

## ***Interactive comment on “External forcings, oceanographic processes and particle flux dynamics in Cap de Creus submarine canyon, NW Mediterranean Sea” by A. Rumín-Caparrós et al.***

**Anonymous Referee #1**

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In this paper an analysis of particle fluxes and of other parameters (near-bottom water temperature, current speed and suspended sediment concentration) measured in two mooring lines deployed in a submarine canyon located in the Gulf of Lion is presented. The analysis is focused on the role played by the atmospheric forcing in producing particulate matter from the canyon toward the deep sea. Two periods (including two consecutive winter seasons) have been considered, corresponding to rather different meteorological conditions that led to different upper ocean thermohaline properties and dense water cascading processes. Wind speed and turbulent heat fluxes have been used to explain qualitatively the observed hydro-sedimentary processes and associated particle fluxes.

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Although the adopted experimental methodology is quite classical and no numerical model has been implemented in this study, the analysis is nonetheless of interest, as it presents a variety of complementary data that describe an interesting case study of particle flux dynamics in a relevant Mediterranean coastal site. In general the manuscript is well written, except in some parts that must be rewritten (English should be improved as well). Therefore, in my opinion the manuscript can be considered for publication in Biogeosciences after a minor revision that should take the following comments into account.

- 1) Sophisticated community models are available that can describe the processes considered here. The authors should at least mention this possibility and state why a modeling analysis has not been carried out.
- 2) Classical bulk formulas use to estimate sensible and latent heat fluxes should be reported at the beginning of section. 3.3. To this respect, having in mind the great uncertainty in determining those estimates, using 5 significant digits to denote heat transfers is meaningless. For example, "14211 W/m<sup>2</sup>" should be rewritten "14.2x10<sup>3</sup> W/m<sup>2</sup>".
- 3) The abstract must be substantially modified. The last paragraph (appropriately modified) should be moved at the beginning of the text. The main aims of the paper should be clearly stated. The location of the Cap de Creus canyon should be specified.
- 4) At the end of the introduction a brief description of the paper structure should be added.
- 5) "Gol" should be defined the first time it is used.
- 6) Reference to Fig. 3 should be made in the first two paragraphs of sect. 4.1.
- 7) Line 13 of page 18581 should be rewritten.

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