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Multidisciplinary Seaglider observations in the Northwest Weddell Sea

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In early 2012 the GENTOO project sampled unprecedented temporal and spatial details of the waters on the eastern Antarctic Peninsula. Variations in currents in this region have global significance for ocean circulation, climate and krill ecology. Three Seagliders were deployed to provide extended spatial and temporal coverage to a dedicated two week science cruise, collecting complementary measurements and glider sensor validation data. One Seaglider was equipped with a novel echosounder to measure krill distributions in addition to standard ocean parameters. The other two Seagliders were deployed to measure temperature, salinity, dissolved oxygen, chlorophyll fluorescence and depth-averaged current in the upper 1000 m along sections across the Antarctic continental shelf and slope into the Weddell Sea. Data show the observations of dense water spilling off the continental shelf, the strength and structure of the Antarctic Slope Front (ASF), as well as the short-term variability of these two features. We present an analysis of the Seaglider data together with the supporting ship-based hydrographic and biological measurements, discussing the Antarctic Slope Current volume transport and variability, addressing questions including the spatial and temporal variability of the water mass properties, currents and krill distribution.
GENTOO demonstrated the capability of ocean gliders to play a key role in future polar ocean observing systems, contributing to the GROOM project.