

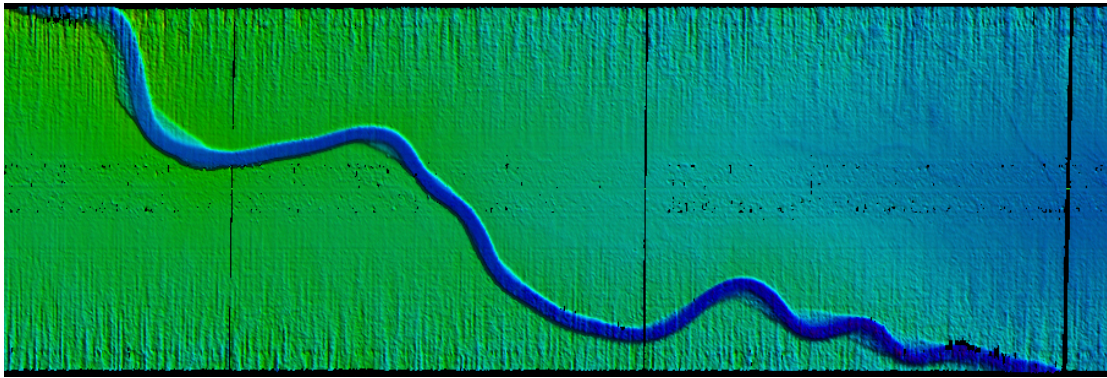
	<p>SO258 Leg 2 INGON 4th Weekly Report (31.07. – 06.08.2017)</p>	<p>RV SONNE 1°44'N / 83°38'E</p>
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At the beginning of the fourth week we again followed a northern course to measure the Earth magnetic field along our third magnetic profile. Without any disturbances we reached the shelf waters south of Sri Lanka in the afternoon of July 31. This time the weather and sea were rougher. Therefore we could only observe the blows of some whales, but neither the back bone or fins.

Beside the magnetic measurements, we also continuously get data from the gravity meter and the hydro-acoustic systems. The latter data are immediately edited on board. The seafloor to the south of Sri Lanka does not look too interesting on a first glance. We are measuring the slight slopes of the southern outreaches of the giant Bengal fan, the largest submarine sediment fan on Earth. The sediments building up the fan are sourced by eroded rock particles of the Himalaya that are washed away by Ganges and Brahmaputra. Various submarine canyons cover the fan. The widths and depths of these canyons reach more than one kilometre and more than 60 m, respectively.



*The towed magnetometer during a "break" on board.
(Photograph: Wolfram Geissler)*



*Submarine canyon at the southern Bengal fan. (North to left)
(prepared by Ralf Krocker)*

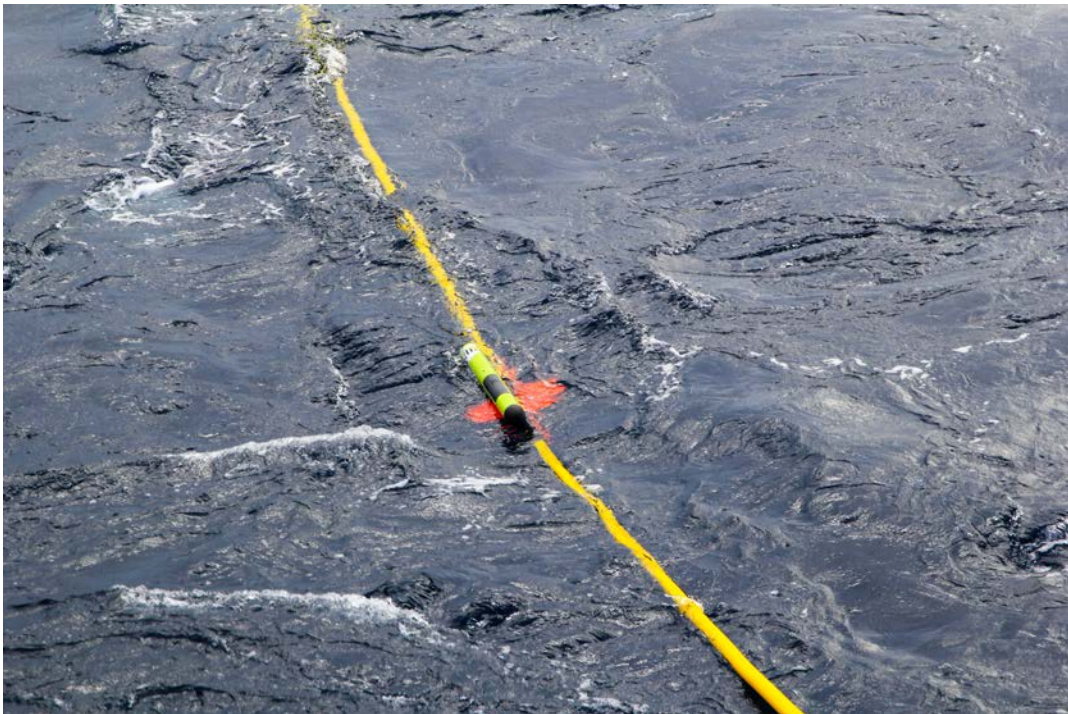
In the morning of August 1st we arrived at the first station of our second seismic refraction profile sailing on a SE course. After we had recovered the towed magnetometer, we started with the deployment of 21 ocean-bottom seismometers. In the meantime we also finalized the preparations for the deployment of the 3000 m long hydrophone cable (streamer). Unfortunately, the streamer had not been in operation along the first profile due to technical reasons. In the morning of August 2nd, the last of the 21 ocean-bottom seismometers were on the way to the seafloor. From there it should record the seismic signals we would generate with the airguns. After the RV SONNE went slightly eastward and we got fresh power from having breakfast, we started deploying the streamer, the airguns and at last the magnetometer.



