308	2760401 DLT	2 0778	300 s	TP recorder; high resolution in time; used for launch phase only; data lost
361	2760402 RCM4	1 00776	3600 s	REF T_LR ok COND ok PRES ok DIR ok SPD ok
362	2760403 TK5) 441&52	8 7200	s recorder with 11 thermistors equally distributed 50 m downwards REF 11xT_LR ok
595	2760404 RCM	4 01407	3600 s	REF T_LR ok COND ok DIR ok SPD ok
798	2760405 RCM4	4 01409	3600 s	REF T_LR ok COND ok DIR ok SPD ok
1202	2760406 RCM4	02025	3600 s	REF T_LR ok COND ok DIR ok SPD ok
1706	2760407 ACM	74		instrument with wrong conversion of instrument's to earth's coordinates; data not used and lost
1708	2760408 RCM5	04352	3600 s	REF T_LR ok DIR ok SPD ok
3087	2760409 RCM5	04565	3600 s	REF T_LR ok DIR ok SPD ok
5239	2760410 RCM5	05327	3600 s	REF T_LR ok DIR bad, not used SPD bad, not used



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Depth Days			Mean		St	Mean andD			ne Sc its	ale	Mome		ixes Temper	s mperature			
		 SPD	DIR	STAB	 U	 V	 T	 u	 v	 t	 <uv></uv>	 <dm></dm>	 <ut></ut>	 <vt></vt>			
239	180	7.1	146	0.78	4.0 4.5	-5.8	15.3 0.7	9	11	28	-3	-18	-0.2	-2.0			
473	180	4.6	152	0.79	2.2	-4.0 3.3	12.3 0.4	12	17	30	0	2	-0.3	-0.7			
677	180	3.1	140	0.72	2.0	-2.4 2.7	10.7	12	20	22	-1	-13	0.0	-0.4			
1081	180	0.8	179	0.47	0.0	-0.8 1.4	8.4 0.2	14	18	8	-0	-24	-0.0	-0.0			
1587	180	0.7	233	0.36	-0.5 1.2	-0.4 1.3	4.9 0.1	16	13	16	-0	-33	-0.0	-0.0			
3013	180	0.8	236	0.44	-0.6 1.4	-0.4		18	15	27	-1	-62	-0.0	0.0			
5237	58	1.5	242	0.68	-1.3 0.7	-0.7 1.6	2.3 0.0	4	8	4	0	4	-0.0	0.0			
Legen Depth		est e	stima	te of :	instrume	ent dep	th as	from	1 log	ıs, r	noorin	ng mod	lel and	ł			
Days	m : 1	easur ength	ed da of r	ta ecord		_						2					
5	: d	irect	ional	stabi	and din lity of	flow (mean v		-	eed	/ mea	an sca	lar sp	eed)			
J, V C	: m	ean t	emper	ature	th compo								_				
its		ntoar		mo daa	le (firs	st zaro	Crogg	ina	of a	11+00	orro	lation	funct	i on)			

KIEL276 Time Series Data Madeira Abyssal Plain 33°N, 022°W, 5280 m water depth V276-05 20-OCT-1983 - 25-OCT-1984

Mooring infor	
General	
Deployed Recovered Latitude N Longitude E	<pre>: -021.923 : 5285 m (corrected) : -13.5 : KIEL276 time series station : T.J. Mueller</pre>

Remarks

General remarks

1) Mooring

All mooring components according to log of launch; all instrument depths nominal as from logs and static model.

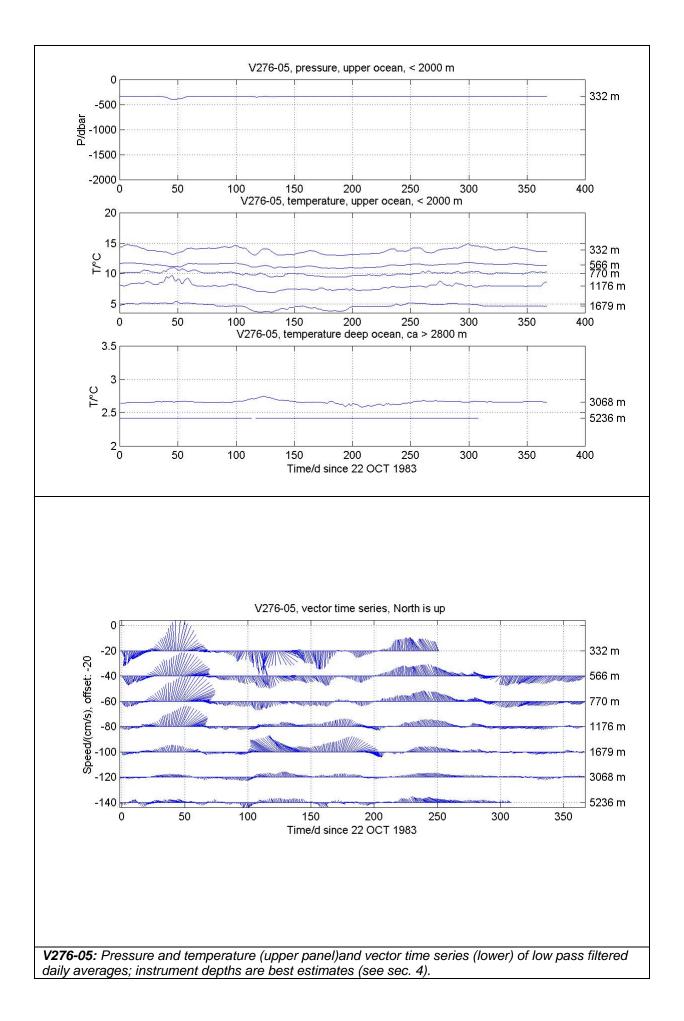
2) Data

Raw data are lost. Data sources are MK4 ASCII files at sampling rate and pre1-processing level. Data of uppermost T/P recorder S/N 778 were high resolution in time (300 s) to measure launch phase.

RCM data, both at pre1-level and pre2-level, processed and at sampling rates in V27605_iii.dat.

Compiled by: T.J. Mueller Date: 11-MAR-2012

	uments		, ,	c 1	7	
	<i>epths ar</i> Moor_ID					<i>ing model (see sec. 2.4.)</i> Remarks
	2760501			30 s		er; high resolution in time; launch phase only
364 2	2760502	RCM4 (00776	3600 s	COND COND COND COND COND COND COND COND	ok ok ok ok ok, rotor bad after 30-JUN-1984
365	2760503	тк50	181&53	0 7200 s	recorde REF 11xT_LR (er with 11 thermistors equally distributed 50 m downwards ok
598	2760504	RCM4	06051	3600 s	REF T_LR o DIR o	ok ok ok
801	2760505	RCM4	05882	3600 s	DIR d	ok ok ok
	2760507	ACM	74			in line changed before launching; nt with wrong conversion of
instri	ument's					's coordinates; used and lost
1207 2	2760506	RCM4	06682	3600 s	COND of DIR of	ok k ok ok
1710 2	2760508	RCM5	06161	3600 s	REF T_LR ok DIR ok SPD ok	
3087 2	2760509	RCM5	05881	3600 s	REF T_LR ok DIR ok SPD ok	
5236 2	2760510	RCM5	06160	3600 s	record st REF T_LR ok DIR ok SPD ok	



Mooring V276-05: sta	atistics from low pass	filtered daily averages

v27605 Depth Days			Mean			Mean andD	ev.		ne So its		Mome	Fluxes Iomentum Temperature		
		SPD	DIR		U	v	Т	u					<ut></ut>	
332	252	1.6	185	0.19	-0.2 4.9	-1.6 8.6	13.7 0.5	10	17	17	-2	-2	-0.3	-0.8
566	368	0.9	219	0.13	-0.5 4.8	-0.7 5.8	11.4 0.3	37	19	31	3	13	-0.4	-0.3
770	368	0.7	302	0.12	-0.6	0.4	10.0	25	16	33	8	37	0.3	0.5
1176	368	1.8	324	0.41	4.8 -1.0	5.3 1.4	0.3 7.9	16	13	31	4	44	0.4	0.5
1679	367	2.5	314	0.51	3.5 -1.8	3.5 1.8	0.5	20	14	30	-5	-62	0.2	-0.8
3068	368	1.5	298	0.63	4.6 -1.3		0.4 NaN	17	14	NaN	-1	-45	NaN	NaN
5236	309	2.0	290	0.64	1.6 -1.9 2.1	1.5 0.7 1.9	NaN NaN NaN	13	11	NaN	-1	-51	NaN	NaN
Legen Depth Days SPD,	n : k m : 1 DIR: m	neasur .ength nean s	ed da of r peed/	ta ecord (cm/s)	instrume and dir	rection						-		
s U, V T	: n : n	nean E nean t	ast a emper	nd Nort ature	lity of th compo	onent o	f flow	, cm	ı/s					
its u, v, <uv>_d <md></md></uv>	t :de : r	eviati moment	ons f um fl	rom ave .ux	le (firs erage ntum flu		cross	ing	of a	autoo	correi	latior	n funct	ion)

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-06

26-OCT-1984 - 16-NOV-1985

Mooring information

General

Mooring ID	V276-06/KPO 642	
Deployed	Date: 26-OCT-1984 Ship / Cruise: Meteor	: II, M69/5
Recovered	Date: 16-NOV-1985 Ship / Cruise: Poseid	lon, P124
Latitude N	33.158	
Longitude E	-021.955	
Water depth	5290 m (corrected, deck log)	
Magn. Anom.	-11.7 (Mk4 files)	
Project	KIEL276 time series station	
PI	T.J. Mueller	
Data origin	IfM Kiel	
Depths	nominal as of logs and IMP static model	

Compiled by: T.J. Mueller Date: 12-MAR-2012

Remarks 1) Mooring

Uppermost T/P recorder was cancelled before deployment. All mooring components according to log of launch; all instrument depths nominal as from logs and static model.

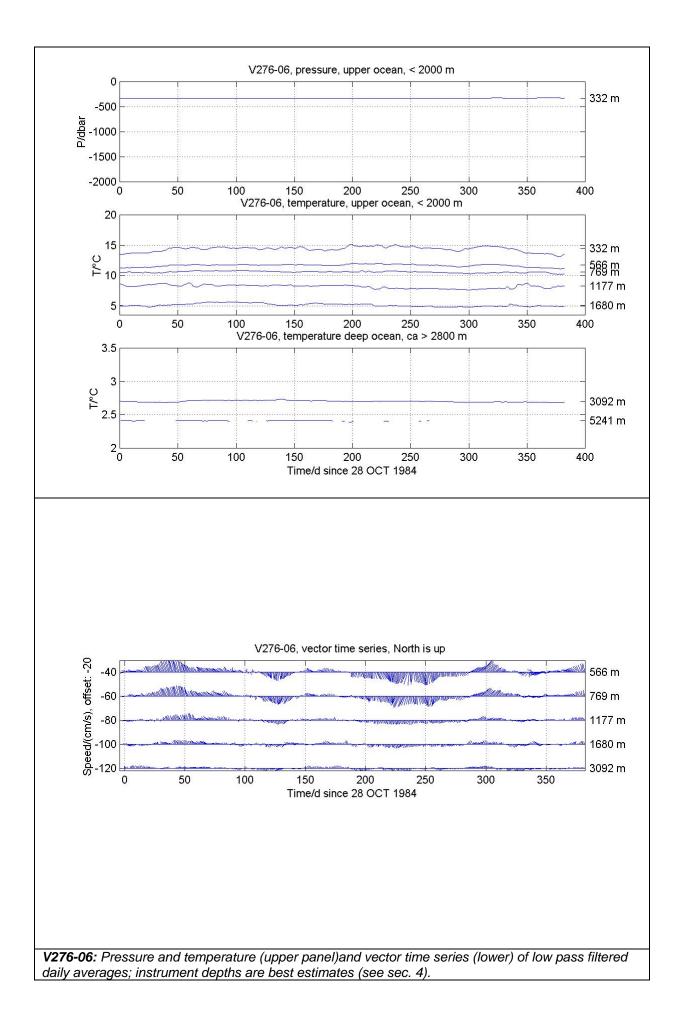
2) Data

Raw data are lost. Data sources are MK4 ASCII files at sampling rate and pre1-processing level. RCM data, both at pre1-level and pre2-level, processed and at sampling rates in V27606_iii.dat.

09-Mar-2013 20:44 K276, V276-06, 26-OCT-1984, M2T M69/5 to 16-NOV-1985, P124 Page # 1 / 2 in/out of water comment Distance from lower rope end rope # Type & Length depth component S/N (incl. stretch) **₽**_{sRs} 302 m Kaese 450 Kp beacon 27.045 MHz i/w 08:09 o/d 12:08 #1 2m chain-16 sRs sRs svivel #2 50m WS-8mm sRs sRs 356 m 1Benthos #3 50m WS-8mm sRs 407 m 3Benthos sRs 409 m RCM-4 AVTP 673 i/w 08:11 o/d 12:14, biofouling on rotor sRs #4 200m KV-11mm sRs #5 30m KV-11mm 641 m 2Benthos RCM-4 AVTL 2528 o/d 12:21 i/w 08:29 642 m sRs #6 200m KV-11mm sRs 843 m 3Benthos ₽sRs o/d 12:31 845 m RCM-5 AVTL 7330 i/w 08:42 sRs recorder with 11 thermistors in 50 m string downwards 847 m ATKR S/N 486/530 #7 50m KV-11mm #8 50m KV-11mm sRs sRs #9 200m KV-11mm sRs sRs 1149 m 2Benthos dþ 1150 m AMF VACM NB 18 i/w 09:04 o/d 12:51 sRs #10 100m KV-11mm sRs 1252 m 2Renthos Rs AVTL 7343 o/d 12:55 1253 m RCM-5 i/w 09.09 sRs #11 200m KV-11mm sRs #12 300m KV-11mm sRs 1755 m 2Benthos dþ sRs 1756 m RCM-5 AVTL 6681 i/w 09:28 o/d 13:09 sRs #13 1000m ML-11mm #14 270m ML-11mm sRs Re 3135 m 4Renthos de sRs 3138 m AVT 6678 o/d 13:29 RCM-5 i/w 10:26 sRs #15 1000m ML-11mm sRs #16 500m ML-11mm sRs #17 200m ML-11mm sRs #18 200m ML-11mm sRs #19 30m ML-11mm sRs 5238 m 4Benthos sRs s 3.2t svivel 5241 m RCM-5 AVT 6160 sRs i/w 12:05 o/d 14:09, rotor lost OC 457, 374 5242 m i/w 12:05 released 11:55 AR-2 s 3.2t #20 0.8m chain-16 s 3.2t #21 40m ML-11mm s 3.2t #22 2m chain-16 s 3.2t 5289 m Anchor BigWheel (3x300) 3 railwheels, parachute, slipped 12:25 V276-06: Mooring sketch with nominal depths as from logs and mooring model (see sec. 2.4).

	u ments epths are no	ominal	as from	n logs and me	ooring m	nodel (see sec. 2.4.)
epth	n Moor_ID	Туре	S/N	Sampling	Sensor	r Remarks
409	2760602 1	RCM4 (00673	3600 s	REF	
					T_LR	ok
					PRES	ok
					DIR	ok,
					SPD	blocked by bio-fouling
642	2760603	RCM4	02528	3600 s	REF	
012	2,00005	100111	02020	3000 5	T_LR	ok
					COND	
					DIR	ok
					SPD	ok
					SFD	0K
845	2760604	RCM4	07330	3600 s	REF	
					T_LR	
					COND	
					DIR	ok
					SPD	ok
847	2760605	тк50	486&53	30 7200 s		corder with 11 thermistors equally distributed 50 m downwards
					-)3-SEP-1985
					REF	
					10xT_I	
					sensor	r 11 bad; to be set to dummy
L50	2760606	ACM	18		data r	not used and lost
						o instrument with wrong conversion of
nsti	rument's					
					to ear	rth's coordinates;
253	2760607 1	RCM4	07343	3600 s	REF	
					T_LR	ok
					COND	ok
					DIR	ok
					SPD	ok
756	2760600		06601	2600 ~	ਸਦਾ	
001	2760608 1	CIND	06681	3600 s	REF	ok
					T_LR	ok
					COND	ok
					DIR	ok
					SPD	ok
L38	2760609 1	RCM5	06678	3600 s	REF	
		-			T_LR	ok
					DIR	ok
					SPD	ok
242	2760610 1	RCM5	06160	3600 s		19-JUL-1985
					REF	
					T_LR	ok, spikes wth T<2.38 °c set to NaN
					DIR	bad, not used
					SPD	bad not used

SPD bad, not used



Mooring V276-06: statistics from low pass filtered daily averages

v2760										_		_					
Depth Days			Mean		St	Mean andD		Tir	ne So its	cale			ixes Temper	mperature			
		SPD	DIR	STAB	 U	 V	 T	 u	 v	 t	 <uv></uv>	 <dm></dm>	 <ut></ut>	 <vt></vt>			
332	383	NaN	NaN	NaN	NaN	NaN	14.4	NaN	NaN	NaN	NaN	NaN	NaN	NaN			
FCC	202	1.1	254	0.21	NaN	NaN	0.4	17	24	20	-2	-8	0.2	0 5			
566	383	1.1	254	0.21	-1.0 2.8	-0.3 4.8	11.7 0.2	1/	24	20	-2	-8	0.2	-0.5			
769	383	0.6	249	0.16	-0.6	-0.2	10.1	16	25	28	-1	-8	-0.1	-0.2			
					2.3	3.9	0.1										
1177	383	0.4	269	0.20	-0.4	-0.0	8.2	12	21	43	-0	-14	-0.2	0.2			
1600	383	0.9	272	0.41	1.4	1.9 0.0	0.3 5.1	11	15	40	-0	66	-0.1	0.0			
1680	383	0.9	212	0.41	-0.9 1.6	0.0 1.5	5.1 0.2	ΤT	15	40	-0	-00	-0.1	0.0			
3092	383	0.5	274	0.31	-0.5	0.0	2.8	17	11	37	0	72	-0.0	-0.0			
					1.4	1.0	0.0										
5241	151	NaN	NaN	NaN	NaN	NaN		NaN	NaN	NaN	NaN	NaN	NaN	NaN			
					NaN	NaN	0.0										
Legen	d:																
Depth	: b	est e	stima	te of i	instrume	ent dep	th as	fror	n log	gs, r	noorii	ng mod	del and				
		leasur															
Days		ength															
					and dir lity of			roat		d	(lan an				
s U, V					ch compo					peed	/ mea	an sca	alar sp	eeu)			
т, ,		lean t			compe	inclife 0	1 1100	v, ci	11/15								
its			-		le (firs	st zero	cross	sinq	of a	autoo	corre	Latior	ı funct	ion)			
u, v,		-		rom ave				5						,			
<uv>_d</uv>	: n	noment	um fl	.ux													
<md></md>	: d	lirect	ion o	f momer	ntum flu	ıx											

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-07

17-NOV-1985 - 31-OCT-1986

Mooring information

General

Mooring ID	: V276-07/KPO 658
Deployed	: Date: 17-NOV-1985 Ship / Cruise: Poseidon, P124
Recovered	: Date: 31-OCT-1986 Ship / Cruise: Meteor, M04/2
Latitude N	: 33.142
Longitude E	: -021.960
Water depth	: 5288 m (corrected)
Magn. Anom.	: -11.7 (Mk4 files)
Project	: KIEL276 time series station
PI	: T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

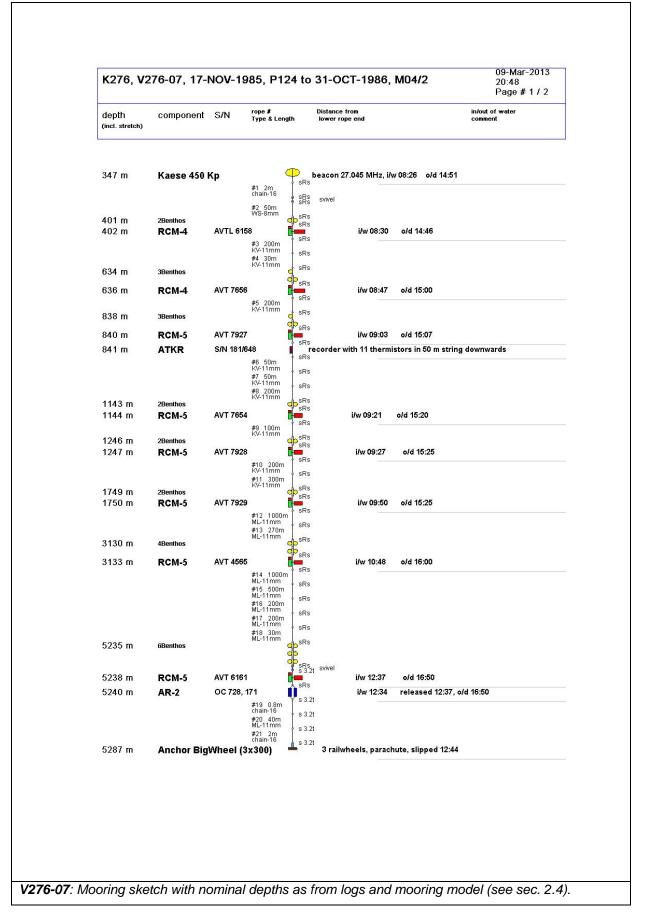
All mooring components according to log of launch; all instrument depths nominal as from static model;

S/N 4665 at 3000 m designed depth changed to S/N 4565 (probably a misprint in the edited deck log)

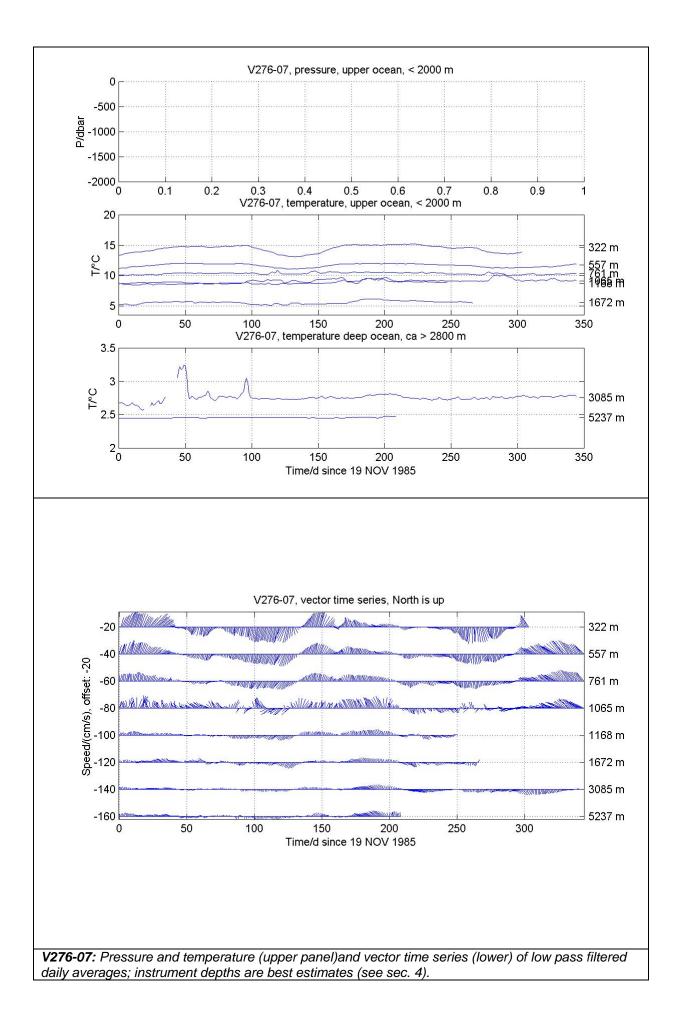
2) Data

Raw data are lost. Data sources are MK4 ASCII files at sampling rate and at pre1-processing level. RCM data, both at pre1-level and pre2-level, processed and at sampling rates in V27607_iii.dat.

Compiled by: T.J. Mueller Date: 12-MAR-2012



epth	Moor_ID	Туре	S/N	Sampling	Sensor	Remarks
 102	 2760701	RCM5	 06158	3600 s	REF	
					T_LR	ok
					COND	ok
					DIR	ok
					SPD	ok
636	2760702	RCM5	07656	3600 s	REF	
					T_LR	ok
					DIR	ok
					SPD	ok
840	2760703	RCM4	07927	3600 s	REF	
					T_LR	ok
					DIR	ok
					SPD	ok
841	2760704	TK50	181&64	18 7200 s	record	der with 11 thermistors equally distributed 50 m downwards
					stop ()3-SEP-1986
					REF	
					T_LR:	01 and 02 bad; 03-11 ok
144	2760705	RCM4	07654	3600 s	REF	
					T_LR	ok
					DIR	ok
					SPD	ok
247	2760706	RCM4	07928	3600 s	REF	
					T_LR	ok
					DIR	ok
					SPD	ok
/51	2760707	RCM5	07929	3600 s	REF	- 1-
					T_LR	ok
					DIR	ok
					SPD	ok
133	2760708	RCM5	04565	3600 s	REF	
					T_LR	few days bad, all other ok
					DIR	ok
					SPD	ok
238	2760709	RCM5	06161	3600 s	REF	
					T_LR	ok
					DIR	ok
					SPD	ok



Mooring V276-07: statistics from low pass filtered daily averages

v27607 Depth Days			Mean		St	Mean andD			ne So its	cale	Fluxes Momentum Tempera			ature
322	303	 SPD 1.0	DIR 161	STAB 0.16	U 0.3	V -0.9	 Т 14.4	 u 14	v 17	t 20		<dm></dm>		<vt></vt>
544	303	1.0	101	0.10	2.9	6.2	0.6	14	т /	20	0	14	-0.5	-0.0
557	345	0.9	299	0.18	-0.8	0.4	0.0 11.7 0.3	19	20	21	-1	-5	0.0	-0.2
761	345	1.2	296	0.30	-1.1 2.2	0.5 3.8	10.3 0.2	20	20	22	-1	-6	0.1	-0.1
1065	345	3.2	319	0.61	-2.1 3.3	2.4 3.4	9.1 0.3	17	15	27	-1			-0.2
1168	248	0.8	306	0.35	-0.7 1.3	0.5 2.0	8.8 0.2	15	18	28	-0	-5		0.1
1672	267	1.0	279	0.40	-1.0 1.8	0.2 1.7	5.6 0.3	14	15	21	-1		0.1	0.1
3085	345	0.6	252	0.28	-0.6 2.0	-0.2 1.5	NaN NaN	17	23	NaN	-1	-73	NaN	NaN
5237	209	1.2	308	0.50	-0.9 2.0	0.7 1.4	2.5 0.0	17	16	12	-1	-65	-0.0	0.0
Legen Depth	: b	est e easur			instrume	ent dep	th as	from	l log	gs, r	noorii	ng mod	lel and	l
Days SPD, s	DIR: m	lean s	peed/		and dir lity of			ecto	or sr	beed	/ mea	an sca	alar sp	eed)
U, V T	: m	iean E	ast a		ch compo					, cou	,		ilar op	,
	t :de	viati	ons f	rom ave	le (firs erage	st zero	cross	ing	of a	autoo	correl	latior	n funct	ion)
<uv>_d <md></md></uv>		noment irect			ntum flu	ıx								

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-08

01-NOV-1986 - 06-NOV-1987

Mooring information

General

••••••	
Mooring ID	: V276-08/KPO 660
Deployed	: Date: 01-NOV-1986 Ship / Cruise: Meteor, M04/2
Recovered	: Date: 06-NOV-1987 Ship / Cruise: Meteor, M06/1
Latitude N	: 33.112
Longitude E	: -021.918
Water depth	: 5281 m (corrected)
Magn. Anom.	: -11.7 (bridge log)
Project	: KIEL276 time series station
PI	: T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

All mooring components according to log of launch; all instrument depths nominal as from static model;

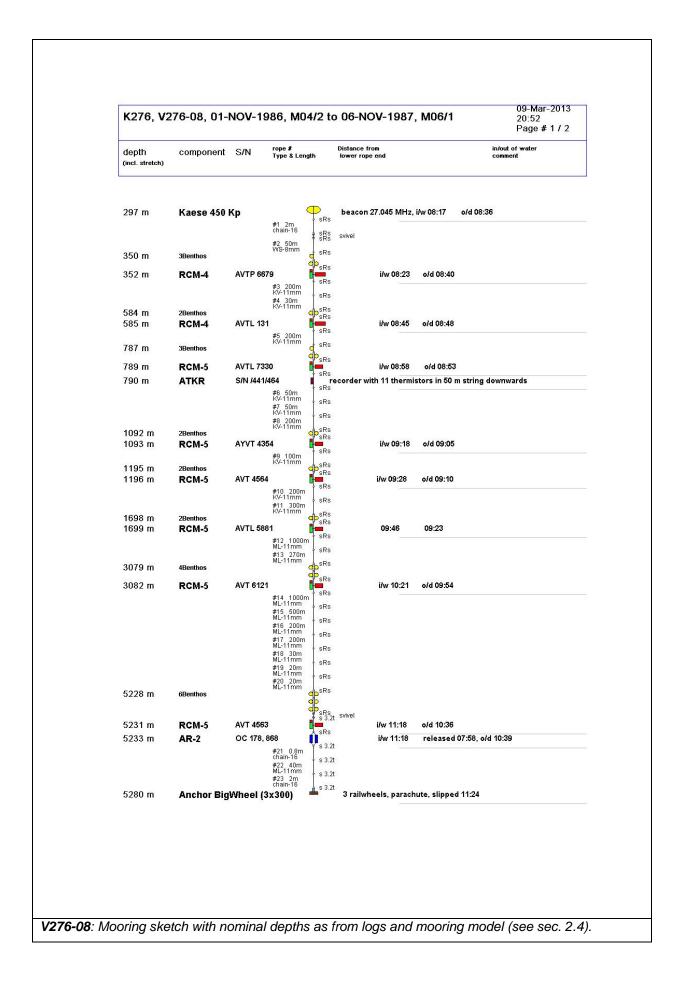
2) Data

Raw data are lost. Data sources are MK4 ASCII files at sampling rate and at pre1-processing level. S/N 4564 showed bad direction measurements.

