

SOUTHAMPTON OCEANOGRAPHY CENTRE

CRUISE REPORT No. 40

RRS *CHARLES DARWIN* CRUISE 126 11 MAR - 20 MAR 2001

Piston coring of debris flows and turbidites
west and south of the Canary Islands

Principal Scientist

D G Masson

2002

Challenger Division for Seafloor Processes
Southampton Oceanography Centre
University of Southampton
Waterfront Campus
European Way
Southampton
Hants SO14 3ZH
UK

Tel: +44 (0)23 8059 6568

Fax: +44 (0)23 8059 6554

Email: dgm@soc.soton.ac.uk

DOCUMENT DATA SHEET

<p><i>AUTHOR</i></p> <p style="text-align: center;">MASSON, D G et al</p>	<p><i>PUBLICATION DATE</i></p> <p style="text-align: center;">2002</p>
<p><i>TITLE</i></p> <p>RRS <i>Charles Darwin</i> Cruise 126, 11 Mar-20 Mar 2001. Piston coring of debris flows and turbidites west and south of the Canary Islands.</p>	
<p><i>REFERENCE</i></p> <p>Southampton Oceanography Centre Cruise Report, No. 40, 15pp.</p>	
<p><i>ABSTRACT</i></p> <p>The major cruise objective was to obtain sediment cores at various locations to the west and southwest of the Canary Islands with the aims of :</p> <ul style="list-style-type: none"> ● Sampling debris flow sediments in the Canary and Saharan debris flows ● Obtaining dateable sediments immediately above and below the debris flow sediments ● Sampling turbidite sediments associated with the debris flows ● Sampling sediments on either flank of a sediment wave west of La Palma <p>In addition, it was planned to</p> <ul style="list-style-type: none"> ● obtain seabed video footage, using the SHRIMP towed camera station, at several localities where downslope sediment transport was believed to be active at the present day, and undertake some test deployments of the SOC Scatterometer system 	
<p><i>KEYWORDS</i></p> <p>Canary Island waters, <i>Charles Darwin</i>, cruise 126 2001, debris flow, sediment transport, SHRIMP, turbidites, underwater camera, videotape recording</p>	
<p><i>ISSUING ORGANISATION</i></p> <p style="text-align: center;">Southampton Oceanography Centre Empress Dock European Way Southampton SO14 3ZH UK</p>	
<p>NATIONAL OCEANOGRAPHIC LIBRARY, SOC</p> <p style="text-align: center;">Tel: +44(0)23 80596116 Fax: +44(0)23 80596115 Email: nol@soc.soton.ac.uk</p>	

CONTENTS

SCIENTIFIC PERSONNEL	7
SHIPS PERSONNEL	7
ITINERARY	9
CRUISE OBJECTIVES	9
NARRATIVE	9
SUMMARY OF RESULTS	12
TABLE 1. CD 126 Station locations	13
FIG. 1 General location map for CD 126	14
FIG. 2 Track chart/station location map for CD126	15

SCIENTIFIC PERSONNEL

MASSON, D.G.	Principal Scientist	Southampton Oceanography Centre
WYNN, R.B.		Southampton Oceanography Centre
JACOBS, C.L.		Southampton Oceanography Centre
GEE, M.R.J.		Southampton Oceanography Centre
ROGERSON, M.		Southampton Oceanography Centre
GRIGOROV, I.K.		Southampton Oceanography Centre
CHOWDHURY, S.		Southampton Oceanography Centre
KEOGH, R.T.		UKORS
PHIPPS, R.A.		UKORS
FLEWELLEN, C.G.		UKORS
BRIDGER, M.J.		UKORS
ROBERTS, R.		UKORS

SHIPS PERSONNEL

AVERY, K.O.	Master
GAULD, P.D.	
GRAVES, M.H.	
HOLMES, J.C.	
ADAMS, A.P.	
McDONALD, B.J.	
CLARKE, J.R.C.	
HEALY, A.	
BAKER, J.G.L.	
POOK, G.A.	
HARRISON, M.A.	
ALLISON, P.	
DALE, J.E.	
JOHNSON, R.	
PERKINS, J.R.	
SEARLE, P.G.C.	
BELL, R.	
LYNCH, P.A.	
DUNCAN, A.S.	
LINK, S.E.M.	
LINK, W.J.T.	

