

CRUISE REPORT OF RESEARCH SHIP R/B NORPPA

Daily cruises between May 1st and September 30, 2007 to the Tisler Reef

1. NAME OF RESEARCH SHIP R/B Norppa CRUISE NO. 2007-02
2. DATES OF CRUISE From 2007-05-01 To 2007-09-30
3. OPERATING AUTHORITY:
Jacobs University Bremen
TELEPHONE: +49-421 200 3254
TELEFAX: +49-421 200 3229
Email: l.thomsen@iu-bremen.de
4. OWNER (if different from no. 3)
5. PARTICULARS OF SHIP:

Name:	Research Boat NORPPA
Nationality:	German
Overall length: (in metres)	6.4 m
Maximum draught: (in metres)	0.5 m
Net tonnage:	1.6 tons
Propulsion e.g. diesel/steam:	Gasoline
Call sign:	
Registration port and number (if registered fishing vessel)	
6. CREW

Name of master:	Laurenz Thomsen
Number of crew:	1
7. SCIENTIFIC PERSONNEL

Name and address of scientist in charge:	Laurenz Thomsen and Volker Karpen Jacobs University Bremen, OceanLab, Campusing 8 D- 28759 Bremen
Tel/telex/fax no.:	+49-421 200 3254, +49-421 200 3229
No. of scientists:	1-4
8. GEOGRAPHICAL AREA IN WHICH SHIP OPERATED (with reference to latitude and longitude)
Polygon, with limitations given below.
59° 03',90 N, 10° 49',45 E; 59° 03',90 N, 11° 08',76 E;
58° 57',10 N, 10° 49',45 E; 58° 57',10 N, 11° 04',90 E
9. BRIEF DESCRIPTION OF PURPOSE OF CRUISE
 1. EU FP6 project HERMES. Interaction between cold-water coral reefs and passing water bodies
 2. Education and Training for graduate students at TMBL for the HERMES project
 3. Project in collaboration with Statoil: Effects of particulate matter on cold-water coral ecosystems
 - a) PURPOSE OF RESEARCH
 1. EU FP6 project HERMES. Interaction between cold-water coral reefs and passing water bodies
 2. Education and Training for graduate students at TMBL
 3. Project in collaboration with Statoil in HERMES: Effects of particulate matter and sedimentation on cold-water coral ecosystems
 - b) GENERAL OPERATIONAL METHODS (including full description of any fish gear, trawl type, mesh size, etc.)

Camera-transects for studies on quality and quantity of benthic fauna. Studies will only be conducted in areas selected from bathymetric conditions. Camera-aided deployment of recording instruments. The following types of equipment will be used:

Hummingbird Echosounder with GPS

Olex navigational system

Mini-ROV Camera type GNOM (max depth 200 m)

Aanderaa RCM 9 Recording instrument (salinity, temperature, current, turbidity) and Aanderaa ADCP 600 (recording profiling current meter)

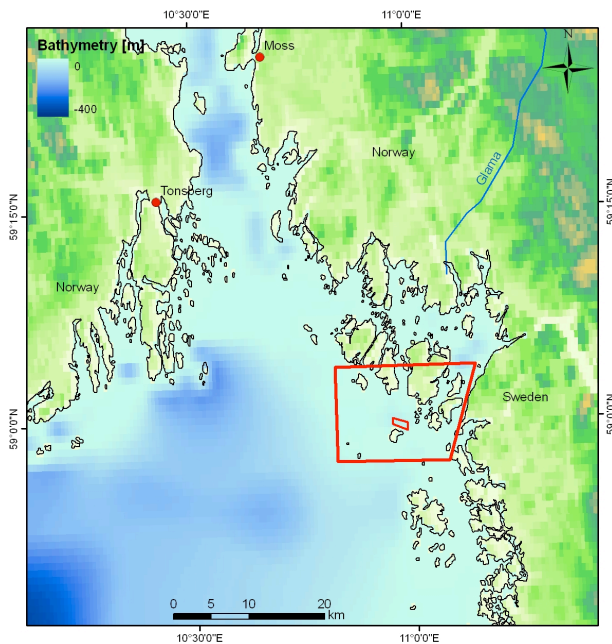
Llist particle sizer

Particle traps

Time-lapse cameras

Particle-Cameras

Small Water sampler



The daily cruises were aimed to investigate fluxes of particulate matter along the Tisler reef. The work concentrated on the development of new video and image analyses to better and faster evaluate coral community structure and varying health status of corals. Further on New sensor systems for environmental monitoring of coral reefs with special emphasis on particle dynamics were tested and deployed.

During two major field campaigns in July and September a total of 29 video guided water samples from different depths (1 m to 5 m above bottom) and different locations across the reef (NW & SE of main reef structure, and mid-reef) for later C, N and Amino Acids analyses were taken.

