Ocean Science
Discussions

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Interactive comment on "Influence of the summer deep-sea circulations on passive drifts among the submarine canyons in the northwestern Mediterranean Sea" *by* Morane Clavel-Henry et al.

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General comments This paper is a first approach to simulate the drift of larvae of the shrimp Aristeus Antennatus that live in canyons off the Catalan coast, and thus to identify potential retention within each canyon and open slope, as well as connectivity between adjacent canyons. This is a first approach in the sense that larvae, in the absence of specific information on their dynamics, are treated as passive particles.

In addition, a comparison of the effect of the spatial resolution of the model, affecting the fineness of bathymetry and vertical resolution near the bottom.

The approach and results appear robust and provide interesting information on the dispersion of Lagrangian particles in this complex environment. The manuscript is clearly presented and illustrated. It deserves to be published in Ocean Science with some corrections.

In general, the discussion would benefit from the use of sub-sections defined by headings to clarify its course and make it easier to read, and a more detailed analysis of the particle trajectory and a more in-depth analysis on the trajectory and dispersion particles would be useful.

Specific comments Page 2, Lines 30-31. The articles by Durrieu de Madron, 1994 and Durrieu de Madron et al. 1999 addressed the dynamics of water masses and dispersion of suspended particles within the Grand-Rhône canyon and the adjacent open slope, located upstream of the area studied in this article. Perharps they would provide some informations on the dynamics of suspended particulate matter applicable to this study. - Durrieu de Madron et al. (1999) Role of the climatological and current variability on shelf-slope exchanges of particulate matter. Evidence from the Rhône continental margin (NW Mediterranean). Deep-Sea Research, 46, 1513-1538 - Durrieu de Madron (1994) Hydrography and nepheloid structures in the Grand-Rhône canyon. Continental Shelf Research, 14, 457-477.

Page 10, lines 19-21. Could you explain in more detail why you decided to use these two versions of the model, one of which using the AGRIF grid refinement system?

Discussion part. It would be interesting to present some typical drifts showing both the trajectory and the depth reached by these particles along their path. Furthermore, the effect of the longer PLD duration on the results of this simulation could have been estimated. Is such a sensitivity analysis with the model considered to be the most efficient possible?

Technical corrections Page 2, Line 24. Is it the decoupling of the surface mixed layer from the rest of the water column?

Pages 7, line 10. I suggest replacing "the beginning of the abyssal plain" with "continental rise".

Page 12, lines 15-18. This sentence has no place here, but rather in the chapter Âń 2.2 Practical study Âż on page 6 to compare the duration of the chosen PLD with that of the literature.

Figure 6. Change the sign > 6% to < 6%

Figure 7. The lines are a little too thin (especially for blue) and could be thickened.

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