Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09236, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09236
EGU General Assembly 2008

DUNE (a DUst experiment in a low Nutrient, low chlorophyll Ecosystem): Presentation of the project and results from its pilot phase

C. Guieu (1), E. Pulido-Villena (1), F. Dulac (2), C. Ridame (3), P. Pondaven (4), M-D Loÿe-Pilot (5), G. Bergametti (2), K. Desboeuf (2), R. Losno (2)

(1) Laboratoire d'Océanographie de Villefranche, Villefranche sur Mer, France, (2) Laboratoire Interuniversitaire des Systèmes Atmosphériques (LISA), Créteil, Paris, (3) LOCEAN-IPSL, Paris, France, (4) Laboratoire des sciences de l'environnement marin (LEMAR), Brest, France, (5) CERES/ERTI, Ecole Normale Supérieure, Paris, France. (guieu@obs-vlfr.fr)

The main goal of DUNE is to explore the impact of atmospheric inputs on an oligotrophic ecosystem submitted to strong atmospheric inputs: the Mediterranean Sea. Atmospheric deposition is currently recognized as a significant source of macro- and micro-nutrients for the surface ocean, but the quantification of its role on biological carbon pump is still poorly understood. The main difficulty of such a quantification relies mainly on the diversity of the processes occurring: (1) within atmospheric cycling of particles (from emission processes to deposition onto surface ocean, including physical-chemical transformations during transport) and (2) within the water column (uptake by bacteria and phytoplankton of particle-derived elements of biogeochemical interest, and carbon export resulting from fertilization induced by those inputs). The idea during DUNE is to perform realistic fertilizations, aiming to mimic natural and anthropogenic events of known intensity, onto a set of large ($33 m^3$) 'clean' mesocosms settled in Scandola Marine Reserve, located in North Corsica. Several biological and chemical parameters will be measured before and after the fertilization, in order to quantify bacteria, phytoplankton (including diazotrophs) and zooplankton response in relation with atmospheric inputs of iron and phosphorus.

The project has been funded by ANR for 3 years (2008-2010) and in 2007, funding

from BQR University Paris VI and from National program ‘LEFE’ have been devoted to 2 field works necessary to prepare the actions proposed in the main project. (1) a campaign devoted to collection of Saharan soils necessary to seed the mesocosm and (2) a short survey in Scandola in June during which 2 large mesocosms were deployed to insure the feasibility of the seeding experiment. During that survey, a limited number of parameters have been measured after the seeding during 5 days. We will present the project and the promising results from the pilot phase.