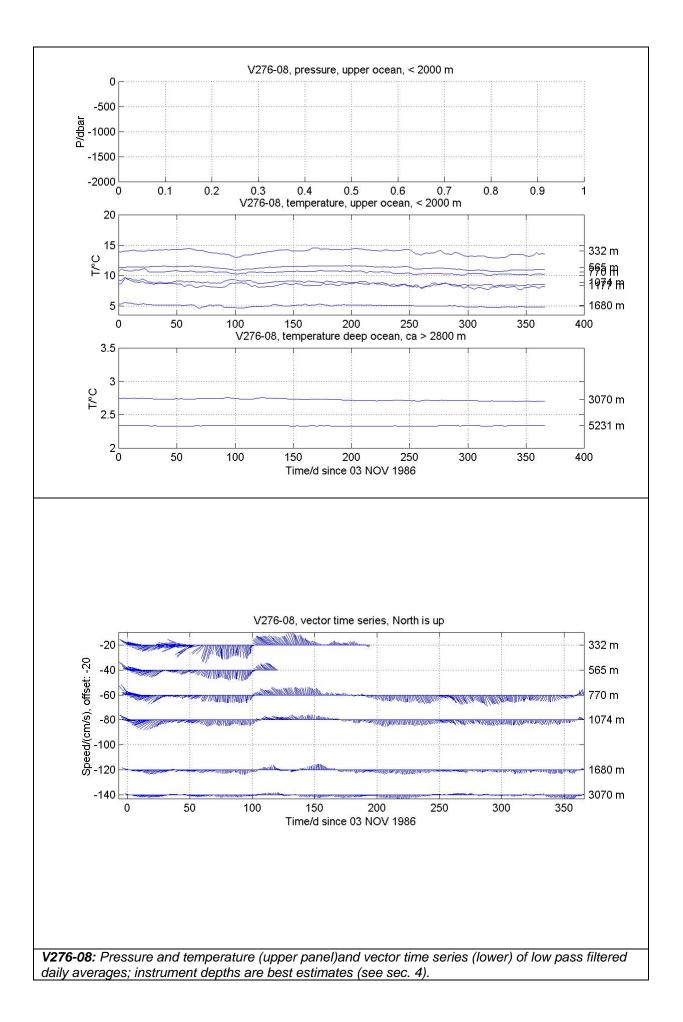
S/N 4563 had the instrumental revolutions/count set wrongly.

RCM data, both at pre1-level and pre2-level, processed and at sampling rates in V27608_iii.dat.

Compiled by: T.J. Mueller Date: 12-MAR-2012



Instruments: All depths are nor	minal as fror	n logs ar	nd mooring model (see sec. 2.4.)
Depth Moor_ID Type S/N S	Sampling	Sensor	Remarks
352 2760801 RCM5 06679 36		REF PRES T_LR DIR SPD	no data (sensor bad) ok ok until 11-MAY-1987 ok until 11-MAY-1987
585 2760802 RCM4 00131 30		REF T_LR COND DIR SPD	ok ok ok ok until 27-APR-1987
789 2760803 RCM4 07330 3		REF T_LR COND DIR SPD	ok ok ok ok
790 2760804 TK50 441 & 46		record REF T_LR, 1	er with 11 thermistors equally distributed 50 m downwards 1x ok
1093 2760805 RCM4 04354 3		REF T_LR DIR SPD	ok ok ok
1196 2760806 RCM4 04564 3		REF T_LR DIR SPD	ok bad no data
1699 2760807 RCM5 05881 3		DIR c	k k k
3082 2760808 RCM5 06121 36		DIR c	k k k
5231 2760809 RCM5 04563 30		DIR c	k k wad (setting of rev/count wrong)



Wooring V2/6-08: statistics from low pass filtered daily averages	Mooring V276-08: statistics from low pass	s filtered daily averages
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v27608 Depth Days			Mean			Mean andD	ev.		its		Mome	entum	-	rature			
		 SPD	DIR	STAB	 U	 V	 Т		 v				 <ut></ut>				
332	195	4.7	263	0.60	-4.7	-0.6	14.0				-5	-20	-0.3	0.1			
					4.7	5.9	0.4										
565	121	4.8	239	0.71	-4.1	-2.5	11.3	16	9	18	-8	-36	-0.1	-0.1			
					3.4	4.0	0.2										
770	367	2.4	201	0.46	-0.9	-2.2	10.5	35	25	37	-6	-40	-0.5	0.3			
					3.6	3.8	0.2										
1074	367	2.4	213	0.58	-1.3	-2.0	8.8	33	22	45	-1	-72	-0.6	0.2			
					3.0	2.5	0.3										
1177	367	NaN	NaN	NaN	NaN	NaN	8.4	NaN	NaN	NaN	NaN	NaN	NaN	NaN			
					NaN	NaN	0.3										
1680	367	1.6	225	0.57	-1.1	-1.1	5.0	28	16	23	-0	-77	-0.2	0.0			
					2.0	1.6	0.2										
3070	366	0.9	215	0.45	-0.5	-0.8	2.8	24	12	62	0	85	-0.0	0.0			
					1.8	1.1	0.0										
5231	367	NaN	NaN	NaN	NaN	NaN	2.3	NaN	NaN	NaN	NaN	NaN	NaN	NaN			
					NaN	NaN	0.0										
Legen Depth	ı:b m	leasur	ed da	ta	instrume	ent dep	th as	from	n log	gs, t	noorii	ng mod	lel and	l			
Days		-		ecord													
					and di												
S					lity of					peed	/ mea	an sca	alar sp	eed)			
U, V					th compo	onent o	f flov	N, CI	n/s								
Т			-	ature					_				_				
its		-			le (firs	st zero	cross	sing	of a	auto	corre	Latior	1 funct	ion)			
				rom ave	erage												
<uv>d</uv>		noment															
<md></md>	: d	lirect	ion o	t momen	ntum flı	ıx											

KIEL276 Time Series Data from Moored Current Meters, V276-09a & V276-09b

KIEL276 Time Series Data

Madeira Abyssal Plain 33°N, 022°W, 5280 m water depth V276-09a and V276-09b 06-NOV-1987 - 14-JAN-1989

Mooring information

General

Mooring ID :	V276-09/ KPO 666
Deployed :	Date: 06-NOV-1987 Ship / Cruise: Meteor, M06/1
top buoy lost:	DATE: ca. 24-SEP-1988
Recovered :	Date: 14-JAN-1989 Ship / Cruise: Meteor, M09/2
Latitude N :	33.090
Longitude E :	-021.875
Water depth :	5287 m (corrected)
Magn. Anom. :	-12 (bridge log)
Project :	KIEL276 time series station
PI :	T.J. Mueller
Data origin :	IfM Kiel
Depths :	nominal as of logs and IMP static model

Remarks

1) Mooring

Mooring lost top buoy and top instrument on 24-SEP-1988, probably due to fish biting in KEVLAR rope. Because now stretching of nylon rope was much less, remaining mooring components dropped to larger depths from then on: 326 m above S/N 6159 and less below.

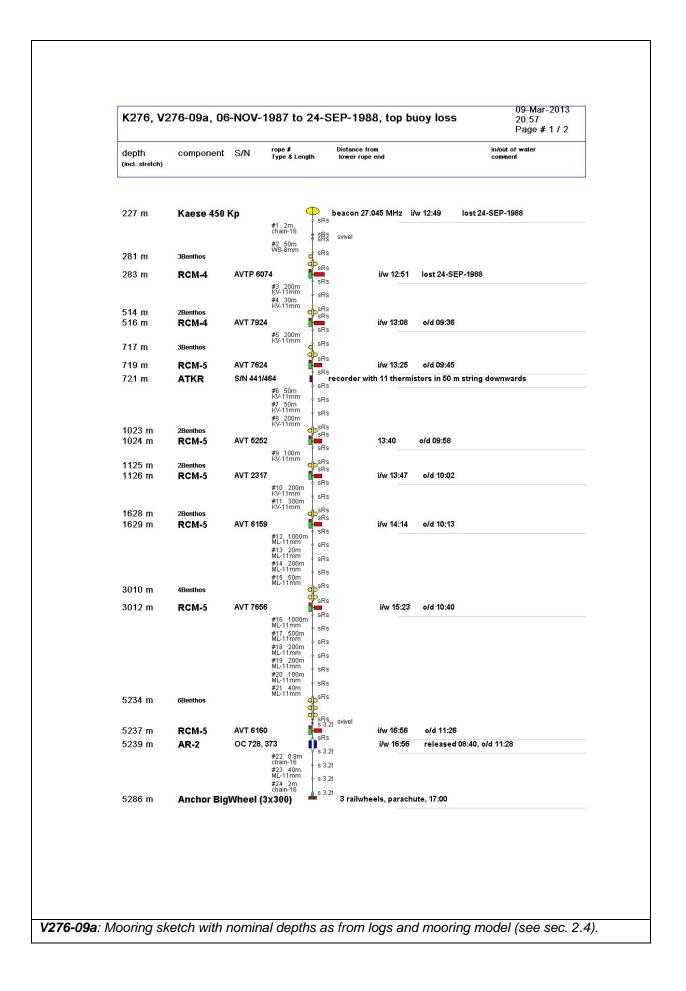
Periods before loss of buoyancy: V276-09a, after loss V276-09b.

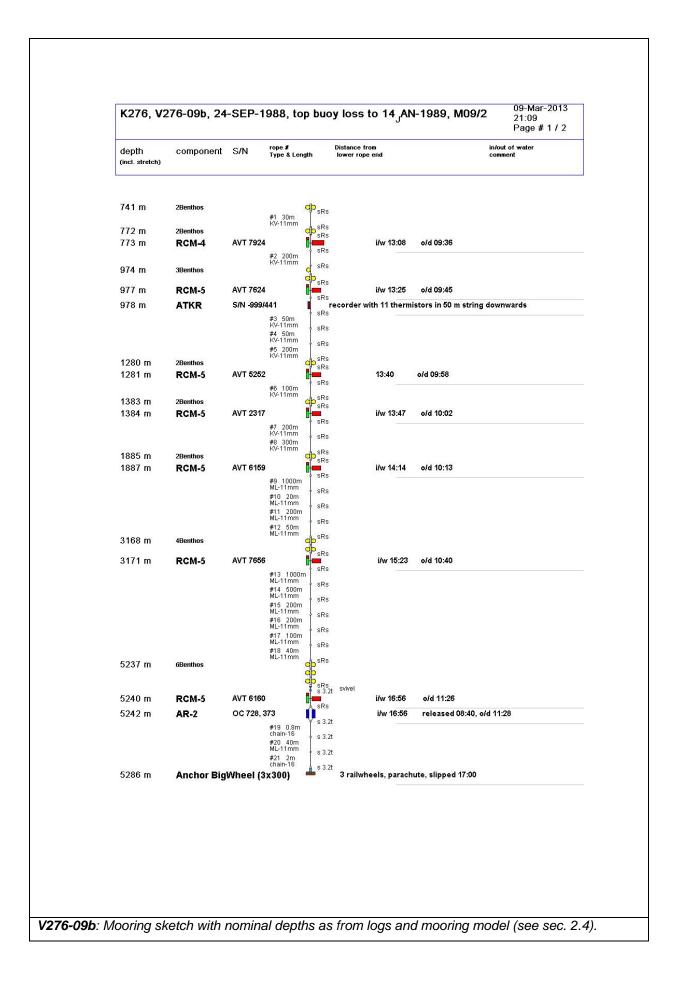
All mooring components according to log of launch; all instrument depths nominal as from logs and static model for both periods, before and after loss of the top buoy;

2) Data

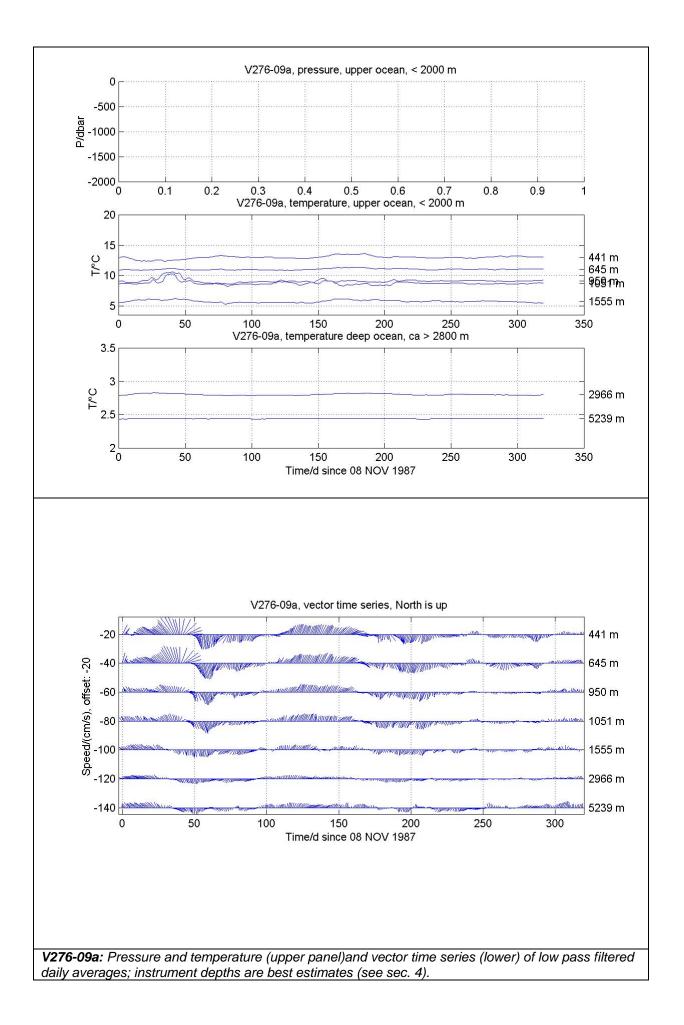
Raw data are lost. Data sources are MK4 ASCII files at sampling rate and at pre1-processing level. RCM data, both at pre1-level and pre2-level, processed and at sampling rates in V27609a_iii.dat and V27609b_iii.dat.

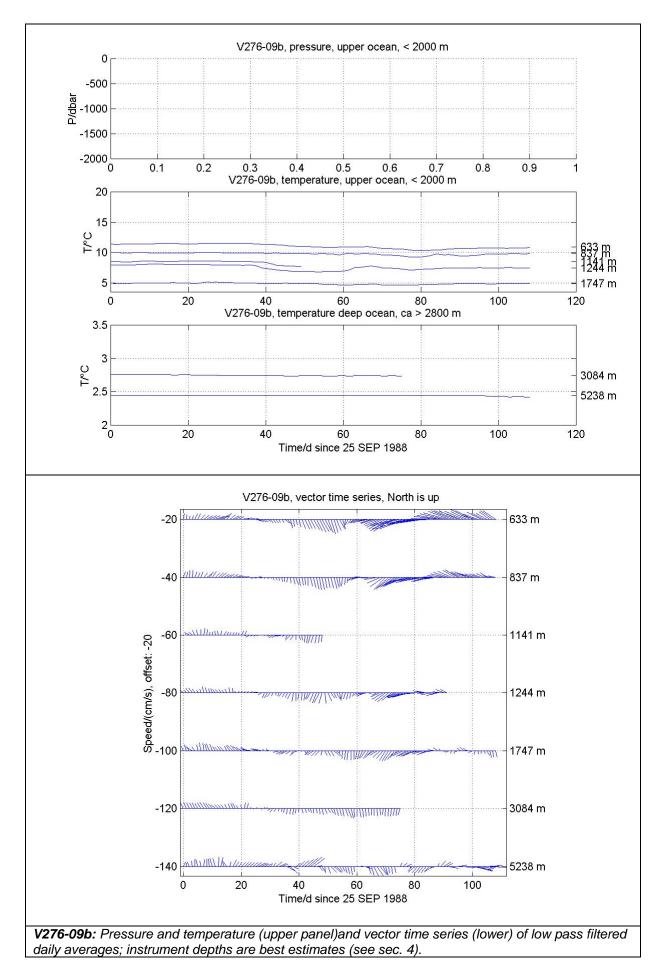
Compiled by: T.J. Mueller Date: 12-MAR-2012





Instruments: All depths are nominal as from logs and mooring model (see sec. 2.4.) Depth Moor_ID Type S/N Sampling Sensor Remarks а b _____ ____ 283 2760901 RCM5 06074 7200 s lost with top buoy 516 2760902 RCM4 07924 7200 s REF 773 T_LR ok DIR ok SPD ok 719 2760903 RCM4 07624 7200 s REF 977 T_LR ok ok DIR SPD ok 721 2760904 TK50 441&464 7200 s recorder with 11 thermistors equally 978 distributed 50 m downwards REF 11x ok until 08-JAN-1989 T_LR stop 15-NOV-1988 1024 2760905 RCM4 05252 7200 s 1281 REF T_LR ok DIR ok SPD ok 1125 2760906 RCM4 02317 7200 s REF T_LR 1384 ok, DIR ok SPD ok until 28-NOV-1988 1629 2760907 RCM5 06159 7200 s REF 1887 T_LR ok DIR ok SPD ok 3012 2760908 RCM5 07656 7200 s stop 11-DEC-1988 (water, tape readable) 3171 REF T_LR ok DIR ok with DIR=DIR+180 SPD ok 5240 2760909 RCM5 06160 7200 s REF T AR ok DIR ok SPD ok







KIEL276 Time Series Data from Moored Current Meters, V276-09a & V276-09b

Depth	Days	Mean			St	Mean StandDev.				ale			uxes Temperature	
441	320	SPD 0.6	DIR 130	STAB 0.13	U 0.5	 V -0.4	T 13.0	u 10	v 15	t 19	 <uv></uv>	 <dm> 4</dm>	<ut></ut>	<vt></vt>
441	320	0.0	130	0.13	0.5 3.3	-0.4 4.6	0.3	ΤŪ	12	19	T	4	0.3	-0.5
645	320	0.5	101	0.10	0.5	-0.1	11.0	10	15	20	0	2	0.0	-0.1
					3.0	4.5	0.1							
950	320	0.2	111	0.06	0.2	-0.1	9.1	13	17	12	1	10	0.1	0.2
					2.0	3.0	0.3							
1051	320	0.3	196	0.09	-0.1	-0.3	8.7	11	18	10	1	5	0.1	0.2
			0.4.6		1.9	3.0	0.3		1.0	1.0	-			
1555	320	0.6	246	0.24	-0.6	-0.3	5.8	15	16	18	1	14	-0.0	-0.1
2966	320	0.9	259	0.42	1.7 -0.8	2.2 -0.2	0.2 2.8	12	16	19	-0	-79	0.0	-0.0
2900	520	0.9	239	0.42	1.5	-0.2	0.0	12	ΤŪ	ТЭ	-0	-19	0.0	-0.0
5239	320	0.6	338	0.22		0.5	2.4	12	15	6	1	39	0.0	0.0
					2.0	2.0	0.0			-	_			
Legen Depth Days SPD,	: b m : 1	easur ength	ed da of r	ta ecord	instrume and din	-		from	ı log	ıs, r	noorii	ng mod	lel and	l
s U, V T	: m	iean E	ast a		lity of th compo				-	eed	/ mea	an sca	lar sp	eed)
its u, v,	: i t :de	ntegr	al [¯] ti ons f	me sca rom ave	le (fir: erage	st zero	cross	ing	of a	uto	corre	lation	ı funct	ion)

Mooring V276-09b: statistics from low pass filtered daily averages v27609b

v2/60	9b														
Depth	Days		Mean			Mean		Tim	ne Sc	ale		Flu	ixes		
					St	StandDev.					Momentum Temperature				
		SPD	DIR	STAB	U	V	Т	u	v	t		<dm></dm>	<ut></ut>	<vt></vt>	
633	109	2.3	257	0.50	-2.2	-0.5	11.0	19	12	21	-1	-85	1.5	0.1	
					4.3	2.2	0.4								
837	109	1.8	249	0.53	-1.7	-0.7	9.8	19	10	15	0	86	0.5	0.1	
					2.9	1.9	0.2								
1141	48	0.4	249	0.26	-0.4	-0.1	8.4	4	9	6	0	12	0.0	0.3	
					0.7	1.5	0.3								
1244	92	1.6	244	0.67	-1.5	-0.7	7.6	12	11	12	0	73	0.2	0.4	
					1.7	1.5	0.4								
1747	109	1.4	245	0.64	-1.3	-0.6	4.9	7	13	15	0	4	0.0	0.1	
					1.2	1.6	0.1								
3084	76	0.7	194	0.37	-0.2	-0.7	2.7	8	15	14	-1	-14	-0.0	0.0	
					0.7	1.8	0.0								
5238	109	1.4	90	0.53	1.4	0.0	2.4	7	11	6	0	35	-0.0	0.0	
		• -			1.8	1.8	0.0			-	-				
					±.0	1.0	0.0								

Legend:

Depth : best estimate of instrument depth as from logs, mooring model and
measured data
Days : length of record
SPD, DIR: mean speed/(cm/s) and direction
s : directional stability of flow (mean vector speed / mean scalar speed)
U, V : mean East and North component of flow, cm/s
T : mean temperature
its : integral time scale (first zero crossing of autocorrelation function)
u, v, t :deviations from average
<uv>_d : momentum flux</uv>
<md> : direction of momentum flux</md>

KIEL276 Time Series Data from Moored Current Meters, V276-09a & V276-09b

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-10

14-JAN-1989 - 27-OCT-1989

Mooring infor	
General Mooring ID Deployed Recovered Latitude N Longitude E Water depth Magn. Anom. Project PI Data origin Depths	: V276-10/ KPO 671 : Date: 14-JAN-1989 Ship / Cruise: Meteor, M09/2 : Date: 27-OCT-1989 Ship / Cruise: Meteor, M11/2 : 33.107 : -021.897 : 5281 m (HS corrected)
<u>-</u>	

Remarks

1) Mooring

Top buoy was shrunk at recovery, i.e. had less buoyancy than when launched. Pressure records of top two RCM both slowly increased from 334 dbar to 354 dbar (600 dbar to 618 dbar). No sudden event.

All mooring components according to log of launch; all instrument depths nominal as from logs and static model.

Note: this mooring had 90 m less nylon rope than V276-09; therefore, instrument S/N 07927 at 1705 and all others at less depths are 100 m deeper than the comparable in V27609.

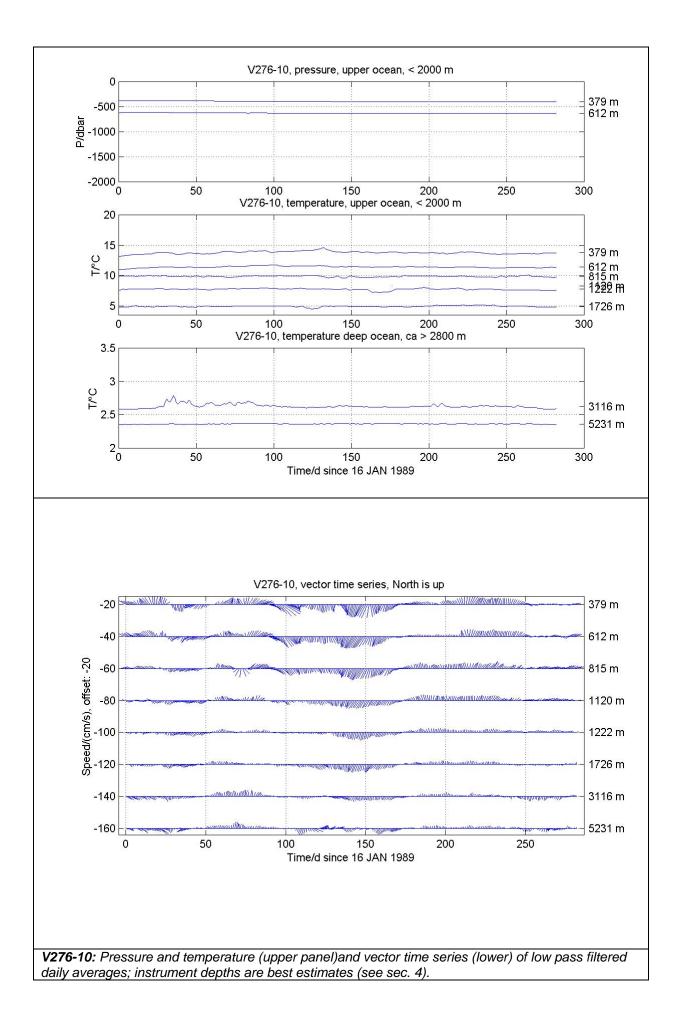
2) Data

Raw data in 27610ii.RAW, 1<=i<=9, files restored from 5 1/4 " disk, March 2012. Files 27610ii.RAW edited and stored to RCM*.EDT. Data re-processed in May 2012. CALAAN.M, ok CHECK_ROTOR_CAL.M applied for M2 tide, ok. RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27610_iii.dat.

