

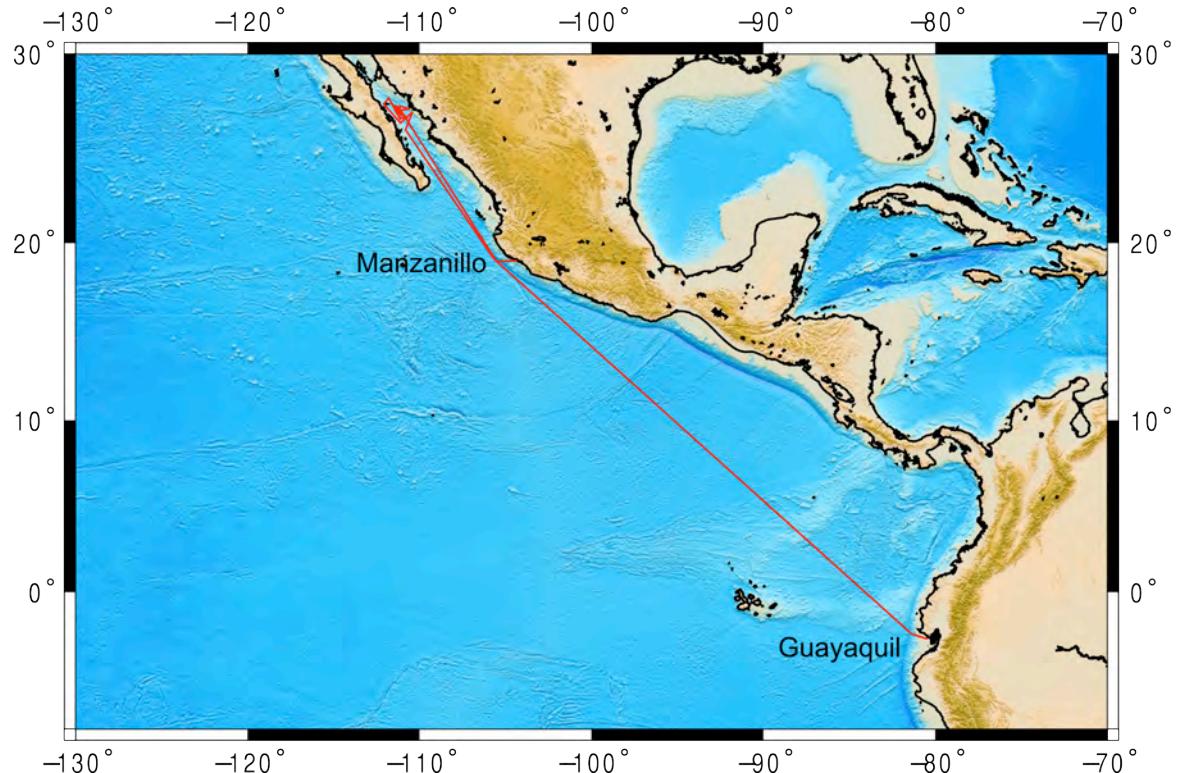
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Short Cruise Report Sonne 241

Manzanillo - Guayaquil
23.6.2015 – 24.7.2015

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Captain: Oliver Meyer



Objectives

The major goal of this cruise was to test the hypothesis, that magmatic intrusions into marine sediments can induce the release of sufficient amounts of organic carbon to change climate (Svensen et al., 2004). For this purpose we have addressed the following questions.

First of all, we have tried to constrain the mass of carbon, which is buried in the sediments of the Guaymas Basin, and hence may be released by magmatic intrusions and heating/melting of sediments (Lizarralde et al. 2010). Lizarralde et al. (2010) used DSDP results for estimating the number of sills. Those data, however, indicate major variations in the upper sediment column (1-4 wt.%; DSDP sites 478, 481; Curay and Moore, 1982; Simoneit und Lonsdale, 1982). We have attempted to improve these estimates by systematic coring.

The second objective was to constrain the volume of sills that recently intruded into the Guaymas Basin. To this end we have conducted high-resolution 2D and 3D seismic surveys and ocean bottom seismometer experiments. These data will also be used to estimate the volume of the metamorphic aureole around the sill intrusions which is the carbon source for the hydrothermal vent fluids. While Svensen et al. (2004) used a simple approach to estimate the amount of methane released from around the magmatic aureole, we will use a more comprehensive, thermal-geochemical approach, which will consider 3D-heat distribution around a sill and kinetic laws for the thermal cracking of organic compounds (Berner et al., 1995). This will allow us to approach the time lag between the intrusion of magma and the discharge of hydrothermal fluids at the seafloor, and hence constrain the results of Lizarralde et al. (2010).

A factor that has not been considered to date is which fraction of the carbon released by heating will actually arrive at the seafloor. Only rapid migration of methane enriched fluids, which would bypass sedimentary filters, would eventually have the chance to reach the atmosphere and become relevant in terms of climate change. Slow advection would enhance biogeochemical processes like AOM, which effectively “filters” methane by oxidation to CO₂ and conversion to bicarbonate, which, in turn, favours the formation of authigenic carbonates as a final sink for mobilized carbon. In order to provide reliable estimates of the mass of carbon reaching the seafloor and being released into the water column it is essential to determine the concentration of dissolved and free gas in pore waters and in the bottom water. We address this aspect of our study by a detailed study on active systems and has not been done before (e.g. Svensen et al., 2004; Lizarralde et al. (2010)). Specifically, the pore water geochemical investigations that we have conducted will allow us to calculate the fluid advection rates and the release of methane into the water column. The suggested pore water geochemical investigations, specifically the application of various isotopic tracers (e.g. δ¹⁸O, δD, δ¹³C, δ⁷Li, 87Sr/86Sr on pore fluids and δ¹³C, δD, C₁-C₁₂ on hydrocarbon gases and CO₂) will help us to elucidate this question and help to develop a consistent model of fluid formation and circulation.

Overall, we have conducted an extensive research program addressing (i) the precise localization and characterisation of fluid vents using hydroacoustic and seismic methods, (ii) the calculation of fluid advection rates at active vents, (iii) the origin of fluids and gases by isotope-geochemical and biomarker analyses (testing the hypothesis of Chan et al., 1994; open hydrothermal system), (iv) plume detection and surveys in order to quantify the carbon output from sediments, and the variability of fluid discharge over time by dating of authigenic carbonates. Detailed surveys of the vent fields will allow us to quantify the amount of carbon stored in authigenic carbonates. This, in turn, will provide us with an estimate of the fraction of carbon, which was released in the subsurface, but did not reach the water column, and hence is removed from biogeochemical cycles for a longer period of time and cannot affect climate.

Our investigations will provide an updated estimate of the mass of carbon that can be

released from sediments upon magmatic intrusions and specifically to calculate the amount of carbon recently arriving at the seafloor and emitting into bottom water.

Narrative

RV Sonne left Manzanillo late in the morning of June 23 after tropical storm Carlos had led to delays in the harbor schedule. We arrived in the study area on the morning of June 25 and ran a first TV-CTD and water column sampling program during the morning. In the afternoon we sampled a seep site with dead mussel beds and small carbonate nodules in the northwestern part of the basin close to Tortuga Island using the video multicorer and the video grab. In the evening we began the hydroacoustic program and at 0000 2D seismic surveying of the entire basin. The seismic system was deployed in the early morning of June 26 and recording started at 0530.

We continued shooting 2D seismic data in calm conditions until June 29 0630. Because of the calm seas and the new array configuration with two airguns the quality of the seismic data surpassed all previous surveys that we have conducted with the same system. Already during the survey a first run of data processing was conducted, and the data were used to plan the subsequent coring operations.

On June 29 we started coring using a gravity corer. The very first core already produced exciting results smelling strongly of H₂S and containing large nodules of hydrate indicating active methane venting. Throughout the day we collected more sediment cores for pore water analysis and microbiological measurements. In the evening of the 29th we carried out a test of the ocean bottom seismometer (OBS) releasers. Unfortunately two of the releasers did not work properly so we were limited to 11 OBS. During the night to Tuesday we carried out two water sampling and CTD profiles and continued coring with the TV multicorer on June 30 until the evening when we switched to the TV grab which successfully sampled several large carbonate blocks.

