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Short Cruise Report

METEOR M108

Las Palmas _ Southampton

06/07/14 – 24/07/14

Chief Scientist: Professor Richard Lampitt

Captain: Michael Schneider

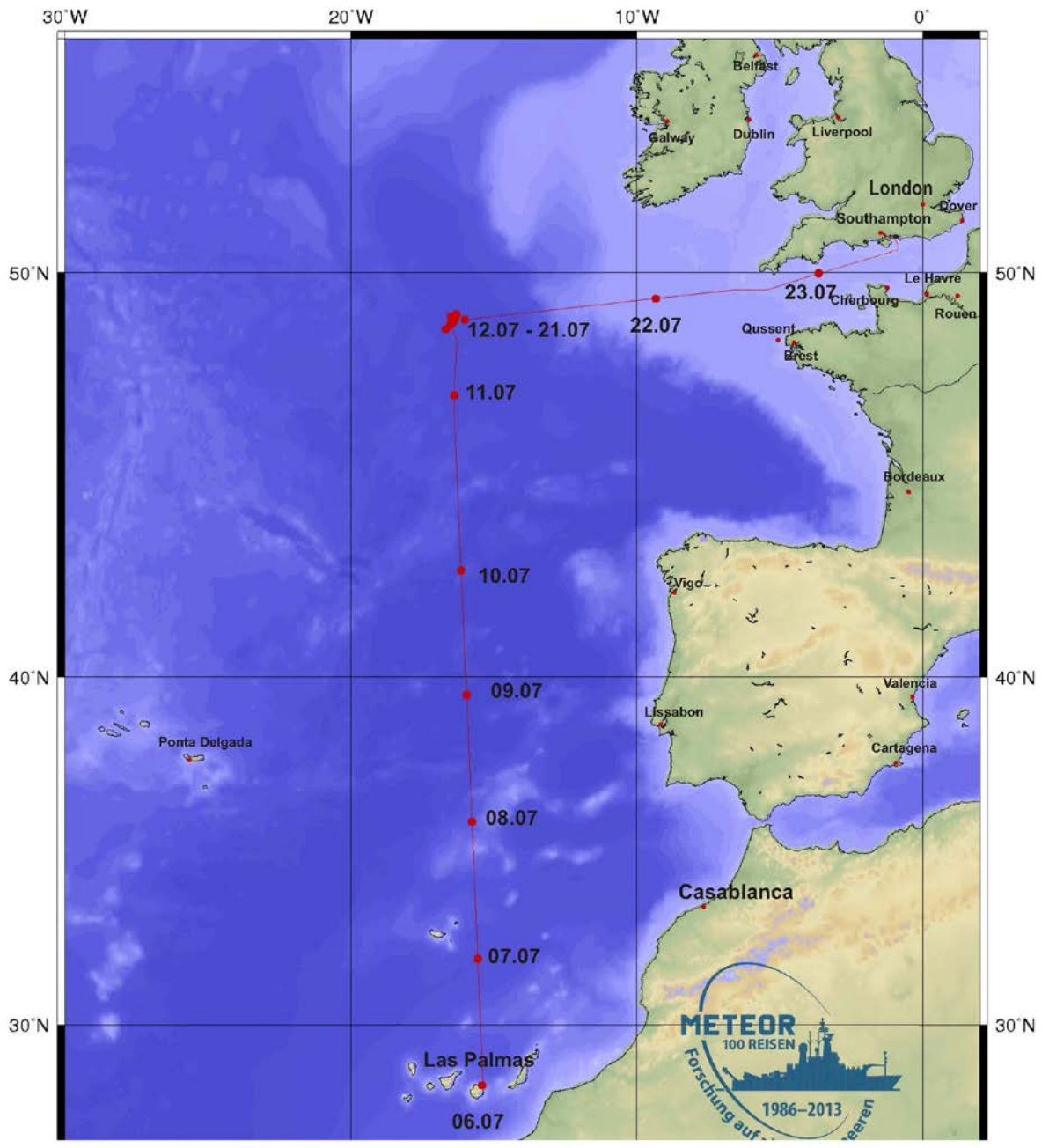


Figure 1: Cruise track

Objectives

The oceanic water column and the underlying seabed change on a variety of temporal and spatial scales. The objective of the PAP observatory is to provide high temporal resolution (hours) of an increasing number of variables which are relevant from the perspective of the biology, physics and chemistry over a relatively small spatial scale (30km). The site has been under examination for over 20 years and during that time, substantial changes have been observed in the benthic environment. The intention is to sustain and enhance these observations in order that a deeper understanding is obtained into the processes which operate; in particular the responses to the changes which are currently taking place in the global environment. The objective of the cruise was primarily to service the infrastructure required for continuous sustained observation, and to put these into context using observations from the ship which as yet cannot be carried out autonomously. In parallel to maintaining and extending existing measurements, the over view was enhanced by parallel research into nitrogen cycling processes occurring in marine aggregates along with studies of the abundance, distribution of and composition of those aggregates. These investigations were carried out using a multi instrument observational approach combined with direct sampling. In addition the cruise achieved substantial sampling of the seabed of the PAP and associated abyssal hills, directly by coring and seasonally by time lapse photography.

Narrative