ITINERARY

Scientific party embarked by boat transfer, Funchal, Madeira
Arrived Santa Cruz, Tenerife

Sunday, 11th March
Tuesday, 20th March

CRUISE OBJECTIVES

The major cruise objective was to obtain sediment cores at various locations to the west and southwest of the Canary Islands with the aims of :

- Sampling debris flow sediments in the Canary and Saharan debris flows
- Obtaining dateable sediments immediately above and below the debris flow sediments
- Sampling turbidite sediments associated with the debris flows
- Sampling sediments on either flank of a sediment wave west of La Palma

In addition, it was planned to

- obtain seabed video footage, using the SHRIMP towed camera station, at several localities where downslope sediment transport was believed to be active at the present day, and
- undertake some test deployments of the SOC Scatterometer system

NARRATIVE (ALL TIMES ARE UTC)

11th March 2001 (Julian Day 070)

0930. Scientific party embarked by boat transfer at Funchal, Madeira. Vessel had been delayed by one day due to the necessity of landing a sick seaman in La Corunna, Spain, while on passage to Madeira

1355-1400. Echosounder and 3.5 kHz fish were deployed

1400-1930. Passage to first coring station

1930. On station at coring station CD126/01

2218. Corer triggered at 31° 27.04'N, 17° 00.43'W

12th March 2001 (Day 071)

0045. Corer on deck. End station CD126/01

0045-0813. Passage to coring station CD126/02

0813. On station CD126/02

1201. Corer triggered at 30° 59.55'N, 18° 01.00'W

1418. Corer on deck. End station CD126/02

1555-2359. Passage to coring station CD126/03

13th March 2001 (Day 072)

0000-0227. Continue passage to coring station CD126/03

0227-0335. 3.5 kHz survey of station CD126/03

0335-2359. Hove to due to bad weather

14th March 2001 (Day 073)

0000-0838. Hove to due to bad weather

0838. Weather improved sufficiently to restart coring operations. On coring station CD126/03

1314. Corer triggered at 29° 05.14'N, 18° 15.81'W

1521. Corer on deck. End station CD126/03

1611-1645. Passage to coring station CD126/04.

1649. On station CD126/04

1929. Corer triggered at 29° 04.65'N, 18° 15.55'W

2112. Corer on deck. End station CD126/04

2209-2359. Passage to station CD126/05

15th March 2001 (Day 074)

0000-0445. Passage to coring station CD126/05

0445-1220. 3.5 kHz survey in vicinity of station CD126/05

1220. On station CD126/05

1448. Corer triggered at 28° 52.55'N, 19° 56.15'W

1645. Corer on deck

1658. End station CD126/05

1658-1913. Passage to coring station CD126/06

1913. On station CD126/06

2132. Corer triggered at 28° 53.46'N, 19° 56.15'W

2321. Corer on deck. End station CD126/06

2321-2309. Passage to camera station CD126/07

16th March 2001 (Day 075)

0000-1019. Passage to camera station CD126/07

1115. SHRIMP camera system deployed

1242-1448. Camera system operation near seabed

1317. Deployed Scatterometer on port side, using crane

1448-1542. Performing tests on camera system. Begin recovery of SHRIMP

1550. Scatterometer inboard

1630. Damage to conducting cable (broken strands on cable armouring) noted during recovery

1730. Shrimp inboard. End station CD126/07

1740-1937. Passage to coring station CD126/08

1942. On station CD126/08

2149. Corer triggered at 27° 18.92'N, 18° 17.95'W

2316. Corer on deck. End station CD126/08

2324-2359. Passage to coring station CD126/09

17th March 2001 (Day 076)

0000-0104. Passage to coring station CD126/09

0104-0236. 3.5 kHz survey in vicinity of station CD126/09

0236. On station CD126/09
0427. Corer triggered at 27° 15.33'N, 18° 38.84'W
0555. Corer inboard. End station CD126/09
0626-0642. Passage to coring station CD126/10
0832. On station CD126/10
1012. Corer triggered at 27° 14.21'N, 18° 39.00'W
1148. Corer inboard. End station CD126/10
1218-1434. 3.5 kHz survey en route to coring station CD126/11
1528. On station CD126/11
1741. Corer triggered at 27° 02.39'N, 18° 29.02'W
1742-2359. Corer stuck in seabed. Manoeuvring around core site at distances of 800-1500 m to free corer.