On July 1 at midnight we began to deploy the ocean bottom seismometers to image one of the seep sites close to the northern rift axis. The operation was finished in the early morning. Originally we intended to collect 3D seismic data, but due to technical problems of the P-Cable system we were only able to shoot along transects across the OBS without collecting 3D seismic data. Shooting of transects across the OBS continued until 0800 on the July 2. Then we continued TV multicorer sampling at the same vent site discovering living chemosynthetic ecosystems indicating recent venting. Coring and CTD casts continued throughout the day before deploying the airgun again to shoot more seismic data for the OBS throughout the night.

On July 3 we steamed towards Guaymas to meet the pilot boat that delivered a spare part for the engine. In the early morning we collected one more TV multicorer and water samples on the shelf to determine the shelfal sediment input before getting to the meeting point just outside Guaymas harbor. Arriving in Guaymas we found that the wrong spare was sent, but some material for fixing the cooling system could be purchased. In the afternoon we left for the western termination of the northern rift segment where we discovered water column temperature anomalies indicating active seepage. We continued with water sampling and TV-multicorer deployments. These operations continued throughout July 4. In the evening of July 4 the backup cooling system of the ship was confirmed to support one compressor and we could resume shooting seismic data into the OBS.

During the fifth of July we acquired multibeam and and parasound data to fill gaps in our data coverage while repairing the broken cooling system pipe and preparing HyBis for deployment. The first HyBis transect was carried out on the southern flank of the northern rift system across a remarkable sedimentary edifice that was discovered in the 2D seismic data. We found several smokers not dissimilar to those in the southern rift system of the Guaymas Basin and we used the grab to recover a sample of the seafloor. During the

second HyBis dive we discovered several additional smokers both active and extinct. Subsequent CTD transects showed that the lower 300 m of the water column are perturbed with elevated temperatures and high methane concentrations.

These operations lasted until 8 am on July 6 when we switched back to TV-multicoring until the evening. At 21:00 we deployed the 2D streamer to obtain more information on the hydrothermal vent site and the surrounding geology. In the morning of July 7 we collected a sound velocity profile for the multi-beam system and sailed back to the slope of Guaymas where we took two 10 m-long gravity cores to determine temporal variations in the oxygen minimum zone. Afterwards we collected another spare part for the ship's cooling system from the pilot station off Guaymas and sailed back to the survey area where we redeployed the 2D seismic system. We acquired three 2D seismic lines until 11 am on the next day.

On July 8 we retrieved the 2D seismic system and released the OBSs. All eleven instruments came up and have recorded data. In the night to July 9 we collected a gravity core to date the age of the black smoker edifice and managed to run a CTD water sampler into one of the hot vents to sample the expelled fluids which worked very well. Afterwards we tried again to get the 3D seismic system to run, which was working until about midnight, but then stopped working. It turned out that the surface water temperature of 30 degree C is too high to cool down the modem near the paravane which interrupted the Ethernet connection. We switched back to 2D seismic which ran successfully for two days until July 11.

On July 11 we took a TV grab at the big cold seep in the central part of the OBS survey collecting carbonate samples that will be used to construct the seepage history in the central part of the basin. Afterwards we took two gravity cores in the hydrothermally altered sediments around the black smoker. Throughout the night we ran two heat flow transects in the same area and continued with gravity coring until the next day.

In the evening of July 12 we continued 2D seismic surveying at the edges of the basin. This lasted until July 14. On the 14th we collected two TV multicorers, ran a CTD across the vent site, retrieved our ADCP lander and took one TV grab lander before we ran another heat flow profile throughout the vent region.

The work program ended on July 15. In the morning we took a gravity at the central seep site before setting sail for Guayaquil at noon.

Acknowledgements

We thank the Federal Ministry of Education and Science (BMBF)'s Sonne program for funding the expedition. We would also like to thank the master and the ship's crew of R/V Sonne for their relentless support and making our research possible. We thank Dan Lizarralde of WHOI for providing seismic data that was used during cruise planning.

Participants

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Station list

Station	date	time (UTC)	Device	Latitude	Longitude	Action
SO241/1	25.06.2015	12:15:00 PM	CTD	27° 30,781' N	111° 41,062' W	station start
SO241/1	25.06.2015	01:28:00 PM	CTD	27° 30,728' N	111° 40,932' W	Bodenkontakt, Posidonia
SO241/1	25.06.2015	01:28:00 PM	CTD	27° 30,717' N	111° 40,915' W	Bodenkontakt Schiff, SL:1732 m, SZ: 8 kN
SO241/1	25.06.2015	01:30:00 PM	CTD	27° 30,716' N	111° 40,915' W	profile start
SO241/1	25.06.2015	03:15:00 PM	CTD	27° 30,063' N	111° 40,658' W	profile end
SO241/1	25.06.2015	03:52:00 PM	CTD	27° 30,069' N	111° 40,654' W	station end
SO241/2	25.06.2015	06:25:00 PM	Multi Corer	27° 30,599' N	111° 40,517' W	station start
SO241/2	25.06.2015	10:19:00 PM	Multi Corer	27° 30,545' N	111° 40,906' W	Bodenkontakt, Posidonia
SO241/2	25.06.2015	10:19:00 PM	Multi Corer	27° 30,558' N	111° 40,922' W	Bodenkontakt Schiff, SL:1744m
SO241/2	25.06.2015	11:21:00 PM	Multi Corer	27° 30,535' N	111° 40,899' W	station end
SO241/3	25.06.2015	11:22:00 PM	GRAB	27° 30,535' N	111° 40,899' W	station start
SO241/3	26.06.2015	01:27:00 AM	GRAB	27° 30,529' N	111° 40,883' W	Bodenkontakt, Posidonia
SO241/3	26.06.2015	01:27:00 AM	GRAB	27° 30,532' N	111° 40,910' W	Bodenkontakt Schiff, SL: 1745 m
SO241/3	26.06.2015	02:26:00 AM	GRAB	27° 30,538' N	111° 40,907' W	station end
SO241/4	database error					
SO241/5	26.06.2015	02:30:00 AM	Multibeam & Parasound	27° 30,513' N	111° 40,867' W	station start
SO241/5	26.06.2015	05:00:00 AM	Multibeam & Parasound	27° 14,781' N	111° 29,085' W	station end
SO241/6	26.06.2015	05:31:00 AM	2D-Seismik	27° 13,453' N	111° 27,946' W	station start
SO241/6	26.06.2015	09:41:00 AM	2D-Seismik	27° 21,907' N	111° 21,318' W	start of line P2001
SO241/6	26.06.2015	11:12:00 AM	2D-Seismik	27° 25,984' N	111° 18,129' W	end of line P2001
SO241/6	26.06.2015	11:28:00 AM	2D-Seismik	27° 26,929' N	111° 18,842' W	start of line P2002
SO241/6	26.06.2015	04:30:00 PM	2D-Seismik	27° 44,827' N	111° 47,405' W	end of line P2002
SO241/6	26.06.2015	04:37:00 PM	2D-Seismik	27° 44,710' N	111° 47,898' W	start of line P2003
SO241/6	26.06.2015	07:52:00 PM	2D-Seismik	27° 37,069' N	111° 53,919' W	end of line P2003
SO241/6	26.06.2015	08:06:00 PM	2D-Seismik	27° 36,257' N	111° 53,594' W	start of line P2004
SO241/6	27.06.2015	07:18:00 AM	2D-Seismik	27° 11,829' N	111° 14,149' W	end of line P2004
SO241/6	27.06.2015	07:27:00 AM	2D-Seismik	27° 11,961' N	111° 13,492' W	start of line P2005
SO241/6	27.06.2015	08:09:00 AM	2D-Seismik	27° 14,430' N	111° 11,827' W	end of line P2005
SO241/6	27.06.2015	08:20:00 AM	2D-Seismik	27° 15,094' N	111° 11,949' W	start of line P2006
SO241/6	27.06.2015	05:01:00 PM	2D-Seismik	27° 42,073' N	111° 54,562' W	end of line P2006
SO241/6	27.06.2015	05:11:00 PM	2D-Seismik	27° 42,809' N	111° 54,366' W	start of line P2007
SO241/6	27.06.2015	05:22:00 PM	2D-Seismik	27° 43,527' N	111° 53,697' W	end of line P2007
SO241/6	27.06.2015	05:34:00 PM	2D-Seismik	27° 43,659' N	111° 52,963' W	start of line P2008
SO241/6	28.06.2015	07:19:00 AM	2D-Seismik	27° 18,153' N	111° 11,973' W	end of line P2008
SO241/6	28.06.2015	07:25:00 AM	2D-Seismik	27° 18,565' N	111° 11,807' W	start of line P2009
SO241/6	28.06.2015	10:08:00 AM	2D-Seismik	27° 30,844' N	111° 12,202' W	end of line P2009
SO241/6	28.06.2015	10:15:00 AM	2D-Seismik	27° 31,367' N	111° 12,529' W	start of line P2010
SO241/6	28.06.2015	11:56:00 AM	2D-Seismik	27° 36,408' N	111° 21,489' W	end of line P2010
SO241/6	28.06.2015	12:05:00 PM	2D-Seismik	27° 36,386' N	111° 22,143' W	start of line P2011
SO241/6	28.06.2015	02:53:00 PM	2D-Seismik	27° 24,833' N	111° 30,926' W	end of line P2011
SO241/6	28.06.2015	03:05:00 PM	2D-Seismik	27° 23,975' N	111° 31,051' W	start of line P2012
SO241/6	28.06.2015	07:31:00 PM	2D-Seismik	27° 04,282' N	111° 30,294' W	end of line P2012
SO241/6	28.06.2015	08:24:00 PM	2D-Seismik	27° 03,026' N	111° 29,595' W	start of line P2013

