Meetings

- Lemaitre N., H. Planquette, F. Dehairs, L. Monin, L. André, S. Jacquet and F. Planchon, Mesopelagic carbon remineralisation along the GEOVIDE transect in the North Atlantic (GEOTRACES GA01), Goldschmidt Conference, Prague, 16-21 August 2015.
- Lemaitre N., Planquette H., F. Dehairs, L. Monin, L. André, S. Jacquet, and F. Planchon, Mesopelagic carbon reminerelization along the GEOVIDE transect in the North Atlantic (GEOTRACES GA01), GEOVIDE Post-cruise meeting, 26-27 May, 2015, IUEM, Brest, France.

Cruises

- Antarctica, Dumont d’Urville fast ice region: Primary production and N-uptake by sea ice and under ice algae (Nov. 2014 - Jan. 2015)
- Belgica 2015/14 (12-26 May 2015): Bay of Biscay and Iberian Margin; nitrogen uptake and cycling; significance of N2 fixation; nitrate isotopic composition; Role of iron.
- R/V Atlantic Explorer cruise: western north Atlantic (Bermuda to the U.S. east coast). Test of underway measurement system for marine nitrogen fixation; Chief scientist: Nicolas Cassar; Debany Fonseca Batista: participant in charge of N2 fixation rate measurements using via 15N2 spiking.
New funding

- Nolwenn Lemaître (PhD grant co-funded by Labex-mer, IUEM, Brest and Vrije Universiteit Brussel, Strategic Research Plan). Multi-proxy approach (234Th, Baxs, 13C, 15N) of biopump associated carbon, nitrogen, silicon, trace element export fluxes and remineralisation.

New results

Southern Ocean

- Nitrification appears to be an ubiquitous process in Antarctic Sea Ice, implying that a significant fraction of nitrate is regenerated in sea ice (up to ~100% of the ambient nitrate pool) and can explain the large nitrous oxide accumulation recently observed in spring landfast sea ice (B. Delille, unpublished results, ULG).
- Nitrification is significant over the Kerguelen Southeast plateau, being a naturally iron-fertilized area in the Southern Ocean. This observation challenges the general assumptions that nitrate in the Southern Ocean is mainly supplied through oceanic circulation, and that iron fertilization implies a more efficient biological pump to strip nutrients out of the surface water.
- Compilation of Antarctic sea ice nutrient data (in the framework of the SCOR working group “Biogeochemical exchange processes at the sea ice interface”). We collected ~13500 previously published data (from 1980 to 2015, i.e., nitrate, nitrite, ammonium, phosphate, and silicic acid) which should shed light on the nutrients dynamic in this extensive overlooked ecosystems (up to 8% of the Earth Surface).

Atlantic Ocean

- N2 fixation rates along a meridional section in the East Atlantic; regional upscaling
- Surprisingly elevated natural N2 uptake rates off the Iberian margin and strong boosting effect of Fe addition.
- A section showing the particulate non-lithogenic barium distribution across the North Atlantic (GEOVIDE).
- 234Th export and POC export (upcoming) in the North Atlantic (GEOVIDE)
- Isotopic composition of nitrate for selected North Atlantic sites (GEOVIDE)
- Primary production, nitrate, nitrite, ammonium uptake and N2 fixation rate for selected sites in the North Atlantic (GEOVIDE).

Relevant publications


Jeandel C., M. Rutgers van der Loeff, P.J. Lam, M. Roy-Barman, R. Sherrell, S. Kretschmer, C. German and F. Dehairs, 2015. What did we learn on the oceanic particle dynamics in the GEOSECS-JGOFS era? Progress in Oceanography, 133, 6-16.


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