Compiled by: T.J. Mueller Date: 31-MAY-2012

		2.41	rope #		Distance from		Page # 1 / 2
depth (incl. stretch)	component	S/N	Type & Lei	ngth	lower rope end		comment
335 m	Kaese 450	Kp			peacon 27.045 MHz	i/w 13:08 o/o	d 08:42, slightly shrunk & buoyand
		•	#1 2m chain-16 #2 50m	sRs sRs sRs	svivel		
389 m	3Benthos		#2 50m WS-8mm	d sRs			
391 m	RCM-8	AVTP 841	2 #3 200m KV-11mm	sRs sRs sRs	i/w 13:12	o/d 08:44	
			#4 30m KV-11mm	sRs			
622 m 624 m	2Benthos RCM-4	AVTP 252	8	sRs sRs sRs sRs	i/w 13:25	o/d 08:52 ro	tor damaged
825 m	3Benthos		#5 200m KV-11mm	d sRs			
827 m	RCM-5	AVT 7343		∲sRs	i/w 13:36	o/d 09:00	
829 m	ATKR	S/N -999/4	86		ecorder with 11 ther	mistors in 50 m s	string downwards
			#6 50m KV-11mm #7 50m KV-11mm #8 200m KV-11mm	sRs sRs sRs	_		
1131 m	2Benthos		KV-11mm				
1132 m	RCM-5	AVT 7928	#9 100m KV-11mm	sRs	i/w 13:47	o/d 09:14	
1233 m	2Benthos		KV-11mm	de sRs sRs	·		
1234 m	RCM-8	AVT 8295	#10 200m KV-11mm	sRs sRs	i/w 13:52	o/d 09:16	
1736 m	3Benthos		#11 300m KV-11mm	sRs			
1738 m	RCM-5	AVT 7927		de sRs	i/w 14:09	9 o(d 09:30	
1750 III	KUM-J	AVI 7327	#12 1000 ML-11mm #13 270m	m sRs sRs	14.02	5 0(0 05.50	
3121 m	4Benthos		ML-11mm	dp sRs			
3123 m	RCM-5	AVT 4570		SRs	i/w 14:52	2 o/d 09:52	
			#14 1000 ML-11mm #15 500n ML-11mm	sRs			
			#16 200m ML-11mm #17 200m ML-11mm	SRS			
5228 m	6Benthos		#18 30m ML-11mm	dp ^{sRs}			
				SRs s 3.2	svivel		
5231 m	RCM-8	AVT 9310		SRs SRS	i/w 16:00		
5233 m	AR-2	OC 728, 3	73 #19 0.8m chain-16	\$ 3.2		released 08	:20, o/d 10:24
			#20 40m ML-11mm #21 2m	s 3.2 s 3.2			
		Wheel (3:	chain-16	s 3.2	3 railwheels, para		16-05

Instruments: All depths are nominal as from logs and mooring model (see sec. 2.4.) Depth Moor_ID Type S/N Sampling Sensor Remarks _____ 391 2761001 RCM8 08412 7200 s REF ok, 164 T_LR ok ok, last 6 values set to NaN, COND PRES ok, see remark below DIR ok SPD ok 624 2761002 RCM4 02528 7200 s REF ok, 371 T_LR ok ok, few spikes replaced by dummy COND PRES ok, see remark below DIR ok SPD ok, rotor 'slow' by factor ca. 0.5 between day 165 and day 212 to be edited: multiply with factor 2 827 2761003 RCM4 07343 7200 s REF ok, 292 T LR ok ok, S with strong nonlinear trend; COND DIR ok SPD ok 829 2761004 TK50 486 7200 s no data, raw values all 512 REF 1132 2761005 RCM5 07928 7200 s 596 (nominal), median 512 read T_LR often reads T_raw=0; set to dummy COND often reads C_raw=0; set to dummy DIR ok SPD ok 1234 2761006 RCM8 08295 7200 s REF ok, 149, at the end often half range T_LR ok C_WR no data DIR ok SPD ok 1738 2761007 RCM5 07927 7200 s ok, 606 REF T_LR ok DIR ok SPD ok 3123 2761008 RCM5 04570 7200 s REF T_LR ok, not stored T_AR ok, stored DIR ok SPD ok 5231 2761009 RCM8 09310 7200 s REF ok, not stored T_LR T_AR ok, stored DIR ok SPD ok



Moori	ng V27	6-10:	stat	istics	from lo	ow pass	filte	red	dai:	ly av	verage	es		
v2761	.0													
Depth	Days		Mean			Mean		Tin		cale			lxes	
						andD			its				Temper	
		SPD	DIR		U	V	T	u				<dm></dm>		
379	283	0.3	135	0.07	0.2	-0.2	13.8	13	19		0	5	0.1	-0.3
					2.6	3.4	0.2							
612	283	0.5	202	0.15	-0.2	-0.5	11.4	16	22	24	1	16	0.1	-0.2
					2.4	3.2	0.1							
815	283	0.4	161	0.11	0.1	-0.3	9.9	18	22	9	2	29	0.0	0.1
1100				0 1 0	2.3	2.8	0.1	~ ~	~ ~					
1120	283	0.3	248	0.12	-0.3	-0.1	NaN	22	22	NaN	2	32	NaN	NaN
1222	283	0.2	236	0.13	1.7 -0.2	2.1 -0.1	NaN 7.7	20	20	11	1	24	0.0	0.0
	205	0.2	230	0.15	-0.2	-0.1	0.1	20	20	ΤT	T	24	0.0	0.0
1726	283	0.6	221	0.36	-0.4	-0.5	4.9	14	21	11	0	2	-0.0	0.0
1/20	205	0.0	221	0.50	1.2	1.6	0.1		21		0	2	0.0	0.0
3116	283	0.5	130	0.25	0.3	-0.3	2.7	13	16	11	-0	-15	-0.0	0.0
					1.2	1.6	0.0							
5231	283	0.1	118	0.08	0.1	-0.1	2.4	10	11	11	0	80	-0.0	0.0
					1.7	1.4	0.0							
_														
Legen							+ 1	e						
Depth		est e easur			Instrume	ent dep	th as	iron	ι τος	gs, t	noorii	ng moo	aei and	L
Days				ecord										
-		_			and dir	rection								
s s			-		lity of			recto	or si	peed	/ mea	an sca	alar sr	eed)
U, V					ch compo						,			,
г		lean t	emper	ature	-									
its	: i	ntegr	al ti	me scal	le (firs	st zero	cross	ing	of a	auto	correi	latior	n funct	ion)
				rom ave										
<uv>_d</uv>	: n	noment	um fl	ux										
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Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-11

27-OCT-1989 - 25-SEP-1990

Mooring information

General

Mooring ID	: V276-11/ KPO 678
Deployed	: Date: 27-OCT-1989 Ship / Cruise: Meteor M11/2
Recovered	: Date: 25-SEP-1990 Ship / Cruise: Meteor M14/1
Latitude N	: 33.103
Longitude E	: -021.905
Water depth	: 5317 m (PN, corrected)
Magn. Anom.	: -11 (interpolated)
Project	: KIEL276 time series station
PI	: T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

All mooring components according to log of launch and all depths nominal as from logs and from static model.

Note: this mooring had (designed) 90 m less nylon rope than V27609; 30 m were added during launch because of larger water depth.

2) Data

Raw data available as V27611*.RAW with * as instrument counter top to bottom in mooring line; copied to corresponding RCM*.RAW and edited to get RCM*.EDT with * as S/N of RCM. CALAAN.M applied

RCM 06160 has corrupted raw data file: nominal 6 columns, but also 774 rows with 12 columns and one row with more than 18 (23) columns. When sorted to 6 column array, the time basis gets ok as compared to the instrument's start/stop log. Data in the beginning are ok until ca. record 1000; later noisy; arctic TEMP graphically edited and interpolated; SPD is noisy and partly somewhat too low; standard deviation in band pass SPD around M2 tide lower (<=40%) than in all other instruments. Data however kept finally.

CHECK_ROTOR_CA ok with vertically averaged standard deviation of SPD around M2 tide 0.4 cm/s +/- 0.08 cm/s (including RCM06160).

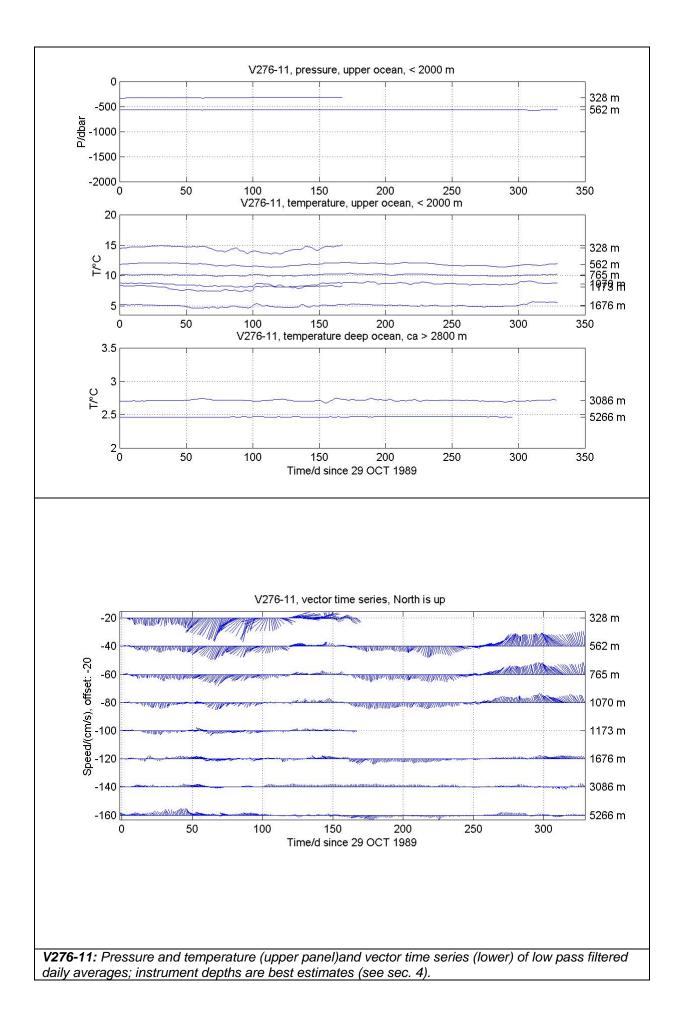
RCM data pre1-level processed and at sampling rates in RCM*.dat.

RCM data at pre2-level processd and at sampling rate in V27611_iii.dat.

Compiled by: T.J. Mueller Date: 13-FEB-2011

depth (incl. stretch)	component	S/M				, M14/1 21:31 Page # 1 / 2
		om	rope # Type & Ler	gth	Distance from lower rope end	in/out of water comment
338 m	Kaese 450	Кр		•	beacon 27.045 MHz ii	/w 14:00 o/d 09:28
			#1 2m chain-16 #2 50m	sRs sRs sRs	svivel	
392 m	3Benthos		#2 50m WS-8mm	d sRs		
394 m	RCM-8	AVTP 972	6 #3 200m KV-11mm	sRs sRs	i <i>l</i> w 14:01	o/d 10:02
606 m	00		#4 30m KV-11mm	sRs sRs		
626 m 627 m	2Benthos RCM-4	AVTP 733	0	SRs	i/w 14:15	o/d 10:13
828 m	3Benthos		#5 200m KV-11mm	sRs sRs		
		AVT 6051		de sRs	11	44 40.05
830 m 832 m	RCM-5 ATKR	S/N TR6		+ sRs	i/w 14:28 recorder with 1	o/d 10:25 1 thermistors in 50 m string downwards, no da
			#6 50m KV-11mm #7 50m KV-11mm #8 200m KV-11mm	sRs sRs sRs		
1134 m	2Benthos			op sRs sRs		
1135 m	RCM-5	AYVT 792	4 #9 100m KV-11mm	sRs	i/w 14:41	o/d 10:37
1236 m	2Benthos			and sRs sRs		
1238 m	RCM-8	AVT 9727	#10 200m KV-11mm	sRs sRs	i/w 14:47	o/d 10:42
1739 m	3Benthos		#11 300m KV-11mm	sRs		
1741 m	RCM-5	AVT 7925		dp _{sRs}	i/w 15:01	o/d 10:53
			#12 1000r ML-11mm	n sRs sRs		
3124 m	4Benthos		#13 270m ML-11mm	SRS		
3124 m 3126 m	RCM-5	AVT 6160		op _{sRs}	i/w 15:39	o/d 11:13
5125			#14 1000r ML-11mm #15 500m ML-11mm #16 200m #17 200m ML-11mm #18 30m ML-11mm #19 30m #L-11mm	sRs sPc		
5264 m	6Benthos		ML-11mm	op sRs		
27 gaz -				sRs s 3.2	t svivel	
5267 m 5269 m	RCM-8	AVT 9728 OC 888, 7		SRS	i/w 16:31 i/w 16:31	o/d 11:45 released 09:02, o/d 11:45
5209 m	AR-2	00 000,7	#20 0.8m chain-16 #21 40m ML-11mm	\$ 3.2 \$ 3.2 \$ 3.2 \$ 3.2	t	Teleased 05.02, 010 TT.40
			#22 2m chain-16 x300)	s 3.2	t	chute, slipped 16:48

Depth	Moor_ID	Туре	S/N	Sampling	Sensor	Remarks
394	2761101	RCM8	09726	7200 s	REF T_LR PRES DIR SPD	e-board S/N 1107, DSU S/N 2215; short record, stops 16-APR-1990, due to data overflow in early DSU's 232 ok ok, initially 327 dbar, median 314 dbar ok ok
627	2761102				REF T_LR COND PRES DIR SPD	ok, 235 ok ok ok, initially 554 dbar, median 544 dbar ok ok, 8 rev/count
with :	rev=8 rev	volut:	ions/co	unt		
830	2761103	RCM4	06051	7200 s	REF T_LR DIR SPD	ok, 381 ok ok ok, 8 rev/count
832	2761104	тк50	006	7200 s	no data	a recorder with 11 thermistors equally distributed 50 m downwards
1135	2761105	RCM5	07924	7200 s	REF T_LR COND DIR SPD	646 ok, SAL too low, 0-77 mS/cm ok 8 rev/count
1238	2761106	RCM8	09727	7200 s	stop 2 REF T_LR COND DIR SPD	2-APR-1990, low voltage on main battery 700 ok ok, SAL too low ok ok
1741	2761107	RCM5	07925	7200 s	REF T_LR DIR SPD	285 ok ok, 4 rev/count
3126	2761108	RCM5	06160	7200 s	stop 0. REF T_AR DIR SPD	2-FEB-1990 160 ok ok ok, 4 rev/count
5267	2761109 F	RCM8	09728	7200 s	T_AR DIR	470, jump to REF=512 at record ca. 2250 ok until record ca. 3500, 30-AUG-1990 ok ok



Γ

Depth	.1 n Days		Mean			Mean				cale			ixes	
						andD			its		MOIIIE		Temper	acure
		SPD	DIR	STAB	U	v	Т	u	v	t	<uv></uv>	<dm></dm>	<ut></ut>	<vt></vt>
328	168	4.7	178	0.54	0.1	-4.7	14.4	17	19	19	26	58	-0.4	-0.0
562	330	0.5	162	0.08	7.2 0.2	5.0	0.4 11.8	18	31	24	2	12	-0.0	-0.4
562	330	0.5	102	0.08	0.2 4.3	-0.5 5.1	0.2	18	31	24	2	12	-0.0	-0.4
765	330	0.6	209	0.12	-0.3	-0.5	10.1	18	31	19	0	2	0.0	-0.1
	000	0.0	200	0.11	3.2	3.9	0.1	10	51		0	-	0.0	0.1
1070	330	0.9	251	0.28	-0.8	-0.3	8.6	16	27	22	-1	-19	0.0	0.0
					2.1	2.9	0.2							
1173	168	1.2	250	0.66	-1.2	-0.4	8.0	14	9	18	0	85	0.4	0.1
			0.50	0 = 0	1.6	1.1	0.3	1.6	1.0			- 4		
1676	330	1.6	268	0.70	-1.6	-0.1 1.4	5.0 0.2	16	19	15	-0	-74	-0.0	0.0
3086	330	1.0	333	0.65	1.6 -0.5	1.4 0.9	0.2 NaN	27	16	NaN	0	90	NaN	NaN
3000	330	1.0	555	0.05	1.3		NaN	27	ΤŪ	INAIN	0	90	INAIN	INAIN
5266	330	1.3	282	0.60	-1.2		NaN	17	28	NaN	-0	-83	NaN	NaN
					1.8	1.4	NaN							
Legen														
Depth					instrume	ent dep	th as	from	1 log	gs, r	noorir	ng mod	lel and	
		easur												
Days		-		ecord										
			-		and dir					-			-	
S					lity of				-	peed	/ mea	an sca	lar sp	eed)
U, V					th compo	onent o	t tlow	, cm	ı/s					
Г			-	ature										
its					le (firs	st zero	cross	ing	of a	autoo	correl	lation	1 funct	ion)
				rom ave	erage									
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Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-12

25-SEP-1990 - 27-JAN-1992

Mooring information

General

Mooring ID	: V276-12/ KPO 685
Deployed	: Date: 25-SEP-1990 Ship / Cruise: Meteor M14/1
Recovered	: Date: 27-JAN-1992 Ship / Cruise: Poseidon P189/1
Latitude N	: 33.149
Longitude E	: -021.888
Water depth	: 5335 m (HS corrected, during recovery 5250+55=5305 m)
Magn. Anom.	: -11 (bridge)
Project	: KIEL276 time series station
PI	: T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

All mooring components and all instrument depths nominal as from logs and static model.

2) Data

Raw data available.

Raw data copied from V27612*.raw => RCMiiiii.raw; Reference checked against nominal reference. RCMiiiii.raw edited to RCMiiiii.edt, then processed with CALAAN.M to get pre1_ph3/RCMiiiii.dat.

Result checked for rotor calibration with CECK_ROTOR_CAL.M; ok within error bounds, i.e. all standard deviations of band pass filtered (around M2) SPD are within 15% limits averaged standard deviation. Systematic decrease with depth probably due to other variability around M2 which could not be filtered out due to too coarse resolution in time.

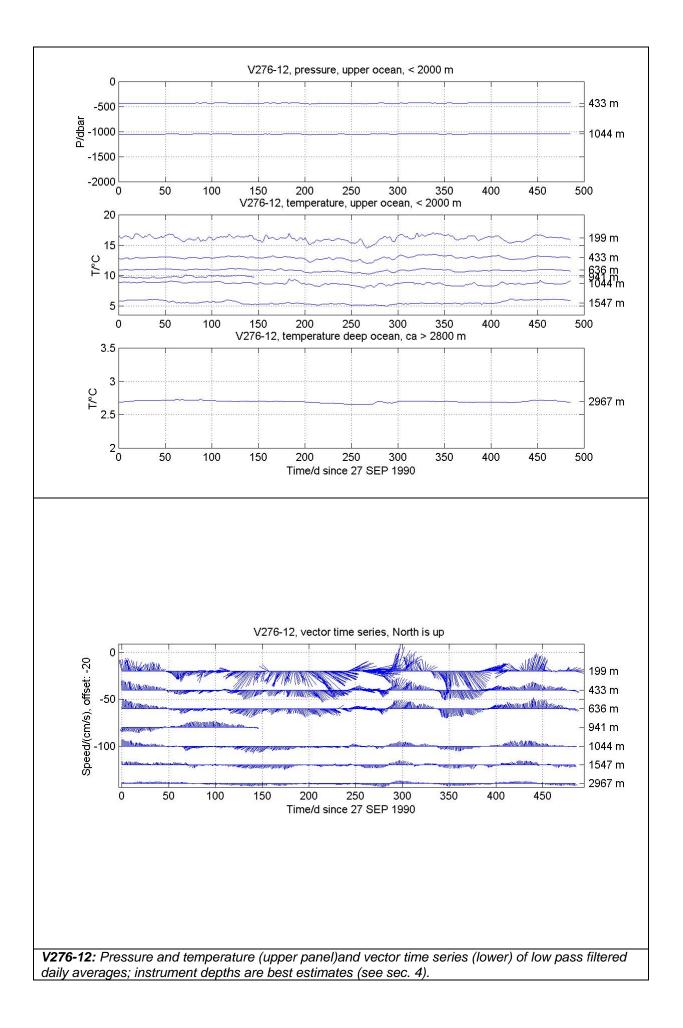
RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27612_iii.dat.

Compiled by: T.J. Mueller Date: 25-MAR-2012

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K276, V276-12, 25-SEP-1990, M14/1 to 27.01.1992, P189/1 09-Mar-2013 21:35 Page # 1 / 2								
depth (incl. stretch)	component	S/N	rope # Type & Len	gth	Distance from lower rope end	infout of water comment		
238 m	Kaese 450	Кр		Φ_	peacon 27.045 MHz i/w	r 14:29 o/d 09:17		
			#1 2m chain-16	sRs sRs sRs	svivel			
292 m	3Benthos		#2 50m WS-8mm	d sRs				
294 m	RCM-8	AVTP 931	3	sRs	i/w 14:30	o/d 09:20		
			#3 100m KV-11mm #4 100m KV-11mm	sRs sRs sRs				
526 m	2Benthos		#5 30m WS-8mm	apsRs sRs				
527 m	RCM-4	AVTP 252		sRs	i/w 14:44	o/d09:31		
728 m	3Benthos		#6 200m KV-11mm	d sRs				
730 m	RCM-5	AVT 7343		sRs	i/w 14:50	09:38		
732 m	ATKR	486/1525	#7 50m	sRs	recorder with	11 thermistors in 50 m string down	wards	
			#7 50m KV-11mm #8 50m KV-11mm #9 200m KV-11mm	∙ sRs • sRs				
1034 m	2Benthos	AV/T 0004		ap sRs sRs	14. 4F.0F			
1035 m	RCM-5	AVT 6681	#10 100m KV-11mm	sRs	i/w 15:05	o/d 09:50		
1136 m	2Benthos	AVT 9323		sRs sRs	iber 15:11	a/d 00-54		
1138 m	RCM-8	AVI 9323	#11 200m KV-11mm	The De	i/w 15:11	o/d 09:54		
			#12 300m KV-11mm	sRs				
1639 m	3Benthos			ap _{sRs}				
1641 m	RCM-5	AVT 7927	#13 1000r ML-11mm	n sRs	i/w 15:23	o/d 10:03		
			ML-11mm #14 270m ML-11mm	5115				
3023 m	4Benthos		MC TTTTTT					
3025 m	RCM-5	AVT 4570			i/w 15:50	o/d 10:36		
			#15 1000r ML-11mm #16 500m	sRs				
			ML-11mm #17 200m ML-11mm	sRs sRs				
			#18 200m ML-11mm #19 100m	CRO				
			#19 100m ML-11mm #20 50m ML-11mm	0.10				
E000				sRs				
5282 m	6Benthos							
5285 m	RCM-8	AVT 9344		sRs s 3.2	svivel i/w 16:42	o/d 10:57, flooded, no data		
5287 m	AR-2	OC 888, 8	89	sRs s 3.2	i/w 16:42	reeased 08:51, o/d 10:59		
			#22 0.8m chain-16 #23 40m	s 3.2				
			ML-11mm #24 2m chain-16	\$ 3.2 \$ 3.2				
5334 m	Anchor Big	Wheel (3	x300)		3 railwheels, para	achute, slipped 15:43		

Instru	ments: Al	l deptl	hs are n	ominal as fro	om logs ar	nd mooring model (see sec. 2.4.)
Depth	Moor_ID	Туре	S/N	Sampling	Sensor	Remarks
294	2761201	RCM8	09313	7200 s	REF T_LR C_WR PRES DIR SPD	clock 2 h ahead; clock corrected ok, 452 ok ok, offset in SAL constant N=1023 reading, not converted ok ok
527	2761202	RCM4	02528	7200 s	REF T_LR PRES DIR SPD	ok, 370 ok ok, initially 455 dbar ok ok
730	2761203	RCM4	07343	7200 s	REF T_LR COND DIR SPD	ok, 292 (except first few records) ok ok, nonlinear drift in SAL ok ok, 8 rev/count
732	2761204	TK50	01525	7200 s	bad dat	a, not processed;
1035	2761205	RCM5	06681	7200 s	and res confirm pronoun => proc REF T_LR C_HR DIR	ecord; tape stopped after 1785 records tarted by shock at release of mooring; ed by launch & release records, and ced peak in spectrum of SPD at M2 tide. essed data stored for further use. ok, with errors ok ok, but offset in SAL ok ok
1138	2761206	RCM8	09323	7200 s	REF T_LR COND PRES DIR	t too late by 304 d, corrected ok, 839 ok ok ok, initially 107, median 1062 dbar ok ok
1641 2	2761207 B	RCM5 (07927	7200 s	REF T_LR DIR SPD	ok ok ok, 4 rev/count
3025	2761208	RCM5	04570	7200 s	T_LR T_AR DIR	bad, nominally 545 ok, not stored ok ok ok, 4 rev/count
5287 2	2761209 F	RCM8	09344	7200 s	flooded	, bottom cap lost, no data



Moori	.ng V27	6-12:	stat	istics	from lo	w pass	filte	red	dail	y av	verage	es			
v2761 Depth	.2 1 Days		Mean			Mean		Tim	ie Sc	ale		۲lı	ıxes		
Depen	Dayb		Hean		StandDev.				its	arc	Momentum Temperature				
			DIR		U	V	т	u				<dm></dm>			
199	486	4.5	117	0.31	4.0 11.1	-2.0 10.7	16.1 0.4	32	18	13	-6	-63	-1.8	0.3	
433	486	1.9	119	0.25	1.6 5.8	-0.9 5.5	12.9 0.3	37	20	20	-1	-80	-0.7	0.1	
636	486	1.3	102	0.20	1.2 4.6	-0.3	10.9 0.2	39	22	30	2	22	-0.7	0.1	
941	146	1.2	335	0.33	-0.5	1.1	9.8	10	23	16	0	2	-0.0	0.3	
1044	486	0.6	252	0.20	1.5 -0.6	3.7 -0.2	0.1 8.7	35	24	32	2	24	-0.3	0.1	
1547	486	0.7	235	0.29	2.3 -0.6	2.8 -0.4		18	18	43	0	4	-0.1	0.3	
2967	486	0.2	167	0.13	1.6 0.1 1.3	2.2 -0.2 1.4	0.3 2.8 0.0	23	18	34	-0	-39	-0.0	0.0	
Legen	nd:														
Depth		est e easur			instrume	ent dep	th as	from	ı log	ıs, r	noorir	ng mod	lel and	l	
Days SPD,	: 1	ength	of r	ecord	and dir	rection	L								
S					lity of th compo				-	eed	/ mea	an sca	lar sp	eed)	
υ, ν Τ				ature	-n compo	onent o	L LIOW	, cu	l/S						
its			-		le (firs	st zero	cross	ing	of a	uto	correl	lation	n funct	ion)	
u, v,	t :de	viati	ons f	rom ave	erage										
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Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-13

28-JAN-1992 - 11-JUL-1993

Mooring information

General

Mooring ID	: V276-13/KPO 719
Deployed	: Date: 28-JAN-1992 Ship / Cruise: Poseidon P189/1
Recovered	: Date: 11-JUL-1993 Ship / Cruise: Poseidon, P200/8
Latitude N	: 32.922
Longitude E	: -022.136
Water depth	: 5279 m (corrected)
Magn. Anom.	: -10.6 (bridge & MK4 files)
Project	: KIEL276 time series station
PI	: T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

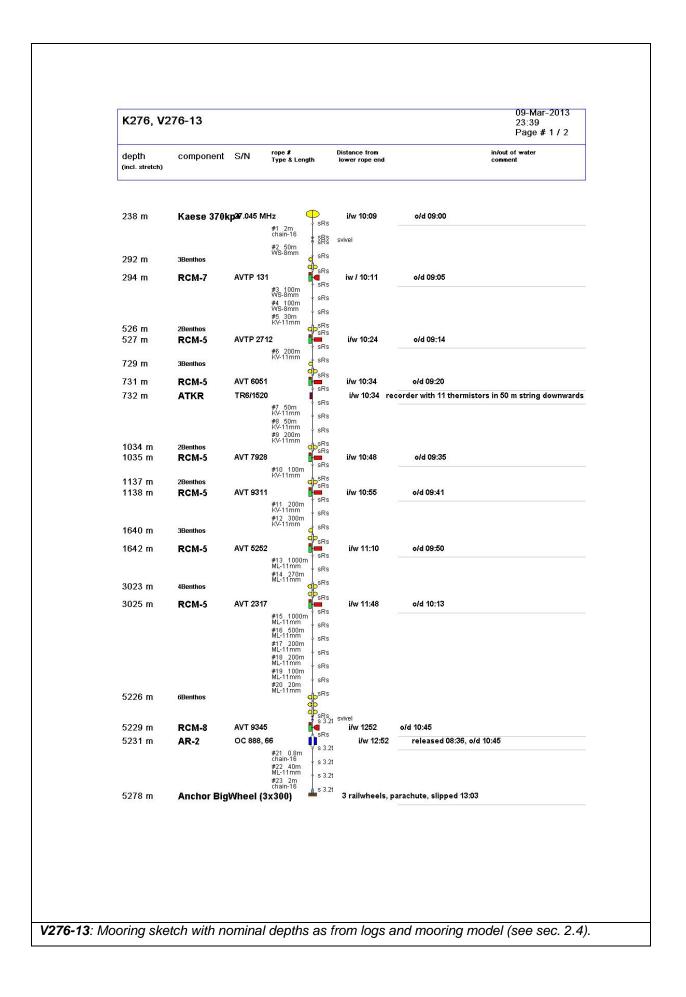
All mooring components as from logs and all depths nominal as from logs and static model.