SO241/6	29.06.2015	02:48:00 AM	2D-Seismik	27° 25,779' N	111° 41,020' W	end of line P2013
SO241/6	29.06.2015	02:56:00 AM	2D-Seismik	27° 26,256' N	111° 41,029' W	start of line P2014
SO241/6	29.06.2015	07:50:00 AM	2D-Seismik	27° 39,260' N	111° 26,026' W	end of line P2014
SO241/6	29.06.2015	08:08:00 AM	2D-Seismik	27° 40,060' N	111° 26,673' W	start of line P2015
SO241/6	29.06.2015	11:28:00 AM	2D-Seismik	27° 39,599' N	111° 45,830' W	end of line P2015
SO241/6	29.06.2015	12:01:00 PM	2D-Seismik	27° 39,633' N	111° 48,080' W	station end
SO241/7	29.06.2015	01:31:00 PM	Gravity Corer	27° 33,299' N	111° 32,851' W	station start
SO241/7	29.06.2015	02:12:00 PM	Gravity Corer	27° 33,285' N	111° 32,866' W	Bodenkontakt, Posidonia
SO241/7	29.06.2015	02:12:00 PM	Gravity Corer	27° 33,301' N	111° 32,882' W	Bodenkontakt Schiff, SL: 1867 m, SZ: 19 kK
SO241/7	29.06.2015	03:10:00 PM	Gravity Corer	27° 33,300' N	111° 32,887' W	station end
SO241/8	29.06.2015	04:00:00 PM	Gravity Corer	27° 33,298' N	111° 32,878' W	station start
SO241/8	29.06.2015	04:39:00 PM	Gravity Corer	27° 33,301' N	111° 32,884' W	Bodenkontakt Schiff, SL: 1866 m, SZ: 18 kN
SO241/8	29.06.2015	05:23:00 PM	Gravity Corer	27° 33,301' N	111° 32,885' W	station end
SO241/9	29.06.2015	06:35:00 PM	Gravity Corer	27° 28,141' N	111° 28,437' W	station start
SO241/9	29.06.2015	07:15:00 PM	Gravity Corer	27° 28,125' N	111° 28,405' W	Bodenkontakt, Posidonia
SO241/9	29.06.2015	07:15:00 PM	Gravity Corer	27° 28,139' N	111° 28,421' W	Bodenkontakt Schiff, SLmax: 1860m ; Wassertiefe: 1838m
SO241/9	29.06.2015	08:17:00 PM	Gravity Corer	27° 28,140' N	111° 28,419' W	station end
SO241/10	29.06.2015	09:01:00 PM	Gravity Corer	27° 26,530' N	111° 29,929' W	station start
SO241/10	29.06.2015	09:43:00 PM	Gravity Corer	27° 26,549' N	111° 29,922' W	Bodenkontakt, Posidonia
SO241/10	29.06.2015	09:43:00 PM	Gravity Corer	27° 26,531' N	111° 29,928' W	Bodenkontakt Schiff, SL: 1872m
SO241/10	29.06.2015	10:28:00 PM	Gravity Corer	27° 26,532' N	111° 29,927' W	station end
SO241/11	29.06.2015	10:39:00 PM	Releasertest	27° 26,529' N	111° 29,925' W	station start
SO241/11	30.06.2015	12:27:00 AM	Releasertest	27° 26,530' N	111° 29,923' W	station end
SO241/12	30.06.2015	12:48:00 AM	CTD	27° 26,160' N	111° 30,263' W	station start
SO241/12	30.06.2015	02:08:00 AM	CTD	27° 26,133' N	111° 30,268' W	Bodensicht, Posidonia
SO241/12	30.06.2015	02:08:00 AM	CTD	27° 26,151' N	111° 30,280' W	Bodensicht, SL: 1843 m, SZ: 8 kN
SO241/12	30.06.2015	03:19:00 AM	CTD	27° 26,149' N	111° 30,271' W	station end
SO241/13	30.06.2015	04:23:00 AM	CTD	27° 33,344' N	111° 32,871' W	station start
SO241/13	30.06.2015	06:10:00 AM	CTD	27° 33,328' N	111° 32,874' W	Bodensicht, Posidonia
SO241/13	30.06.2015	06:10:00 AM	CTD	27° 33,344' N	111° 32,886' W	Bodensicht, SLmax: 1827m , Wassertiefe: 1846m
SO241/13	30.06.2015	06:24:00 AM	CTD	27° 33,348' N	111° 32,885' W	profile start
SO241/13	30.06.2015	07:20:00 AM	CTD	27° 33,213' N	111° 32,876' W	Bodensicht, SLmax: 1839m
SO241/13	30.06.2015	11:01:00 AM	CTD	27° 33,281' N	111° 32,874' W	station end
SO241/14	30.06.2015	12:10:00 PM	Gravity Corer	27° 23,874' N	111° 25,942' W	station start
SO241/14	30.06.2015	12:56:00 PM	Gravity Corer	27° 23,850' N	111° 25,923' W	Bodenkontakt, Posidonia
SO241/14	30.06.2015	12:56:00 PM	Gravity Corer	27° 23,864' N	111° 25,939' W	Bodenkontakt Schiff, SL: 2056m
SO241/14	30.06.2015	01:52:00 PM	Gravity Corer	27° 23,865' N	111° 25,939' W	station end
SO241/15	30.06.2015	02:50:00 PM	Multi Corer	27° 26,532' N	111° 29,904' W	station start
SO241/15	30.06.2015	06:05:00 PM	Multi Corer	27° 26,522' N	111° 29,925' W	Bodenkontakt Schiff, SLmax: 1856m
SO241/15	30.06.2015	07:03:00 PM	Multi Corer	27° 26,523' N	111° 29,925' W	station end
SO241/16	30.06.2015	07:46:00 PM	Multi Corer	27° 23,953' N	111° 26,032' W	station start
SO241/16	30.06.2015	10:14:00 PM	Multi Corer	27° 23,808' N	111° 25,915' W	Bodenkontakt, Posidonia
SO241/16	30.06.2015	10:14:00 PM	Multi Corer	27° 23,827' N	111° 25,923' W	Bodenkontakt Schiff, SL: 2043m
SO241/16	30.06.2015	11:13:00 PM	Multi Corer	27° 23,827' N	111° 25,919' W	station end
SO241/17	01.07.2015	12:45:00 AM	GRAB	27° 30,412' N	111° 40,760' W	station start
SO241/17	01.07.2015	01:28:00 AM	GRAB	27° 30,447' N	111° 40,776' W	Bodenkontakt, Posidonia
SO241/17	01.07.2015	01:28:00 AM	GRAB	27° 30,467' N	111° 40,778' W	Bodenkontakt Schiff, SL: 1736 m, SZ: 33 kN
SO241/17	01.07.2015	04:02:00 AM	GRAB	27° 30,277' N	111° 40,741' W	station end