18th March 2001 (Day 077)

0000-0448. Corer still stuck in seabed. Manoeuvring around core site at distances up to 2000 m to free corer. Corer released with maximum pullout force of 8.2 t.
0642. Corer inboard. End station CD126/11
0645-0945. 3.5 kHz survey en route to coring station 12
1012. On station CD126/12
1210. Corer triggered at 26° 41.97'N, 18° 15.04'W
1342. Corer inboard. End station CD126/12
1345-1650. 3.5 kHz survey en route to coring station CD126/13
1717. On station CD126/13
1912. Corer triggered at 26° 23.80'N, 17° 58.73'W
2048. Corer inboard. End station CD126/13
2052-2359. Passage to coring station CD126/14

19th March 2001 (Day 078)

0000-0048. Continue passage to coring station CD126/14
0048-0224. 3.5 kHz survey in vicinity of coring station CD126/14
0308. On station CD126/14
0520. Corer triggered at 27° 06.83'N, 17° 56.88'W
0700. Corer inboard. End station CD126/14
0710-0936. Passage to scatterometer trial site (CD126/15) in shelter of El Hierro island
1004-1508. On station CD126/15. Scatterometer trial
1645-1845. Passage to coring station CD126/16
1845. On station CD126/16
2036. Corer triggered at 27° 29.71'N, 17° 26.30'W
2201. Corer inboard. End station CD126/16
2215. Begin passage to Tenerife
2303-2318. Hove to recover echosounder and 3.5 kHz fish
2319-2359. Continue passage to Tenerife

20th March 2001 (Day 079)

0000-0900. Passage to Santa Cruz, Tenerife

SUMMARY OF RESULTS

This was a short but successful cruise. Fourteen coring stations were occupied, with core material recovered on every attempt. Cores were not opened on board, but subsequent laboratory work indicates that the recovered sediments should allow most of the cruise objectives to be addressed. Seabed photography and scatterometer tests were limited by the failure of the conducting cable. However, initial tests of the scatterometer were encouraging.

TABLES

Table 1. CD 126 Station locations

Station No	Station type	Latitude	Longitude	Water depth (m)	Pullout (t)	Core length (m)	Trigger core (m)	Target
1	Piston core	31° 27.25'N	17°00.43'W	4454	6.45	5.58	1.10	Turbidites in western Agadir Basin
2	Piston core	30° 59.55'N	18° 00.58'W	4566	6.54	5.19	1.14	Turbidites on north Canary slope/rise
3	Piston core	29°05.02'N	18° 15.89'W	3820	6.99	8.52	1.47	Sediment wave field
4	Piston core	29°04.65'N	18° 15.54'W	3808	6.31	8.14	1.47	Sediment wave field
5	Piston core	28°52.55'N	19°56.15'W	4520	6.35	8.52	0.66	Edge of Canary debris flow
6	Piston core	28° 53.46'N	19° 56.15'W	4540	7.90	5.81	1.27	Edge of Canary debris flow
7 (start)	SHRIMP	27°32.09'N	18°11.14'W	3130	-	-	-	Bedforms on El Julan embayment
7 (end)	SHRIMP	27°33.20'N	18°08.96'W	3000	-	-	-	Bedforms on El Julan embayment
8	Piston core	27° 18.92'N	18°17.95'W	3731	7.50	3.31	1.47	Drape over El Julan landslide
9	Piston core	27° 15.33'N	18°38.84'W	3880	6.10	4.91	1.36	South edge of Saharan debris flow
10	Piston core	27°14.21'N	18°39.00'W	3876	5.80	1.50	1.33	Just off Saharan debris flow
11	Piston core	27°02.39'N	18°29.02'W	3814	8.20	5.96	1.47	South edge of Saharan debris flow
12	Piston core	26° 41.97'N	18°15.04'W	3705	5.71	5.47	1.25	South edge of Saharan debris flow
13	Piston core	26°23.80'N	17° 58.73'W	3626	5.40	5.52	1.07	South edge of Saharan debris flow
14	Piston core	27°06.83'N	17°56.88'W	3793	5.70	4.44	0.87	North edge of Saharan debris flow
15	Scatterometer	27°33.05'N	17°57.84'W	1021	-	-	-	Scatterometer trial
16	Piston core	27°29.71'N	17°26.70'W	3653	5.86	5.25	0.89	Drape over Las Playas debris avalanche

