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GOCART project: Novel use of gliders for biological carbon pump research

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Abstract (Poster)

An important component of Earth's carbon cycle is the ocean's biological carbon pump, which consists of sinking organic matter that is remineralised back into CO₂ in the deep ocean. The depth at which remineralisation occurs is the main factor affecting the amount of organic carbon stored in the ocean. Currently we do not understand how or why remineralisation depth varies in time, which limits our ability to make robust predictions of the future carbon cycle, and hence our climate. This is mainly due to the challenges of measuring remineralisation depth using conventional methods – a barrier which autonomous underwater vehicles, such as gliders, are able to overcome by providing high frequency data over long periods.

In the GOCART project, 3-4 month long glider deployments in the Southern Ocean and Benguela upwelling regions are being used to establish the characteristics and significance of temporal variability in organic carbon flux and remineralisation depth. Backscatter sensors provide information on particle abundance and size; combined with temperature, salinity and chlorophyll data novel insights into the biological carbon pump have been gained. This poster provides an overview of the GOCART project and results from glider deployments to date.