SO241/18	01.07.2015	06:21:00 AM	OBS deployment	27° 28,803' N	111° 28,573' W	station start
SO241/18	01.07.2015	12:10:00 PM	OBS deployment	27° 25,929' N	111° 25,919' W	station end
SO241/19	01.07.2015	02:09:00 PM	OBS Seismic	27° 31,428' N	111° 32,104' W	station start
SO241/19	01.07.2015	2:20:00 pm	OBS Seismic	27°31.159' N	111°31.823' W	start of line OBS 2002-01
SO241/19	01.07.2015	7:50:00 pm	OBS Seismic	27° 23,841' N	111°28.469' W	end of line OBS 2002-01
SO241/19	01.07.2015	8:07:00 pm	OBS Seismic	27° 24,544' N	111° 29,168' W	start of line OBS 2002-02
SO241/19	01.07.2015	9:54:00 pm	OBS Seismic	27° 29,329' N	111° 23,288' W	end of line OBS 2002-02
SO241/19	01.07.2015	10:07:00 PM	OBS Seismic	27° 27,635' N	111° 28,640' W	station end
SO241/20	01.07.2015	11:12:00 PM	3D-Seismik	27° 22,090' N	111° 22,432' W	station start
SO241/20	02.07.2015	03:55:00 AM	3D-Seismik	27° 30,653' N	111° 32,212' W	station end
SO241/21	02.07.2015	04:11:00 AM	OBS Seismic	27° 30,907' N	111° 31,816' W	station start
SO241/21	02.07.2015	4:18:00 AM	OBS Seismic	27° 30,900' N	111°31.643' W	start of line OBS 3000-01
SO241/21	02.07.2015	6:11:00 AM	OBS Seismic	27° 30,573' N	111°24.852' W	end of line OBS 3000-01
SO241/21	02.07.2015	6:34:00 AM	OBS Seismic	27° 29,799' N	111° 24.549' W	start of line OBS 3000-02
SO241/21	02.07.2015	7:55:00 AM	OBS Seismic	27° 25,332' N	111° 29,744' W	end of line OBS 3000-02
SO241/21	02.07.2015	8:20:00 AM	OBS Seismic	27° 26,192' N	111° 30,794' W	start of line OBS 3000-03
SO241/21	02.07.2015	10:06:00 AM	OBS Seismic	27° 30,675' N	111° 25,352' W	end of line OBS 3000-03
SO241/21	02.07.2015	10:20:00 AM	OBS Seismic	27° 31,239' N	111° 25,818' W	start of line OBS 3000-04
SO241/21	02.07.2015	11:51:00 AM	OBS Seismic	27° 26,30' N	111° 31,097' W	end of line OBS 3000-04
SO241/21	02.07.2015	12:14:00 PM	OBS Seismic	27° 25,810' N	111° 30,296' W	start of line OBS 3000-05
SO241/21	02.07.2015	2:03:00 PM	OBS Seismic	27° 30,635' N	111° 24,566' W	end of line OBS 3000-05
SO241/21	02.07.2015	2:26:00 PM	OBS Seismic	27° 31,222' N	111° 26,048' W	start of line OBS 3000-06
SO241/21	02.07.2015	3:20:00 PM	OBS Seismic	27° 29,312' N	111° 29,810' W	end of line OBS 3000-06
SO241/21	02.07.2015	3:34:00 PM	OBS Seismic	27° 28,540' N	111° 29,700' W	start of line OBS 3000-07
SO241/21	02.07.2015	4:03:00 PM	OBS Seismic	27° 27,3767' N	111° 28,412' W	end of line OBS 3000-07
SO241/21	02.07.2015	4:17:00 PM	OBS Seismic	27° 27,793' N	111° 28,024' W	start of line OBS 3000-08
SO241/21	02.07.2015	4:31:00 PM	OBS Seismic	27° 28,718' N	111° 29,094' W	end of line OBS 3000-08
SO241/21	02.07.2015	4:43:00 PM	OBS Seismic	27° 28,472' N	111° 29,532' W	start of line OBS 3000-09
SO241/21	02.07.2015	5:00:00 PM	OBS Seismic	27° 27,742' N	111° 28,745' W	end of line OBS 3000-09
SO241/21	02.07.2015	05:08:11 PM	OBS Seismic	27° 27,635' N	111° 28,640' W	station end
SO241/22	02.07.2015	05:46:00 PM	Multi Corer	27° 28,150' N	111° 28,372' W	station start
SO241/22	02.07.2015	08:08:00 PM	Multi Corer	27° 28,150' N	111° 28,331' W	Bodenkontakt, Posidonia
SO241/22	02.07.2015	08:08:00 PM	Multi Corer	27° 28,165' N	111° 28,347' W	Bodenkontakt Schiff, SLmax: 1849m
SO241/22	02.07.2015	09:11:00 PM	Multi Corer	27° 28,167' N	111° 28,342' W	station end
SO241/23	02.07.2015	10:23:00 PM	Multi Corer	27° 30,286' N	111° 40,745' W	station start
SO241/23	02.07.2015	01:02:00 AM	Multi Corer	27° 30,294' N	111° 40,784' W	Bodenkontakt, Posidonia
SO241/23	03.07.2015	01:02:00 AM	Multi Corer	27° 30,282' N	111° 40,770' W	Bodenkontakt Schiff, SL: 1743 m, SZ: 12 kN
SO241/23	03.07.2015	01:59:00 AM	Multi Corer	27° 30,285' N	111° 40,774' W	station end
SO241/24	03.07.2015	03:30:00 AM	OBS Seismic	27° 28,434' N	111° 29,547' W	station start
SO241/24	03.07.2015	3:35:00 AM	OBS Seismic	27° 28,330' N	111°29.423' W	start of line OBS 3000-10
SO241/24	03.07.2015	4:03:00 AM	OBS Seismic	27°27.393' N	111°28.373' W	end of line OBS 3000-10
SO241/24	03.07.2015	4:19:00 AM	OBS Seismic	27°28.012' N	111°28.168' W	start of line OBS 3000-11
SO241/24	03.07.2015	4:31:00 AM	OBS Seismic	27°28.822' N	111°29.179' W	end of line OBS 3000-11
SO241/24	03.07.2015	4:42:00 AM	OBS Seismic	27°28.423' N	111°29.419' W	start of line OBS 3000-12
SO241/24	03.07.2015	5:11:00 AM	OBS Seismic	27°27.432' N	111°28.355' W	end of line OBS 3000-12
SO241/24	03.07.2015	5:28:00 AM	OBS Seismic	27°28.213' N	111°28.326' W	start of line OBS 3000-13
SO241/24	03.07.2015	5:36:00 AM	OBS Seismic	27°28.755' N	111°29.000' W	end of line OBS 3000-13
SO241/24	03.07.2015	5:48:00 AM	OBS Seismic	27°28.531' N	111°29.556' W	start of line OBS 3000-14
SO241/24	03.07.2015	6:22:00 AM	OBS Seismic	27°27.465' N	111°28.349' W	end of line OBS 3000-14