2) Data

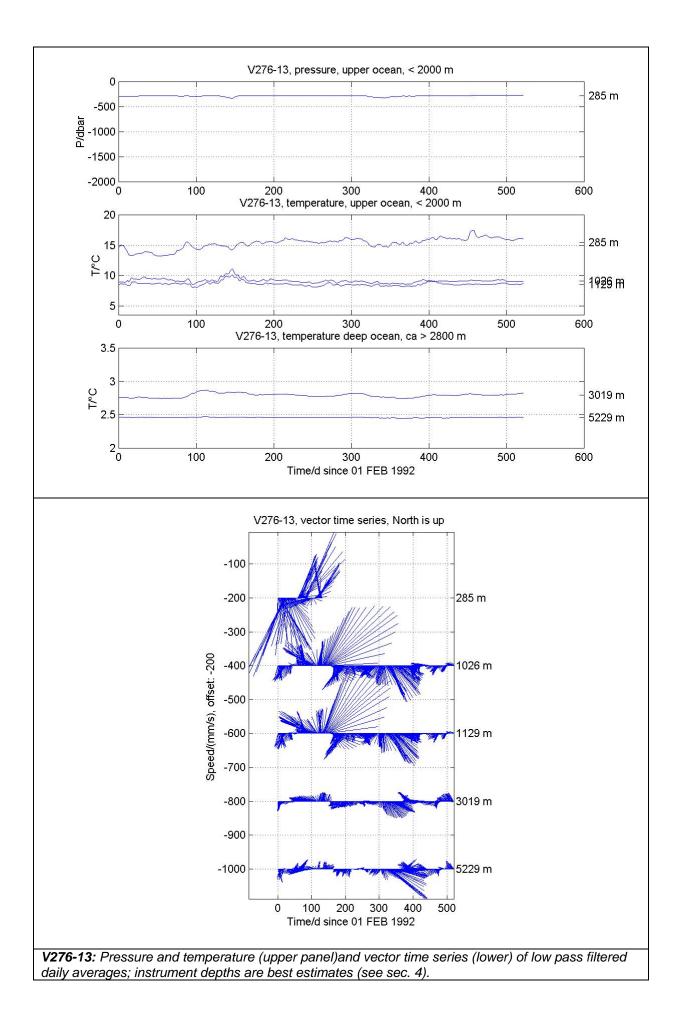
Raw data lost. Processed data sources (without TC 50 m data) are MK4 ASCII files with low pass filtered daily averages at pre1-processing level.

RCM data pre1-level and at pre2-level processed and at low pass filtered daily averages in V27613_iii.dat.

Compiled by: T.J. Mueller Date: 25-MAR-2012



Depth	Moor_ID	Туре	S/N	Samplin	g Sensor	Remarks
294	2761301	RCM7	00131	7200 s	REF T_LR COND PRES DIR	ok ok ok, starts with 282 dbar, after first event 270 dbar after second event 265 dbar ok
					SPD	ok until first current event, 16-JUN-1992
527	2761302	RCM5	02712	7200 s	no MK4	data
731	2761303	RCM5	06051	7200 s	no MK4	data
732	2761304	TK50	6 & 15	20 720	0 s	stop 13-MAR-1993; thermistors no. 7 & 8 ok until then
1035	2761305	RCM5	07928	7200 s	REF T_LR COND DIR SPD	ok ok ok, 8 rev/count
1138	2761306	RCM8	09311	7200 s	REF T_LR COND DIR SPD	ok ok ok ok
1642	2761307	RCM5	05252	7200 s	floode	d, no data
3025	2761308	RCM5	02317	7200 s	REF T_AR DIR SPD	ok ok ok, 4 rev/count
5229	2761309 B	RCM8	09345	7200 s	REF T_AR DIR SPD	ok ok ok, 4 rev/count



v2761			Maan			Meen				-1-				
Deptr	l Days		Mean		St	Time Scale its			Fluxes Momentum Temperatur					
		SPD	DIR	STAB	U	V	Т	u	v	t	<uv></uv>	<dm></dm>	<ut></ut>	<vt></vt>
285	131	1.9	115	0.17		-0.8		6	17	16	29	17	0.5	2.2
					5.6	10.9	0.7							
1026	522	1.3	174	0.26	0.1	-1.3	9.1	16	31	27	2	24	0.4	0.9
					4.2	4.6	0.4				-			
1129	522	1.0	171	0.22	0.2	-1.0		16	26	17	1	26	0.5	0.8
3019	522	0.9	247	0.35	4.1	4.4		19	20	26	2	C A	-0.0	0.0
3019	522	0.9	247	0.35	-0.8 2.3	-0.4 1.7	2.8 0.0	19	20	20	-2	-64	-0.0	0.0
5229	522	0.5	166	0.19		-0.5		21	16	27	-2	-75	-0.0	0.0
5227	522	0.5	100	0.17		1.8	0.0	21	ΞŪ	27	2	15	0.0	0.0
					5.1	1.0	0.0							
Leger	ıd:													
Depth	ı : b	est e	stima	te of i	instrume	ent dep	th as	from	ı log	s, r	noorii	ng mod	lel and	L
	n	leasur	ed da	ta										
Days	: 1	ength	of r	ecord										
SPD,	DIR: m	lean s	peed/	(cm/s)	and dia	rection								
s	: d	irect	ional	stabil	lity of	flow (mean v	recto	r sp	eed	/ mea	an sca	lar sp	eed)
U, V	: m	iean E	ast a	nd Nort	ch compo	onent o	f flow	, cm	l/s					
г	: m	lean t	emper	ature										
its	: i	ntegr	al ti	me scal	le (firs	st zero	cross	ing	of a	uto	correl	lation	funct	ion)
	t :de	viati	ons f	rom ave	erage									
1, V,					_									
	: n	noment	um fl	ux										

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-14

11-JUL-1993 - 17-SEP-1994

Mooring information

General

Mooring ID	: V276-14/KPO 739
Deployed	: Date: 11-JUL-1993 Ship / Cruise: Poseidon, P200/8
Recovered	: Date: 17-SEP-1994 Ship / Cruise: Poseidon, P202
Latitude N	: 32.994
Longitude E	: -022.002
Water depth	: 5282 m (corrected)
Magn. Anom.	: -11.7 (bridge & MK4 files)
Project	: KIEL276 time series station
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

On recovery, the top buoy turned out to be squeezed; it had no buoyancy at all, but weight in the mooring line as it did not surface on its own. The reason probably was a strong current event in the Mediterranean water level, a 'super MEDDY' which forced the top buoy to much larger depth than its rating (400 dbar), damaged it and then forced the mooring's top down to the bottom due to lack of buoyancy. As the two top instruments had pressure sensors which were rated to 2000 dbar only, these two instruments were flooded. The deepest instrument (5200 m designed) was flooded, now known due to bad bottom caps in early RCM8s. Only the 3000 m designed instrument was not affected.

All mooring components and all instrument depths nominal as from logs and from static model until loss of top buoyancy.

2) Data

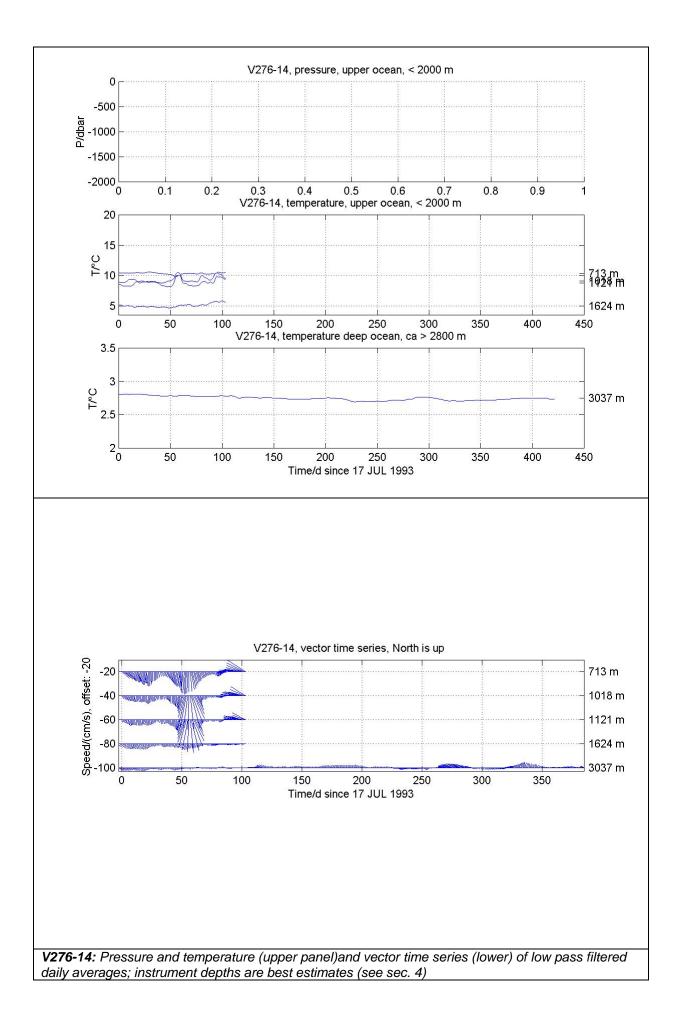
Raw data lost. Processed data sources are MK4 ASCII files with low pass filtered daily averages at pe1-processing level in V27614_iii.dat. After the event, the instruments from deeper than 700 m were turned top down and gave no reasonable current data although they were 6000 dbar depth rated; the MK4 data processing cut these data. Only the instrument at 3000 m designed depth with almost full record.

RCM data pre1-level and at pre2-level processed and at low pass filtered daily averages in V27613_iii.dat.

Compiled by: T.J. Mueller Date: 26-MAR-2012

K276, V2	276-14, 11.0	07.1993	8, P200	0/8 to	17.09.199	4, P202 9 -Mar-2013 23:44 Page # 1 / 2
depth (incl. stretch)	component	S/N	rope # Type & Le	ngth	Distance from lower rope end	in/out of water comment
303 m	Kaese 450	Kp		•	beacon 27.04	45 MHz i/w 14:04 o/d 13:30
		•	#1 2m chain-16 #2 50m	sRs sBs sRs	svivel	
357 m	3Benthos		#2 50m WS-8mm	d sRs		
359 m	RCM-7	AVTP 94		^{op} sRs	i/w 14:07	o/d 11:40 flooded
			#3 100m WS-8mm #4 100m WS-8mm	sRs sRs sRs		
591 m	2Benthos		#5 30m KV-11mm			
592 m	RCM-8	AVTP 981		sRs sRs	i/w 14:11	o/d 11:32 flooded
793 m	3Benthos		#6 200m KV-11mm			
795 m	RCM-8	AVT 1065	9	SRS	i/w 14:26	o/d 11:25
797 m	ATKR	TR485/15		sRs sRs	i/w 14:26 re	corder with 11 thermistors in 50 m string downward
			#7 50m KV-11mm #8 50m KV-11mm #9 200m KV-11mm	• sRs • sRs		
1099 m	2Benthos			dp ^{sRs} sRs		
1100 m	RCM-8	AVT 9820	#10_100n KV-11mm	n sRs	i/w 14:40	o/d 11:09
1201 m	2Benthos		KV-11mm	apsRs sRs		
1203 m	RCM-8	AVT 9727	#11 200n	sRs	i/w 14:46	o/d 11:04
			#11 200n KV-11mm #12 300n KV-11mm	n sRs		
1704 m	3Benthos		KV-11mm	d sRs		
1706 m	RCM-8	AVT 1066	2	SRs	i/w 15:06	o/d 10:50
			#13 1000 ML-11mm	sRs sRs		
200E	10-11-1		#14 270n ML-11mm	n sRs		
3085 m	4Benthos			op sRs		
3087 m	RCM-8	AVT 1066		sRs	i/w 15:45	o/d 10:17
			#15 1000 ML-11mm #16 500n ML-11mm	n sRs		
			#17 200n ML-11mm	n		
			#18 200n ML-11mm			
			#19 50m ML-11mm	- Po		
5229 m	6Benthos		#20 20m ML-11mm	db ^{sRs}		
5225 m	Obernitos			dp.		
5232 m	RCM-8	AVT 1050	0	sRs s 3.2t	svivel i/w 16:39	o/d 09:38 flooded
5234 m	AR-2	OC 66, 45		SRs	i/w 16:39	released 07:08 o/d 09:38
			#21 0.8m chain-16 #22 40m ML-11mm #22 2m	s 3.2t s 3.2t s 3.2t		
5281 m	Anchor Big	Wheel (3	chain-16 x3001	s 3.2t	3 railwheels.	parachute, slipped 18:44
5281 m	Anchor Big	Wheel (3	#22 40m ML-11mm #23 2m chain-16	• s 3.2t		parachute, slipped 18:44

Instruments: All depths are nominal as from logs and mooring model (see sec. 2.4.) Depth Moor_ID Type S/N Sampling Sensor Remarks ------324 2761401 RCM8 00094 7200 s flooded, no data 592 2761402 RCM8 09818 7200 s flooded, no data 795 2761403 RCM8 10659 7200 s data (daily averaged) as MK4 until 29-OCT-1993 REF T_LR ok COND ok DIR ok SPD ok 797 2761404 TK50 1525 7200 s recorder with 11 thermistors equally distributed 50 m downwards data (daily averaged) as MK4 until 29-OCT-1993; 8 out of 11 thermistors. 1100 2761405 RCM8 09820 7200 s data (daily averaged) as MK4 until 29-OCT-1993 REF T_LR ok COND ok DIR ok SPD ok 1203 2761406 RCM8 09727 7200 s data (daily averaged) as MK4 until 29-OCT-1993 REF T_LR ok COND ok DIR ok SPD ok 1706 2761407 RCM8 10662 7200 s data (daily averaged) as MK4 until 29-OCT-1993 REF T_LR ok COND ok DIR ok SPD ok 3087 2761408 RCM8 10660 7200 s REF T_AR ok DIR ok until 05-AUG-1994 ok until 05-AUG-1994 SPD 5232 2761409 RCM8 10500 7200 s flooded, no data



Moori	ng V27	6-14:	stat	istics	from lo	w pass	filte	red	dail	y av	verage	es			
v2761	4														
Depth	Days		Mean			Mean		Tim	ne Sc	ale	Fluxes				
					StandDev.				its		Mome	entum	Temper	ature	
		SPD	DIR	STAB	U	V	 Т	u	v	t	<uv></uv>	<dm></dm>	<ut></ut>	<vt></vt>	
713	104	6.7	184	0.71	-0.5			12	10	8	-19	-45	-0.0	0.5	
							0.2								
1018	104	5.5	193	0.74		-5.3		8	9	7	-13	-20	-0.8	-0.6	
1101	104		105			7.0		_	~	~					
1121	104	4.7	195	0.75		-4.6 6.5		./	8	6	-9	-16	-0.4	-0.7	
1624	104	2.9	214	0.93		6.5 -2.4		7	11	14	0	F	-0.1	0.3	
1024	104	2.9	214	0.95		-2.4		1	ΤT	14	-0	-5	-0.1	0.5	
3037	386	08	292	0.35		0.3		14	14	54	-1	-75	-0.0	-0 0	
	500	0.0	272	0.00	2.1					01	-	, 0	0.0	0.0	
Days SPD, s U, V T	L : b m : 1 DIR: m : d : m : m	easur ength ean s irect ean E ean t	ed da of r peed/ ional ast a emper	ta ecord (cm/s) stabil nd Nort ature	instrume and dir lity of ch compo	rection flow (mean v f flow	recto 7, cm	or sp 1/s	eed	/ mea	an sca	lar sp	peed)	
its					le (firs	st zero	cross	ing	of a	uto	correl	lation	n funct	ion)	
				rom ave	erage										
a	: n														
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Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-15

18-Sep-1994 - 14-Oct-1995

Mooring information

General

Mooring ID	: V276-15/KPO 757
Deployed	: Date: 18-Sep-1994 Ship / Cruise: POSEIDON 202
Recovered	: Date: 14-Oct-1995 Ship / Cruise: POSEIDON 212/4
Latitude N	: 32.957
Longitude E	: -022.022
Water depth	: 5277 (corrected)
Magn. Anom.	: -10.5° (bridge)
Project	: KIEL276 time series
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

All mooring components and all instrument depths nominal as from logs and static model.

2) RCM data

All current meters are Aanderaa RCM7/8. All records at 7200 s sampling interval. All RCM logs: stop is noted with wrong date (16.10.1995); correct stop date is 15.10.1995

- Processed data available (J. Reppin) in specially formatted files (RCM) at sampling interval; there, non-existing pressure and conductivity data are at offset value or zero.

- Re-processing by TJM

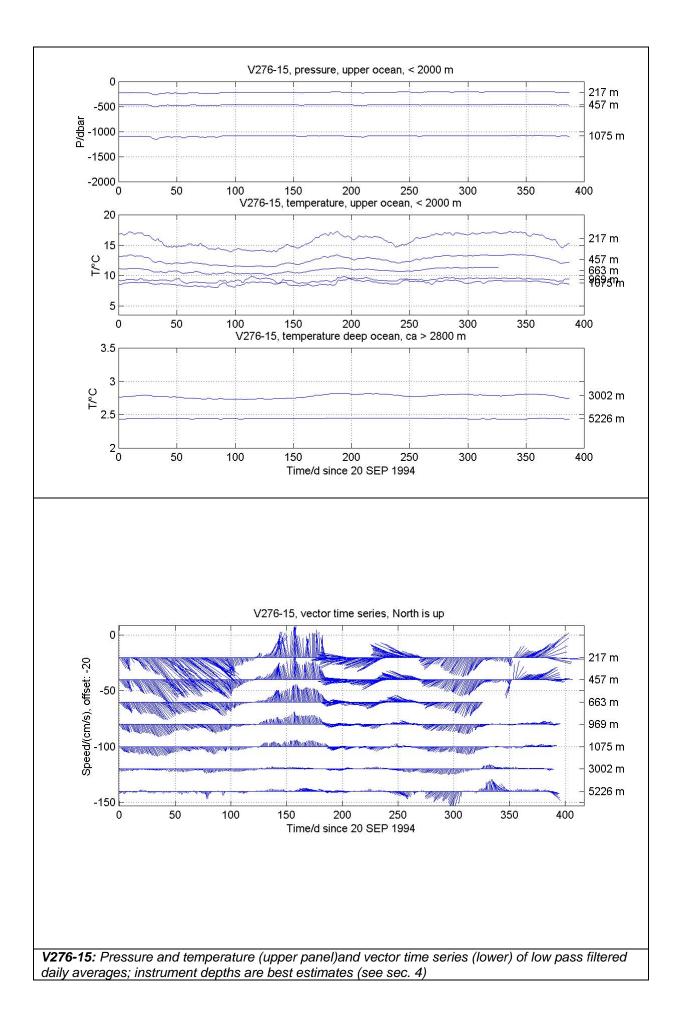
V27615i.raw copied to RCMiiiii.raw checking reference where IIIII is the instrument's S/N. RCMiiiii.raw edited with launch/recovery comments => RCMiiiii.edt. RCMiiiii.edt processed with CALAAN.M => RCMiiiii.dat; see RCMiiiii.log for details. Check rotor cal is ok, mean standard deviation 0.5 cm/s +/- 0.02 cm/s RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27615_iii.dat.

3) TRAP data at IOW

Compiled by: T.J. Mueller, IFMK Date: 24-JUN-2012

depth (incl. stretch)	component	S/N	rope # Type & Len	igth	Distance fro lower rope	end		in/out of water comment
202 m	Kaese 450	Кр	₹1 chain-16	sRs ISRS	beacon 27.0	045 MHz, i/v	w 07:25 o/d 08:36	
266 m	8Benthos		₩s-9mm	de Rs	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
270 m	RCM-8	AVTP 981		SRS SRS SRS		i/w 07:35	o/d 08:40	
402 m	5Benthos		#3-1100m #0-1990m	sRs				
455 m	TRAP	Trap 56	₩s-9000	Rs Rs		i/w 07:55	o/d 08:40	
507 m	5Benthos	1140 00	#s-§Rin		svivel		014 00.40	
510 m	RCM-8	AVTP 981	16 #7 100∞	SRS SRS		i/w 08:05	o/d 09:01	
712 m	4Benthos		∜s-9mm ∜s-9mm ∜s-9mm	∙sRs desRs				
715 m 716 m	RCM-8 ATKR	AVT 9833 TR1244/1		SRS SRS	ecorder with	i/w 08:20 11 thermis	o/d 09:08 tors in 50 m string do	wnwards
			税5-38000 税2-115000	sRs			<u></u>	
1018 m	5Benthos		#11_200m KV-11mm	SRS				
1021 m	RCM-8	AVT 9821	₹1,190m	SRS SRS		i/w 08:53	o/d 09:26	
1073 m	TRAP	Trap 57, I	Incl. 1112 ≹V31150m		svivel	i/w 09:00	o/d 09:28	
1125 m 1127 m	3Benthos RCM-8	AVT 1065	8	SRS		i/w 09:07	o/d 09:34	
1629 m	2Benthos		#14, 200m KV-11mm #15, 300m KV-11mm	sRs sRs sRs				
1629 m 1630 m 1984 m	RCM-8 5Benthos	AVT 9345	#16, 320m ML-11mm			i/w 09:20	o/d 09:47, no data	
1304 11	Juentitus		郡7 ₁₁ 50m	SRS				
2037 m	TRAP	Trap 58	#18,900m ML-11mm	sRs sRs sRs	svivel	i/w 09:46	o/d 09:55	
3032 m 3034 m	3Benthos RCM-8	AVT 9344		SRS		i/w 10:08	o/d 10:18	
4139 m	5Benthos		#19_1000r ML-11mm	n sRs				
4193 m	TRAP	Trap 59	≹20 <u>1150</u> m	TSRs Rs TSRS	winel	i/w 10:08	o/d 09:55	
			#21_500m ML-11mm #22_1200m	sRs	sviver			
5224 m	6Benthos		齢2311200m #24130m ML-11mm	sRs esRs				
5227 m	RCM-8	AVT 9312		SRS SRS	svivel	i/w 11:18	o/d 10:55	
5228 m	AR-2	OC 67, 69) #25_0.8m chain-16	4sRs 4s 3.2 1s 3.2		i/w 11:18	released 08:05 o/c	10:55
5276 m	Anchor Big	Wheel (3	#26, 40m ML-11mm #27, 2m chain-16	s 3.2		els, parach	ute, slipped 11:15	
0210 11	Anchor Dig	uncer to	x000j		• •			

Depth	Moor_ID	Туре	S/N	Sensors	Remarks
270	2761501	RCM8	09813	REF T_LR C_HR PRES DIR SPD	ok, 318 ok ok; S with offset ok, initially 190 dbar, median 180 dbar ok ok
455	2761502	TRAP	56		data at IOW
510	2761503	RCM8	09816	REF T_LR COND PRES DIR SPD	ok, 303 ok ok, S ok; maybe offset ok, initially 435 dbar, median 434 dbar ok ok
715	2761504	RCM8	09833	records b	ord: 329 d (26430 words, nominally 30804); ad & cut at the end; nd mark; check M2 tide ok; ok, 452 ok ok, S maybe offset; S interpolated ok ok
716	2761505	TK50	01294		bad with large jumps and not processed; mistor cable; no cal info;
1021	2761506	RCM8	09821	REF T_LR COND DIR SPD	ok, 355 ok S ok; maybe offset ok ok
1073	2761507	TRAP	57		with inclinometer, data at IOW
1127	2761508	RCM8	10658	T_LR COND PRES DIR SPD	ok ok, S maybe offset ok, initially 1042 dbar, median 1147 dbar ok ok
1630	2761509	RCM8	09345		no data (DSU bad)
2037	2761510	TRAP	58		data at IOW
3034	2761511	RCM8	09344	REF T_LR T_AR DIR SPD	ok, 235 ok, low resolution; not stored ok ok ok
4193	2761512	TRAP	59		data at IOW
5227	2761513	RCM8	09312	REF T_LR T_AR DIR SPD	ok, 239 ok ok ok ok



Depth	Days		Mean			Mean		Tim	ie Sc	ale	Fluxes						
_	_					andD		its		Momentum Temperature							
		SPD	DIR	STAB	U	v	Т	u				<dm></dm>		<vt></vt>			
217	388	3.3	170	0.18	0.5	-3.2	15.8	44	27	33	-61	-60	-6.1	-0.1			
					15.5	13.1	1.1										
457	388	2.5	192	0.19	-0.5	-2.4	12.6	45	27	36	-28	-55	-2.6	-0.3			
					10.6		0.6										
663	327	2.8	213	0.26		-2.3	10.8	52	30	31	-23	-52	-1.4	-0.3			
0.00	200	1 0	014	0 00		7.4	0.4	4.7	0.0	1 -	-	- 4	0 5	0 0			
969	388	1.9	214	0.29	-1.0 4.9	-1.5 4.5	9.3 0.3	41	28	15	-5	-54	-0.5	-0.2			
L075	388	1.8	204	0.39	4.9 -0.7	4.5 -1.6	8.8	39	27	33	2	-52	-0.6	-0.1			
1075	200	1.0	204	0.39	-0.7	-1.0	0.3	29	27	22	-2	-52	-0.0	-0.1			
3002	388	1.1	229	0.43	-0.9	-0.7	2.8	1/	19	37	0	83	-0.0	0.0			
002	500	±•±	227	0.45		1.8	0.0	ТŢ	1)	57	0	05	0.0	0.0			
5226	388	12	243	0.33	-1.1			12	13	25	-1	-58	-0.0	-0.0			
	000		210	0.00		3.3	0.0		10	20	-	00	0.0	0.0			
Legen Depth		est e	stima	te of '	instrume	ent der	th as	from	loa	is n	noorir	പപ സറപ്പ	lel and				
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Days				ecord													
SPD,					and dir	rection											
5	: d	irect	ional	stabi	lity of	flow (mean v	ecto	r sp	eed	/ mea	an sca	lar sp	eed)			
J, V	: m	ean E	ast a	nd Nort	th compo	onent o	f flow	, cm	ı/s				-				
Г	: m	ean t	emper	ature													
lts	: i	ntegr	al ti	me scal	le (firs	st zero	cross	ing	of a	uto	correl	lation	funct	ion)			
ı, v,	t :de	viati	ons f	rom ave	erage												
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u					ntum flu												

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-16

15-Oct-1995- 24-Jun-1996

Mooring information

General

Mooring ID	: V276_16/KPO 775
Deployed	: Date: 15-Oct-1995 Ship / Cruise: POSEIDON 212/4
Recovered	: Date: 24-Jun-1996 Ship / Cruise: METEOR 36/2
Latitude N	: 33.002
Longitude E	: -021.964
Water depth	: 5274 (corrected)
Magn. Anom.	: -10.3
Project	: KIEL276 time series
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

All mooring components according to log of launch; top buoyancy with nominal 450 kp assumed 30 kp less for design, namely 420 kp.

