INFLUENCE OF CALCIFYING PHYTOPLANKTON BLOOMS ON CARBON TRANSFER IN THE MESOPELAGIC OCEAN

combining ocean colour remote sensing and BGC-Argo float data

Griet Neukermans\textsuperscript{1,}\textsuperscript{*}, Nathan Briggs\textsuperscript{2}, Louis Terrats\textsuperscript{3,4} and Hervé Claustre\textsuperscript{5}

\textsuperscript{1} Ghent University, Ghent, Belgium. * grriet.neukermans@ugent.be
\textsuperscript{2} National Oceanographic Centre, Southampton, UK
\textsuperscript{3} Sorbonne University, Villefranche-sur-Mer, France
\textsuperscript{4} ACRI-ST, France
1 Phytoplankton blooms and particle flux in the Iceland basin

BGC-Argo float trajectory

MODIS PIC summer climatology

Bloom 1
Bloom 2
Bloom 3

BGC-Argo float PROVOR float

357 profiles (0-1000m) every 5 days, equipped with ECO-Triplet (F_{Chl}, bb, F_{CDOM}).
Vertical res: 1m (0-250 m), 10m (250-1000m)

Neukermans et al. (in prep.)

E. huxleyi

Z_{eu} MLD
Phytoplankton blooms and particle flux along the Patagonian Shelf break

BGC-Argo float trajectory

- Argentina
- Shelf break (700m)
- BGC-Argo float on Malvinas current
- Malvinas Islands
- Bloom 1
- Bloom 2
- Bloom 3
- MODIS Chl-a climatology

417 profiles (0-1000m) at HIGH RESOLUTION (daily at 1m depth interval), equipped with ECO-Triplet ($F_{\text{Chl}}$, $b_{bb}$, $F_{\text{CDOM}}$).

High-resolution float operation allowed estimation of sinking speed of large particles using $F_{\text{Chl}}$ and $b_{bp}$ spikes, $w_{\text{Chl}}$ and $w_{bbp}$, respectively (Briggs et al. 2020).

Neukermans et al. (in prep.)
Gaps and priorities

Short term priorities

Expand study to global BGC-Argo equipped with $b_{bp}$ and FChl sensors

Develop autonomous PIC sensor for in situ observing platforms (ongoing CarbOcean project)

Mid-long term priorities

Deliver proof-of-concept for observing PIC and POC components of the Biological Carbon Pump from BGC-Argo floats (ongoing CarbOcean project)

Address knowledge gaps on the role of the oceanic carbonate pump and climate feedbacks