SO241/24	03.07.2015	6:40:00 AM	OBS Seismic	27°28.132' N	111°28.174' W	start of line OBS 3000-15
SO241/24	03.07.2015	6:52:00 AM	OBS Seismic	27°28.737' N	111°28.912' W	end of line OBS 3000-15
SO241/24	03.07.2015	7:08:00 AM	OBS Seismic	27°28.442' N	111°29.476' W	start of line OBS 3000-16
SO241/24	03.07.2015	8:55:00 AM	OBS Seismic	27°24.580' N	111°25.016' W	end of line OBS 3000-16
SO241/24	03.07.2015	9:08:00 AM	OBS Seismic	27°25.120' N	111°24.725' W	start of line OBS 3000-17
SO241/24	03.07.2015	10:06:00 AM	OBS Seismic	27°29.030' N	111°29.197' W	end of line OBS 3000-17
SO241/24	03.07.2015	10:16:00 AM	OBS Seismic	27° 29,680' N	111° 29,888' W	station end
SO241/25	03.07.2015	01:21:00 PM	CTD	27° 55,012' N	111° 1,157' W	station start
SO241/25	03.07.2015	02:09:00 PM	CTD	27° 55,021' N	111° 01,108' W	Bodensicht, Posidonia
SO241/25	03.07.2015	02:09:00 PM	CTD	27° 55,012' N	111° 1,128' W	Bodensicht, SL: 35 m, SZ: 2 kN
SO241/25	03.07.2015	02:22:00 PM	CTD	27° 55,013' N	111° 1,126' W	station end
SO241/26	03.07.2015	02:24:00 PM	Multi Corer	27° 55,013' N	111° 1,126' W	station start
SO241/26	03.07.2015	02:38:00 PM	Multi Corer	27° 55,013' N	111° 1,127' W	Bodenkontakt Schiff, SL: 44 m, SZ: - 3 kN
SO241/26	03.07.2015	02:52:00 PM	Multi Corer	27° 55,014' N	111° 1,129' W	station end
SO241/27	04.07.2015	12:25:00 AM	Multi Corer	27° 42,433' N	111° 13,641' W	station start
SO241/27	04.07.2015	12:51:00 AM	Multi Corer	27° 42,429' N	111° 13,668' W	Bodenkontakt, Posidonia
SO241/27	04.07.2015	12:51:00 AM	Multi Corer	27° 42,415' N	111° 13,654' W	Bodenkontakt Schiff, SL: 675m
SO241/27	04.07.2015	01:12:00 AM	Multi Corer	27° 42,409' N	111° 13,653' W	station end
SO241/28	04.07.2015	01:20:00 AM	Multi Corer	27° 42,410' N	111° 13,655' W	station start
SO241/28	04.07.2015	01:51:00 AM	Multi Corer	27° 42,413' N	111° 13,656' W	Bodenkontakt Schiff, SLmax: 665 m, SZ: 10 kN
SO241/28	04.07.2015	02:12:00 AM	Multi Corer	27° 42,414' N	111° 13,656' W	station end
SO241/29	04.07.2015	02:04:00 AM	Multi Corer	27° 42,413' N	111° 13,652' W	station start
SO241/29	04.07.2015	02:32:00 AM	Multi Corer	27° 42,423' N	111° 13,670' W	Bodenkontakt, Posidonia
SO241/29	04.07.2015	02:32:00 AM	Multi Corer	27° 42,410' N	111° 13,656' W	Bodenkontakt Schiff, SL: 667 m, SZ: 8 kN
SO241/29	04.07.2015	02:57:00 AM	Multi Corer	27° 42,396' N	111° 13,691' W	station end
SO241/30	04.07.2015	03:00:00 AM	Multibeam & Parasound	27° 42,356' N	111° 13,713' W	station start
SO241/30	04.07.2015	06:42:00 AM	Multibeam & Parasound	27° 18,223' N	111° 31,383' W	station end
SO241/31	04.07.2015	07:12:00 AM	CTD	27° 18,121' N	111° 31,463' W	station start
SO241/31	04.07.2015	11:25:00 AM	CTD	27° 18,233' N	111° 30,144' W	Bodensicht, SL: 1995m
SO241/31	04.07.2015	12:32:00 PM	CTD	27° 18,233' N	111° 30,148' W	station end
SO241/32	04.07.2015	01:06:00 PM	Multi Corer	27° 18,193' N	111° 30,143' W	station start
SO241/32	04.07.2015	04:31:00 PM	Multi Corer	27° 17,741' N	111° 30,671' W	hieven ohne Bodenkontakt, SL: 2000 m, SZ: 23 kN
SO241/32	04.07.2015	05:21:00 PM	Multi Corer	27° 17,738' N	111° 30,674' W	station end
SO241/33	04.07.2015	07:15:00 PM	Multi Corer	27° 33,312' N	111° 32,914' W	station start
SO241/33	04.07.2015	09:35:00 PM	Multi Corer	27° 33,287' N	111° 32,867' W	Bodenkontakt, Posidonia
SO241/33	04.07.2015	09:35:00 PM	Multi Corer	27° 33,301' N	111° 32,883' W	Bodenkontakt Schiff, SL: 1857m
SO241/33	04.07.2015	10:37:00 PM	Multi Corer	27° 33,298' N	111° 32,884' W	station end
SO241/34	05.07.2015	11:28:00 PM	GRAB	27° 28,159' N	111° 28,430' W	station start
SO241/34	05.07.2015	01:12:47 AM	GRAB	27° 28,165' N	111° 28,374' W	Bodenkontakt, Posidonia
SO241/34	05.07.2015	01:12:47 AM	GRAB	27° 28,180' N	111° 28,389' W	Bodenkontakt Schiff, SLmax: 665 m, SZ: 10 kN
SO241/34	05.07.2015	02:02:43 AM	GRAB	27° 28,179' N	111° 28,384' W	station end
SO241/35	05.07.2015	03:39:00 AM	OBS Seismic	27° 29,467' N	111° 30,467' W	station start
SO241/35	05.07.2015	04:08:00 AM	OBS Seismic	27° 28,621' N	111° 29,497' W	start of line OBS4000-01
SO241/35	05.07.2015	05:39:00 AM	OBS Seismic	27° 24,648' N	111° 24,981' W	end of line OBS4000-01
SO241/35	05.07.2015	05:58:00 AM	OBS Seismic	27° 24,970' N	111° 24,500' W	start of line OBS4000-02
SO241/35	05.07.2015	07:11:00 AM	OBS Seismic	27° 28,964' N	111° 28,919' W	end of line OBS4000-02
SO241/35	05.07.2015	07:32:00 AM	OBS Seismic	27° 28,727' N	111° 29,460' W	start of line OBS4000-03
SO241/35	05.07.2015	09:06:00 AM	OBS Seismic	27° 24,693' N	111° 24,852' W	end of line OBS4000-03

