

## ***Interactive comment on “Introduction to the project DUNE, a DUST experiment in a low Nutrient, low chlorophyll Ecosystem” by C. Guieu et al.***

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This paper is the head paper of a special issue presenting a mesocosm experiment dedicated to the understanding of the impact of atmospheric input on the biogeochemical functioning of the sea. More specifically it addresses the potential fertilization of oligotrophic zones of the ocean by desert dust, the experiment being implemented in the Western Mediterranean Sea. The paper is very sound from a scientific point of view, and well written: clear, concise, with clear tables and figures. So my comments are minor remarks.

Specific comments.

1- The aim and the design of the DUNE experiment address the question of the impact

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of atmospheric DESERTIC (here saharan) dust deposition: it should be specified as atmospheric / aeolian dust covers different origins (see technical comments for corrections).

2- The initial conditions of the 3 experiments are assumed to be the same; however temperature profiles of the mesocosms (Fig 4) and the uncertainty on the NO<sub>3</sub> concentrations for DUNE 1 experiments should push the authors into improving the discussion on that point.

3- Considering the chemical characterization of the dust used in the experiments (table 1), it would be useful to distinguish organic and inorganic form, especially for C and N. Also of interest would be the percentage of leachable fraction of each element.

4- Wet deposition of Saharan dust does not always correspond to rains including an anthropogenic component (the so-called “mixed” rain according to Loÿe-Pilot and Morelli (1988)); there are also “pure” Saharan wet deposition events (same reference). Dry deposition events of Saharan dust, in spite of being very scarce in the Western Mediterranean, are more often than not “pure” Saharan. Wet deposition should not be given as equivalent to mixed saharan/polluted deposition: then the writing should be clearer.

Technical details.

P 12493: - line 3: add “mineral” to Aeolian dust; why a capital letter for aeolian? (check this last point for the whole text);- line 7: add “desert dust” to atmospheric inputs

P 12494: - line 18: add in ref section: Loÿe-Pilot et al 1990

P 12495: - line 23: no reference associated with the MERMEX group?

P 12496: - line 28: add “mineral dust” or “desert dust” to atmospheric input.

P 12497: - line 12: replace “Aeolian” by “desert dust”

P 12500: - line 26: discuss also the possible different forms and solubility of N in the 2

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types of aerosols

P 12506: -line 6: (Pulido-Villena et al., 2010); - line 7 : “The second dust input”, would be clearer

P 12507: - line 15 : *Alteromonas macleodii* in italic

P 12509: - line 10: CERES/ERTI-ENS

Table 2: I would add the year for each experiment

Fig 1: Why no arrow from Nutrients box to phytoplankton one?

Fig 3: - DUNE 2: 2 successive wet depositions add: “(evapocondensed dust)”

Fig 4: - legend line 3: DUNE-1 ; add “(P, Q experiments)”: line 4: DUNE-2 ; add “(R experiment)”

Fig 5: The maps seem to be a little stretched out of shape (Corsica and Sardegna are “fat”): possible to correct?

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