All instrument depths nominal as from static model.

2) RCM data

All current meters are Aanderaa RCM7/8.

All records at 7200 s sampling interval.

- Processed data available (J. Reppin) in specially formatted files (RCM) at sampling interval; there, non-existing pressure and conductivity data are at offset value or zero.

- Re-processing by TJM

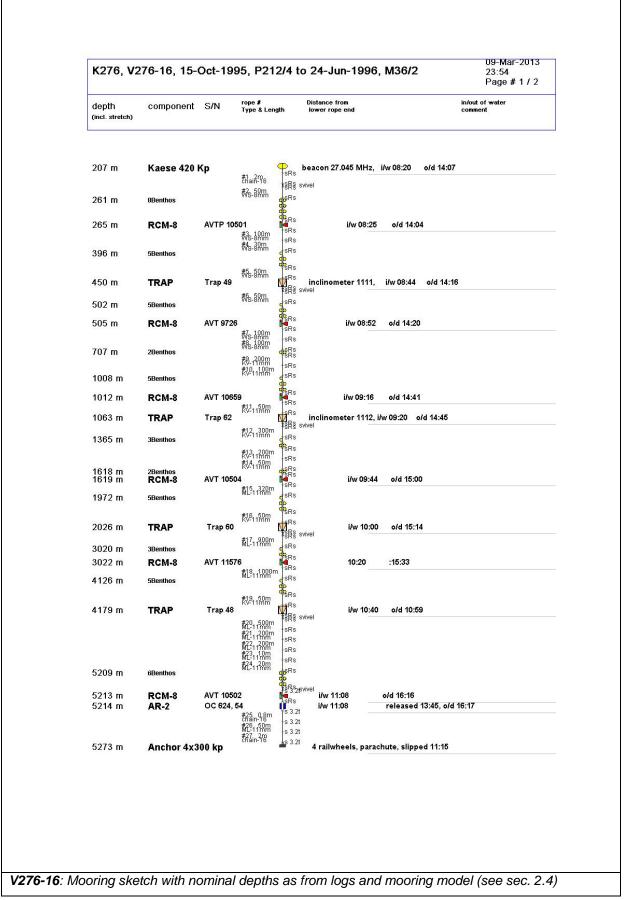
RCMiiiii copied to RCMiiiii.raw checking reference where IIIII is the instrument's S/N. RCMiiiii.raw edited with launch/recovery comments => RCMiiiii.edt. RCMiiiii.edt processed with CALAAN.M => RCMiiiii.dat; see RCMiiiii.log for details. RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27616_iii.dat.

3) TRAP data:

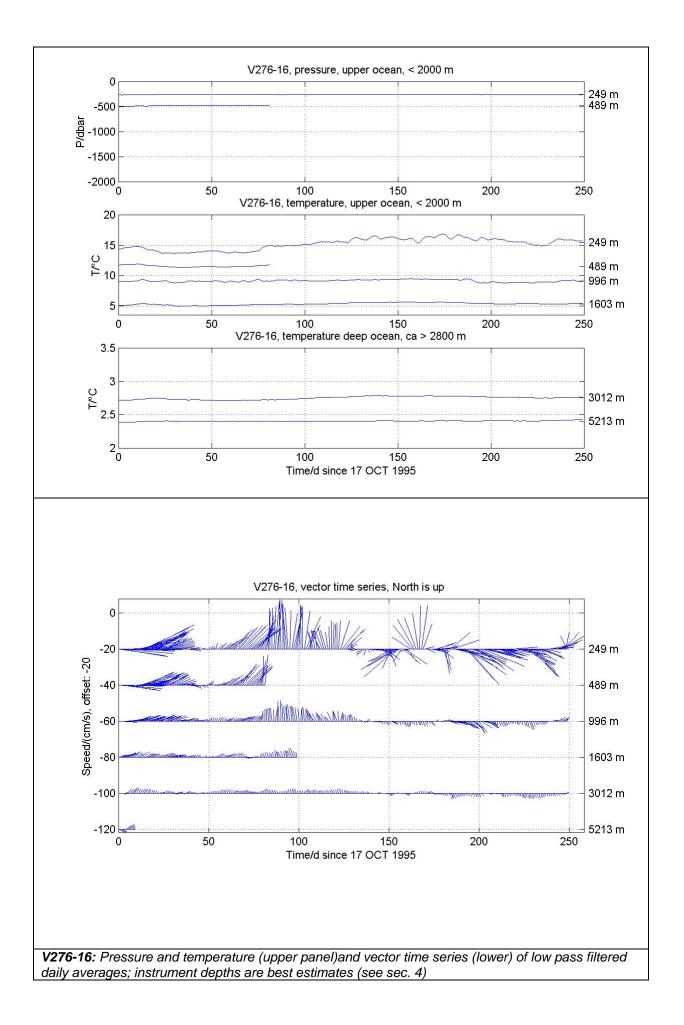
info at IOW.

Compiled by: T.J. Mueller, IFMK

Date: 17-Oct-2003



Instrui	ments: All o	depths a	are nomin	al as from lo	ogs and mooring model (see sec. 2.4.)
Depth	Moor_ID	Туре	S/N	Sensors	Remarks
265	2761601	RCM8	10501	T_LR PRES DIR SPD	ok, initially 295 dbar, median 277 dbar ok ok, spectrum at inert. period ok, at M2 tide much less pronounced than usual
450	2761602	TRAP	49		inclinometer 1111, data at IOW
505	2761603	RCM8	09726		hly until 08-JAN-1996, then stop; estart on day of recovery; clock ok ok, 323 ok ok, linar range calibration, intially 490 dbar, median 471 dbar ok ok
1012	2761604	RCM8	10659	REF T_LR COND DIR SPD	ok, 312 ok ok, SAL at starts nonlinearly ok ok
1063	2761605	TRAP	62		inclinometer 1112, data info at IOW
1619	2761606	RCM8	10504	REF T_LR DIR SPD	ok, 579 ok ok ok until record 1225 (day 91)
2026	2761607	TRAP	60		data info at IOW
3022	2761608	RCM8	11576	T_AR DIR SPD	ok ok ok
4179	2761609	TRAP	48		data info at IOW
5213	2761610	RCM8	10502	T_AR DIR SPD	ok ok rotor ok until record 123 (day 10); imploding glass buoyancy destroyed rotor counter



Moori	.ng V27	6-16:	stat	istics	from lo	w pass	filte	red	dail	y av	verage	es		
v2761	.6													
Depth	n Days		Mean			Mean		Tin	ne Sc	ale		Flu	uxes	
					St	andD	ev.		its		Mome	entum	Temper	ature
			DIR		U	V	Т						<ut></ut>	
249	250	8.8	64	0.62	7.9			14	19	39	-22	-33	-1.3	-2.5
					8.9		0.9							
489	82	9.9	65	0.91	9.0	4.2	11.6	12	8	10	-1	-88	0.7	0.0
					6.0	4.5	0.2							
996	250	2.6	61	0.59	2.2	1.2	9.1	19	27	18	-3	-33	-0.2	0.1
					2.9	3.3	0.2							
1603	100	2.5	43	0.83	1.7		5.2	10	7	10	-0	-78	-0.1	0.1
					1.8	1.1	0.1							
3012	250	0.6	47	0.37	0.5	0.4	2.8	15	30	38	0	24	-0.0	-0.0
					1.1									
5213	10	2.0	62	0.73	1.7			3	3	2	-1	-28	-0.0	0.0
					1.1	1.7	0.0							
-	1.													
Legen							+ 1	.					1 . 7	
Depth					nstrume	nt dep	th as	iron	n Iog	s, r	noorii	ng moo	lei and	L
D		leasur												
Days		-		ecord	مسأ أماني									
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Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-17

28-FEB-1996 - 06-AUG-1997

Mooring information

General

Mooring ID	: V276_17/KPO 781
Deployed	: Date: 28-FEB-1996 Ship / Cruise: METEOR 36/2
Recovered	: Date: 06-AUG-1997 Ship / Cruise: POSEIDON 231
Latitude N	: 33.000
Longitude E	: -022.000
Water depth	: 5294 m (HYDROSWEEP+55 m)
Magn. Anom.	: -10
Project	: KIEL276 time series
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

All mooring components according to log of launch; top buoyancy with nominal 450 kp assumed 30 kp less for design, namely 420 kp.

All instrument depths nominal as from logs and static model.

2) RCM data

Raw data available.

All current meters are Aanderaa RCM7/8.

All records at 7200 s sampling interval.

- Processed data available (J. Reppin) in specially formatted files (RCM) at sampling interval; there, non-existing pressure and conductivity data are at offset value or zero.

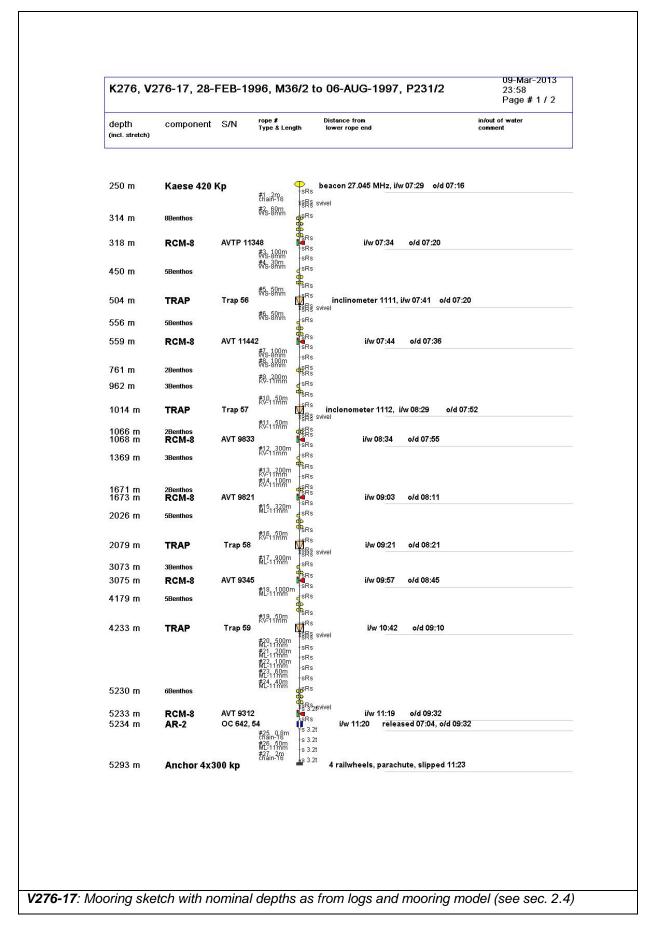
- Re-processing by TJM

RCMiiiii renamed to RCMiiii.raw checking reference where IIIII is the instrument's S/N. RCMiiiii.raw edited with launch/recovery comments => RCMiiiii.edt. RCMiiii.edt processed with CALAAN.M => RCMiiiii.dat; see RCMiiiii.log for details. No stop times taken => just offset clock correction from start time & no correction for drift, RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27617_iii.dat.

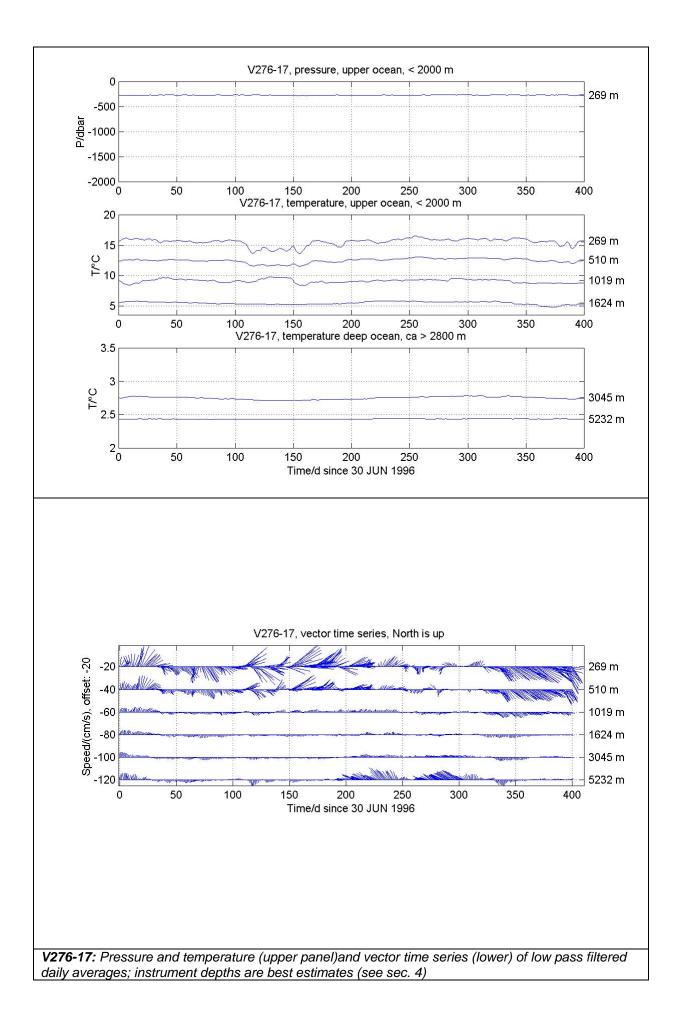
3) TRAP data

Info at IOW.

Compiled by: T.J. Mueller, IFMK	Date: 17-Oct-2003; revised August 2013
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Instru	ments: All o	depths a	re nomin	al as from log	gs and mooring model (see sec. 2.4.)
Depth	Moor_ID	Туре	S/N	Sensors	Remarks
318	2761701	RCM8	11348	REF T_HR PRES DIR SPD	ok, 398 ok ok, initially 238 dbar, median 233 dbar ok ok
504	2761702	TRAP	56		inclinometer 1111; data info at IOW
559	2761703	RCM8	11442	REF T_LR COND PRES DIR SPD	ok, 251 ok ok, S maybe offset sensor faied, data not stored ok ok
1014	2761704	TRAP	57		inclinometer 1112; data info at IOW
1068	2761705	RCM8	09833	REF T_LR COND DIR SPD	ok, 452 ok ok, S maybe offset ok ok
1673	2761706	RCM8	09821	REF T_LR C_HR DIR SPD	ok, 355 ok ok, S maybe offset ok ok
2079	2761707	TRAP	58		data info at IOW
3075 applie	2761708 ed	RCM8	09345	from deck REF T_LR T_AR DIR SPD	<pre>log, time correction of -360 s estimated & ok, 952 ok, not stored ok, overwrites T_LR ok ok</pre>
5233	2761709	RCM8	09312	REF T_LR T_AR DIR SPD	ok, 323 (corr., wrongly 239 in RCM log) ok, not stored ok, overwrites T_LR ok ok



Moori	.ng V27	6-17:	stat	istics	from lo	ow pass	filte	red	dail	y av	verage	es		
v2761	.7													
Depth	n Days		Mean		St	Mean andD					Mome		uxes Temper	ature
0.50	4.0.1		DIR		U	V	T						<ut></ut>	
269	401	9.0	98	0.71	8.9		15.5	25	18	27	-3	-26	-2.1	-0.1
F 1 0	4.0.1		104	0 70			0.6	0.4	0.2	24	0	65	0 0	0 0
510	401	5./	104	0.72	5.5	-1.4	12.5	24	23	34	-2	-65	-0.9	-0.2
1010	401	1 4	105	0 55	5.3	4.9		~ ~	22	7.4	1	10	-0.2	0 0
1019	401	1.4	105	0.55	1.4	-0.4 1.9		22	22	14	-1	-40	-0.2	-0.0
1624	401	0.3	187	0.22	-0.0			24	16	20	0	18	-0.1	0.1
1024	401	0.5	101	0.22	-0.0	-0.3	0.2	24	TO	29	0	ΤO	-0.1	0.1
3045	401	0.6	274	0.34		0.0	2.8	21	18	44	_1	-40	-0.0	0.0
2042	TOT	0.0	2/1	0.54	1.3		0.0	21	TO	11	-1	-+0	-0.0	0.0
5232	401	2 2	305	0 67	-1.8		2.4	18	23	35	-6	-51	-0.0	0.0
5252	TOT	2.2	505	0.07	3.2			ΤŪ	25	55	0	51	0.0	0.0
					5.4	2.0	0.0							
Legen	nd:													
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·														

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-18

07-AUG-1997 - 24-JAN-1999

Mooring information

General

Mooring ID	: V276_18/KPO 826
Deployed	: Date: 07-AUG-1997 Ship / Cruise: POSEIDON 231/3
Recovered	: Date: 24-JAN-1999 Ship / Cruise: POSEIDON 247/2
Latitude N	: 32.992
Longitude E	: -021.998
Water depth	: 5277 m (corrected)
Magn. Anom.	: -10
Project	: KIEL276 time series
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

All mooring components according to log of launch. According to the original draft, there maybe two mistakes in the deployment log:

100 m instead of 70 m above RCM11576 (3000 m level)
100 m instead of 30 m above RCM10502 (5185 m level)
But all depths are nominal as from logs & static model.

2) Data

All RCM records at 7200 s sampling interval.

Processed data sources are PH3 formatted files at sampling interval;

RCM10578: P sensor, with corrected coefficients recalibrated;

Meteor lengths 30 m corrected to 100 m; length 70 m corrected to 100 m as in original draft to meet best pressure measurements at RCM 10501, RCM 10578 and RCM 10577.

RCM data pre1-level processed and at sampling rates in RCM*.dat.

RCM data at pre2-level processed and at sampling rate in V27618_iii.dat.

3) Trap data

No traps deployed; info at IOW.

Compiled by: T.J. Mueller, IFMK

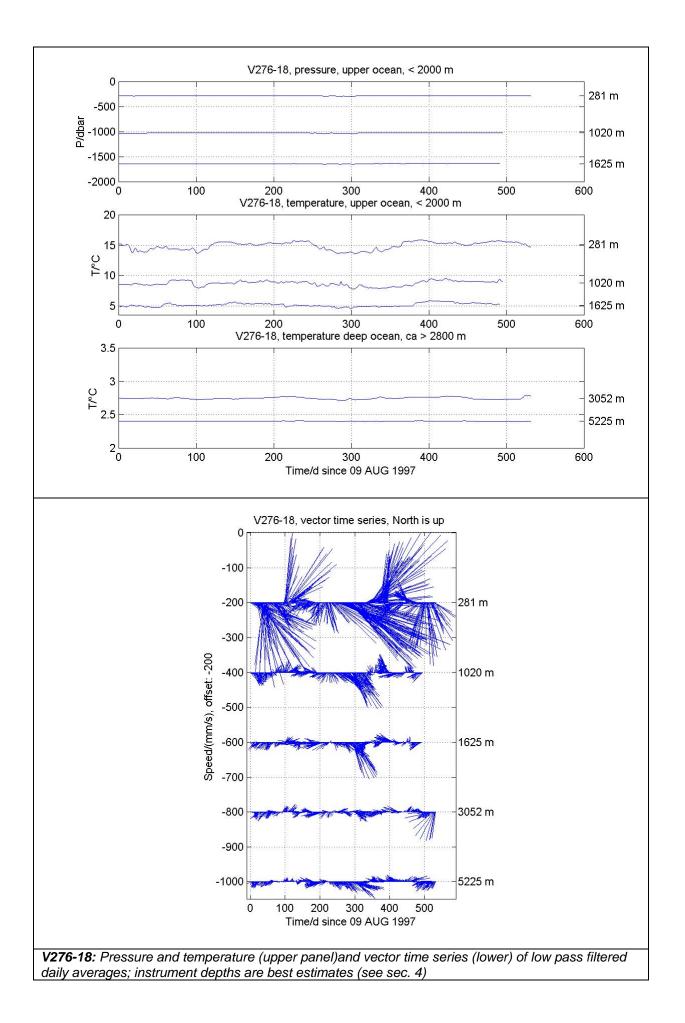
Date: 07-Jan-2001, revised Oct 2012

TJM 07.05.2008

depth (incl. stretch)	component	C/N	rope #		Distance from	Page # 1 / 2
8	component	5/11	Type & Ler	ngth	lower rope end	comment
2.22		2				
316 m	Kaese 420	кр	#1 2m chain-16	∘ sRs	beacon 27.045 MHz, iA	w 07:13 o/d 12:11
			#2 30m WS-8mm	sRs sRs sRs	svivel	
390 m	5Benthos		#3 40m WS-8mm	d sRs		
393 m	RCM-8	AVTP 105	01	sRs	i/w 07:18	o/d 12:21
			#4 100m WS-8mm #5 100m	sRs sRs		
			#5 100m WS-8mm #6 30m WS-8mm	sRs		
625 m	5Benthos					
628 m	RCM-8	AVT 1055		sRs sRs sRs	no data	
			#7 100m WS-8mm #8 100m WS-8mm	• sRs • sRs		
1130 m	4Benthos		#9 300m KV-11mm	dp sRs		
1132 m	RCM-8	AVT 1057	8	dpsRs ∎■	i/w 07:54	o/d 12:55
			#10 200m KV-11mm #11 200m	sRs sRs		
			#11 200m KV-11mm #12 200m KV-11mm	sRs		
1734 m	3Benthos	AVT 1057		d sks	ih., 09-04	-14 42:44
1736 m	RCM-8	AVI 1057	#13 1000 ML-11mm	m sRs	i/w 08:24	o/d 13:14
			#14 200m ML-11mm #15 70m ML-11mm	sRs		
3118 m	4Benthos		ML-11mm			
3120 m	RCM-8	AVT 1157	#16 1000	SRs.	i/w 09:05	o/d 13:47
			ML-11mm #17 500m ML-11mm	sRs		
			#18 200m ML-11mm #19 200m ML-11mm			
F004			ML-11mm #20 30m ML-11mm	sRs		
5224 m	6Benthos			do		
5227 m	RCM-8	AVT 1050		sRs	svivel i/w 10:27	o/d 14:32
5229 m	AR-2	OC B730	#21 0.8m chain-16	Y s 3.2t	i/w 10:27	released 10:05, o/d 14:32
			#22 40m ML-11mm	s 3.2t		
		00 kp	#23 2m chain-16	s 3.2t	4 railwheels, parach	ute, slipped 11:34

Instruments: All depths are nominal as from logs and mooring model (see sec. 2.4.)

Depth	Moor_ID	Туре	S/N	Sensors	Remarks
393	2761801	RCM8	10501	T_LR	ok
				PRES	ok, linear range calibration, initially 258 dbar, median 259 dbar
				DIR	ok
				SPD	ok
628	2761802	RCM8	10559	no data (1	oad battery)
1132	2761803	RCM8	10578		last good record 18-Dec-1998
				T_LR	ok
				PRES	ok, linear range calibration initially 1012 dbar, median 1005 dbar
				DIR	ok
				SPD	ok
1736	2761804	RCM8	10577	last good	record 14-Dec-1998
				T_LR	ok
				PRES	ok, linear range calibration, initially 1568 dbar , median 1563 dbar
				DIR	ok
				SPD	ok
3120	2761805	RCM8	11576	T_AR	ok
				DIR	ok
				SPD	ok
5227	2761806	RCM8	10502	T_AR	ok
				DIR	ok
				SPD	ok



v27618	3															
Depth	Days		Mean						e Sc	ale	Fluxes					
				StandDev.			its 			Mome	entum	Temperature				
		SPD	DIR	STAB	U	 V	 Т	 u	v	t	<uv></uv>	<dm></dm>	<ut></ut>	<vt></vt>		
281	532	5.8	124	0.51	4.8	-3.2	14.9	37	24	30	-16	-47	-3.4	1.7		
					8.7	8.6	0.6									
1020	496	1.0	163	0.31	0.3	-1.0	8.7	32	28	27	-4	-48	-0.7	0.3		
					2.7	2.6	0.4									
1625	492	1.2	214	0.50	-0.7	-1.0	5.2	21	22	33	-2	-57	-0.3	0.3		
					2.3	1.8	0.3									
3052	532	0.7	231	0.36	-0.6	-0.5	2.8	20	12	21	0	79	-0.0	-0.0		
					1.9	1.2	0.0									
5225	532	0.5	217	0.26	-0.3	-0.4	2.4	19	27	21	-1	-78	-0.0	0.0		
					2.1	1.1	0.0									
Legend	۹.															
Depth		oct o	atima	to of	instrume	ant den	th ac	from	100		noorir	na mod	lol and			
Depth		easur				enc dep	ui as	LT OU	. 10g	5, I		ig illou	lei allu	-		
Days				ecord												
-		<u> </u>			and di	roation										
SPD, I S			-		lity of			oato	r an	bood.	/ mor	n aan	lar an	(bood		
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Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-19

25-Jan-1999 - 13-Apr-2000

Mooring information

General

Mooring ID	: V276-19/KPO 855
Deployed	: Date: 25-Jan-1999 Ship / Cruise: Poseidon 247/2
Recovered	: Date: 13-Apr-2000 Ship / Cruise: Poseidon 259/1
Latitude N	: 32.9683
Longitude E	: -022.0083
Water depth	: 5271 m (corrected)
Magn. Anom.	: - 9.5 deg
Project	: KIEL276 time series station
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IfM Kiel
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

All mooring components according to log of launch; top buoyancy with nominal 450 kp assumed 30kp less for design, namely 420 kp.

All instrument depths nominal as from logs and static model.

2) RCM data

All RCM records at 7200 s sampling interval. Processed data sources are PH3 formatted files at sampling interval; RCM10578: P sensor, with corrected coefficients recalibrated;

RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27619_iii.dat.