SO241/35	05.07.2015	09:19:00 AM	OBS Seismic	27° 25.118' N	111° 24.470' W	start of line OBS4000-04
SO241/35	05.07.2015	10:35:00 AM	OBS Seismic	27° 29.117' N	111° 28.878' W	end of line OBS4000-04
SO241/35	05.07.2015	10:45:00 AM	OBS Seismic	27° 28.707' N	111° 29.260' W	start of line OBS4000-05
SO241/35	05.07.2015	12:09:00 PM	OBS Seismic	27° 24.795' N	111° 24.776' W	end of line OBS4000-05
SO241/35	05.07.2015	12:21:00 PM	OBS Seismic	27° 25.265' N	111° 24.405' W	start of line OBS4000-06
SO241/35	05.07.2015	12:56:00 PM	OBS Seismic	27° 27.008' N	111° 26.320' W	end of line OBS4000-06
SO241/35	05.07.2015	01:10:00 PM	OBS Seismic	27° 27.506' N	111° 26.860' W	station end
SO241/36	05.07.2015	02:34:00 PM	Multibeam & Parasound	27° 25,094' N	111° 19,574' W	station start
SO241/36	05.07.2015	06:32:13 PM	Multibeam & Parasound	27° 41,793' N	111° 49,645' W	station end
SO241/37	05.07.2015	10:23:10 PM	Hybis	27° 24,775' N	111° 23,235' W	station start
SO241/37	05.07.2015	12:49:53 AM	Hybis	27° 24,743' N	111° 23,217' W	Bodenkontakt, Posidonia
SO241/37	06.07.2015	12:49:53 AM	Hybis	27° 24,761' N	111° 23,229' W	Bodenkontakt Schiff, SL: 1857m
SO241/37	06.07.2015	02:19:25 AM	Hybis	27° 24,765' N	111° 23,228' W	station end
SO241/38	06.07.2015	02:25:33 AM	Hybis	27° 24,762' N	111° 23,225' W	station start
SO241/38	06.07.2015	08:06:55 AM	Hybis	27° 24,559' N	111° 23,331' W	station end
SO241/39	06.07.2015	08:52:00 AM	CTD	27° 24,763' N	111° 23,232' W	station start
SO241/39	06.07.2015	10:28:20 AM	CTD	27° 24,765' N	111° 23,207' W	Bodensicht, Posidonia
SO241/39	06.07.2015	10:28:20 AM	CTD	27° 24,768' N	111° 23,229' W	Bodensicht, SL: 1768m
SO241/39	06.07.2015	12:14:00 PM	CTD	27° 24,544' N	111° 23,339' W	station end
SO241/40	06.07.2015	01:20:03 PM	Multi Corer	27° 24,691' N	111° 23,249' W	station start
SO241/40	06.07.2015	03:22:34 PM	Multi Corer	27° 24,686' N	111° 23,237' W	Bodenkontakt, Posidonia
SO241/40	06.07.2015	03:22:34 PM	Multi Corer	27° 24,698' N	111° 23,254' W	Bodenkontakt Schiff, SL: 1828 m, SZ: 14 kN
SO241/40	06.07.2015	04:26:32 PM	Multi Corer	27° 24,703' N	111° 23,255' W	station end
SO241/41	06.07.2015	05:53:34 PM	Multi Corer	27° 34,800' N	111° 21,539' W	station start
SO241/41	06.07.2015	06:32:20 PM	Multi Corer	27° 34,800' N	111° 21,537' W	Bodensicht, SL: 1221m
SO241/41	06.07.2015	07:15:47 PM	Multi Corer	27° 34,805' N	111° 21,537' W	station end
SO241/42	06.07.2015	08:36:26 PM	CTD	27° 42,438' N	111° 13,733' W	station start
SO241/42	06.07.2015	09:01:44 PM	CTD	27° 42,411' N	111° 13,663' W	Bodensicht, SLmax: 659m
SO241/42	06.07.2015	09:30:29 PM	CTD	27° 42,409' N	111° 13,655' W	station end
SO241/43	06.07.2015	09:53:14 PM	Multi Corer	27° 42,409' N	111° 13,655' W	station start
SO241/43	06.07.2015	10:23:08 PM	Multi Corer	27° 42,409' N	111° 13,656' W	Bodenkontakt Schiff, SL: 669m
SO241/43	06.07.2015	10:49:18 PM	Multi Corer	27° 42,408' N	111° 13,650' W	station end
SO241/44	07.07.2015	02:18:47 AM	2D-Seismik	27° 17,797' N	111° 44,062' W	station start
SO241/44	07.07.2015	03:02:00 AM	2D-Seismik	27° 17,710' N	111° 42,116' W	start of line P5001
SO241/44	07.07.2015	07:41:00 AM	2D-Seismik	27° 17,215' N	111° 20,655' W	end of line P5001
SO241/44	08.07.2015	07:51:00 AM	2D-Seismik	27° 17,715' N	111° 20,433' W	start of line P5002
SO241/44	08.07.2015	11:08:00 AM	2D-Seismik	27° 30,396' N	111° 25,587' W	end of line P5002
SO241/44	08.07.2015	11:18:00 AM	2D-Seismik	27° 30,400' N	111° 26,348' W	start of line P5003
SO241/44	09.07.2015	12:48:00 PM	2D-Seismik	27° 24,879' N	111° 31,316' W	end of line P5003
SO241/44	07.07.2015	01:30:32 PM	2D-Seismik	27° 24,424' N	111° 29,401' W	station end
SO241/45	07.07.2015	02:15:31 PM	CTD	27° 24,577' N	111° 25,184' W	station start
SO241/45	07.07.2015	03:15:01 PM	CTD	27° 24,580' N	111° 25,164' W	Bodensicht, SL: 2024 m, SZ: 9 kN
SO241/45	07.07.2015	04:25:27 PM	CTD	27° 24,578' N	111° 25,166' W	station end
SO241/46	07.07.2015	06:41:30 PM	Gravity Corer	27° 42,416' N	111° 13,675' W	station start
SO241/46	07.07.2015	07:02:51 PM	Gravity Corer	27° 42,412' N	111° 13,651' W	Bodenkontakt Schiff, SLmax: 680m
SO241/46	07.07.2015	08:00:00 PM	Gravity Corer	27° 42,407' N	111° 13,653' W	station end
SO241/47	07.07.2015	08:00:55 PM	Gravity Corer	27° 42,407' N	111° 13,654' W	station start
SO241/47	07.07.2015	08:40:39 PM	Gravity Corer	27° 42,413' N	111° 13,649' W	Bodenkontakt Schiff, SLmax: 676m
SO241/47	07.07.2015	09:11:34 PM	Gravity Corer	27° 42,416' N	111° 13,646' W	station end

SO241/48	08.07.2015	03:52:23 AM	2D-Seismik	27° 24,110' N	111° 34,760' W	station start
SO241/48	08.07.2015	04:18:00 AM	2D-Seismik	27° 24,200' N	111° 33,215' W	start of line P6001
SO241/48	08.07.2015	10:13:00 AM	2D-Seismik	27° 25,611' N	111° 05,481' W	end of line P6001
SO241/48	08.07.2015	10:30:00 AM	2D-Seismik	27° 24,789' N	111° 05,483' W	start of line P6002
SO241/48	08.07.2015	01:08:00 PM	2D-Seismik	27° 21,116' N	111° 18,130' W	end of line P6002
SO241/48	09.07.2015	01:10:00 PM	2D-Seismik	27° 21,147' N	111° 18,282' W	start of line P6003
SO241/48	09.07.2015	04:05:00 PM	2D-Seismik	27° 29,376' N	111° 30,134' W	end of line P6003
SO241/48	08.07.2015	04:40:00 PM	2D-Seismik	27° 30,335' N	111° 31,507' W	station end
SO241/49	08.07.2015	05:34:21 PM	OBS Recovery	27° 26,645' N	111° 26,016' W	station start
SO241/49	08.07.2015		OBS Recovery			station end
SO241/50	09.07.2015	02:04:06 AM	Gravity Corer	27° 24,786' N	111° 23,249' W	station start
SO241/50	09.07.2015	02:46:57 AM	Gravity Corer	27° 24,695' N	111° 23,220' W	Bodenkontakt, Posidonia
SO241/50	09.07.2015	02:46:57 AM	Gravity Corer	27° 24,715' N	111° 23,228' W	Bodenkontakt Schiff, SL: 1826 m, SZ: 18 kN
SO241/50	09.07.2015	03:48:28 AM	Gravity Corer	27° 24,710' N	111° 23,232' W	station end
SO241/51	09.07.2015	04:08:00 AM	Gravity Corer	27° 24,469' N	111° 23,377' W	station start
SO241/51	09.07.2015	04:49:57 AM	Gravity Corer	27° 24,453' N	111° 23,369' W	Bodenkontakt, Posidonia
SO241/51	09.07.2015	04:49:57 AM	Gravity Corer	27° 24,472' N	111° 23,377' W	Bodenkontakt Schiff, SLmax: 1869 m, SZ: 18 kN
SO241/51	09.07.2015	05:44:51 AM	Gravity Corer	27° 24,467' N	111° 23,380' W	station end
SO241/52	09.07.2015	07:11:03 AM	CTD	27° 24,753' N	111° 23,165' W	station start
SO241/52	09.07.2015	08:30:36 AM	CTD	27° 24,731' N	111° 23,241' W	Bodensicht, Posidonia
SO241/52	09.07.2015	08:30:36 AM	CTD	27° 24,750' N	111° 23,240' W	Bodensicht, SLmax: 1774m
SO241/52	09.07.2015	11:16:31 AM	CTD	27° 24,731' N	111° 23,234' W	station end
SO241/53	09.07.2015	11:25:36 AM	Multibeam & Parasound	27° 24,846' N	111° 23,392' W	station start
SO241/53	09.07.2015	12:53:00 PM	Multibeam & Parasound	27° 24,215' N	111° 23,442' W	station end
SO241/54	09.07.2015	05:35:00 PM	3D-Seismik	27° 22,033' N	111° 17,826' W	station start
SO241/54	10.07.2015	07:21:00 AM	3D-Seismik	27° 21,122' N	111° 21,291' W	station end
SO241/55	10.07.2015	08:44:00 AM	2D-Seismik	27° 18,780' N	111° 34,334' W	station start
SO241/55	10.07.2015	09:18:00 AM	2D-Seismik	27° 18,901' N	111° 35,485' W	start of line P8001
SO241/55	10.07.2015	10:46:00 AM	2D-Seismik	27° 18,515' N	111° 41,101' W	end of line P8001
SO241/55	10.07.2015	11:01:00 AM	2D-Seismik	27° 17,652' N	111° 40,644' W	start of line P8002
SO241/55	10.07.2015	11:26:00 AM	2D-Seismik	27° 17,685' N	111° 38,269' W	end of line P8002
SO241/55	10.07.2015	11:29:00 AM	2D-Seismik	27° 17,799' N	111° 38,110' W	start of line P8003
SO241/55	10.07.2015	12:42:00 PM	2D-Seismik	27° 22,353' N	111° 35,428' W	end of line P8003
SO241/55	10.07.2015	12:47:00 PM	2D-Seismik	27° 22,609' N	111° 35,475' W	start of line P8004
SO241/55	10.07.2015	06:07:00 PM	2D-Seismik	27° 33,005' N	111° 52,045' W	end of line P8004
SO241/55	10.07.2015	06:10:00 PM	2D-Seismik	27° 33,181' N	111° 51,960' W	start of line P8005
SO241/55	10.07.2015	08:41:00 PM	2D-Seismik	27° 41,796' N	111° 46,212' W	end of line P8005
SO241/55	10.07.2015	08:42:00 PM	2D-Seismik	27° 41,856' N	111° 46,117' W	start of line P8006
SO241/55	11.07.2015	01:46:00 AM	2D-Seismik	27° 30,477' N	111° 28,631' W	end of line P8006
SO241/55	11.07.2015	01:50:00 AM	2D-Seismik	27° 30,348' N	111° 28,421' W	start of line P8007
SO241/55	11.07.2015	03:43:00 AM	2D-Seismik	27° 31,489' N	111° 19,778' W	end of line P8007
SO241/55	11.07.2015	03:46:00 AM	2D-Seismik	27° 31,699' N	111° 19,583' W	start of line P8008
SO241/55	11.07.2015	04:37:00 AM	2D-Seismik	27° 35,085' N	111° 17,225' W	end of line P8008
SO241/55	11.07.2015	04:40:00 AM	2D-Seismik	27° 35,136' N	111° 16,962' W	start of line P8009
SO241/55	11.07.2015	05:17:00 AM	2D-Seismik	27° 33,811' N	111° 14,774' W	end of line P8009
SO241/55	11.07.2015	05:21:00 AM	2D-Seismik	27° 33,595' N	111° 14,734' W	start of line P8010
SO241/55	11.07.2015	10:00:00 AM	2D-Seismik	27° 18,026' N	111° 25,339' W	end of line P8010
SO241/55	11.07.2015	10:02:00 AM	2D-Seismik	27° 18,016' N	111° 25,456' W	start of line P8011

