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Overview of the deep water soundscape off East Antarctica

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Since 2004 the Australian Antarctic Division (AAD) has collected over 100,000 hours of underwater sound recordings in Southern Ocean off East Antarctica. The bulk of these recordings were made by mooring autonomous acoustic recorders in deep water. Continuous year-long recordings were made at sites along shipping routes during the annual resupply of Australia's three stations in East Antarctica, and many sites have now yielded several consecutive and/or non-consecutive years of data. The original aim of these recordings was to provide an efficient means to study endangered Antarctic blue and fin whales, but over the years the number of species recorded has increased in step with improvements in hardware and digital storage. Since 2013, acoustic recorders have been able to provide information on the presence and behaviour of many Antarctic top predators including: two species of toothed whales, four vocal pinniped species, and all species of baleen whale known to be present around Antarctica. Here we present a brief overview of this rich acoustic dataset to highlight the advantages and challenges of remote acoustic monitoring of marine mammals in the Southern Ocean. We begin with investigation of ambient noise, which in the Antarctic is driven largely by wind and ice. Then we present the highly seasonal contributions of blue, fin, and minke whales and leopard seals to the soundscape. Lastly we present systematic observations of sperm whales and preliminary observations of crabeater seals and humpback whales. The AAD plans to continue acoustic data collection and analysis via the Southern Ocean Hydrophone Network (SOHN), a joint long-term project of the IWC's Southern Ocean Research Partnership (IWC-SORP) and the Southern Ocean Observing System (SOOS).