On Sunday 6th July we set off from Las Palmas towards PAP. It was a slow start with a slight delay leaving Las Palmas and a stiff head wind on the way north. We did a CTD and acoustic release test on passage which was successful and on 11th July just before midnight we started in earnest with a couple of deployments of the megacorer. On 11th July we also carried out a very successful CTD deployment attached to which was the Underwater Vision Profiler (UVP5) kindly loaned to us by Rainer Kiko at GEOMAR, Kiel which was to give one of the three optical assessments of particle concentration, size distribution and characteristics. The other two were on a “snow camera system” being the HoloCam and the P-Cam each with different water volumes sampled and size categories detectable. The Marine Snow Catcher or “Snatcher” and drifting sediment traps were deployed on a number of occasions, the former (a large water bottle) to collect marine snow particles at one instant in time and the latter to collect an integrated flux of material over several hours or days. Morten Iversen from the University of Bremen has a team working on various aspects of aggregates in the laboratory as well as material collected by the drifting sediment traps.

The team on board is far too small in number, which is a challenge but everyone, from the ship side and the scientific complement worked in a highly integrated, harmonious and professional manner.

The Parflux sediment traps which are a pivotal element of the PAP observatory were prepared on passage and the sensors for the ODAS mooring (PAP 1) were also assembled into the integrated system on deck (see photo above).

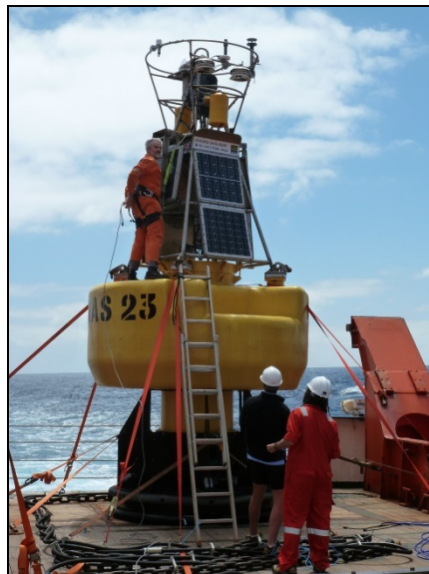


Figure 2: Jon Campbell and others preparing the ODAS buoy (PAP 1) for deployment

Deployment of the ODAS buoy and PAP 1 mooring was delayed till Tuesday 15th so that some fine tuning of the software could be carried out and at the end of this, the entire complex system was working very well on deck. Fresh data immediately started to be transmitted to the PAP website with excellent support from Maureen Pagnani at NOC.