SO241/55	11.07.2015	12:41:00 PM	2D-Seismik	27° 22,725' N	111° 35,177' W	end of line P8011
SO241/55	11.07.2015	01:38:00 PM	2D-Seismik	27° 24,725' N	111° 33,182' W	station end
SO241/56	11.07.2015	02:27:00 PM	GRAB	27° 28,179' N	111° 28,422' W	station start
SO241/56	11.07.2015	04:49:00 PM	GRAB	27° 28,179' N	111° 28,362' W	Bodenkontakt, Posidonia
SO241/56	11.07.2015	04:49:00 PM	GRAB	27° 28,181' N	111° 28,387' W	Bodenkontakt Schiff, SL: 1830 m, SZ: 29 kN
SO241/56	11.07.2015	06:05:00 PM	GRAB	27° 28,182' N	111° 28,379' W	station end
SO241/57	11.07.2015	07:25:00 PM	LANDER	27° 24,485' N	111° 23,003' W	station start
SO241/57	11.07.2015	07:42:00 PM	LANDER	27° 24,475' N	111° 22,999' W	station end
SO241/58	11.07.2015	08:01:00 PM	Gravity Corer	27° 24,501' N	111° 23,374' W	station start
SO241/58	11.07.2015	08:45:00 PM	Gravity Corer	27° 24,487' N	111° 23,377' W	Bodenkontakt Schiff, SLmax: 1866m
SO241/58	11.07.2015	09:50:00 PM	Gravity Corer	27° 24,489' N	111° 23,379' W	station end
SO241/59	11.07.2015	10:08:00 PM	Gravity Corer	27° 24,453' N	111° 23,370' W	station start
SO241/59	11.07.2015	11:35:00 PM	Gravity Corer	27° 24,471' N	111° 23,370' W	Bodenkontakt Schiff, SLmax: 1869 m, SZ: 18 kN
SO241/59	12.07.2015	12:20:00 AM	Gravity Corer	27° 24,473' N	111° 23,367' W	station end
SO241/60	12.07.2015	12:51:00 AM	Heat-Flow	27° 24,622' N	111° 23,626' W	station start
SO241/60	12.07.2015	01:48:00 AM	Heat-Flow	27° 24,604' N	111° 23,626' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	01:48:00 AM	Heat-Flow	27° 24,623' N	111° 23,622' W	1. Bodenkontakt Schiff, SL: 1871 m, SZ: 22 /17 kN
SO241/60	12.07.2015	02:32:00 AM	Heat-Flow	27° 24,527' N	111° 23,514' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	02:32:00 AM	Heat-Flow	27° 24,546' N	111° 23,509' W	2. Bodenkontakt Schiff, SL: 1863 m, SZ: 21/17 kN
SO241/60	12.07.2015	03:12:00 AM	Heat-Flow	27° 24,446' N	111° 23,392' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	03:12:00 AM	Heat-Flow	27° 24,465' N	111° 23,386' W	3. Bodenkontakt Schiff, SL: 1863 m, SZ: 22/17 kN
SO241/60	12.07.2015	03:53:00 AM	Heat-Flow	27° 24,379' N	111° 23,285' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	03:53:00 AM	Heat-Flow	27° 24,397' N	111° 23,280' W	4. Bodenkontakt Schiff, SL: 1874 m, SZ: 22/18 kN
SO241/60	12.07.2015	04:33:00 AM	Heat-Flow	27° 24,313' N	111° 23,171' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	04:33:00 AM	Heat-Flow	27° 24,335' N	111° 23,171' W	5. Bodenkontakt Schiff, SL: 1884 m, SZ: 21/17 kN
SO241/60	12.07.2015	05:21:00 AM	Heat-Flow	27° 24,240' N	111° 23,075' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	05:21:00 AM	Heat-Flow	27° 24,260' N	111° 23,075' W	6. Bodenkontakt Schiff, SL: 1881m, SZ: 29,1kN
SO241/60	12.07.2015	05:50:00 AM	Heat-Flow	27° 24,171' N	111° 22,954' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	05:50:00 AM	Heat-Flow	27° 24,189' N	111° 22,952' W	7. Bodenkontakt Schiff, SLmax: 1867m , SZ: 18,5 kN
SO241/60	12.07.2015	08:09:00 AM	Heat-Flow	27° 24,581' N	111° 23,328' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	08:09:00 AM	Heat-Flow	27° 24,598' N	111° 23,317' W	8. Bodenkontakt Schiff, SLmax: 1840m
SO241/60	12.07.2015	08:39:00 AM	Heat-Flow	27° 24,552' N	111° 23,346' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	08:39:00 AM	Heat-Flow	27° 24,568' N	111° 23,336' W	9. Bodenkontakt Schiff, SLmax: 1858m
SO241/60	12.07.2015	09:09:00 AM	Heat-Flow	27° 24,503' N	111° 23,371' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	09:09:00 AM	Heat-Flow	27° 24,520' N	111° 23,361' W	10. Bodenkontakt Schiff, SL: 1857m
SO241/60	12.07.2015	10:31:00 AM	Heat-Flow	27° 24,787' N	111° 23,221' W	Bodenkontakt, Posidonia
SO241/60	12.07.2015	10:31:00 AM	Heat-Flow	27° 24,804' N	111° 23,210' W	11. Bodenkontakt Schiff, SL: 1833m
SO241/60	12.07.2015	11:37:00 AM	Heat-Flow	27° 24,805' N	111° 23,206' W	station end
SO241/61	12.07.2015	11:47:00 AM	Gravity Corer	27° 24,820' N	111° 23,199' W	station start
SO241/61	12.07.2015	12:31:00 PM	Gravity Corer	27° 24,836' N	111° 23,189' W	Bodenkontakt, Posidonia
SO241/61	12.07.2015	12:31:00 PM	Gravity Corer	27° 24,821' N	111° 23,200' W	Bodenkontakt Schiff, SL: 1869m, SZ: 33,3kN
SO241/61	12.07.2015	01:18:00 PM	Gravity Corer	27° 24,823' N	111° 23,198' W	station end
SO241/62	12.07.2015	02:10:00 PM	Gravity Corer	27° 28,183' N	111° 28,400' W	station start
SO241/62	12.07.2015	03:00:00 PM	Gravity Corer	27° 28,193' N	111° 28,343' W	Bodenkontakt, Posidonia
SO241/62	12.07.2015	03:00:00 PM	Gravity Corer	27° 28,193' N	111° 28,365' W	Bodenkontakt Schiff, SL: 1862 m, SZ: 18 kN
SO241/62	12.07.2015	04:00:00 PM	Gravity Corer	27° 28,191' N	111° 28,364' W	station end