- 33 deployments of a small Particle Camera at both the NW and SE edges of the reef and mid-reef took place

- 30 camera guided CTD and Oxygen Profiles of the water column at different locations across the reef were taken

The field campaign data are currently being analysed. 23 water samples of surface waters have been taken across the campaigns for amino acid and CN analysis.

Results

Sensor reliability and applicability

The Nortek ADCP and Aanderaa ADCP/turbidity, oxygen, fluorescence sensor-package have been found to operate well at the Tisler Reef. The LISST particle sizer is considered as an essential tool to model particle transport behaviour of fine material within the reef. It is still undergoing testing to determine its applicability in monitoring coral reef environments.

Equipment necessary for video-mosaicing has been successfully tested. The work with filming and identifying areas with different coral health status will now begin in close collaboration with the TMBL labs. We will estimate health status by looking at e.g. proportion of dead/live polyps, overgrowth by other organisms and sediment coverage. After identifying areas where corals seem more healthy and less healthy, instruments to record hydrodynamics, particle fluxes, oxygen etc will be deployed by TMBL in 2008.

This results will lead to a better understanding of:

- The transport behaviour of particulate organic matter in the benthic boundary layer (BBL) within Coral Reefs and its implications for the marine carbon cycle.
- The alteration of lateral transported particulate matter by Coral reefs ecosystems and the composition, quantity and temporal variability of particulate organic matter (POM) exported from this systems.
- The influence of the exported POM on surrounding benthic communities and their carbon degradation behaviour and the role of these alteration and export processes in the benthic carbon cycle.

The NORPPA cruises allowed us to investigate the Tisler reef with small and sophisticated equipment. Samples were taken with video guided devices to prevent any damage for corals. The results will be presented during the 2008 annual HERMES workshop in Faro. Results show that the coral reef deposits large amounts of particles and exports mucus to the surrounding sediment communities. The collaborative partner StatoilHydro has been informed about the sensor tests and will use our results for the preparation of improved ecosystem monitoring. The results have also been presented during the first ESONET training workshop. ESONET aims to develop long-term monitoring observatories for the deep waters around Europe. The sensors from the Tisler tests are currently implemented in long term landers for the University of Bergen, Jan Helge Fossa. We hope that you will allow us to proceed with our daily cruises in 2008. A proposal will be sent to you soon. Copies of publications will be sent to you asap.

Tisler Stations

Name	Lat	Lon	Depth (m)	Device	Time
A	58°59.688	10°58.020	107	middle	near small island
B	58°59.584	10°58.550	150	near SE corner;	~ 40 m outside the reef to the SE
C	58°59.858	10°57.443	130	from NW corner	~ 180 m to the SW
D	58°59.660	10°58.340	144	HERMES station	
E	58°59.817	10°57.839	100	Central channel	
F	58°59.826	10°57.919	116	ADCP	Aanderaa Sep 2007
G	58°59.799	10°58.001	110	middle of reef	
H	58°59.820	10°57.546	129	near Station C	
J	58°59.604	10°58.491	147	near Station B	
B	58°59.584	10°58.550	122	CTD	23.07.2007 12:15:00h
B	58°59.584	10°58.550	122		23.07.2007 12:25:00 h
B	58°59.584	10°58.550	122		23.07.2007 13:41:00 h
C	58°59.862	10°57.447	126		23.07.2007 13:50:00 h
C	58°59.862	10°57.447	126		24.07.2007 14:07:00 h
C	58°59.862	10°57.447	126		24.07.2007 14:32:00 h
C	58°59.862	10°57.447	126		24.07.2007 14:54:00 h

G	58°59.799	10°58.001	125	24.07.2007	15:07:00 h
G	58°59.799	10°58.001	125	24.07.2007	15:22:00 h
G	58°59.799	10°58.001	125	24.07.2007	15:39:00 h

B	58°59.584	10°58.550	122 Particle Camera	25.07.2007	10:05:00 h
B	58°59.584	10°58.550	122	25.07.2007	11:03:00 h
B	58°59.584	10°58.550	122	25.07.2007	11:50:00 h
C	58°59.862	10°57.447	126	25.07.2007	12:45:00 h
C	58°59.862	10°57.447	126	25.07.2007	13:55:00 h
C	58°59.862	10°57.447	126	25.07.2007	14:33:00 h
C	58°59.862	10°57.447	126	25.07.2007	15:25:00 h
G	58°59.799	10°58.001	125	25.07.2007	16:03:00 h
G	58°59.799	10°58.001	125	25.07.2007	16:53:00 h
G	58°59.799	10°58.001	125	25.07.2007	17:34:00 h

