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The newly discovered Odyssea Drift (Ross Sea): preliminary results

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The Hillary Canyon is one of the main conduits for dense shelf water forming in the Ross Sea, over-flowing the shelf edge and transforming into the Antarctic Bottom Water (AABW). The main changes in past ocean circulation are recorded in the adjacent sediment drift. A wealth of data was acquired on the drift west of the Hillary Canyon during the 2017 OGS Explora expedition, which included the PNRA ODYSSEA and EUROFLEETS ANTSSS projects. The multi-disciplinary dataset acquired includes: single channel seismics, sub-bottom profiling, multibeam bathymetry, gravity and box cores, XBT launching, water sampling, CTD, L-ADCP, ADCP-VM, turbidity and florescence profiling. The sediment drift, which we named Odyssea Drift, is elongated in the NNE direction with dimensions of several tens of km. Prominent landslide scars and a giant landslide deposit, over 70 ms thick and spanning 200 km2, are visible on the drift. The sediment cores evidence well-developed cross beddings suggesting the effect of vigorous bottom currents. The oceanographic data show a $\sim$200 m thick layer, near the bottom, with AABW characteristics (potential temperature $< 0^{\circ}$C). The deeper layer displays also a strong velocity, mainly flowing along the isobaths. The energetic mixing between the along slope currents, mainly CDW, and the RSBW coming from the basin interior increase the turbidity of the bottom boundary layer.
Our results will be merged with those obtained from the 2018 IODP drilling expedition 374 to develop a conceptual model of sediment deposition relating to marine-based ice sheet and oceanic processes along the Ross Sea continental margin occurring through the Neogene and Quaternary.