SO241/63	12.07.2015	05:32:00 PM	3D-Seismik	27° 22,237' N	111° 19,866' W	station start
SO241/63	13.07.2015	12:07:00 AM	3D-Seismik	27° 26,838' N	111° 29,107' W	station end
SO241/64	13.07.2015	01:30:00 AM	2D-Seismik	27° 24,725' N	111° 30,396' W	station start
SO241/64	13.07.2015	0:49	2D-Seismik	27° 25,778' N	111° 32,446' W	start of line P10001
SO241/64	13.07.2015	8:59	2D-Seismik	27° 39,013' N	111° 57,849' W	end of line P10001
SO241/64	13.07.2015	8:59	2D-Seismik	27° 39,013' N	111° 57,849' W	start of line P10002
SO241/64	13.07.2015	11:49	2D-Seismik	27° 24,169' N	111° 59,578' W	end of line P10002
SO241/64	13.07.2015	11:49	2D-Seismik	27° 24,169' N	111° 59,578' W	start of line P10003
SO241/64	13.07.2015	18:41	2D-Seismik	27° 06,719' N	111° 28,412' W	end of line P10003
SO241/64	13.07.2015	18:41	2D-Seismik	27° 06,719' N	111° 28,412' W	start of line P10004
SO241/64	13.07.2015	20:20	2D-Seismik	27° 00,870' N	111° 22,952' W	end of line P10004
SO241/64	13.07.2015	20:20	2D-Seismik	27° 00,870' N	111° 22,952' W	start of line P10005
SO241/64	14.07.2015	0:24	2D-Seismik	27° 00,575' N	111° 02,060' W	end of line P1005
SO241/64	14.07.2015	0:24	2D-Seismik	27° 00,575' N	111° 02,060' W	start of line P10006
SO241/64	14.07.2015	4:13	2D-Seismik	27° 15,993' N	111° 00,567' W	end of line P10006
SO241/64	14.07.2015	4:13	2D-Seismik	27° 15,993' N	111° 00,567' W	start of line P10007
SO241/64	14.07.2015	9:13	2D-Seismik	27° 29,024' N	111° 25,833' W	end of line P10007
SO241/64	14.07.2015	9:13	2D-Seismik	27° 29,024' N	111° 25,833' W	start of line P10008
SO241/64	14.07.2015	10:41	2D-Seismik	27° 31,920' N	111° 19,610' W	end of line P10008
SO241/64	14.07.2015	11:07:00 AM	2D-Seismik	27° 32,531' N	111° 18,594' W	station end
SO241/65	14.07.2015	12:08:00 PM	Multi Corer	27° 24,322' N	111° 23,001' W	station start
SO241/65	14.07.2015	12:59:00 PM	Multi Corer	27° 24,342' N	111° 22,970' W	Bodenkontakt Schiff, SL: 1872m
SO241/65	14.07.2015	02:07:00 PM	Multi Corer	27° 24,344' N	111° 22,968' W	station end
SO241/66	14.07.2015	02:40:00 PM	Multi Corer	27° 24,482' N	111° 23,402' W	station start
SO241/66	14.07.2015	05:35:00 PM	Multi Corer	27° 24,566' N	111° 23,245' W	Bodenkontakt, Posidonia
SO241/66	14.07.2015	05:35:00 PM	Multi Corer	27° 24,577' N	111° 23,265' W	Bodenkontakt, SLmax: 1853m
SO241/66	14.07.2015	07:08:00 PM	Multi Corer	27° 24,552' N	111° 23,046' W	station end
SO241/67	14.07.2015	07:30:00 PM	CTD	27° 24,842' N	111° 23,181' W	station start
SO241/67	14.07.2015	11:49:00 PM	CTD	27° 24,439' N	111° 23,381' W	station end
SO241/68	14.07.2015	11:51:00 PM	LANDER	27° 24,439' N	111° 23,381' W	station start
SO241/68	15.07.2015	01:00:00 AM	LANDER	27° 24,649' N	111° 22,472' W	station end
SO241/69	15.07.2015	01:40:00 AM	GRAB	27° 24,772' N	111° 23,227' W	station start
SO241/69	15.07.2015	03:22:00 AM	GRAB	27° 24,730' N	111° 23,223' W	Bodenkontakt, Posidonia
SO241/69	15.07.2015	03:22:00 AM	GRAB	27° 24,749' N	111° 23,224' W	Bodenkontakt Schiff, SL: 1788 m, SZ: 22 kN
SO241/69	15.07.2015	04:54:00 AM	GRAB	27° 24,753' N	111° 23,225' W	station end
SO241/70	15.07.2015	06:24:00 AM	Heat-Flow	27° 25,805' N	111° 25,476' W	station start
SO241/70	15.07.2015	07:11:00 AM	Heat-Flow	27° 25,802' N	111° 25,454' W	Bodenkontakt, Posidonia
SO241/70	15.07.2015	07:11:00 AM	Heat-Flow	27° 25,809' N	111° 25,474' W	1. Bodenkontakt Schiff, SLmax: 1905 m
SO241/70	15.07.2015	09:01:00 AM	Heat-Flow	27° 25,471' N	111° 24,923' W	Bodenkontakt, Posidonia
SO241/70	15.07.2015	09:01:00 AM	Heat-Flow	27° 25,476' N	111° 24,945' W	2. Bodenkontakt Schiff, SLmax: 2052m
SO241/70	15.07.2015	10:09:00 AM	Heat-Flow	27° 25,148' N	111° 24,414' W	Bodenkontakt, Posidonia
SO241/70	15.07.2015	10:09:00 AM	Heat-Flow	27° 25,152' N	111° 24,436' W	3. Bodenkontakt Schiff, SL: 2070m
SO241/70	15.07.2015	11:09:00 AM	Heat-Flow	27° 24,841' N	111° 23,932' W	Bodenkontakt, Posidonia
SO241/70	15.07.2015	11:09:00 AM	Heat-Flow	27° 24,847' N	111° 23,954' W	4. Bodenkontakt Schiff, SL: 2046m
SO241/70	15.07.2015	12:09:00 PM	Heat-Flow	27° 24,847' N	111° 23,953' W	station end
SO241/71	15.07.2015	12:51:00 PM	Gravity Corer	27° 28,233' N	111° 28,372' W	station start
SO241/71	15.07.2015	01:31:00 PM	Gravity Corer	27° 28,180' N	111° 28,360' W	Bodenkontakt, Posidonia
SO241/71	15.07.2015	01:31:00 PM	Gravity Corer	27° 28,187' N	111° 28,380' W	Bodenkontakt Schiff, SL: 1859 m, SZ: 17 kN
SO241/71	15.07.2015	02:24:00 PM	Gravity Corer	27° 28,184' N	111° 28,384' W	station end

SO241/72	15.07.2015	02:26:00 PM	Gravity Corer	27° 28,184' N	111° 28,379' W	station start
SO241/72	15.07.2015	03:52:00 PM	Gravity Corer	27° 28,170' N	111° 28,376' W	Bodenkontakt, Posidonia
SO241/72	15.07.2015	03:52:00 PM	Gravity Corer	27° 28,178' N	111° 28,396' W	Bodenkontakt Schiff, SL: 1858 m, SZ: 17 kN
SO241/72	15.07.2015	04:36:00 PM	Gravity Corer	27° 28,178' N	111° 28,396' W	station end