Figure 3 The snow camera system.

The long term moored sediment trap mooring was recovered with perfect samples for promising analysis back at NOC and a new mooring was deployed for another year of sampling. The Bathysnap time lapse camera was also successfully recovered with some stunning images of the seabed every 8 hours over the past year and this was re-deployed for another year. All conductivity, temperature and depth (CTD) profiles achieved a 100% success rate giving essential insights into the water structure from the perspective of biogeochemistry and physics. We deployed a megacorer and box core on several occasions with some of the highest success rate to date at PAP.

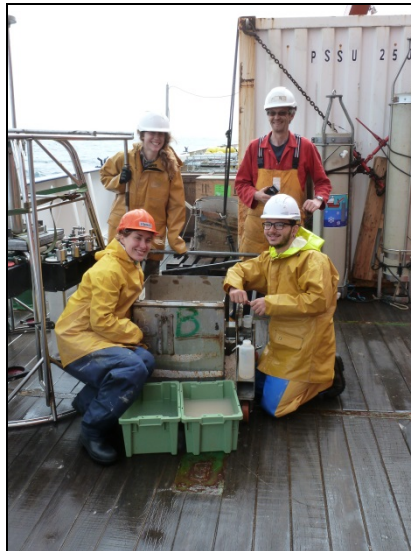


Figure 4 Brian Bett and the benthic team, happy to have a perfect sample of sediment in the box corer.

This was partly due to the very calm weather which makes such deployments more reliable. The weather has been perfect but rather cloudy therefore no satellite data is available at this time.

Acknowledgements

The success and smooth running of this cruise was in a large part due to the experience and professionalism of the ships crew and Captain and I would like to extend my grateful thanks for their enthusiasm and dedication.

Participants

LAMPITT	RICHARD STEPHEN	Chief Scientist	NOC
CAMPBELL	JONATHAN MICHAEL	Engineer	NOC
PEBODY	CORINNE ANNE	Technician	NOC
PABORTSAVA	KATSIARYNA	PhD Student	NOC
BETT	BRIAN JAMES	Scientist	NOC
MORRIS	ANDREW	Scientist	NOC
STEFANOUDIS	PARIS VASILEIOS	PhD Student	NOC
BRASIER	MADELEINE	PhD Student	NHM
GUNTON	IAETITIA	PhD Student	NOC
IVERSEN	MORTEN	Scientist	Universität Bremen
FUSSEL	JESSIKA	Scientist	Universität Bremen
PASTOR	JENNIFER	PhD Student	Universität Bremen
PLATT	WILLIAM	Engineer	NOC
CHILDS	DAVID	Engineer	NOC
MCLACHLAN	ROB	Engineer	NOC
PROVOST	PAUL		NOC

Institute:

