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Multi data streams from the Porcupine Abyssal Plain Sustained Observatory in the Northeast Atlantic offer insight into the dynamics of phosphate versus nitrate limitation in the open ocean?

Corinne Pebody and Richard Lampitt

National Oceaography Centre, Ocean biogeochemistry and ecosystems, United Kingdom (cawo@noc.ac.uk)

Multi data streams from the Porcupine Abyssal Plain Sustained Observatory in the Northeast Atlantic offer insight into the dynamics of phosphate versus nitrate limitation in the open ocean?
Pebody, C., Lampitt, R.S.
NOC, Southampton, UK
corinne@noc.ac.uk
The Porcupine Abyssal Plain Sustained Observatory (PAP-SO)is at 49°N 16 °W and is part of the $FixO_3$ open observatory network. It is in the 'North Atlantic Drift Province' of the biogeochemical provinces and has distinct inter annual variation with deep winter mixing and strongly stratified surface waters in summer. There is strong seasonality and inter annual variability in downward particle flux.
In 2016 phosphate was measured at the observatory for three months enabling us to record concentration and uptake during the bloom and post bloom period. Concurrent measurements of temperature, oxygen, chlorophyll and particle flux, have enabled us to establish a close link between phosphate uptake, primary productivity and export.
Phosphorous is essential for cellular structure in marine plankton and therefore plays a crucial role in plankton biomass, production and community structure. Phosphate availability is potentially limiting the fast growing species at the beginning of the spring bloom and will be co-limiting in the post bloom, stratified waters of the north east Atlantic. Our data shows close correlation of phosphate and chlorophyll concentration illustrating the closeness of this relationship.
Multi-disciplinary open ocean observatories such as the PAP-SO offer unique opportunities to measure and investigate basic, yet still poorly understood elements of oceanic biogeochemical cycling and biological productivity. It is essential that we extend the time series and increase the number of variables that we measure at these sites to further our understanding of these key processes
Key words: sediment traps; PAP; $FixO_3$; seasonal variability; phosphate; biogeochemical cycles; Northeast Atlantic.