

## **Reconstruction of Late Quaternary palaeoenvironmental changes on the West Antarctic continental margin using a multi-proxy approach**

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### **Abstract**

Giant sediment drifts located on the continental rise west of the Antarctic Peninsula and in the Bellingshausen Sea contain a high-resolution archive of ice sheet history in West Antarctica and palaeoceanographic changes in the Southern Ocean. However, previous studies on sediment cores recovered from these contourite drifts, including Ocean Drilling Program (ODP) Leg 178, were compromised by lack of reliable chronological control. This shortcoming is mainly caused by the very low abundance of calcareous microfossils in the sediments that are required for applying radiocarbon dating and stable oxygen isotope ( $\delta^{18}\text{O}$ ) stratigraphy. Moreover, sediments assumed to have been deposited during glacial periods consist almost entirely of terrigenous detritus, i.e. they lack even siliceous microfossils that could be utilised for biostratigraphic purposes.

International Ocean Discovery Program (IODP) proposal 732-Full2 aims to obtain continuous, high-resolution records from sites on the West Antarctic sediment drifts and to develop reliable age models for them. The strategy for achieving the second objective is to use a range of chronostratigraphic techniques including  $\delta^{18}\text{O}$  stratigraphy and relative geomagnetic palaeointensity on sedimentary sequences recovered from the shallowest parts of the drift crests, where the preservation of calcareous microfossils is expected to be higher than in deeper water. Here we present results of multi-proxy investigations on piston and box cores recovered from the proposed drill sites during site survey investigation cruise JR298 of the RRS *James Clark Ross* in 2015. Apart from the integrated chronological approach, the new cores augment previous assessments of palaeoenvironmental changes on the West Antarctic continental margin during glacial-interglacial cycles of the Late Quaternary. We will present results of geochemical analyses, physical properties measurements, detailed grain-size investigations and clay-mineral studies.

**Keywords:** sediment drift, Late Quaternary, palaeoenvironment, sediment core