NOC

National Oceanography Centre, Southampton

Universität Bremen

Stationsliste

Station list

0			Start				End				
Start	End	Station	Latitude		Longitude		Latitude		Longitude		Equipment
			North	West	North	West	North	West	North	West	
09/07/2014 09:14	09/07/2014 09:21	742	39	30.92	15	57.51	39	30.91	15	57.52	CTD/rosette water sampler
09/07/2014 10:05	09/07/2014 13:44	743	39	30.92	15	57.52	39	30.92	15	57.52	CTD/rosette water sampler
11/07/2014 17:43	11/07/2014 17:50	744	48	8.25	16	18.85	48	9.00	16	18.77	Expendable CTD
11/07/2014 23:40	12/07/2014 03:50	745	48	50.10	16	31.15	48	50.05	16	31.14	Megacorer
12/07/2014 04:33	12/07/2014 08:40	746	48	50.06	16	31.15	48	50.06	16	31.15	Megacorer
12/07/2014 10:25	12/07/2014 11:52	747	48	59.99	16	30.00	48	60.00	16	30.00	CTD/rosette water sampler
12/07/2014 12:45	12/07/2014 13:07	748	48	60.00	16	30.00	48	59.96	16	30.01	Marine Snow camera
12/07/2014 13:58	12/07/2014 14:09	749	48	59.99	16	29.98	48	59.99	16	29.98	Snowcatcher
12/07/2014 14:28	12/07/2014 14:35	750	48	59.99	16	29.98	48	59.99	16	29.98	Snowcatcher
12/07/2014 20:49	12/07/2014 21:50	751	48	59.99	16	29.98	48	59.99	16	29.98	Marine Snow camera
12/07/2014 23:41	13/07/2014 03:41	752	48	50.07	16	31.16	48	50.07	16	31.16	Megacorer
13/07/2014 04:58	13/07/2014 08:45	753	48	50.07	16	31.16	48	50.07	16	31.16	Box corer
13/07/2014 09:35	13/07/2014 10:15	754	48	50.07	16	31.16	48	49.62	16	30.99	Deploy drifting sediment traps
13/07/2014 13:37	13/07/2014 14:40	755	48	49.43	16	31.19	48	49.20	16	31.45	Marine Snow camera
13/07/2014 15:10	13/07/2014 15:58	756	48	49.41	16	31.17	48	49.25	16	31.33	CTD/rosette water sampler
13/07/2014 22:25	13/07/2014 23:46	757	48	49.40	16	31.16	48	49.40	16	31.16	Marine Snow camera
14/07/2014 00:15	14/07/2014 03:42	758	48	50.06	16	31.13	48	50.00	16	31.15	Megacorer
14/07/2014 04:52	14/07/2014 06:54	759	48	49.94	16	32.00	48	49.94	16	32.00	Marine Snow camera
14/07/2014 10:11	14/07/2014 10:37	760	48	43.59	16	40.77	48	43.36	16	41.02	Recover drifting sediment traps
14/07/2014 11:16	14/07/2014 12:25	761	48	43.28	16	41.04	48	43.22	16	41.12	CTD/rosette water sampler
14/07/2014 12:40	14/07/2014 13:16	762	48	43.24	16	41.08	48	43.18	16	41.25	WP2 Zooplankton net
14/07/2014 13:20	14/07/2014 13:56	763	48	43.18	16	41.25	48	43.06	16	41.46	WP2 Zooplankton net
14/07/2014 14:28	14/07/2014 15:08	764	48	43.05	16	41.48	48	43.00	16	42.00	Marine Snow camera
14/07/2014 17:20	14/07/2014 19:41	765	49	0.25	16	26.47	49	0.38	16	26.42	Recover Bathysnap