Name	Lat	Lon	Depth (m)	Device	Time
B	58°59.584	10°58.550	122	CTD	26.09.2007 10:03:00 h
B	58°59.584	10°58.550	122		26.09.2007 11:03:00 h
B	58°59.584	10°58.550	122		26.09.2007 11:24:00 h
C	58°59.862	10°57.447	126		26.09.2007 12:00:00 h
C	58°59.862	10°57.447	126		26.09.2007 12:50:00 h
C	58°59.862	10°57.447	126		26.09.2007 13:27:00 h
C	58°59.862	10°57.447	126		26.09.2007 13:56:00 h
G	58°59.799	10°58.001	125		26.09.2007 14:33:00 h
G	58°59.799	10°58.001	125		26.09.2007 15:25:00 h
G	58°59.799	10°58.001	125		26.09.2007 15:40:00 h

B	58°59.584	10°58.550	122	Oxygen Optode	26.09.2007 10:03:00 h
B	58°59.584	10°58.550	122		26.09.2007 11:03:00 h
B	58°59.584	10°58.550	122		26.09.2007 11:24:00 h
C	58°59.862	10°57.447	126		26.09.2007 12:00:00 h
C	58°59.862	10°57.447	126		26.09.2007 12:50:00 h
C	58°59.862	10°57.447	126		26.09.2007 13:27:00 h
C	58°59.862	10°57.447	126		26.09.2007 13:56:00 h
G	58°59.799	10°58.001	125		26.09.2007 14:33:00 h
G	58°59.799	10°58.001	125		26.09.2007 15:25:00 h
G	58°59.799	10°58.001	125		26.09.2007 15:40:00 h

B	58°59.590	10°58.582	117	Particle Camera	13.09.2007 11:02:00 h
C	58°59.852	10°57.441	119		13.09.2007 11:25:00 h
B	58°59.600	10°58.531	124		13.09.2007 12:02:00 h
G	58°59.799	10°58.001	125		13.09.2007 13:02:00 h
C	58°59.862	10°57.447	126		13.09.2007 13:38:00 h
C	58°59.862	10°57.447	126		13.09.2007 14:00:00 h
G	58°59.799	10°58.001	125		13.09.2007 14:43:00 h
B	58°59.584	10°58.550	122		13.09.2007 15:08:00 h
B	58°59.584	10°58.550	122		13.09.2007 15:28:00 h
G	58°59.799	10°58.001	125		

C	58°59.862	10°57.447	126	17.09.2007	14:09:00 h
				17.09.2007	14:34:00 h
B	58°59.584	10°58.550	122	17.09.2007	15:01:00 h
G	58°59.799	10°58.001	125		
C	58°59.862	10°57.447	126	21.09.2007	17:03:00 h
				21.09.2007	17:40:00 h
B	58°59.584	10°58.550	122	21.09.2007	18:33:00 h
C	58°59.862	10°57.447	126		
G	58°59.799	10°58.001	125	26.09.2007	10:42:00 h
				26.09.2007	12:30:00 h
B	58°59.584	10°58.550	122	26.09.2007	15:08:00 h
C	58°59.862	10°57.447	126	26.09.2007	17:24:00 h
G	58°59.799	10°58.001	125	26.09.2007	17:57:00 h
C	58°59.862	10°57.447	126	26.09.2007	18:33:00 h
C	58°59.862	10°57.447	126		
B	58°59.584	10°58.550	122		

Name	Lat	Lon	Depth (m)	Device	Time
C	58°59.857	10°57.463		5 water sampler	06.09.2007 15:13:00 h
B	58°59.596	10°58.625		5	06.09.2007 15:40:00 h
C	58°59.855	10°57.430	5		09.09.2007 14:36:00 h
C	58°59.857	10°57.449	5		09.09.2007 14:51:00 h
C	58°59.854	10°57.448	5		09.09.2007 15:00:00 h
B	58°59.588	10°58.562	5		09.09.2007 15:23:00 h
B	58°59.586	10°58.552	5		09.09.2007 15:32:00 h
B	58°59.582	10°58.577	5		09.09.2007 15:58:00 h
C	58°59.862	10°57.447	126		13.09.2007 15:55:00 h
C	58°59.862	10°57.447	126		13.09.2007 16:11:00 h
C	58°59.862	10°57.447	126		13.09.2007 16:24:00 h
B	58°59.584	10°58.550	122		13.09.2007 16:41:00 h
B	58°59.584	10°58.550	122		13.09.2007 16:54:00 h
B	58°59.584	10°58.550	122		13.09.2007 17:09:00 h
B	58°59.584	10°58.550	122		26.09.2007 10:15:00 h
B	58°59.584	10°58.550	122		26.09.2007 11:11:00 h
B	58°59.584	10°58.550	122		26.09.2007 11:30:00 h
C	58°59.862	10°57.447	126		26.09.2007 12:13:00 h
C	58°59.862	10°57.447	126		26.09.2007 13:16:00 h
C	58°59.862	10°57.447	126		26.09.2007 14:17:00 h
G	58°59.799	10°58.001	125		26.09.2007 14:41:00 h
G	58°59.799	10°58.001	125		26.09.2007 15:31:00 h
G	58°59.799	10°58.001	125		26.09.2007 16:03:00 h

Travis

(Principal Scientist)

Dated 19.12.2007