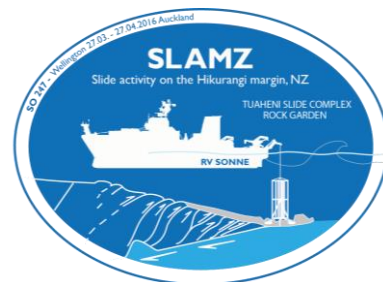


TFS SONNE Expedition SO247 SlamZ

– Slide activity along the Hikurangi Margin, NZ



5th weekly Report: 18.04. – 24.04.2016

The final week began with a further MeBo drill hole in the area of the undisturbed sediments above the Tuaheni landslide (Fig. 1). MeBo drilled without any issues and after almost 40 hours we had reached a depth of 105.4 m. After recovering the core we were more than satisfied: core recovery of more than 98%. This excellent continuous core gives us a long record for the region that did not exist prior. In addition to the original objectives from this core addressing mechanics of sliding and a better understanding of sediment physical properties of potential material that has failed, the core will open up other research topics. Of particular interest is the possibility for tephra-chronology. In addition to the exceptional core recovery, we also recovered the first successful pressure core from the hole at a depth of 25 m below seafloor. Degassing of the core the following morning was also successful and the initial analyses promise interesting results. With this core we also concluded our primary work programme in the Tuaheni work area. The last four gravity cores in the area of the basal slide surface as well as heat flow measurements in the region of the deformation front on the coming Monday will bring a final close to the work programme.

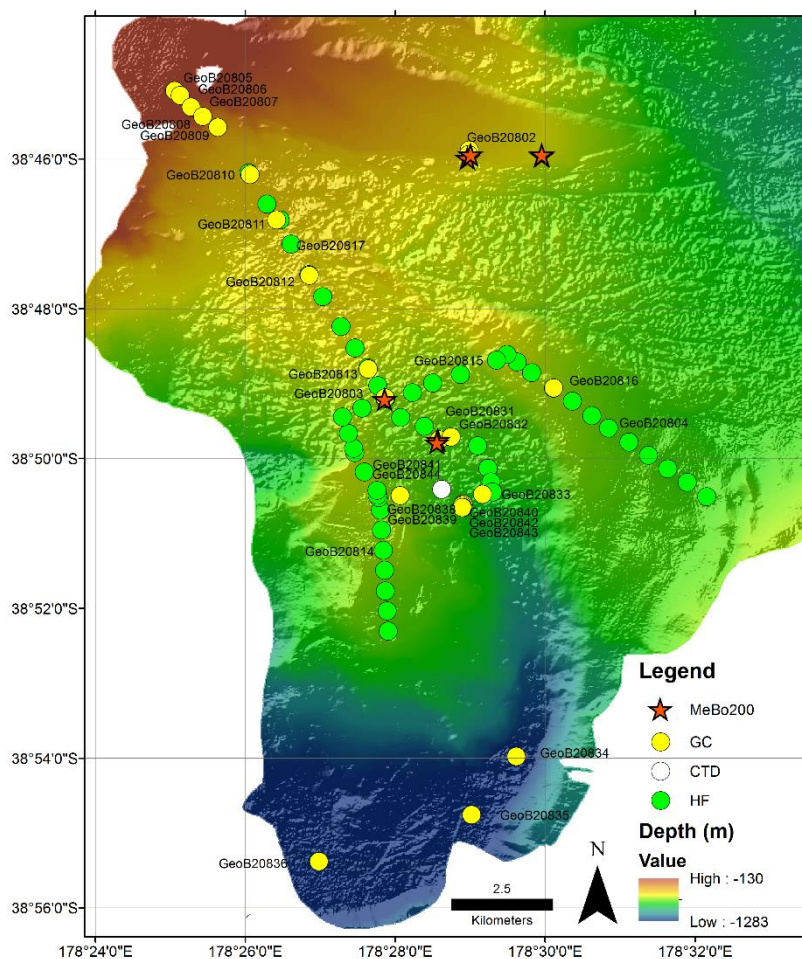


Fig. 1: All acquired data in the area of the Tuaheni Landslide Complex.