3) TRAP data

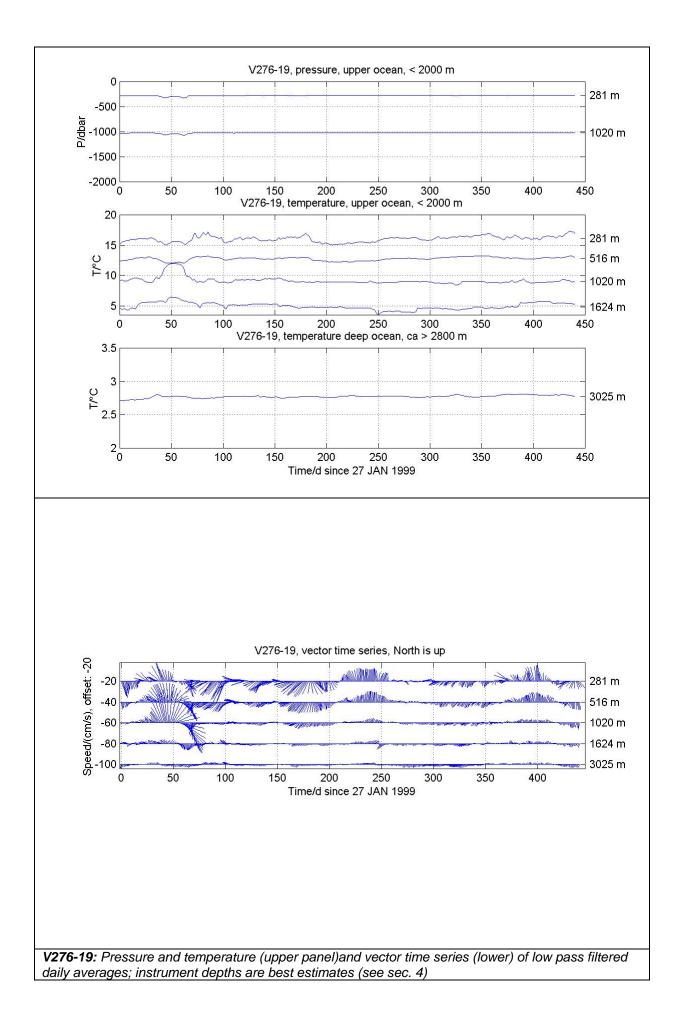
Info at IOW.

Compiled by: T.J. Mueller

Date: 07-Jan-2001, revised 16.10.2003 and Feb. 2012:

depth			9, P24	7/2 t	o 13-Apr-2000,	P259/1	1:01 Page # 1 / 2
(incl. stretch)	component	S/N	rope # Type & Ler	igth	Distance from lower rope end		out of water mment
229 m	Kaese 420 I	Kn		Ð	beacon 27.995MHz, i/w	10:08	
		· P	#130m #8-8mm #840m Ws-8mm	sRs sRs sRs			
300 m	5Benthos	AV/TD 405		ep sRs	1. 10.17		
303 m	RCM-8	AVTP 105	#3 100m WS-8mm #4 100m WS-8mm	sRs sRs sRs	i/w 10:13	o/d 12:55	
535 m	5Benthos		#5_30m WS-8mm				
538 m	RCM-8	AVT 1057	#6 100m WS-8mm #7 100m WS-8mm	sRs sRs sRs sRs	i/w 10:25	o/d 13:08	
1040 m	4Benthos		#8_300m KV-11mm	dosRs			
1042 m	RCM-8	AVTP 105	#9_300m KV-11mm	sRs sRs sRs	i/w 10:47	o/d 13:40	
1644 m	3Benthos		#10_300m KV-11mm	e sRs			
1646 m	RCM-8	AVT 1055	0 #11_200m KV-11mm #12_150m KV-11mm		i/w 11:17	o/d 14:20	
1998 m	5Benthos			8	svivel		
2052 m	TRAP	Trap 46	#13_50m KV-11mm #14_500m #L-11mm #15_200m	sRs SRS sRs	i/w 11:47 svivel	o/d 14:45	
3035 m	9Benthos		#14 500m ML-11mm #15 200m #16 100m ML-11mm ML-11mm #17 100m ML-11mm	sRs sRs sRs csRs cp cp			
3040 m	RCM-8	AVT 1055		SRS SRS	i/w 12:13	o/d 15:25	
3113 m	TRAP	Trap 62	#18 70m KV-11mm #19 500m	₩ SRs SBS S32	svivel	o/d 15:30	
			#19 500m ML-11mm #20 500m #21 500m ML-11mm #22 300m ML-11mm #22 100m #23 100m	∙ sRs • sRs			
5218 m	6Benthos		#24_20m #L-11mm	sRs do ^{sRs}			
52210 m		AVT 1057		SRS	i/w 14:10	o/d 16:10 flooded,	no data
5221 m 5222 m	RCM-8 AR-2	OC 642, 6		SF3.2	svivel i/w 12:23	released 12:08, o/d 10	
	- en en anne e 1993 (en l		#25 0.8m chain-16 #26 40m ML-11mm	Y s 3.2 s 3.2 s 3.2			
	Anchor 4x3	00 kp	#27 2m chain-16	s 3.2	4 railwheels, parach	ute, slipped 13:04	

Instru	ments: A	ll deptl	ns are no	ominal as fro	m logs an	nd mooring model (see sec. 2.4.)
Depth	Moor_ID	Туре	S/N	Sampling	Sensor	Remarks
303	2761901	RCM8	10551	7200 s	T_LR PRES DIR SPD	ok ok, initially 250 dbar, median 246 dbar ok ok
538	2761902	RCM8	10577	7200 s	T_LR PRES DIR SPD	ok no record ok ok
1042	2761903	RCM8	10578	7200 s	T_LR PRES DIR SPD	ok ok, initially 980 dbar, median 973 dbar ok ok
1646	2761904	RCM8	10550	7200 s	T_LR DIR SPD	ok ok ok
2052	2761905 '	TRAP	46	1 month	data in:	fo at IOW
3040	2761906	RCM8	10555	7200 s	T_LR DIR SPD	ok ok ok
3113	2761907 '	TRAP	62	1 month	data in:	fo at IOW
5221	2761908	RCM8	10579	7200 s	flooded	, no data



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v2761														
Depth	Days	Mean			St	Mean StandDev.					Fluxes Momentum Temperature			
281	441		DIR 246	STAB 0.42		V -1.5 7.1							<ut></ut>	
516	441	2.2	247	0.35	-2.0 4.1	-0.9		11	13	19	0	1	-0.5	-0.5
1020	441	1.0	260	0.20		-0.2 6.4		9	9	24	-7	-17	1.9	0.7
1624	441	1.5	257	0.58	-1.4 2.0	-0.3 1.8		13	10	38	0	63	0.1	0.2
3025	441	1.5	250	0.69	-1.4 1.7	-0.5 1.2		23	12	34	0	75	0.0	0.0
s U, V T its u, v,	: b m : 1 DIR: m : d : m : m : m	easur ength ean s irect ean E ean t ntegr viati	ed da of r peed/ ional ast a emper al ti ons f	ta ecord (cm/s) stabii nd Nort ature me scai rom ave	and din lity of th compo le (firs erage	rection flow (onent o	mean v f flow	recto 7, cm	er sp l/s	eed	/ mea	an sca	lar sp	eed)

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-20

14-Apr-2000 - 14-Apr-2000

Mooring information

General

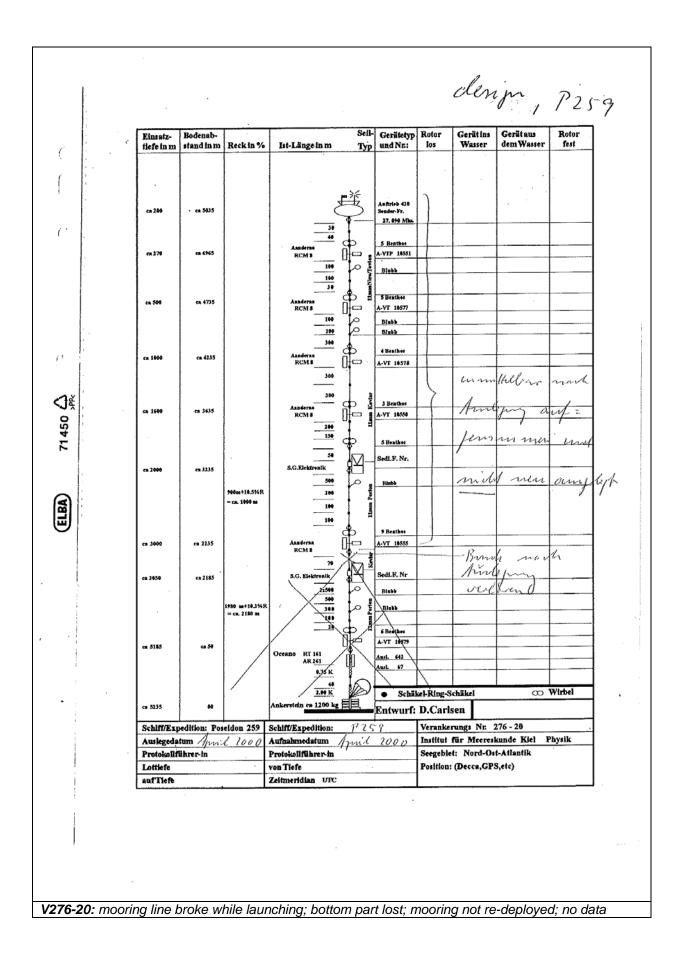
Mooring ID	: V276-20/KPO 856
Deployed	: Date: 14-Apr-2000 Ship / Cruise: Poseidon 259/1
Recovered	: Date: 14-Apr-2000 Ship / Cruise: Poseidon 259/1
Latitude N	: 32.9683
Longitude E	: -021.986
Water depth	: 5266 m (corrected)
Magn. Anom.	: - 9.5 deg
Project	: KIEL276 time series station
PI	: J.J. Waniek & T.J. Mueller
Data origin	:: IfM Kiel

Remarks

Mooring line broke during launching in Kevlar termination above TRAP at 3050 m designed depth. Upper part recovered including RCM10555 at 3000 m designed depth, lower part of mooring including TRAP 52, RCM10551 and two releases lost because of lack of backup buoyancy (ca. -60 kp at TRAP 52).

Data no data

Compiled by: T.J. Mueller Date: 29-Jun-2002



Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-21

02-Feb-2001 - 19-Feb-2002

Mooring information

General

Mooring ID	: V276-21/KPO 912
Deployed	: Date: 02-Feb-2001 Ship / Cruise: Poseidon 268
Recovered	: Date: 19-Feb-2002 Ship / Cruise: Poseidon 283/2
Latitude N	: 32.9250
Longitude E	: -022.0250
Water depth	: 5272 m (corrected)
Magn. Anom.	: -10 deg
Project	: KIEL276 time series station
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IOW
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

Upward 150 kHz ADCP on top buoy. Pair of sediment TRAPs designed at 2000 m. Single TRAP at 3050 m. All instrument depths as from static mooring model with components as in deck log.

2) RCM & ADCP data

ADCP data still to be processed. RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processd and at sampling rate in V27621_iii.dat.

3) TRAP data

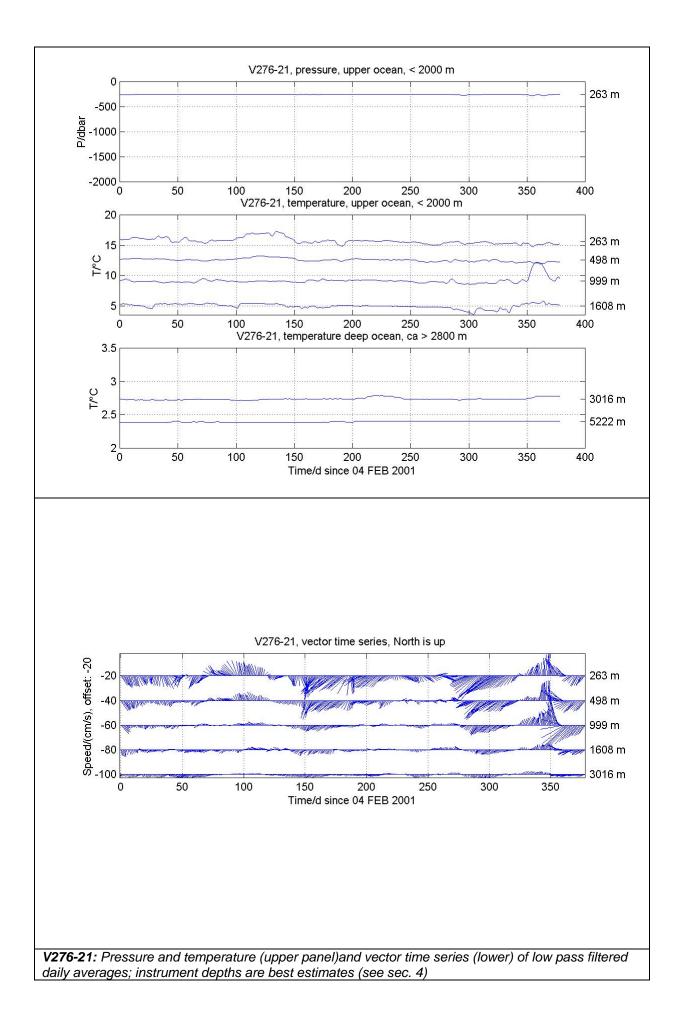
Info at IOW.

Compiled by: T.J. Mueller Date: 12-Aug-2002, revised Oct 2013

K276, V2	276-21, 02-	Feb-200	01, P26	68 to	19-Feb-2002, P	10-Mar-201 283/2 1:04 Page # 1 / 2
depth (incl. stretch)	component	S/N	rope # Type & Ler	igth	Distance from lower rope end	in/out of water comment
				V		
203 m	Käse 380 K	pADCP 559	#1-30m Ws-8mm #2-40m Ws-8mm	sRs sRs	WD 5506, beacon 35 M	IHz, i/w 09:20 o/d 12:09
274 m	10Benthos		WS-8mm			
279 m	RCM-8	AVTP 105	54 #3 100m WS-8mm #4 100m WS-8mm #5 30m WS-8mm	SRs SRs SRs	i/w 09:30	o/d 12:12
511 m	6Benthos		#5 30m WS-8mm	sRs cosRs		
514 m	RCM-8	AVT 1057		SRS SRS	i/w 09:15	o/d 12:31
			#6 100m WS-8mm #7 100m WS-8mm #8 240m ML-11mm	∙sRs ∙sRs ∙sRs		
1012 m	4Benthos		#9 30m ML-11mm	ge sRs		
1014 m	RCM-8	AVTP 105	78 #10_500m ML-11mm #11_50m ML-11mm	sRs sRs sRs	i/w 10:18	old 12:55
1619 m	3Benthos		ML-11mm	4		
1621 m	RCM-8	AVT 1055		SRS SRS	i/w 10:47	o/d 13:17
1974 m	6Benthos		#12, 320m ML-11mm		svivel	
2028 m	2 TRAPs &	tilltraps, 46	#13_50m KV-11mm & 53	SR's	inclinometer 1112. i/w	11:48 o/d 13:35
		anan it k	#14 500m ML-11mm ML-11mm #16 100m #16 100m ML-11mm #17 100m ML-11mm	sRs sRs sRs sRs	svivel ———	
3019 m	10Benthos		ML-11mm			
3024 m	RCM-8	AVT 1055		PsRs	svivel	o/d 14:11
3096 m	TRAP & tilt	Trap 55	#18 70m KV-11mm		inclinometer 1113, i/w svivel	12:01 o/d 14:18
			#19,500m #20,500m ML-11mm #21,500m ML-11mm #22,300m ML-11mm #23,100m ML-11mm #24,20m ML-11mm	sRs sRs sRs		
5218 m	8Benthos		ML-11mm	do SRS CO CO		
5222 m	RCM-8	AVT 1058	1	SRS	svivel	o/d 15:18 rotor lost, no current data
5223 m	AR-2	OC 373, 7	#25_0.8m	Ys 3.21 s 3.21	I/W 13:07	released 09:13, o/d 15:18
		00 kp	#26, 40m ML-11mm #27, 2m chain-16	s 3.21		ute, slipped 13:19

Instruments: All depths are nominal as from logs and mooring model (see sec. 2.4.)

					-	
Depth	Moor_ID	Туре	S/N	Sampling	Sensor Re	emarks
203	2762101	ADCP	559	3200	60 pings,	30 bins, 20 bins available, 16 m each
279	2762102	RCM8	10554	7200 s		k, linear range calibration nitially 255 dbar, median 246 dbar k
514	2762103	RCM8	10577	7200 s	03-SEP-200 Bad parts Bad parts Result sto Missing pa T_LR of PRES se en	are of order of some days. eliminated from raw data. ored in RCM10577.EDT for processing. arts interpolated linearly in time. k ensor encapsulated; slow adjustment to nvironmental pressure; o reliable data.
1014	2762104	RCM8	10578	7200 s	T_LR OF DIR OF SPD OF	k
1621	2762105	RCM8	10550	7200 s	T_LR of DIR of SPD of	ĸ
2028	2762106	TRAP 4	17 53	1	two TRAPs, inclinomet data info	
3024	2762107	RCM8	10555	7200 s	T_LR of DIR of SPD of	ĸ
3090	2762108	TRAP	55		data info	at IOW
5222	2762109	RCM8	10581	7200 s	DIR of SPD ro	k, no arctic range avaiable k otor lost during deployment; ata set to dummy.



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Moori	.ng V27	6-21:	stat	istics	from lo	w pass	filte	ered	dail	ly av	verage	es		
v2762	1													
Depth	Days		Mean			Mean		Tir	ne So	cale		Flu	lxes	
-	-				St	andD	ev.		its		Mome	entum	Temper	ature
			DIR		U	V						<dm></dm>	<ut></ut>	<vt></vt>
263	379	5.5	227	0.52	-4.0				17	36	18	40	0.8	0.1
						7.7								
498	379	3.9	234	0.59		-2.3			14	22	10	38	0.4	-0.1
					4.8		0.3							
999	379	2.4	250	0.51	-2.2			11	9	11	7	24	-1.1	0.3
						5.0								
1608	379	2.3	250	0.72	-2.2	-0.8			11	20	1	46	-0.2	0.1
						2.0	0.4							
3016	379	1.7	237	0.70				14	13	19	1	68	-0.0	0.0
						1.2								
5222	379	NaN	NaN	NaN				NaN	NaN	NaN	NaN	NaN	NaN	NaN
					NaN	NaN	0.0							
-	-													
Legen								c	-			-		
Deptn		est e easur			Instrume	ent dep	th as	Irot	n tog	js, t	noorii	ng moo	lei and	L
D														
Days		<u> </u>		ecord	and dir									
			± .	,				to at		bood	(mo		low ar	(bood)
S					lity of				-	peed	/ mea	an sca	itar sp	eed)
υ, ν Τ					ch compo	onent o	I IIO	v, ci	II/S					
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its		-			le (firs	si zero	cross	stuð	OT 5	autoo	orre.	LALION	LUNCT	.1011)
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<1110>	• 0	trect	TOU 0	r momer	ntum flu	IX								

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-22

22-Feb-2002 - 20-APR-2003

Mooring information

General

Mooring ID	: V276-22/KPO 938
Deployed	: Date: 22-Feb-2002 Ship / Cruise: Poseidon 283-2
Recovered	: Date: 20-APR-2003 Ship / Cruise: Poseidon 297
Latitude N	: 32.868
Longitude E	: -022.029
Water depth	: 5275 m (corrected)
Magn. Anom.	: -9 (interpolated between V276-21 and V276-23)
Project	: KIEL276 time series station
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IOW
Depths	: nominal as of logs and IMP static model

Compiled by: T.J. Mueller Date: 22-Aug-2004

Remarks

1) Mooring

Upward 150 kHz ADCP on top buoy not deployed (P283 cruise report, Ch. 5, Tab. 1). ADCP Buoy without ADCP has 450 kp buoyancy; replaced by 'normal' buoy with 450 kp for static model. Pair of parallel sediment TRAPs at 2000 m designed depth. Single TRAP at 3050 m designed depth. All instrument depths nominal from static mooring model with components as in deck log.

2) RCM data

RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27622_iii.dat.

3) TRAP data

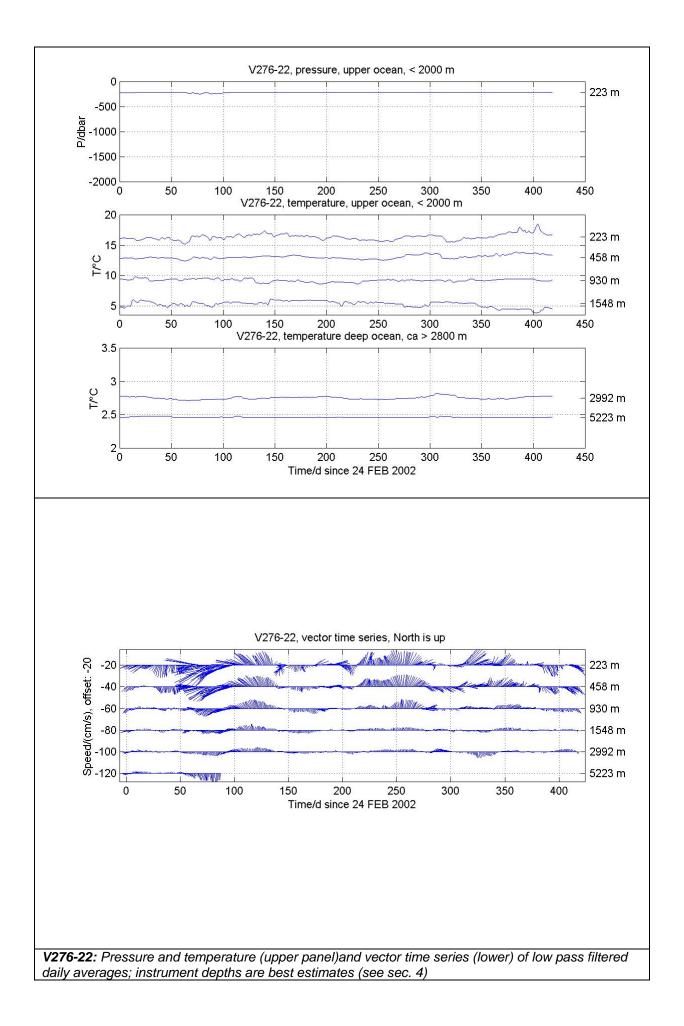
Info at IOW.

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N270, V2	76-22, 22-	Feb-200)2, P28	3-2 t	o 20-APR-2003	, P297	10-Mar-2013 1:08 Page # 1 / 2
depth (incl. stretch)	component	S/N	rope # Type & Len	gth	Distance from lower rope end		in/out of water comment
204 m	Kaese 450	Kp		⊕ sRs	WD SMM500, beacon 3	33 MHz, i/w 09:42 o/	d 07:39
276 -	100	a i	散-110mm 乾-111mm 乾-110mm	sRs			
276 m	10Benthos			SRS CO SRS SRS			
281 m	RCM-8	AVTP 105		sRs sRs sRs	i/w 09:56	o/d 07:47	
513 m	6Benthos		#3 100m WS-8mm #4 100m WS-8mm #5 30m #5-8mm WS-8mm	sRs <mark>de</mark> sRs			
516 m	RCM-8	AVTP 105		SRS	i/w 10:10	o/d 08:07	
			#6, 100m WS-8mm #7, 100m WS-8mm	sRs sRs sRs			
982 m	4Benthos		龍-740m	SRs			
984 m	RCM-8	AVT 1057	3 #9 50m ML-11mm #10 500m ML-11mm	sRs sRs sRs	i/w 10:34	o/d 08:50	
1592 m	3Benthos		ML-11mm	SRS Repe			
1594 m	RCM-8	AVT 1055)	SRs sRs sRs	i/w 10:55	o/d 08:56	
1949 m	6Benthos		ML=11MM				
			#13 30m ML-14mm #14 30m ML-14mm	sRs sRs	vivel		
2019 m	2 TRAPs &	til¶raps 47	ML-14mm & 53		inclinometer 1112, i/	w 11:17 o/d 09:13	
			#15, 500m #16, 200m ML-11mm #17, 100m ML-11mm ML-11mm	sRs			
3015 m	10Benthos		ML-11mm #18 100m ML-11mm	∙sRs <mark>qo</mark> sRs			
3020 m	RCM-8	AVT 1055		SRS SRS	vivel	o/d 10:00	
2000		T 55	#19, 30m ML-14mm #20, 30m ML-14mm	sRs	11	-11 40.05	
3089 m	TRAP	Trap 55	#21_500m ML-11mm	SRS SRS SRS SRS SRS	vivel	o/d 10:05	
			#22_500m ML-11mm #23_500m	sRs			
			#24 300m ML-11mm #25 100m ML-11mm #26 20m ML-11mm	sRs sRs			
5221 m	8Benthos		#26 20m ML-11mm	sRs SRs			
5224 m	RCM-8	AVTP 105	58	SRS	i/w 13:09	o/d 11:00	
5224 m 5226 m	AR-2	33, 34		AsRs Ys 3.2t		released 07:00, od 1	1:00
			#27 0.8m chain-16 #28 40m ML-11mm #29 2m	s 3.2t s 3.2t			
		800 kp	#29 2m chain-16	s 3.2t	4 railwheels, parach	ute. 13:22	

Instruments: All depths are nominal as from logs and mooring model (see sec. 2.4.)

Depth	Moor ID	Type	S/N	Sampling	Sensor	Remarks
	2762201				ADCP no	ot deployed, nise reports POS283 and POS297
281	2762202	RCM8	10554	7200 s	REF	344, e-board 2595, DSU 3690 time base correction by 20 h
					T_LR PRES DIR SPD	ok ok, 6300 dbar linear range calibration, initially 200 dbar, median 188 dbar ok ok
516	2762203	RCM8	10577	7200 s	Raw dat	and edited in RCM10577.EDT to keep good
					parts. REF T_LR PRES	342, e-board 2626, DSU 6717 ok nonlinear trend from initially 400 dbar to 300 dbar at day 200, then stable; sensor probably encapsulated; data not taken.
					DIR SPD	ok ok
984	2762204	RCM8	10578	7200 s	REF T_LR DIR SPD	318, e-board 2624, DSU 3644 ok ok ok
1594	2762205	RCM8	10550	7200 s	REF T_LR DIR SPD	271, e-board 2590, DSU 5937 ok ok ok
2019 2	2762206 1	TRAP 4	17 & 53			two particle TRAPs parallel, inclination meter 1112. Info at IOW.
3020 2	2762207 F	RCM8	10555	7200 s	REF T_LR DIR SPD	414, e-board 2601, DSU 3392 ok, no arctic range ok ok
3089 2	2762208	TRAP	55			particle TRAP
5224 2	2762209 F	RCM8	10558	7200 s	REF 2 T_LR c PRES c DIR c SPD c	clock has 18 h offset 258, e-board 2589, DSU 3689 ok, no arctic range ok, 6300 dbar range calibration; initially & median 5352 dbar (5249 m) ok ok until 24-MAY-2002 cotor stuck and set to dummy thereafter



	2								_	-					
Depth	Days		Mean		~	Mean				ale	Fluxes				
				StandDev.					its		Momentum Temperature				
		SPD	DIR	STAB	U	v	т	u	v	t	<uv></uv>	<dm></dm>	<ut></ut>	<vt></vt>	
223	419	1.2	269	0.12	-1.2	-0.0	16.4	34	17	19	22	72	0.5	-1.0	
					10.5	7.0	0.5								
458	419	0.2	9	0.03	0.0	0.2	13.1	36	15	21	7	78	1.1	-0.5	
					7.7	5.2	0.3								
930	419	0.2	360	0.06	-0.0		9.2	30	14	23	3	73	-0.4	-0.1	
					4.1	3.0	0.2								
1548	419	0.5	271	0.24	-0.5		6.7	15	12	29	1	66	0.0	-0.0	
					2.0	1.6	0.5								
2992	419	0.6	274	0.26	-0.6	0.0	2.8	12	13	17	-0	-83	-0.0	0.0	
					2.0	1.7	0.0								
5223	88	1.8	168	0.49	0.4	-1.7		12	15	12	-2	-26	0.0	0.0	
					2.5	3.0	0.0								
Legen	d:														
-		est e	stima	te of :	instrume	ent dep	th as	from	109	s, r	noorin	na mod	el and		
-1		easur				<u>-</u>						5			
Days	: 1	ength	of r	ecord											
SPD,	DIR: m	iean s	peed/	(cm/s)	and di	rection									
S	: d	irect	ional	stabi	lity of	flow (mean v	ecto	r sp	eed	/ mea	an sca	lar sp	eed)	
U, V	: m	iean E	ast a	nd Nort	th compo	onent o	f flow	, cm	ı/s -				-		
Т	: m	lean t	emper	ature	-										
its	: i	ntegr	al ti	me sca	le (fir:	st zero	cross	ing	of a	uto	correl	lation	funct	ion)	
its : integral time scale (first zero crossing of autocorrelation function)															
u, v, t :deviations from average															
	t:de : n				Llage										

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-23

22-APR-2003 - 16-MAR-2004

Mooring information

General

Mooring ID	: V276-23/KPO 1083
Deployed	: Date: 22-APR-2003 Ship / Cruise: Poseidon 297
Recovered	: Date: 16-MAR-2004 Ship / Cruise: Poseidon 308
Latitude N	: 32.828
Longitude E	: -022.003
Water depth	: 5264 m (corrected)
Magn. Anom.	: -7.3 deg (W)
Project	: KIEL276 time series station
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IOW
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

ADCP Buoy designed on top replaced by 'normal' buoy with 450 kp. Pair of parallel sediment TRAPs at 2000 m designed depth. Single TRAP at 3050 m designed depth. All instrument depths nominal from static mooring model with components as in deck log.

