



Mountains to the Sea

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VIEW ABSTRACT

N₂ FIXATION AND N-BUDGET IN THE PHOTIC LAYER OF THREE STATIONS REPRESENTATIVE OF THE SW PACIFIC OCEAN (OUTPACE CRUISE, 2015)

We measured N₂ fixation and performed a first order N budget in the photic layer of three stations in the SW Pacific Ocean during the OUTPACE (Oligotrophy to Ultra-oligotrophy PACific Experiment - February-March 2015) cruise. Thanks to a Lagrangian strategy, we sampled the same water mass for the entire duration of each station (6 days), allowing to consider only vertical exchanges. The three stations LDA, LDB and LDC were characteristic of different trophic regimes, with a chlorophyll maximum (Chl a max) located close to the surface (60 m) at LDB, at 80 m at LDA (Melanesian archipelagoes), and deeper (140 m) at LDC, representative of the ultraoligotrophic waters from the South Pacific gyre. N₂ fixation rates were extremely high at both LDA (593±51 μmol N.m⁻².d⁻¹) and LDB (706±302 μmol N.m⁻².d⁻¹) and dominated by the diazotroph *Trichodesmium*. N₂ fixation rates were lower (59±16 μmol N.m⁻².d⁻¹) and diazotroph populations were dominated by UCYN at LDC in the South Pacific gyre. In the nitrate-depleted photic layer of the South Western Pacific, N₂ fixation appears to be the major source of new N for primary production before aeolian deposition and upward nitrate fluxes induced by turbulence. The efficiency of particulate organic N export across this trophic and N₂ fixation gradients will be discussed. OUTPACE cruise DOI: <http://dx.doi.org/10.17600/15000900>

AUTHORS

CAFFIN, M., Aix-Marseille University - MIO, France,
mathieu.caffin@mio.osupytheas.fr

MOUTIN, T., Aix-Marseille University - MIO, France,
thierry.moutin@mio.osupytheas.fr

BOURUET-AUBERTOT, P., LOCEAN-IPSL UPMC, France,
pba@locean-ipsl.upmc.fr

DOGLIOLI, A. M., Aix-Marseille University - MIO, France,
andrea.doglioli@mio.osupytheas.fr

GROSSO, O., CNRS - MIO, France,
olivier.grosso@mio.osupytheas.fr

HELIAS-NUNIGE, S., CNRS - MIO, France, sandra.helias-nunige@mio.osupytheas.fr

LEBLOND, N., LOV Villefranche, France, leblond@obs-vlfr.fr

GIMENEZ, A., Aix-Marseille University - MIO, France,
audrey.gimenez@mio.osupytheas.fr

de VERNEIL, A., Aix-Marseille University - MIO, France,
alain.de-verneil@mio.osupytheas.fr

BONNET, S., IRD - MIO, New Caledonia,
sophie.bonnet@mio.osupytheas.fr

DETAILS

Oral presentation

Session #: 019

Date: 02/28/2017

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