The second deployment of MeBo (GeoB208-31) in the Rock Garden working area was, like previously, focused on drilling the top of the accretionary ridge, but this time in shallower water depths than the first drill hole (i.e. GeoB204-24) on the ridge top (Fig. 2). In the shallower water depths, GeoB208-31 was outside the gas hydrate stability zone, and we hope that the results will give better understanding into the interplay between ridge uplift, gas hydrate stability and sediment destabilization. Like at Tuaheni, the MeBo drilling at this location was also made more difficult by interbedded sand layers. On Friday morning, we recovered a core with a maximum depth of 35.3 m below seafloor and a core recovery of ~50%. Several gravity cores were also taken to supplement this MeBo core, with the focus being to sample active seep sites. Unfortunately, these cores did not result in the recovery of any gas hydrates, but the cores show all typical signs of methane seep sites. The planned heat flow measurements along the landward flank of Rock Garden had to be abandoned unfortunately, due insufficient penetration of the heat flow lance. The conclusion of work at Rock Garden came in the form of a second MeBo drill hole (GeoB208-46) in a basin structure landward of Rock Garden, at the foot of a separate ridge known as Paoanui Ridge. Unfortunately the drilling had to be abandoned on Sunday at a depth of 28 m below seafloor due to ongoing sand influx into the drill hole.

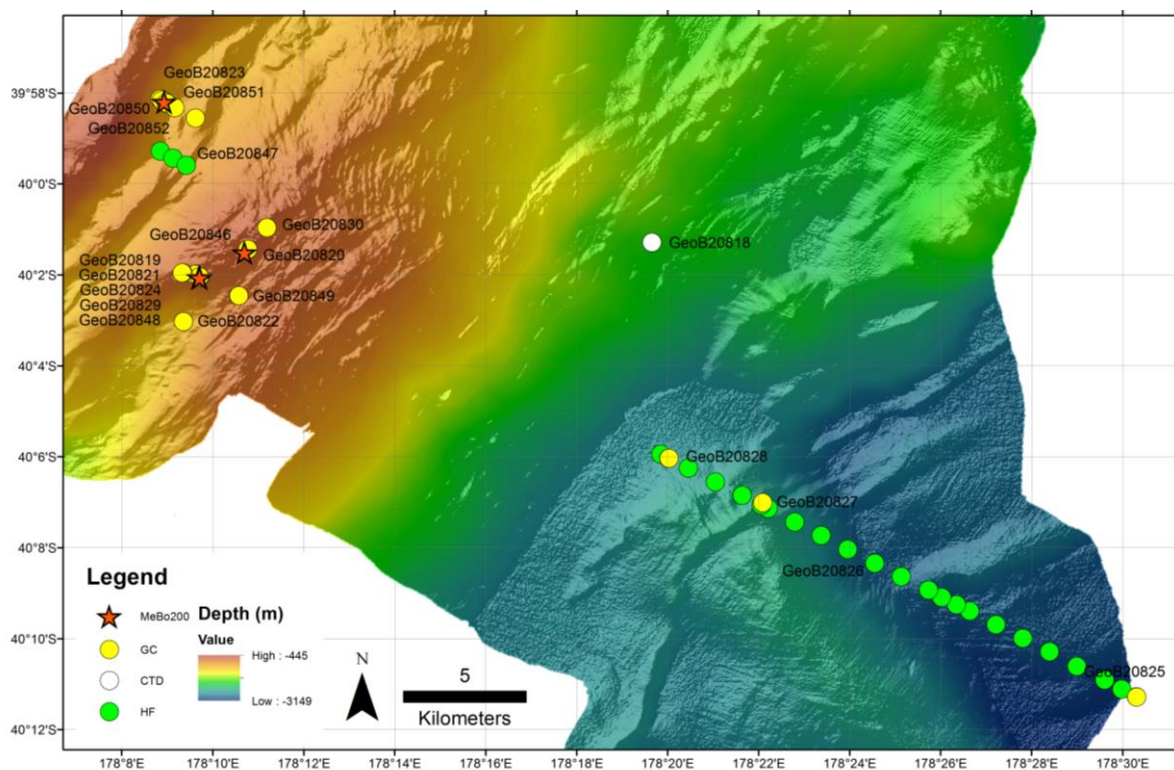


Fig. 2: All acquired data in the area of the Rock Garden research area.

After four good weeks, on Monday we will complete our work programme and head home with a total of 2 CTD profiles, 109 in-situ heat flow measurements, 54 gravity cores and 12 MeBo200 deployments. The cores represent a total of 638.86 m of sediment, of which 481.9 came from MeBo200. This material will surely provide us great opportunities to address exciting scientific questions in the coming years.

Finally we would like to thank Captain Meyer and the crew of the DSRV SONNE for their excellent work and support of the SO247 expedition.

Greetings on behalf of all cruise participants of SO247,
Katrin Huhn & Nina Kukowski

P.S. On Monday early afternoon we finally recovered some sought-after gas hydrates in our last gravity core (Fig. 3).

