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Seaglider observations of surface mixed layer physics and biogeochemistry

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The Ocean Surface Mixing, Ocean Sub-mesoscale Interaction Study (OSMOSIS) aims to develop new, physically-based parameterisations of processes that deepen and shoal the ocean surface boundary layer. As part of this project, 2 Seagliders were deployed in September 2012 at the Porcupine Abyssal Plain (PAP) site in the North Atlantic, to measure the structure and evolution of the ocean surface boundary layer over the seasonal cycle. The gliders measured temperature, salinity, dissolved oxygen, dive-averaged currents, chlorophyll fluorescence, CDOM fluorescence and PAR. We present results from the first 6 months of the Seaglider deployments, examining particular case studies of deepening/shoaling events and their impact on the biogeochemistry. Shoaling events appear to be more abrupt than deepening events. We also discuss the water masses found in the area, in particular, the occurrences of Mediterranean Water observed at a depth of approximately 800 m. As a contribution to the GROOM project, we assess the advantages and challenges of maintaining a continuous glider-based multidisciplinary observing system at the PAP site, with 2 gliders being turned around approximately every 4 months.