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Seaglider observations of ocean physics and biology in the Northwest Weddell Sea

K J Heywood (1), S Fielding (2), S Schmidtko (1), D Guihen (2), A F Thompson (3), and G Griffiths (4)

(1) School of Environmental Sciences, University of East Anglia, Norwich, UK (k.heywood@uea.ac.uk), (2) British Antarctic Survey, Cambridge, UK, (3) California Institute of Technology, Pasadena, USA, (4) National Oceanography Centre, Southampton, UK

The GENTOO project aims to show whether the potential for undersea gliders to survey the ocean in unprecedented temporal and spatial detail can answer several outstanding questions appertaining to the waters on the eastern Antarctic Peninsula. Variations in currents in this region have global significance for ocean circulation, climate and krill ecology. A Seaglider survey in January-February 2012 aims to provide temporal coverage over an extended period with complementary shipboard measurements and sample collection for validation. One Seaglider is equipped with new acoustic backscatter sensors to measure krill distributions; this capability will be critically assessed.

The Seagliders are deployed to measure temperature, salinity, dissolved oxygen, chlorophyll fluorescence, acoustic backscatter and depth-averaged current in the upper 1000 m along sections across the Antarctic continental shelf and slope into the Weddell Sea. We expect to measure dense water spilling off the continental shelf, the strength and structure of the Antarctic Slope Front, as well as the variability of these two features. We present a preliminary analysis of the Seaglider data together with the supporting ship-based hydrographic and biological measurements, addressing questions including the spatial and temporal variability of the water mass properties, currents and krill distribution. As well as investigating these science issues, GENTOO hopes to develop and demonstrate the capability of ocean gliders to play a key role in future polar ocean observing systems.