*Fixing of a "bird" and a streamer recovery device at the streamer.
(Photograph: Masakazu Fujii)*

Everything went very smooth and fast. That's why we could start our measurements already before lunchtime. Before we send the first signal to the seafloor we got the Go-ahead from our marine mammal observers. Before and during our measurements there were not any whales, dolphins or turtles close to the vessel. Airguns and streamer are towed in ten meter water depth behind the vessel. The streamer's tow depth can be regulated by "birds". In the case that big vessels would come to close to the streamer, we can send the birds and therefore the streamer to larger depths. In the case that the streamer breaks and starts to sink, streamer recovery devices will bring the streamer back to the sea surface.

In the following one and a half days we measured along the profile towards NW crossing all the positions where we had been deployed ocean-bottom seismometers before. Using the reflected and refracted seismic signals recorded with the streamer and the ocean-bottom station, we are able to get an image of the sedimentary deposits and the structure of the Earth's crust.



*"bird" and streamer recovery device start to dive behind the vessel.
(Photograph: Konrad Behnke)*

After we had finished the measurements successfully without any interruptions, we started with the recovery of our instruments in the early morning of August 4. As already during the deployments everything went well. Only the streamer winch was a little bit slower, since this time it had to bring the long and heavy cable in and not out. At the end only 15 minutes were missing to save us from a heavy tropical rainfall.

The weather had become worse during the last couple of days. Beside stronger wind and increased sea state, we also got heavy rainfalls at the vessel from time to time. During the rainfalls the wind strength increased from Beaufort 6 or 7 up to 9 for short intervals, But shortly after the sun was shining again. Since the RV SONNE behaves very well in the sea, we could carry out all planned actions and measurements.

From Friday (August 4) till today we again sailed on SE course to recover the ocean-bottom instruments. The beginning was very good and we hoped to have all stations back on deck at the end of the week. Although the weather was quite rough and made the recoveries more difficult, the experienced crew was able to bring all instruments safely home. Unfortunately, we failed at one station to set communication with the release unit at the seafloor. Maybe the sea was too rough for good acoustic communication or the station has another problem. After several trials we decided to continue the recovery with the next station. We will visit the position again shortly before the end of the cruise to try to get the instrument again. Then it should come autonomously to the sea surface; at least we programmed it that way. That means waiting for another week.

All remaining ocean-bottom seismometers could be recovered quickly and without further problems. Also a new, smaller instrument that we took on the expedition for testing is now back on board. Although one instrument is still in the sea, we were happy to finish the work along the second seismic profile successfully. During the next days we will check the data for its quality.



*Recovery of an ocean-bottom seismometer from the second profile.
(Photograph: Konrad Behnke)*



*There is hope to get also the missing station back.
(Photograph: Menaka Goonewardena)*

In the morning, during the recovery of the second last station, we got a visit from Sri Lankan fishermen. They were looking in the area to find good places to fish that far off the Sri Lankan coast. The rest of the day went quiet. And as every day, but especially every Sunday, our cooks Andre and Christian made us happy with a real Sunday menu: strong bouillon as a starter, duck with dumpling and red cabbage as main course, and if somebody had not already eaten to much, Sunday-ice cream as dessert.

All on board are in a good mood and we are looking forward to meet the fifth week at sea.

With best regards from the Indian Ocean

Wolfram Geissler and the SO258/2 Science Party