

Interactive comment on “Wave induced mixing and transport of buoyant particles: application to the Statfjord A oil spill” by M. Drivdal et al.

Anonymous Referee #3

Received and published: 2 July 2014

This paper deals with the dispersion of pollutants by waves. The authors particularly investigate the effects of the mixing induced by wave breaking on drift. First, they validate their modeling strategy with well-known solutions. Second, the Statfjord case is set-up. The authors found that the effects of wind and waves play an important role in oil dispersion. On the whole, the paper shows results in agreement with former ones. The state of art is poor and must be rewritten. Some of major publications are missing like the one of McWilliams et al (1997). The authors could pursued their study by the improvement of the parameterization used for the mixing induced by waves. Indeed, I think their study lacks of new things. So, I recommend a major revision.

Specific comments:

- page 1280: In contrast with the arguments of the authors, I think a discussion on the
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value of X is fundamental because comparisons between the values given in Raschle et al. (2006) and in Csanady (1982) were performed (Figure 1). How your X value is computed ? I have not found the value of X in the manuscript.

- page 1292, Figure 2: What are the dashed lines ? Can you specify this in the legend.
- page 1293, Figure 3: same remarks as previously.

Interactive comment on Ocean Sci. Discuss., 11, 1265, 2014.