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Good-bye Weddell Sea! Hot-Spot discovered! Bransfield Strait, here we come!

It was hard to take the final decision to cancel the plan to go to Larsen. Even though the ice is decreasing, this decision was inevitable. Furthermore, our hopes for a more northerly station were disappointed. A suitable area discovered during initial helicopter ice surveys had closed once we arrived at the site. Once again, the ice came in and made station work impossible. To make the best out of our situation, despite increasing winds and decreasing ice conditions, we decided to revisit a site where we coincidentally recorded exceptionally shallow water depths during our journey out to Larsen. At this site, a row of stranded ice bergs formed a barrier for the northward drifting ice floats thus creating a patch of open water in their lee. This one time, the ice had actually worked in our favor. Such a local seabed elevation is of particular ecological importance. As an isolated area, it can potentially act as a stepping-stone for the distribution of shallow marine species. This shallow bank area with water depths of less than 35m is located on the approximately 450m deep continental shelf. Therefore, this site represents a hot-spot where questions regarding local ecosystem functioning and biogeographical relevance can be addressed. Our first glance at the structure was provided by a small mapping survey. The result, an informative, abstract image of the sea-floor topography, immediately started a discussion about the origin of this mound or bank. At the moment, it appears that it is a volcano with a capped top but the final word has yet to be spoken. The flat plateau of the bank has an average water depth of 25m. Images recorded with the Ocean Floor Observation System (OFOS) from the plateau itself show that the summit area is almost entirely scraped clear by ice bergs. Only some kelp algae occur in sheltered spots. In order to get samples, we used all available equipment to scrap samples off of (Agassiz-Trawl and dredge), punch sediments out of (giant box corer and multi-corer) and spy information from the bank (OFOS). In addition, the RMT was used to trawl for plankton and the CTD measured the water column properties. In an interview with the TV-team on board, I even went as far as stating that the material and data we have collected and recorded from this scientific hot-spot can be compared with a raw gemstone which our analyses back home in our institutes, will turn into a shining diamond.

Towards the end of the station work, a vivid discussion arose as to whether the sampling of the bank could be extended. But everything that was feasible had been done. We were extremely lucky that icebergs created this patch of open water and also sheltered us from wind and waves. Now, however, our main plan B requires our full attention and we decided not cut it short. Therefore, we left the bank and traveled to our new target areas to the west of the Antarctic Peninsula. For our regional scientific approach, we need a good spatial coverage to complement our Larsen study. When we finalized our plans, we left for the Antarctic Sound. The way, however, was quite a challenge as the winds had compacted the ice floes. Finally, the weather improved and almost all of Thursday was sunny. At this time, a helicopter ice survey showed that open water was only 6 miles ahead of us. This, however, took some time and when we eventually arrived at the polynya, the ice between us and the Antarctic Sound had closed again. We, once again, relied on the skills and experiences of Captain Pahl and his team of nautical officers to find a way for the Polarstern to break her way through the ice. We are confident that we will soon reach the Bransfield Strait at the western side of the Antarctic Peninsula.

Wherever feasible and reasonable, the marine mammal assessment is continued. As guest author for the weekly report, Helena will describe this project: "Our focus is on Antarctic minke whales, the species still being hunted by Japan for "scientific" purposes. Current population estimates are based on assessments solely conducted in open waters up to the marginal ice zone. While it is known that minke whales also inhabit the ice laden waters, the share of minke whales present in the ice at any given time, as well as their density in the ice, are unknown. For this reason, the marine mammal assessment team, i.e. Karl-Hermann, Carsten and I, have focused our work on the assessment of



minke whales in areas with high ice concentrations and will present our results to the International Whaling Commission. We conduct aerial surveys using the helicopters on board. Whenever weather permits, we design a set of transect lines in the surrounding area of the ship and survey it from the air. Travelling along these lines, we record any sighting of marine mammals and continuously log position, sighting conditions and environmental data directly on to a computer. During this expedition, low clouds, fog or high sea states have often prevented us from flying. Currently, big swells and high sea states again keep us grounded. Nevertheless, during the past few weeks, we recorded 153 whales, of which 32 were Antarctic minke whales. Other species included humpback whales, southern bottlenose whales, killer whales and fin whales. During our last flight in the Antarctic Sound, we had a very special sighting: we encountered a pod of 15 killer whales, split into smaller subgroups, hunting penguins. For several minutes we were able to observe how the whales cooperatively chased single penguins, trying to encircle them, cutting off their way and directing them from one whale to another. The penguins speeded through the water and finally one managed to flee. The others, however, did not make it. For now, we are hoping for better weather, staying in touch with the meteorologists and are ready to fly any time!"

The two days of fair weather raised our spirits. In the name of all participants, I sent our best greeting ashore.
Julian Gutt



Fig 3: Two Antarctic minke whales southeast off the Antarctic Sound. © ITAW/Helena Feindt-Herr.