14/07/2014 19:59	14/07/2014 20:41	766	49	0.38	16	26.43	49	0.38	16	26.44	CTD/rosette water sampler
14/07/2014 20:56	14/07/2014 22:58	767	49	0.39	16	26.42	49	0.39	16	26.41	Marine Snow camera
15/07/2014 09:18	15/07/2014 16:15	768	49	5.66	16	18.49	49	1.77	16	19.14	Deploy PAP#1 mooring **
15/07/2014 16:46	15/07/2014 17:15	769	49	3.18	16	21.54	49	3.15	16	21.52	CTD/rosette water sampler
15/07/2014 18:04	15/07/2014 19:45	770	49	3.15	16	21.52	49	2.81	16	21.39	Marine Snow camera
15/07/2014 23:42	16/07/2014 00:20	771	48	50.08	16	31.17	48	50.08	16	31.17	WP2 Zooplankton net
16/07/2014 00:25	16/07/2014 01:09	772	48	50.08	16	31.17	48	50.07	16	31.17	WP2 Zooplankton net
16/07/2014 01:27	16/07/2014 04:51	773	48	50.07	16	31.17	48	50.05	16	31.17	Megacorer
16/07/2014 09:01	16/07/2014 09:56	774	49	0.00	16	29.99	49	0.00	16	29.99	CTD/rosette water sampler
16/07/2014 10:48	16/07/2014 12:12	775	49	0.00	16	29.99	48	59.95	16	29.93	Marine Snow camera
16/07/2014 12:31	16/07/2014 13:14	776	48	59.94	16	29.93	48	59.76	16	29.74	Deploy drifting sediment traps
16/07/2014 13:51	16/07/2014 18:08	777	48	59.47	16	26.59	48	57.83	16	27.37	Recover PAP#3 sediment trap mooring
16/07/2014 19:02	16/07/2014 22:42	778	48	58.53	16	27.45	48	57.79	16	26.59	CTD/rosette water sampler
16/07/2014 23:20	17/07/2014 00:02	779	48	57.79	16	26.59	48	57.79	16	26.59	Marine Snow camera
17/07/2014 00:33	17/07/2014 01:13	780	48	57.79	16	26.59	48	57.49	16	26.37	Marine Snow camera
17/07/2014 02:15	17/07/2014 05:47	781	48	50.04	16	31.07	48	50.06	16	31.15	Box corer
17/07/2014 07:31	17/07/2014 08:06	782	49	1.58	16	25.42	49	1.52	16	25.31	Deploy Bathysnap
17/07/2014 09:29	17/07/2014 10:01	783	48	53.31	16	25.36	48	53.11	16	25.37	CTD/rosette water sampler
17/07/2014 10:28	17/07/2014 11:55	784	48	53.01	16	25.38	48	52.49	16	25.57	Marine Snow camera
17/07/2014 12:10	17/07/2014 12:55	785	48	52.48	16	25.57	48	52.13	16	25.63	WP2 Zooplankton net
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17/07/2014 14:11	17/07/2014 14:25	787	48	51.84	16	25.51	48	51.72	16	25.32	Snowcatcher
17/07/2014 14:43	17/07/2014 14:55	788	48	51.51	16	25.24	48	51.44	16	25.11	Snowcatcher
17/07/2014 15:13	17/07/2014 15:44	789	48	51.28	16	25.11	48	50.93	16	24.68	CTD/rosette water sampler
17/07/2014 16:01	17/07/2014 16:27	790	48	50.66	16	25.11	48	50.40	16	24.91	Recover drifting sediment traps
17/07/2014 18:43	17/07/2014 19:31	791	49	0.49	16	19.23	49	0.49	16	19.23	Marine Snow camera
17/07/2014 22:50	18/07/2014 00:17	792	48	59.95	16	30.12	49	0.04	16	30.02	Marine Snow camera

