M154-1

2. Weekly report

8.4.-14.4.2019

Mindelo- Pointe a Pitre

After a speedy crossing of the Atlantic we arrived in the study area late on Wednesday morning (10.4.) First, we carried out the releaser test for the ocean bottom seismometers and collected another sound velocity profile to calibrate the hydroacoustic systems for the oceanographic conditions of the study area. From 14:00 onwards we deployed 10 ocean bottom seismometers which took about six hours. Afterwards we deployed a short 2D seismic streamer to acquire profiles along the OBS tracks with a long trigger interval of 10 s. The system was up and running at 22:30. During Thursday morning we continued acquiring 2D seismic data along the track lines. These data will be used later on to derive a seismic velocity model that is necessary for the processing of the P-Cable data and which will help to constrain the physical properties of the seafloor sediments and the large sector collapse deposits. After lunch we started to deploy the 3D seismic system which was finished at 17:00 and the first sail line of the 3D seismic cube across Kahouane Seamounts and the central part of deposit 2 started at 18:00. Unfortunately, the wind picked up to Bft 5-6 which is not ideal for the quality of the seismic data. At 21:00 the junction box between the cross cable and the data cable had a water intrusion which made it necessary to recover that part of the P-Cable and re-terminate the data cable. Repairs and redeployment took until 2:30 am of Friday morning. Afterwards P-Cable acquisition continued. At 14:00 the starboard paravane caught a fishing net and we had to recover the data cable and the first three streamers to fix the damage that was caused to streamer 3 and the data cable. This took until 17:00 when the P-Cable was redeployed and acquisition continued. By midnight the wind had picked up and the waves caused damage to the data cable and the whole system had to be recovered. Throughout the night from Friday to Saturday we re-rigged the system to 2D mode and started acquisition of 2D seismic data with 7 streamers at 7pm in the morning. Acquisition continued throughout the day. At 10 am on Sunday

Figure 1: Deployment of the Starboard paravane. Photograph: Stefan Kontradowitz.

morning the first GI gun started to leak air and the seismic source had to be recovered and is being serviced at the moment.

Since starting the seismic acquisition on Wednesday evening we have been running the EM122 multi-beam echosounder and the Parasound sub-bottom profiler. While most of the bathymetry was already mapped before by British colleagues the Parasound data provide exciting new insights into the structure of landslide deposit 2 and the background sedimentation. In particular the most distal part of the deposit is a surprise. While many debris flows tend to erode into the substratum and deform it, the Parasound data indicate that deposit 2 was emplaced onto the seafloor without much deformation of the underlying sediments. Also the 2D seismic data provide new insights into the distribution of sector collapse deposits indicating that the history of slope failures in the study area is more complex than previously thought.

The weather is forecast to calm down and we are hopeful that we can resume 3D surveying on Monday afternoon.

On behalf of the cruise participants,

Christian Berndt
(Chief scientist)