



RV SONNE - SO297 "PISAGUA"

24.02.2023 - 11.04.2023

Talcahuano (Chile) - Guayaquil (Ecuador)

5th Weekly Report

20. - 26.03.2023

At sea, 24°31,312'S/71°40,480'W, 26 March 2023



After we had traversed a long north-south profile with seismic refraction overnight, the air pulsers and the MCS streamer were retrieved at 10:20 am on 20 March. Immediately afterward, we started dismantling 33 of the 42 installed OBS/OBH instruments of the 3D experiment (Figure 1). Nine instruments remain on the seafloor for the final profile until the end of the cruise.

After recovering 13 instruments, we installed the third Chilean pressure sensor from IMO using the deep-sea cable at 08 am on 21 March. Shortly after launching the device, we discovered that the Posidonia acoustic locator was not working. After bringing the unit on deck and repairing a damaged connector, we deployed the pressure sensor again shortly afterward. The subsequent installation went smoothly, and by 13:00, the unit stood almost horizontal on the seafloor at 4454 m water depth and working as expected. After retrieving the deep-sea wire, we continued retrieving the remaining OBS/OBH (Figure 1).

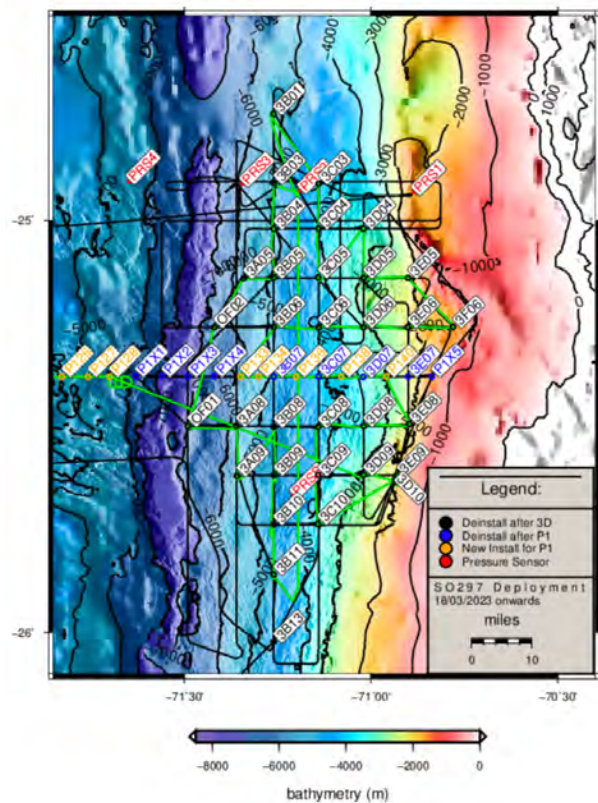


Figure 1: Map of the 3D experiment with the ship track of SO297 (black lines) and the ship track of the last week (green lines). The OBS/OBHs labelled in black were dismantled last week and the orange stations were newly installed. Ocean depths from GEBCO superimposed with the EM122 multibeam from FS SONNE. Figure: D. Lange.



We dismantled 12 OBS/OBH stations overnight and installed five new instruments for the second profile (P1) of the cruise at noon on 22 March (Figure 3). The subsequent dismantling of another eight stations went smoothly. At 23:00, we reached OBH 3D10, where we were able to measure the acoustic range but could not release the instrument. After many release attempts, we still located the OBH on the seabed and stopped recovering 3D10 for the time being.