18/07/2014 00:23	18/07/2014 01:12	793	49	0.04	16	30.01	49	0.08	16	29.96	WP2 Zooplankton net
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18/07/2014 03:42	18/07/2014 06:37	795	49	6.92	16	37.80	49	6.95	16	37.08	Megacorer
18/07/2014 08:21	18/07/2014 11:37	796	48	58.92	16	29.76	48	59.09	16	25.37	Deploy PAP#3 sediment trap mooring
18/07/2014 12:36	18/07/2014 13:00	797	48	58.86	16	18.41	48	58.86	16	18.41	Snowcatcher
18/07/2014 13:02	18/07/2014 17:26	798	48	58.86	16	18.41	48	58.62	16	18.98	Recover PAP#1 mooring
18/07/2014 18:48	18/07/2014 19:11	799	48	58.67	16	16.21	48	58.67	16	16.21	CTD/rosette water sampler
18/07/2014 19:24	18/07/2014 20:01	800	48	58.67	16	16.21	48	58.61	16	16.24	Deploy drifting sediment traps
18/07/2014 20:13	18/07/2014 21:41	801	48	58.30	16	16.52	48	58.28	16	16.52	Marine Snow camera
18/07/2014 23:56	19/07/2014 00:38	802	48	58.23	16	16.49	48	58.23	16	16.49	Marine Snow camera
19/07/2014 00:47	19/07/2014 01:37	803	48	58.23	16	16.49	48	58.22	16	16.50	WP2 Zooplankton net
19/07/2014 01:39	19/07/2014 02:28	804	48	58.22	16	16.50	48	58.20	16	16.50	WP2 Zooplankton net
19/07/2014 03:56	19/07/2014 07:32	805	48	50.07	16	31.18	48	50.07	16	31.18	Megacorer
19/07/2014 08:37	19/07/2014 12:12	806	48	50.07	16	31.18	48	50.09	16	31.16	Box corer
19/07/2014 13:42	19/07/2014 13:52	807	48	52.43	16	17.95	48	52.39	16	18.00	Snowcatcher
19/07/2014 14:09	19/07/2014 14:37	808	48	52.22	16	18.19	48	52.04	16	18.14	CTD/rosette water sampler
19/07/2014 15:02	19/07/2014 16:22	809	48	51.63	16	17.69	48	51.05	16	17.54	Marine Snow camera
19/07/2014 16:30	19/07/2014 16:57	810	48	50.92	16	17.41	48	50.76	16	17.48	CTD/rosette water sampler
19/07/2014 17:18	19/07/2014 18:47	811	48	50.47	16	17.19	48	49.70	16	17.78	Marine Snow camera
19/07/2014 18:54	19/07/2014 19:15	812	48	49.56	16	17.70	48	49.50	16	17.84	CTD/rosette water sampler
19/07/2014 19:29	19/07/2014 19:48	813	48	49.58	16	17.59	48	49.39	16	17.66	Recover drifting sediment traps
19/07/2014 20:21	19/07/2014 21:42	814	48	49.35	16	17.69	48	49.34	16	17.68	Marine Snow camera
19/07/2014 22:17	19/07/2014 23:33	815	48	49.34	16	17.68	48	49.35	16	17.68	Marine Snow camera
20/07/2014 02:07	20/07/2014 05:17	816	49	4.43	16	15.82	49	4.44	16	15.80	Box corer
20/07/2014 11:38	20/07/2014 12:27	817	48	59.99	16	29.83	49	0.01	16	29.85	WP2 Zooplankton net
20/07/2014 12:28	20/07/2014 13:08	818	49	0.00	16	29.85	48	59.95	16	29.82	WP2 Zooplankton net
20/07/2014 13:16	20/07/2014 13:41	819	48	59.95	16	29.83	48	59.90	16	29.59	CTD/rosette water sampler
20/07/2014 13:52	20/07/2014 17:50	820	48	59.92	16	29.75	48	59.44	16	28.13	CTD/rosette water sampler
20/07/2014 18:01	20/07/2014 18:32	821	48	59.43	16	28.11	48	59.51	16	27.85	Deploy drifting sediment traps
20/07/2014 18:56	20/07/2014 20:20	822	48	59.63	16	27.66	48	59.31	16	27.09	Marine Snow camera
20/07/2014 20:39	20/07/2014 21:25	823	48	59.19	16	26.85	48	58.87	16	26.23	CTD/rosette water sampler
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21/07/2014 00:05	21/07/2014 01:25	825	48	57.96	16	24.67	48	57.36	16	23.91	Marine Snow camera
21/07/2014 02:13	21/07/2014 03:32	826	48	57.01	16	23.65	48	56.40	16	23.06	Marine Snow camera
21/07/2014 04:02	21/07/2014 05:28	827	48	56.26	16	22.81	48	55.68	16	22.90	Marine Snow camera
21/07/2014 06:01	21/07/2014 07:28	828	48	55.65	16	22.77	48	55.24	16	22.56	Marine Snow camera
21/07/2014 08:15	21/07/2014 08:37	829	48	55.03	16	22.42	48	54.90	16	22.24	Recover drifting sediment traps
21/07/2014 08:45	21/07/2014 09:27	830	48	54.90	16	22.24	48	54.90	16	22.24	CTD/rosette water sampler