FIGURES

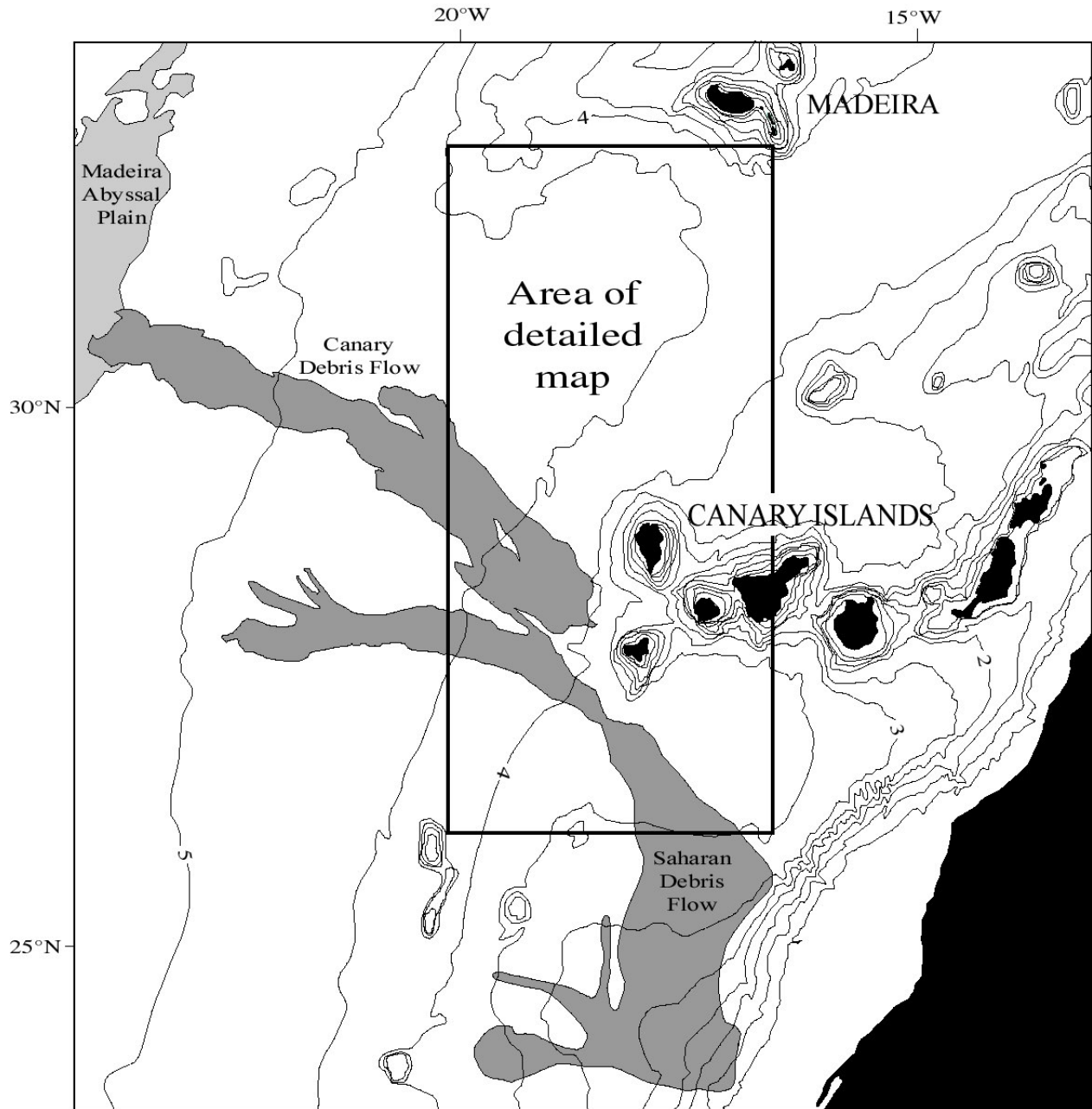


Fig. 1. General location map for CD 126

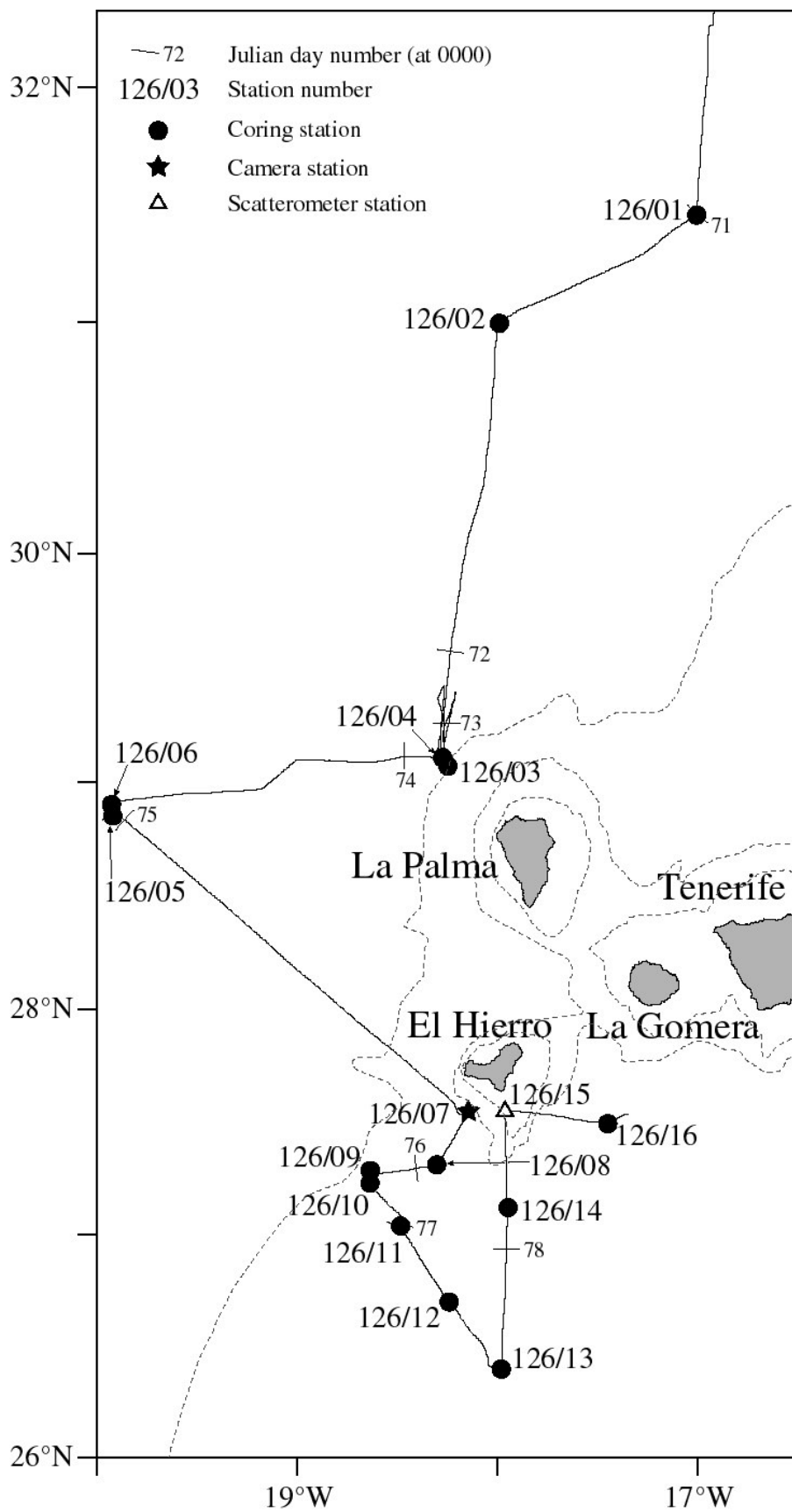


Fig. 2. Track chart and station location map for CD 126. For general location map see Fig. 1.