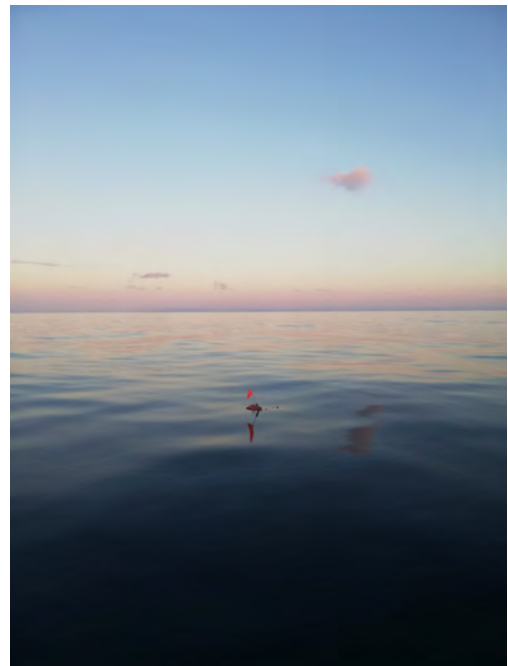


Figure 2: OBS in evening light on the sea surface shortly before retrieval. Photo: A. Beniast.

During the night, we recovered two more stations (3E09, 3D09) until 02:15 and then started a four-hour transit to the new profile P1 (Figure 3).

On 23 March, we started to install 27 new OBS/OBH stations from east to west along profile P1 starting with OBS P128. Around noon we interrupted the station deployment for 3 hours. During this time, a release test was carried out at 2000 m depth. Then, a floating test of a GEOMAR pressure sensor was carried out (Figure 4). The pressure

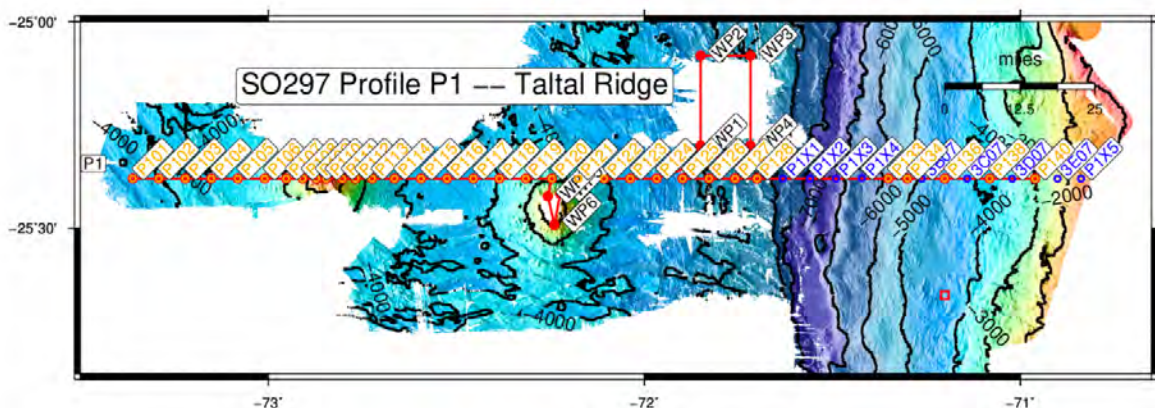


Figure 3: Map showing the OBS/OBH locations along the refraction profile at 22°22.8'S latitude. The stations marked in blue were already deployed during the 3D experiment. The red line shows the planned ship track for 26/03/2023.



sensor frame is based on an OBS frame modified during the current cruise. Last, the MCS streamer was briefly lowered into the water for a functional test.

Profile P1 was completely installed at 2 am on 24th March, and we continued with multibeam mapping until 8 am, which revealed some small seamounts and a complex structure of intersecting graben structures. At 08:00 on 28 March, the air pulsers and MCS streamer were installed again, and FS SONNE started to acquire refraction data along profile P1 and towards the east. At the western end of the profile, the ship turned again west to record ~30 miles of MCS data. Since this morning (26 March 2023), we have continued with the deinstallation of OBS/OBH along profile P1, starting with P134, heading west.

Everybody on board is doing well, and we are a bit ahead of schedule thanks to the great support of the ship crew and captain.

With best regards on behalf of all participants on board of the RV SONNE,

Dietrich Lange

Dietrich Lange
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Figure 4: Floating test of the drift-free pressure sensor on a modified OBS instrument carrier. Photo: T. Bartels.