2) RCM data

RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processd and at sampling rate in V27623_iii.dat.

3)TRAP data

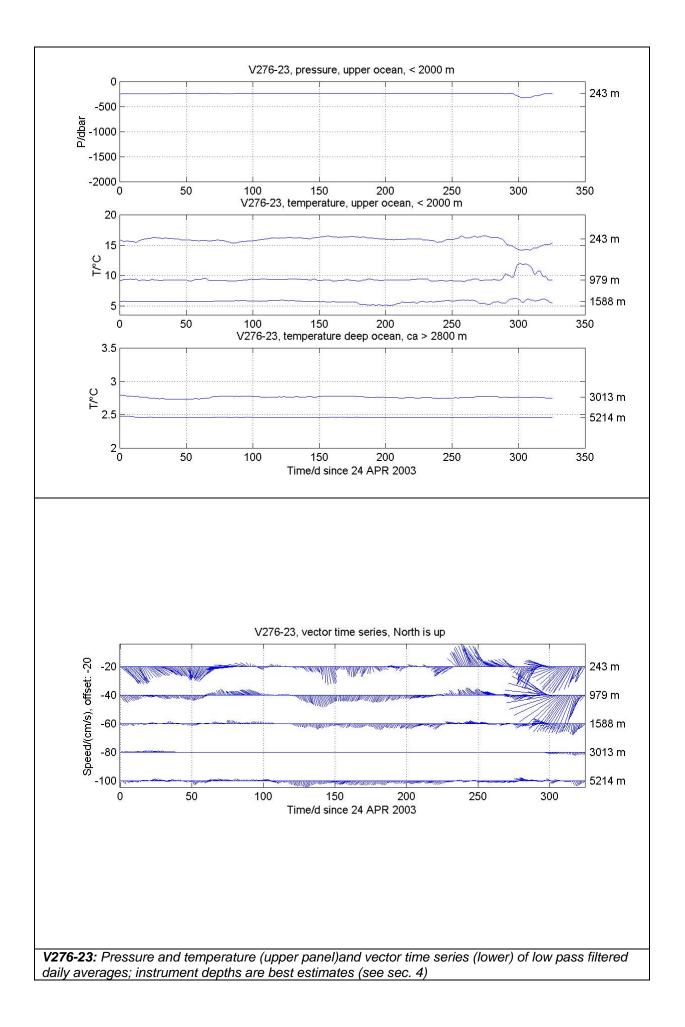
Info at IOW.

Compiled by: T.J. Mueller Date: 22-Aug-2004, rev. Sep 2013

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K270, V2	76-23, 22-	APR-20	03 P29	7 to	16-MAR-2004, F	7308 Page # 1 / 2
depth (incl. stretch)	component	S/N	rope # Type & Len	gth	Distance from lower rope end	in/out of water comment
168 m	Kaese 420	Кр			WD??, beacon 27.090 N	/Hz, i/w 11:10 o/d 09:20
239 m	10Benthos		#1,40m KV-11mm #2,30m KV-11mm	sRs		
259 m	Tobenanos			SRS SRS SRS SRS		
244 m	RCM-8	AVTP 105			i/w 11:22	o/d 09:29
476	00		#3 100m WS-8mm #4 100m WS-8mm #5 30m WS-8mm	sRs sRs sRs		
476 m	6Benthos	AV/T 4057		db.		
479 m	RCM-8	AVT 10577	#6.100m #7.100m WS-8mm WS-8mm #8.30m #8.11mm #9.240m ML-11mm	SRS SRS SRS SRS SRS SRS	no data	
978 m	4Benthos			SRS SRS	i/w 12:04	o/d 09:39
980 m	RCM-8	AVT 10578	#10, 500m ML-11mm #11,50m ML-11mm	sRs	I/W 12:04	0/0 09:39
1587 m	3Benthos		ML-11mm	sRs		
1589 m	RCM-8	AVT 10550) #12,20m ML-11mm #13,300m ML-11mm	SRs SRs SRs	i/w 12:26	o/d 09:54
1943 m	6Benthos		ML-11mm	es Rs		
2014 m 3008 m	2 TRAPs &		#L ⁴ 140m #L ⁵ 130m #L ⁵ 140m #L ⁶ 1500m #L ⁶ 1500m #L ⁷ 1200m #L ⁷ 1200m #L ⁸ 1100m #L ⁹ 1100m #L ⁹ 1100m	SRS SRS SRS SRS SRS SRS SRS SRS SRS	inclinometer 1112, i <i>l</i> w svivel	ca. 13:00 o/d 10:06
			-71	A SRs		
3013 m	RCM-8	AVT 10556	#20, 30m ML-14mm	*8R8	svivel	o/d 10:26
3082 m	TRAP	Trap xx	#21 30m ML-14mm	sRs SRs	14:29	o/d 10:31
			#221500m #23500m #24500m #24500m #24500m #25100m #26100m #26100m #26100m #26100m #26100m	s 3.2 sRs sRs sRs sRs sRs sRs sRs	(svive)	
5210 m	8Benthos		ML-11mm			
5214 m	RCM-8	AVTP 105	58	SRS	i/w 14:53	o/d 10:51
5215 m	AR-2	XX, XX	#28 0.8m chain-16 #29 40m ML-11mm	Ys 3.2 9s 3.2 9s 3.2	t	released 09:25, o/d 10:51
5263 m	Anchor 4x3	00 kp	#30 2m chain-16	s 3.2		ute, slipped 15:32

Depth	Moor_ID	Туре	S/N	Sampling	Sensor	Remarks
244	2762301	RCM8	10554	7200 s	REF T_LR PRES DIR SPD	344, e-board 2595, DSU 3690 ok ok, 6300 dbar linear range calibration, initially 215 dbar, median 203 dbar ok ok
479	2762302	RCM8	10577	7200 s		battery leakage, no record
980	2762303	RCM8	10578	7200 s	REF T_LR DIR SPD	318, e-board 2624, DSU 3644 ok ok ok
1589	2762304	RCM8	10550	7200 s	REF T_LR DIR SPD	271, e-board 2590, DSU 5937 ok ok ok
2014 2	2762305 :	FRAP -	-9999 -	9999	-	ticle TRAPs, inclinometer 1112 fo at IOW
3013 2	2762306 1	RCM8	10555	7200 s	REF T_LR DIR SPD	414, e-board 2601, DSU 3392 ok, no arctic range ok stuck between day 40 and 300, set to
dummy	there				512	ok elsewhere
3082 2	2762307	TRAP	-999	9	particl data in	e TRAP fo at IOW
5214 2	2762308 1	RCM8	10558	7200 s	T_LR PRES DIR	58, e-board 2589, DSU 3689 ok, no arctic range ok, 6300 dbar range calibration, median 5383 dbar (5279 m at 33°N) ok ok



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v Z / U Z	4													
v27623 Depth Days Mean					Mean Time Scale						Flu	lxes		
_				St	StandDev.			its			entum	Temperature		
				STAB	U	v	 Т	u	v	t	<uv></uv>	<dm></dm>	<ut></ut>	<vt></vt>
243	326	4.1	220	0.47	-2.6 6.7		15.9 0.5	19	15	16	-9	-47	1.7	0.8
979	326	3.7	236	0.60	-3.1	-2.1 6.0	9.4	19	9	14	6	49	-2.8	-1.3
1588	326	2.0	242	0.71	-1.8	-1.0 1.9	5.7 0.2	36	16	16	0	69	0.0	0.1
3013	68	0.3	102	0.14	0.3	-0.1	2.8	10	13	8	1	64	-0.0	0.0
5214	326	1.4	238	0.53	-1.2	-0.8	2.5	18	19	8	0	82	0.0	0.0
Legen						_		_						
Depth		est e easur			instrume	ent dep	th as	from	log	ıs, r	noorii	ng mod	lel and	
Days	: 1	ength	of r	ecord										
SPD,	DIR: m	ean s	peed/	(cm/s)	and dim	rection								
S					lity of				-	eed	/ mea	an sca	lar sp	eed)
U, V					th compo	onent o	f flow	, cm	ı/s					
Т			-	ature					_				_	
its		-			le (firs	st zero	cross	ing	of a	uto	corre	lation	1 funct	ion)
		viati	ons f	rom ave	erage									
u, v,	t de t m				eruge									

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-24

17-MAR-2004 - 06-MAY-2005

Mooring information

General

Mooring ID	: V276-24/KPO 1084
Deployed	: Date: 17-MAR-2004 Ship / Cruise: Poseidon 308
Recovered	: Date: 06-MAY-2005 Ship / Cruise: Poseidon 321
Latitude N	: 32.818
Longitude E	: -022.000
Water depth	: 5270 m (corrected)
Magn. Anom.	: -09 deg (W)
Project	: KIEL276 time series station
PI	: J.J. Waniek & T.J. Mueller
Data origin	: IOW
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

Top buoy with with reduced buoyancy, 420 kp. TRAPs at 2000 m and at 3050 m designed depth. All instrument depths nominal as from static mooring model with components as in deck log.

2) RCM data

RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27624_iii.dat.

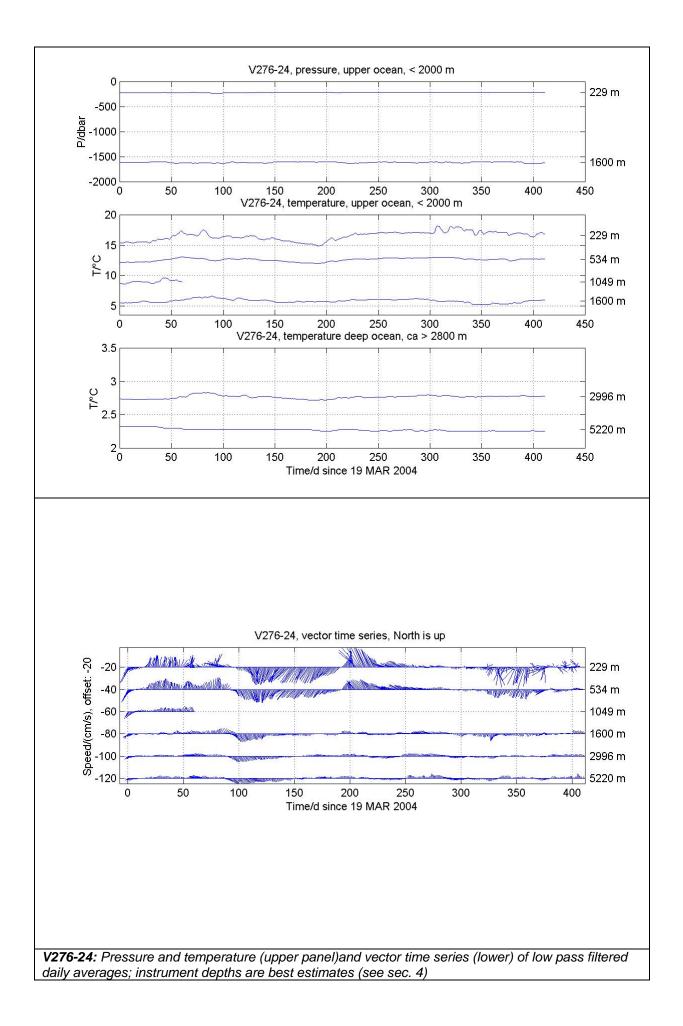
3) TRAP data Info at IOW.

Compiled by: T.J. Mueller Date: 12-SEP-2005

K276, V2	276-24, PO	S308,	17.03.20	004 -	POS321, 0	6.05.2005 1:14	Mar-2013 1 1e # 1 / 2
depth (incl. stretch)	component	S/N	rope # Type & Ler	igth	Distance from lower rope end	in/out of wat comment	er
171 m	Kaese 420	Kn		T			
223 m	8Benthos	кþ	#1_50m ₩S-8mm	sRs sRs		S	
225 111	obenthus			000			
227 m	RCM-8	AVTP 10	#2, 100m WS-8mm #3, 100m WS-8mm	sRs sRs sRs sRs	i/w 13:34		
529 m	6Benthos		#4_100m ₩s-8mm				
532 m	RCM-8	AVT 105	81 #5, 100m #6, 100m #6, 100m WS-8mm	SRS SRS SRS	i/w 13:47		
734 m	2Benthos		#7, 100m WS-8mm #8, 100m WS-8mm	sRs sRs sRs sRs			
1045 m	4Benthos		#9 100m ML-14mm	opsRs			
1047 m	RCM-8	AVT 105		sRs sRs	i/w 14:06		
1596 m	3Benthos		#10, 500m ML-11mm	sRs			
1598 m	RCM-8	AVTP 10		sRs sRs	i/w 14:17		
1929 m	5Benthos		#11_300m ML-11mm	do lite	svivel		
2000 m	TRAP	Trap S	#L ² 1 30m #L ² 1 4mm #L ² 1 4mm E #1 #L ⁴ 500m #L ⁴ 500m #L ⁵ 200m ML ⁻ 11mm #L ⁶ 200m #L ⁶ 200m	sRs SRS SRS sRs	L 1112 svivel		
2992 m	5Benthos		#16, 200m ML-11mm	sRs q sRs			
2995 m	RCM-8	AVT 105		SRS SRS	i /w 14:49 svivel		
3063 m	TRAP	Trap SE	#17 30m ML-14mm #18 30m ML-14mm #2 #19 500m ML-11mm	sRs SRs SRs SRs SRs S	i/w 14:54 svivel		
3615 m	2Benthos		ML-11mm #20_500m ML-11mm	SRs			
4718 m	2Benthos		#21 500m ML-11mm #22 200m ML-11mm #23 200m ML-11mm	apsRs			
5160 m	2Benthos			desRs sRs			
5217 m	6Benthos		#24, 50m ML-11mm				
5220 m 5221 m	RCM-8 AR-2	AVT 105 #35		sRs sRs s3.21 s3.21		released 07:17, o/d 12:01	
	Anchor 4x3	00 kp	#25 0.8m chain-16 #26 40m ML-11mm #27 2m chain-16	s 3.2		arachute, slipped 17:07	

Instruments: All depths are nominal as from logs and mooring model (see sec. 2.4.)

Depth	Moor_ID) Туре	S/N	Sampling	Sensor	Remarks
227	2762401	. RCM8	10554	7200 s	REF T_LR PRES DIR SPD	344, e-board 2595, DSU 3690 ok ok, 6300 dbar linear range calibration initially 185 dbar, median 172 dbar ok ok
532	2762402	RCM8	10581	7200 s	REF T_LR DIR SPD	301, e-board 2592, DSU 7097 ok ok ok ok
1047	2762403	RCM8	10578	7200 s	short 1 REF T_LR DIR SPD	record of 61 d only; self check DSU ok 342, e-board 2624, DSU 3644 ok ok ok ok
1598	2762404	RCM8	10558	7200 s	REF T_LR PRES DIR SPD	257, e-board 2589, DSU 3689 ok ok 6300 dbar linear range calibration initially 1580, median 1581 dbar ok ok
2000	2762405	TRAP	001		-	ticle TRAP 5 1112 inclination meter 711 inclination (no calibration sheet accessable) constant
2995	2762406	RCM8	10555	7200 s	REF T_LR DIR SPD	414, e-board 2601, DSU 3392 ok, no arctic range ok ok
3063	2762407	TRAP	002			particle TRAP
5220	2762408	RCM8	10550	7200 s	T_LR o DIR o	258, e-board 2590, DSU 5937 ok, no arctic range ok ok



Moori	ng V27	6-24:	stat	istics	from lo	ow pass	filte	red	dail	y av	verage	es			
v2762	4														
Depth	Days		Mean			Mean		Tim	ie Sc	ale	Fluxes				
					St	its			Mome	entum	Temperature				
		SPD	DTR	STAB	 IJ	 V	 Т	 u		+	<11V>	<dm></dm>		 <vt></vt>	
229	412		248	0.38	-3.1	-1.2					6			0.1	
		5.5	210	0.00	5.0		0.7	-		00	Ũ		0.0	0.1	
534	412	2.5	255	0.40	-2.4	-0.6	12.6	16	24	25	0	1	0.2	0.1	
					3.1	5.5	0.3								
1049	61	2.0	317	0.54	-1.3	1.5	9.0	9	8	7	3	38	0.0	0.4	
					2.2	2.6	0.3								
1600	412	1.0	255	0.36	-1.0	-0.3	5.8	14	13	25	-1	-51	0.2	0.1	
					2.3	2.1	0.3								
2996	412	0.8	272	0.33	-0.8	0.0	2.8	15	15	23	-1	-63	-0.0	-0.0	
					2.0										
5220	412	0.6	289	0.24		0.2		15	16	48	-1	-72	0.0	0.0	
					2.4	1.7	0.0								
Legen	d •														
-		heat e	stima	te of ·	instrume	nt den	th ag	from		ig n	noorir	na mod	lel and	1	
Depen		leasur				ucp	cii ub	1100	. 109	5, 1		19 1100	ici uno		
Days				ecord											
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u, v					th compo								-	,	
Т				ature	-										
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KIEL276 Time Series Data

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-25

08-MAY-2005 - 10-APR-2007

Mooring information

General

Mooring ID	: V276-25/KPO 1084
Deployed	: Date: 08-MAY-2005 Ship / Cruise: Poseidon 321
Recovered	: Date: 10-APR-2007 Ship / Cruise: Poseidon 349
Latitude N	: 33.000
Longitude E	: -021.998
Water depth	: 5273 m (corrected)
Magn. Anom.	: -8.6 deg (W)
Project	: KIEL276 time series station
PI	: J.J. Waniek
Data origin	: IOW
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

Sounding depth at 1500 m/s is 5218 m. Longlines - destroying coating of stainless steel wire - in mooring parts on recovery. Top buoy modelled with reduced buoyancy, 420 kp. TRAPs at 2000 m and at 3050 m designed depth. All instrument depths nominal as from static mooring model with components as in deck log.

2) RCM data

All raw data in RCM*.ASC; non-relevant records skipped in *.ASC. RCM clocks in DSUs were set prior to launching. No stop logs for RCMs => drift correction in time estimated from deck log and final recorded times. RCM pressure sensors have no in-situ calibration (bad weather). RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27625_iii.dat.

3) TRAP data

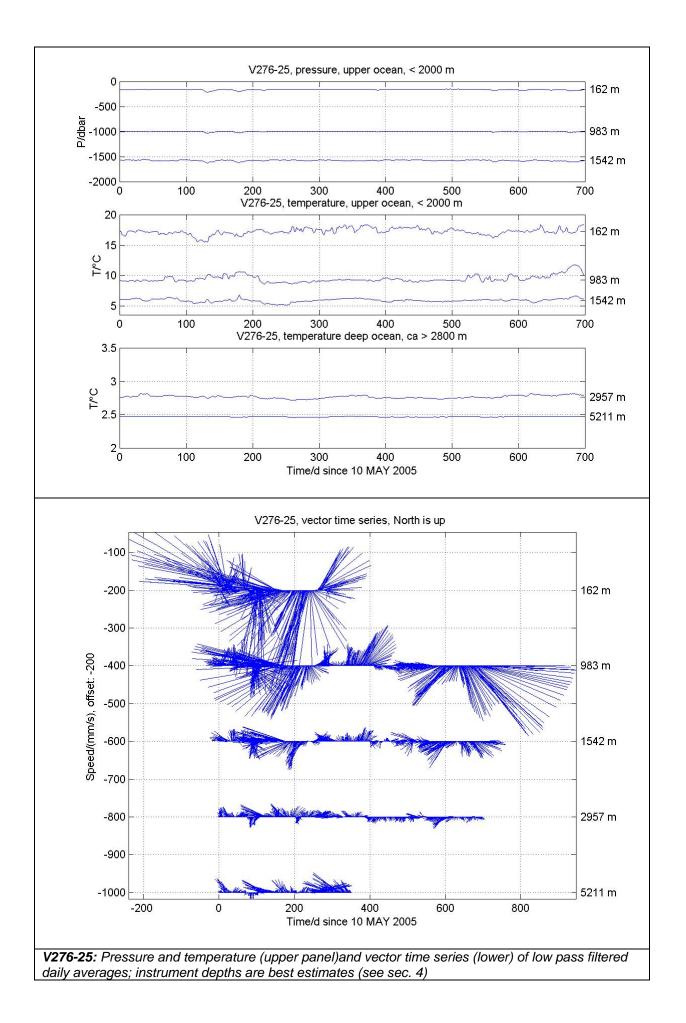
Info at IOW.

Compiled by: T.J. Mueller Date: 01-MAR-2009

K276, V2	276-25, P32	21, 08.0	5.2005	- P3	49, 10.04.2	2007	10-Mar-201 1:18 Page # 1 / 2
depth (incl. stretch)	component	S/N	rope # Type & Leng	ļth	Distance from lower rope end		in/out of water comment
165 m	Kaese 420	KnWD ID 2	2028	Φ	27.038 MHz,	i/w 13:31	
216 m	8Benthos			sRs do ^{sRs}			
				s S Rs			
220 m	RCM-8	AVTP 105	#2, 100m WS-8mm #3, 100m WS-8mm WS-8mm #4, 100m WS-8mm	sRs sRs sRs	i/w 13:37	o/d 09:24	
523 m	6Benthos		WS-8mm	de ^{sRs}			
526 m	RCM-8	AVT 1058		sRs sRs	i/w 13:50	o/d 09:55, no data	
728 m	2Benthos		#5, 100m WS-8mm #6, 100m WS-8mm #7, 100m WS-8mm #8, 100m	sRs desRs sRs sRs			
			#8 100m WS-8mm #9 100m ML-14mm	sRs do ^{sRs}			
1039 m 1041 m	4Benthos RCM-8	AVTP 084		SRS	i/w 14:06	o/d 10:02	
		AVIE 004	#10_500m ML-11mm	sRs	1/10/14:00	0/0 10.02	
1590 m 1592 m	3Benthos RCM-8	AVTP 105	58	PsRs	i/w 14:10	6 o/d 10:32, no rotor	
1002 11	item-e		#11_40m	sRs			
1923 m	5Benthos		都12,1260m 都1-11mm	d sRs			
1993 m	TRAP & tilt	Trap SE				:27 o/d 11:24	
2094 m	(D-utto-		#14 500m ML-11mm #15 400m ML-11mm	sRs			
2984 m	5Benthos			sRs			
2988 m	RCM-8	AVT 1055		ISR8 :	i/w 15:47 svivel	o/d 11:50, no rotor	
3056 m	TRAP	Trap SE#				o/d 12:00	
3607 m	2Benthos		#17 500m ML-11mm #18,500m	de <mark>s</mark> Rs sRs			
4710 m	2Benthos		#18 500m ML-11mm #19 500m ML-11mm #20 200m	sRs desRs sRs			
			#20 200m ML-11mm #21 180m ML-11mm #22 20m ML-11mm	sRs sRs			
5152 m	2Benthos		-	asRs sRs			
5209 m	6Benthos		#23 50m ML-11mm	do ^{sRs}			
5212 m	RCM-8	AVT 0981		SRS	i/w 15:34	o/d 12:48	
5213 m	AR-2	#888, #88	9 #24 0.8m chain-16 #25 50m ML-11mm	sRs s 3.2t s 3.2t	i/w 15:36	release time not	logged, o/d 12:48
5272 m	Anchor 4x3	100 km	#26 2m chain-16	s 3.2t	4 railwhaala	parachute, slipped 16:1	7
5272 m		00 KP			4 raiwieeis,	paracritice, simplear to r	

Instruments: All depths are nominal as from logs and mooring model (see sec. 2.4.)

Depth	Moor_	_ID	Туре	S/N	Sampling	Sensor	Remarks
220	27625	501	RCM8	10554	7200 s	REF T_LR PRES DIR SPD	344, e-board 2595, DSU 3690, from V2762401 ok ok, 6300 dbar linear range calibration initially 140 dbar, median 135 dbar ok ok until day 254, rotor off then and data set to dummy
526	27625	502	RCM8	10581	7200 s	REF	no data; RCM failed
1041	27625	503	RCM8	08411	7200 s	REF T_LR PRES DIR SPD	325, e-board 6030, DSU 4831 ok ok, 6300 dbar linear range calibration, initially 935 dbar, median 935 dbar ok ok
1592 V27624		504	RCM8	10558	7200 s	REF T_LR PRES DIR SPD	257, e-board 2589, DSU 3689, from ok ok, 6300 dbar linear range calibration, initially 1528 dbar, median 1531 dbar ok ok
1993 2	276250)5	TRAP	001		REF ch 2 ch 3	SE particle TRAP with DL 1112, inclination meter 711, ok, inclination, raw data stored constant, not stored
2988 2 V27624)6 F	RCM8	10555	7200 s	REF T_LR DIR SPD	414, e-board 2601, DSU 3392, from ok, no arctic range ok ok
3056 2	276250)7 1	FRAP	002		SE part	icle TRAP
5212 2	276250)8 F	RCM8	09812	7200 s	REF T_LR T_AR DIR SPD	686 ok, not stored ok, stored ok ok, rotor stuck from day 400 on, data set to dummy



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	5 Days		Mean			Mean		Tim		210		۰. [ع	lxes	
Depen	I Days		Mean			andD		its			Momentum Tempera			ature
		SPD	DIR	STAB	U	v	T	u			<uv></uv>	<dm></dm>	<ut></ut>	
162	289	6.3	241	0.47	-5.5 10.2	-3.0 10.0	17.0 0.5	15	16	14	-11	-51	2.5	0.3
983	699	1.8	219	0.26	-1.1	-1.4	9.5	28	29	27	-2	-85	0.6	-1.3
					7.4	5.3	0.6							
1542	699	1.3	251	0.41	-1.2	-0.4	5.9	24	19	22	0	90	0.1	0.0
	600		0.7.4		3.0	2.1	0.3			2.6				
2957	699	0.7	274	0.38	-0.7 1.7	0.1 1.2	2.8 0.0	15	44	36	-0	-90	-0.0	-0.0
5211	352	1.3	318	0.55	-0.9		2.5	16	11	16	-1	-83	-0.0	-0.0
					2.8		0.0				_			
Legen Depth	ı : b	est e easur			instrume	ent dep	th as	from	ı log	s, r	noorir	ng mod	lel and	
Depen				ecord										
-		engtn	OT T											
Days	: 1	-			and dir	rection								
Days SPD,	: 1 DIR: m : d	ean s irect	peed/ ional	(cm/s) stabi	lity of	flow (mean v		-	eed	/ mea	an sca	lar sp	eed)
Days SPD, s U, V	: 1 DIR: m : d : m	ean s irect ean E	peed/ ional ast a	(cm/s) stabil nd Nort		flow (mean v		-	eed	/ mea	an sca	lar sp	eed)
Days SPD, s U, V T	: 1 DIR: m : d : m : m	ean s irect ean E ean t	peed/ ional ast a emper	(cm/s) stabii nd Nort ature	lity of th compo	flow (onent o	mean v f flow	, cm	ı/s				-	
Days SPD, s U, V T its	: 1 DIR: m : d : m : m : i	ean s irect ean E ean t ntegr	peed/ ional ast a emper al ti	(cm/s) stabi nd Nort ature me sca	lity of th compo le (firs	flow (onent o	mean v f flow	, cm	ı/s				-	
Days SPD, s U, V T its u, v,	: 1 DIR: m : d : m : m : i	ean s irect ean E ean t ntegr viati	peed/ ional ast a emper al ti ons f	(cm/s) stabi nd Nort ature me scal rom ave	lity of th compo le (firs	flow (onent o	mean v f flow	, cm	ı/s				-	

KIEL276 Time Series Data

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-26

17-APR-2007 - 27-APR-2009

Mooring information

General

Mooring ID	: V276-26/KPO 1085
Deployed	: Date: 17-APR-2007 Ship / Cruise: Poseidon 349
Recovered	: Date: 27-APR-2009 Ship / Cruise: Poseidon 383
Latitude N	: 33.000
Longitude E	: -022.000
Water depth	: 5270 m (corrected)
Magn. Anom.	: -9.5 deg (W)
Project	: KIEL276 time series station
PI	: J.J. Waniek
Data origin	: IOW
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

Sounding depth at 1500 m/s is 5215 m. Long-lines destroyed coating of some stainless steel wire. Top buoy modelled with reduced buoyancy, 420 kp. TRAPs at 2000 m and at 3050 m designed depth. All instrument depths nominal as from static mooring model with components as in deck log.

