

TFS SONNE Expedition SO247 SlamZ – Slide activity along the Hikurangi Margin, NZ



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Less than a day after RV Sonne left Wellington, scientific work began in the Tuaheni slide region on the 28th with a CTD, high-resolution bathymetric mapping, and the first gravity coring. The initial goal was to determine the optimum location for the first drill hole GeoB20802-4 with MeBo200. Here, undisturbed sediments of the slope should be drilled as a reference. At the same time, a transect of 9 gravity cores was accomplished from the undisturbed slope through the scarp edge down to the slumped material. Average core lengths ranged from close to a meter in shallower water, to up to 4.20 m – 5.70 m in slumped material (Fig.2).

During the first two deployments of MeBo200, at the reference site, two cores of more than 17.5 meter and 28 meter length, respectively, (and more than 85% core recovery) were drilled as a reference. These reference cores are the longest sediment cores so far obtained from the Hikurangi continental margin. Deployment and recovery of MeBo went without any problems, due also to the splendid cooperation with RV Sonne's deck crew.

At the moment, MeBo is drilling slumped material at position GeoB20803-2 – the drill bit is already in a depth of more than 70 m and drilling parameters suggest that the material being drilled is markedly different from that obtained from gravity cores at this location. A first pressure core has also been taken as part of this drill hole. Everybody is excited and all scientists look forward to the new week and the chance to welcome completely new material from this working area.

A central aim when planning the first week of scientific work was to provide work and data/material for all working groups. Infrared photos have already been taken from the first gravity cores as well as the first MeBo cores; they were then opened and scanned with a smartCIS 1600 Line Scanner as well as described sedimentologically.

The working halves were sampled (Fig.1) in multiple ways. Sampling comprises very different disciplines such as the extraction of pore water, taking smear slides for spectroscopic and sedimentological analyses, sampling for biological investigations, and many more.



Fig.1: Sampling the first MeBo200 cores in the hangar of RV Sonne.

Further, geotechnical measurements to determine moisture density and mechanical properties, among other parameters, was immediately undertaken on the working halves.

The first work on the sediments of the shallowest four meters, both of the undisturbed sequences as well as of the slumped material, show regionally very similar results as expected with fine grained, cohesive sediments. Tephra layers drilled in many of the cores will allow for age dating and estimation of recent accumulation rates.

Besides coring, 32 successful heat flow measurements were undertaken along three transects over the slumped material (Fig. 2). Initial results suggest it might be possible to distinguish hydrate-bearing areas from those without hydrates. Some of the temperature-depth profiles show a complicated temperature distribution, which has been observed at other continental margins. On the other hand, mainly uniform values of thermal conductivity reveal the similarity of the material obtained in the cores. Sections rich in quartz differ from these uniform values.

The scientists of SO247 meet every day to discuss progress and the upcoming working programme. Often, there are also talks on themes associated with the SlamZ-expedition or about other projects. During the weekend, the scientists of SO247 took the opportunity to explore deeper parts of the vessel as part of a guided tour through the machine rooms.

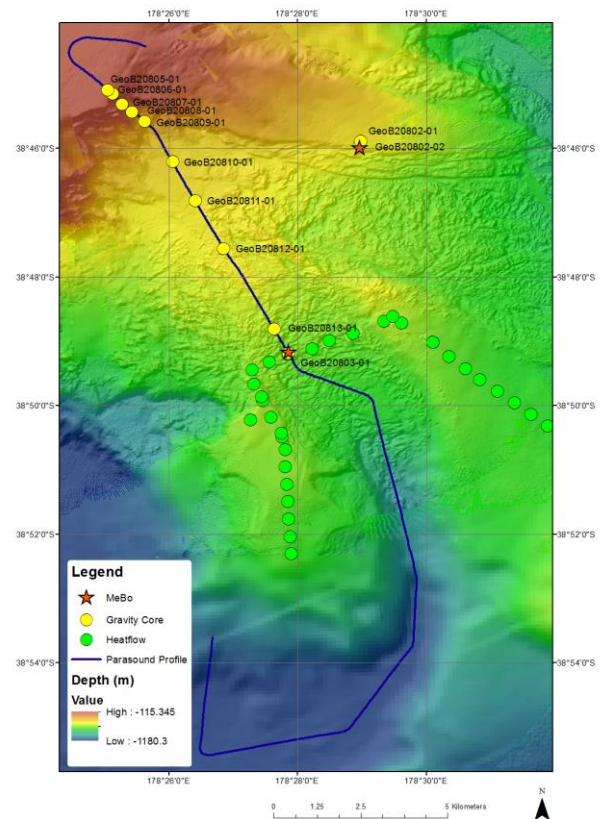


Fig. 2 shows the Tuaheni working area with positions of already recovered cravity and MeBo cores as well as locations of heat flow measurements.

With good weather conditions, the 10 scientific working groups are cooperating efficiently and in a good mood, which is also due to the excellent support through the crew of RV Sonne.

Many greetings from the Sonne on behalf of all participants from

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