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SECRETS OF SCOTIA BENTHOS DIVERSITY: CONTINENTAL SHELF TO DEEP-WATER SAMPLING ACROSS ANTARCTICA'S MOST DYNAMIC REGION

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The island chain of the Scotia arc that links magellanic South America to Antarctica has changed much in the last few million years. It comprises both old and very new islands and is a pivotal region in terms of Southern Ocean biodiversity and biogeography. The taxonomic richness of in the marine realm of the Scotia Sea is dominated by macro/megabenthos in terms of both higher taxa and species. While sampling for international campaigns such as IBMANT and LAMPOS mainly focussed on the benthos of the uppermost shelf, our recent study sampled a wide range of depths at each site. Here we report the first results of a cruise sampling from shallow water down to 1500m, together with the coasts of all the major archipelagos. Thus for the first time we are able to compare qualitative data taken by standardised sampling at high taxonomic resolution along the entire Scotia arc in the context of bathymetry, latitude and distance. The near-shelf based environment has been vital for the survival of shallow benthos as a refuge to allow recolonisation following glacial maxima, but an important unanswered question is how do the taxa that have recolonised vary around the Scotia arc, and why? In this talk we focus on geographic, bathymetric and evolutionary patterns in representative taxa. Comparisons of faunal similarity are made between Scotia arc archipelagos and islands such as Bouvetøya and the Indian Ocean sector subantarctic archipelagos. The Scotia arc, as the only (semi-continuous) link between Antarctica's coast and the world north of the Polar Front, is the ideal place to look for range shifts and changes in Southern Ocean benthos. In a time and region of unprecedented climate change, knowledge of the benthos is crucial not only to determine the dramatic changes of the past but also to give an insight into responses to present environmental change together with those predicted for the near future.