2) RCM data

In-situ RCM pressure calibration was cancelled due to bad weather before deployment. All raw data in RCM*.RAW with leading columns for [record DD.MM.YYYY hh:mm:ss]; separators '.' and ':' removed by editing; non-relevant rows skipped; result inn *.EDT. RCM clocks were not set before deployment. Last setting of re-used RCM in May 2005 prior to deployment of V27625.

No start and no stop logs for RCMs => no drift correction in time.

Times in data compare with launch & release times of deck & bridge logs.

RCM pressure sensors have no in-situ calibration (no calibration cast due to bad weather).

RCM data pre1-level processed and at sampling rates in RCM*.dat.

RCM data at pre2-level processd and at sampling rate in V27626_iii.dat.

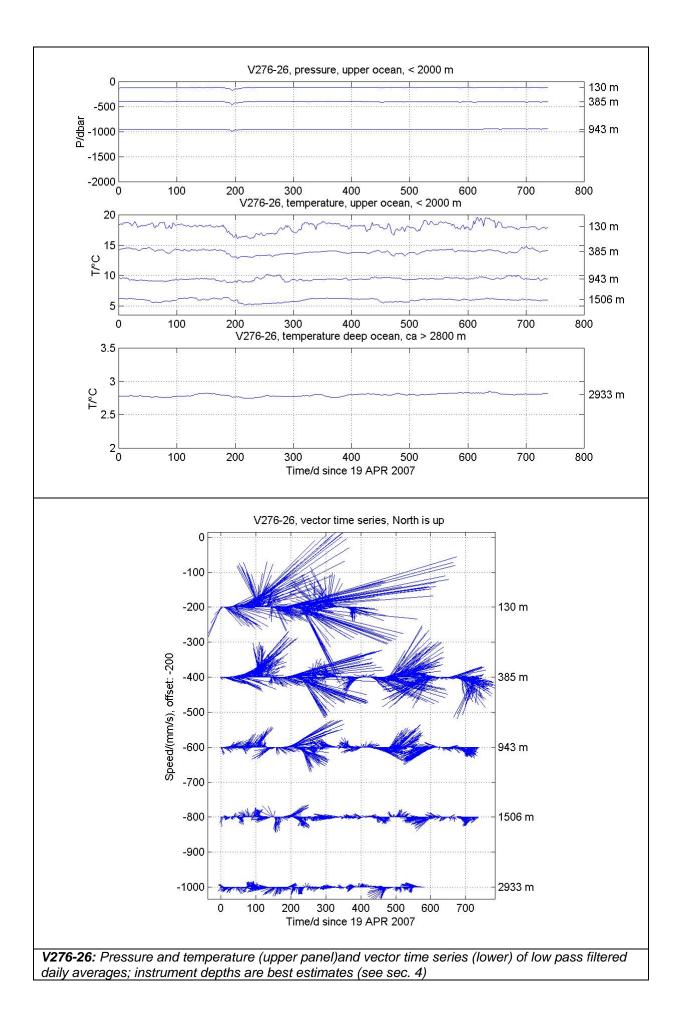
3) TRAP data

Info at IOW.

Compiled by: T.J. Mueller Date: 01-MAR-2009

K276, V2	76-26, PO			2007	' to P	OS383, 2	7-APR-2009	10-Mar-2013 1:21 Page # 1 / 2
depth (incl. stretch)	component		rope # Type & Len	gth	Distanc Iower I	e from rope end		out of water mment
157 m	Kaese 420			0		i/w 09:34	o/d 09:45	
208 m	8Benthos			sRs				
212 m	RCM-8	AVTP 1055	#2_50m	sRs		i/w 09:40	o/d 09:50	
			#3 100m WS-8mm #4 100m WS-8mm	∙sRs ∙sRs				
464 m	6Benthos		WS-8mm	desRs				
467 m	RCM-8	AVTP 1055		SRs SRs		i/w 09:50	o/d 10:25	
000	1221 13		#5, 100m WS-8mm #6, 100m WS-8mm	sRs				
669 m	2Benthos		#7 100m ML-14mm	desRs sRs sRs				
			#8 60m ML-14mm #9 60m ML-14mm	sRs sRs				
1022 m	4Benthos		#9 60m ML-14mm #10 100m ML-14mm	dh.				
1024 m	RCM-8	AVTP 841		SRS SRS		i/w 10:05	o/d 10:45	
1575 m	3Benthos		#11_500m ML-11mm	d				
1577 m	RCM-8	AVT 9344	#12_300m	SRS SRS		i/w 10:17	o/d 10:57	
1909 m	5Benthos		#12_300m ML-11mm	d sRs				
			#13_60m ML-14mm	0	svivel			
1979 m	TRAP	Trap SE S	F1	MASRS SRS SRS	DL 11 svivel	12 i/w 10:30	o/d 11:05	
			#14,500m ML-11mm ML-11mm ML-11mm #16,200m ML-11mm	∙ sRs • sRs				
2974 m	5Benthos		#16_200m ML-11mm	gsRs				
2977 m	RCM-8	AVT _{LR} 105	55	SRs		i/w 10:53	o/d 11:26, rotor lost	
			#17 60m ML-14mm	sRs sRs	svivel	(-		
3046 m	TRAP	Trap SE# \$		M _{SRs.}	svivel	i/w 10:56	5 o/d 11:31	
3599 m	2Benthos		#18,500m ML-11mm #19,500m					
4705 m	2Benthos		#19_500m ML-11mm #20_500m ML-11mm					
4705 11	ZBenthos		#21 200m ML-11mm #22 200m ML-11mm					
5149 m	2Benthos		ML-11mm #23_50m ML-11mm	SRs				
5205 m	6Benthos		ML-11mm					
5208 m	RCM-8	AVT _{LR} 981		SRS SRS		i/w 14:45	old 12:15, bottom cap lo	
5210 m	AR-2	# 888, # 88	#24 0.8m	s 3.2		11:45	release time not logge	i, o/d 12:15
			#25_50m ML-11mm #26_2m chain-16	s 3.2				
5269 m	Anchor 4x3	00 kp	chain-16	s 3.2	4 rail	wheels & para	achute, slipped 11:55	

Denth	Moor_ID	Type	C/M	Sampling	Sengor	Remarks
212	2762601	RCM8	10554	7200 s	clock c REF T_LR PRES DIR SPD	hange +2*60 s over 2 years compared to recording interval 344 ok ok, 6300 dbar linear range calibration initially 125 dbar, median 117 dbar ok ok until 07-MAY-2008; thereafter, rotor probably damaged by long-lines
467	2762602	RCM8	10558	7200 s	clock c REF T_LR PRES DIR SPD	hange -18*60 s over 2 years compared to recording interval 257 ok much too low under 6300 dbar linear range calibration; initially 265 dbar, median 265 dbar ok ok
1024	2762603	RCM8	08411	7200 s	clock c REF T_LR PRES DIR SPD	hange -6*60 s over 2 years compared to recording interval 325 ok ok, 6300 dbar linear range calibration, initially 915 dbar, median 910 dbar ok ok
1577	2762604	RCM8	09344	7200 s	clock c REF T_LR DIR SPD	hange 6*60 s over 2 years compared to recording interval 257 ok ok ok ok
1979 :	2762605	TRAP	001		SE part REF ch 2 ch 3	icle TRAP wih DL 1112, inclination meter 711, ok, inclination, raw data stored constant, not stored
2977 :	2762606 I	RCM8	10555	7200 s	clock c REF T_LR DIR SPD	hange 5*60 s over 2 years compared to recording interval 411 ok ok ok ok until 21-NOV-2008, rotor stuck later
3046	2762607 :	FRAP	002		SE part	icle TRAP
5208 3	2762608 B	RCM8	09812	7200 s	flooded	, no data



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Depth	16 L Days		Mean			Mean		Tim	ie Sc	ale		Flu	ixes	
					St	StandDev.				its			Temperature	
		SPD	DIR	STAB	U	V	Т	u	v	t		<dm></dm>		<vt></vt>
130	384	6.9	81	0.67	6.8		17.9 0.8	20	15	36	10	83	-3.3	1.2
385	738	3.8	89	0.53	10.8 3.8		13.9	28	18	38	8	76	-0.8	0.0
					7.1	4.5	0.4							
943	738	1.2	94	0.31	1.2	-0.1	9.4	27	16	18	3	76	-0.2	-0.2
					4.0	2.3								
1506	738	0.6	235	0.28	-0.5	-0.3		22	11	28	0	83	-0.1	0.1
					2.1	1.2	0.3	1.0	1.0			0.5		
2933	582	0.9	247	0.47		-0.3 0.9		13	13	28	0	86	-0.0	-0.0
Legen														
Depth					instrume	ent dep	th as	from	ı log	ıs, r	noorir	ng mod	lel and	L
Derre		easur												
Days		-		ecord	and dir	reation								
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KIEL276 Time Series Data

Madeira Abyssal Plain

33°N, 022°W, 5280 m water depth

V276-27

28-APR-2009 - 21-APR-2011

Mooring information

General

Mooring ID	: V276-27/KPO 1086
Deployed	: Date: 28-APR-2009 Ship / Cruise: Poseidon 383
Recovered	: Date: 21-APR-2011 Ship / Cruise: Merian MSM018/1
Latitude N	: 32.959
Longitude E	: -021.993
Water depth	: 5276 m (corrected)
Magn. Anom.	: -9 deg (W, from 2007)
Project	: KIEL276 time series station
PI	: J.J. Waniek
Data origin	: IOW
Depths	: nominal as of logs and IMP static model

Remarks

1) Mooring

On recovery, mooring broke at 3000 m; second part found and also recovered. Top buoy modelled with reduced buoyancy, 420 kp. TRAPs at 2000 m and at 3050 m designed depth.

All instrument depths nominal as from static mooring model with components as in deck log.

2) RCM data

No in-situ or lab RCM pressure calibration available. Standard calibrations for temperature and linear range calibration for pressure sensors used. All raw data in RCM*.ASC; non-relevant rows skipped in *.EDT. No setting of RCM clocks prior to launching logged. All times of launching and of release fit with times of associated temperature and pressure changes in data. No start and no stop logs for RCMs => no drift correction in time. RCM data pre1-level processed and at sampling rates in RCM*.dat. RCM data at pre2-level processed and at sampling rate in V27627_iii.dat.

3) TRAP data

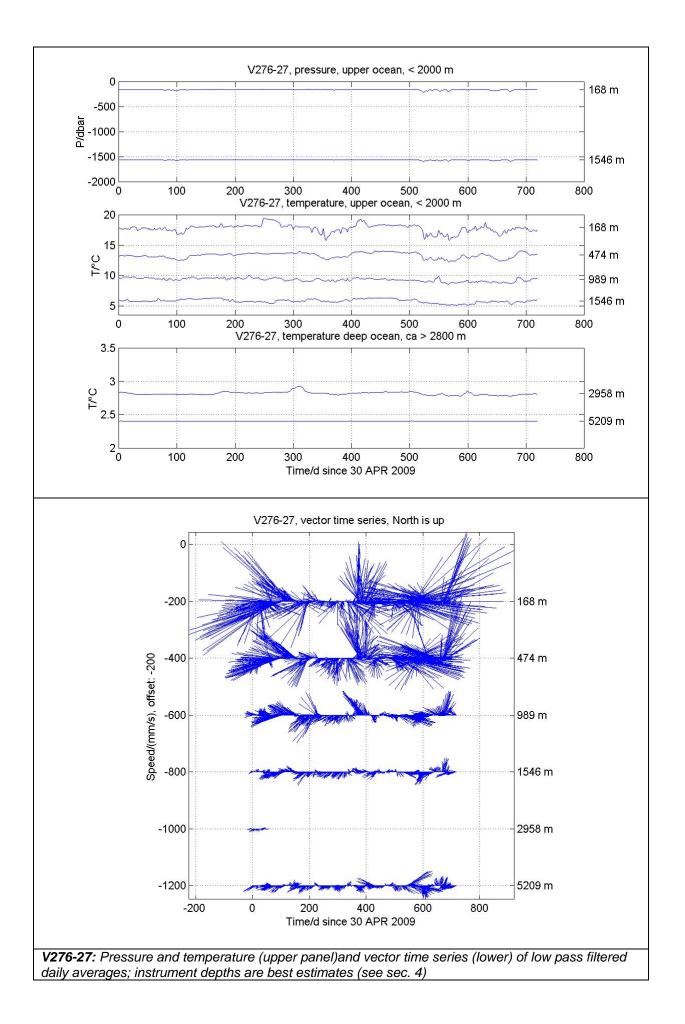
Info at IOW.

Compiled by: T.J. Mueller Date: 23-APR-2012

component	S/N	rope # Type & Len	gth	Distance from lower rope end		in/out of water
						comment
Kaese 370	Kn		i 1	VD ID 22028, i/w 08:05	o/d10:55	
		∜s-8mm	sRs			
			1			
RCM-8	AVTP S/N	#2_100m WS-8mm #3_100m WS-8mm	sRs sRs sRs sRs	i/w 08:13	o/d 11:03	
6Benthos		₩s-8mm	de ^{sRs}			
RCM-8	AVT S/N		SRS SRS	i/w 08:26	o/d 11:26	
2Benthos		#7 100m WS-8mm #8 100m WS-8mm	∯sRs sRs ∙ sRs			
4Benthos		#9 100m ML-14mm	dosRs			
RCM-8	AVT S/N			i/w 08:45	o/d 11:59	
3Benthos		#10_500m ML-11mm	d sRs			
RCM-8	AVTP S/N		SRS	i/w 08:57	o/d 12:24	
5Benthos		#11 300m ML-11mm	gsRs			
TRAP	Trap SE#		M ^{SRs}	DL i/w 09:11 o/d	1 12:44	
		#13,500m ML-11mm #14,200m ML-11mm #15,200m	sRs sRs			
5Benthos			d sRs			
RCM-8	AVT _{LR} S/N	#16 60m	10110	i/w 09:36 o/d 13:16 svivel		
TRAP	Trap SE		18 2 2 2	i/w 09:42 o/d	13:21	
2Benthos		#18_500m ML-11mm				
2Benthos		#19 500m ML-11mm	dosRs			
2Benthos			desRs sRs			
6Benthos		≇22 50m ML-11mm	sRs			
RCM-8	AVT 1057	'8,	sRs	i/w 10:37	o/d 15:23	
AR-2	S/N 361	#23 0.8m chain-16 #24 50m ML-11mm		i/w 10:36 released	09:35 o/d 15:23	
		#25 2m chain-16	s 3.2t		:hute, i/w 10:49	
	6Benthos RCM-3 2Benthos RCM-3 3Benthos RCM-3 5Benthos TRAP 5Benthos RCM-3 2Benthos 2Benthos 2Benthos 2Benthos	RCM-8 AVTP S/N 6Benthos AVT S/N RCM-8 AVT S/N 2Benthos AVT S/N 4Benthos AVT S/N 3Benthos AVT S/N 3Benthos AVT S/N 5Benthos AVT S/N 6Benthos AVT 1057	Beenthos AVTP S/N 09349 RCM-8 AVTP S/N 09349 RBenthos RCM-8 RCM-8 AVT S/N 05881 RCM-8 AVT S/N 05881 ZBenthos RS-400m 4Benthos RCM-8 AVT S/N 05881 RS-400m 3Benthos RCM-8 RCM-8 AVT S/N 04562 3Benthos RCM-8 RCM-8 AVT S/N 04562 Benthos RCM-8 RCM-8 AVT S/N 04562 Benthos RCM-8 RCM-8 AVT S/N 09932 TRAP Trap SE# RCM-8 AVT LR S/N 09832 TRAP Trap SE RCM-8 AVT LR S/N 09832 TRAP Trap SE Benthos RI 2-160m RCM-8 AVT LR S/N 09832 TRAP Trap SE Benthos RI 2-160m Benthos RI 2-160m ZBenthos RI 2-160m Benthos RI 2-160m Benthos RI 2-160m	BBenthos WW-Bmm SRS RCM-8 AVTP S/N 09349 SRS 6Benthos SRS SRS 6Benthos AVT S/N 05881 SRS 2Benthos SRS SRS 2Benthos SRS SRS 2Benthos SRS SRS 4Benthos AVT S/N 05881 SRS 3Benthos SRS SRS 7Benthos AVT S/N 04562 SRS 3Benthos SRS SRS 7Benthos SR SRS 7Benthos SRS SRS	BBenthos WS-Bmm SRS RCM-8 AVTP S/N 09349 SRS i/w 08:13 6Benthos MS-B000 SRS SRS 6Benthos MS-B000 SRS SRS 2Benthos MS-B000 SRS i/w 08:26 2Benthos MS-B000 SRS SRS 2Benthos MS-B000 SRS SRS 2Benthos MS-B000 SRS SRS 4Benthos AVT S/N 05881 SRS SRS 3Benthos MU-14000 SRS SRS 76Benthos MUT S/N 09932 SRS Swivel SBenthos ML214000 SRS Swivel SBenthos ML214000 SRS Swivel SBenthos MUT S/N 09832 SRS Swivel SBenthos MUT S/N 09832 SRS SWWel SRS SBenthos MUT S/N 09832 SRS SWWel SRS SBenthos MUT S/N 09832 SRS SRS SRS ZBenth	BBenthos WESHIM SRs We 08:13 o/d 11:03 6Benthos SRs I/w 08:13 o/d 11:03 6Benthos SRs I/w 08:13 o/d 11:03 6Benthos SRs I/w 08:26 o/d 11:26 78 I/w 08:26 o/d 11:26 78 I/w 08:26 o/d 11:26 78 I/w 08:45 o/d 11:59 78 I/w 08:45 o/d 11:59 78 I/w 08:57 o/d 11:59 78 I/w 08:57 o/d 12:24 78 I/w 08:57 o/d 12:24 78 I/w 09:32 Servel 78 I/w 09:32 I/w 09:31 78 I/w 09:32 o/d 12:24 78 I/w 09:36 o/d 13:16 78 I/w 09:36 o/d 13:21 78 I/w 09:32 o/d 13:21 78 I/w 09:32 o/d 13:21 78 I/w 10:37 o/d 15:23 78 I/w 10:37 o/d 15:23 78 I/w 10:36

Instruments: All depths are nominal as from logs and mooring model (see sec. 2.4.)

Depth	Moor_ID	Туре	S/N	Sampling	Sensor	Remarks
216	2762701	RCM8	09349	7200 s	REF T_LR PRES DIR SPD	511 ok ok, 6300 dbar linear range calibration initially 120 dbar, median 117 dbar ok ok until 21-MAR-2011, 22:08
522	2762702	RCM8	05881	7200 s	REF T_LR DIR SPD	ok, 392 ok ok ok until 04-APR-2011, 10:00
1037 2	2762703	RCM8	04562	7200 s	REF T_LR DIR SPD	ok, 280 ok ok ok
1588 2	2762704	RCM8	09932	7200 s	REF T_LR PRES DIR SPD	ok, 615 ok ok, initially 1512dbar, median 1511dbar ok ok
1989 2 IOW	2762705	TRAP	001		SE part	icle TRAP and tilt sensor 1112; data at
2984 2	2762706	RCM8	09832	7200 s	REF T_AR DIR SPD	ok, 433 ok ok ok until 03-JUL-2009
3053 2	2762707	TRAP	-9999		SE part	icle TRAP
5210 2	2762708	RCM8	10578	7200 s	REF T_LR DIR SPD	ok, 318 ok ok ok



Mooring V276-27: statistics from low pass filtered daily averages															
v2762 Depth			Mean			Mean			Time Scale			Fluxes			
					StandDev.			its			Momentum Temperature				
		SPD	DIR	STAB	 U	 V	 Т	 u	v	t	<uv></uv>	 <dm></dm>	<ut></ut>	<vt></vt>	
168	720	1.3	269	0.13	-1.3 11.0		17.8 0.7	24	11	25	8	84	-1.2	-0.3	
474	703	1.8	276	0.21	-1.8 8.6	0.2 5.8	13.3 0.4	28	16	25	-3	-86	-0.1	-0.6	
989	720	1.5	270	0.36	-1.5 3.8	0.0 2.7	9.3 0.3	38	17	62	-1	-83	-0.3	-0.0	
1546	720	1.2	244	0.56	$^{-1.1}_{1.7}$	-0.5 1.3	5.8 0.3	20	16	37	1	66	-0.2	0.1	
2958	56	0.3	141	0.36	0.2 0.9	-0.3 0.4	2.8 0.0	7	7	11	0	77	-0.0	-0.0	
5209	720	0.7	211	0.28	-0.3 2.5		2.4	20	12	3	1	82	-0.0	-0.0	
Legen Depth Days	: b m	easur	ed da		instrume	ent dep	th as	from	ı log	ıs, r	noorii	ng mod	lel and	L	
SPD, 3 s	DIR: m : d	ean s irect	peed/ ional	(cm/s) stabil	and dir lity of	flow (mean v		-	eed	/ mea	an sca	lar sp	eed)	
U, V T	: m	lean t	emper	ature	th compo			-				lotic	funct	ion)	
	t :de : n	viati noment	ons f um fl	rom ave .ux	5		cross	ing	or a	utoo	corre.	Lation	i funct	10n)	
<md></md>	: d	irect	ion o	f momer	ntum flu	IX									



GEOMAR Reports

No.

Title

- FS POSEIDON Fahrtbericht / Cruise Report POS421, 08. 18.11.2011, Kiel - Las Palmas, Ed.: T.J. Müller, 26 pp, DOI: 10.3289/GEOMAR_REP_NS_1_2012
- Nitrous Oxide Time Series Measurements off Peru A Collaboration between SFB 754 and IMARPE –, Annual Report 2011, Eds.: Baustian, T., M. Graco, H.W. Bange, G. Flores, J. Ledesma, M. Sarmiento, V. Leon, C. Robles, O. Moron, 20 pp, DOI: 10.3289/GEOMAR_REP_NS_2_2012
- 3 FS POSEIDON Fahrtbericht / Cruise Report POS427 Fluid emissions from mud volcanoes, cold seeps and fluid circulation at the Don-_Kuban deep sea fan (Kerch peninsula, Crimea, Black Sea) – 23.02. – 19.03.2012, Burgas, Bulgaria - Heraklion, Greece, Ed.: J. Bialas, 32 pp, DOI: 10.3289/GEOMAR_REP_NS_3_2012
- 4 RV CELTIC EXPLORER EUROFLEETS Cruise Report, CE12010 ECO2@NorthSea, 20.07. – 06.08.2012, Bremerhaven – Hamburg, Eds.: P. Linke et al., 65 pp, DOI: 10.3289/GEOMAR_REP_NS_4_2012
- RV PELAGIA Fahrtbericht / Cruise Report 64PE350/64PE351 JEDDAH-TRANSECT -, 08.03. – 05.04.2012, Jeddah – Jeddah, 06.04 - 22.04.2012, Jeddah – Duba, Eds.: M. Schmidt, R. Al-Farawati, A. Al-Aidaroos, B. Kurten and the shipboard scientific party, 154 pp, DOI: 10.3289/GEOMAR_REP_NS_5_2013
- 6 RV SONNE Fahrtbericht / Cruise Report SO225 MANIHIKI II Leg 2 The Manihiki Plateau - Origin, Structure and Effects of Oceanic Plateaus and Pleistocene Dynamic of the West Pacific Warm Water Pool, 19.11.2012 -06.01.2013 Suva / Fiji – Auckland / New Zealand, Eds.: R. Werner, D. Nürnberg, and F. Hauff and the shipboard scientific party, 176 pp, DOI: 10.3289/GEOMAR_REP_NS_6_2013
- RV SONNE Fahrtbericht / Cruise Report SO226 CHRIMP CHatham RIse Methane Pockmarks, 07.01. - 06.02.2013 / Auckland – Lyttleton & 07.02.
 – 01.03.2013 / Lyttleton – Wellington, Eds.: Jörg Bialas / Ingo Klaucke / Jasmin Mögeltönder, 126 pp, DOI: 10.3289/GEOMAR_REP_NS_7_2013
- 8 The SUGAR Toolbox A library of numerical algorithms and data for modelling of gas hydrate systems and marine environments, Eds.: Elke Kossel, Nikolaus Bigalke, Elena Piñero, Matthias Haeckel, 168 pp, DOI: 10.3289/GEOMAR_REP_NS_8_2013
- 9 RV ALKOR Fahrtbericht / Cruise Report AL412, 22.03.-08.04.2013, Kiel Kiel. Eds: Peter Linke and the shipboard scientific party, 38 pp, DOI: 10.3289/GEOMAR_REP_NS_9_2013
- 10 Literaturrecherche, Aus- und Bewertung der Datenbasis zur Meerforelle (*Salmo trutta trutta L.*) Grundlage für ein Projekt zur Optimierung des Meerforellenmanagements in Schleswig-Holstein. Eds.: Christoph Petereit, Thorsten Reusch, Jan Dierking, Albrecht Hahn, 158 pp, DOI: 10.3289/GEOMAR_REP_NS_10_2013
- 11 RV SONNE Fahrtbericht / Cruise Report SO227 TAIFLUX, 02.04. 02.05.2013, Kaohsiung – Kaohsiung (Taiwan), Christian Berndt, 105 pp, DOI: 10.3289/GEOMAR_REP_NS_11_2013



No.

Title

12 RV SONNE Fahrtbericht / Cruise Report SO218 SHIVA (Stratospheric Ozone: Halogens in a Varying Atmosphere), 15.-29.11.2011, Singapore -Manila, Philippines, Part 1: SO218- SHIVA Summary Report (in German), Part 2: SO218- SHIVA English reports of participating groups, Eds.: Birgit Quack & Kirstin Krüger, 119 pp, DOI: 10.3289/GEOMAR_REP_NS_12_2013

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