

EXPERIMENTAL EVIDENCE OF MARINE SURFACE WATER FERTILISATION BY ATMOSPHERICALLY-TRANSPORTED PHOSPHORUS

V. Magro, V. Chambard, J. Chiaverini, C. Migon, J.C. Marty, A. Stock and M. Perez

Observatoire Océanologique, BP 8, F 06238 Villefranche Sur Mer
migon@obs-vlfr.fr /Fax: 33 4 93763739

There is an increasing evidence that the atmospheric supply of nutrients is likely to fertilise surface waters under oligotrophic conditions. The atmospheric supply of phosphorus (P) has been assessed in the NW Mediterranean and new production may theoretically be induced by rain events (Migon and Sandroni, 1999, *Limnol. Oceanogr.*). In particular, anthropogenic P may play a key role in fertilising offshore surface waters, owing to its solubility. Transparent spherical apparatus (4.5 litres) were filled up with surface seawater and spiked in situ with an amount of P corresponding to the dilution within a 5 m-water layer of $17 \mu\text{mol P m}^{-2}$ (typical input of a significant rain event in June over NW Mediterranean areas). Simultaneously, an excess of ^{14}C was injected in all spheres. They were incubated on moorings at two marine sites (coastal + central Ligurian Sea), together with reference non-spiked spheres. After an in situ incubation of 12 and 24 h, primary production was measured; pigment analysis and differential filtration enabled to characterise the phytoplanktonic populations that have taken up this P input. Preliminary results indicate that the low rate of soluble P brought by rain is likely to induce a measurable new production, which is in fact higher than that was expected by calculation. A phosphate-stimulation of nitrate consumption is hypothesised.