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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Assimilation of decomposed in-situ directional wave spectra into a numerical wave model on typhoon wave" *by* Y. M. Fan et al.

Anonymous Referee #2

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This paper timely provides a useful assimilation approach by decomposing the directional wave spectra, which considerably improves the wave predictions. The approach is particularly important in forecasting the typhoon-induced waves, which vary rapidly in space and time.

The paper is well structured and clearly demonstrated the improvement of wave predictions for two typhoon events occurred in 2006. However, I suggest the following comments to be further discussed:

1) Expend further the descriptions of two assimilation methods, so that two methods

can be compared.

2) Elaborate further the Optimal Interpolation (OI) scheme, as well as OI-P.

3) If possible, present and discuss in detail the difference of wave spectra obtained from SAR and pitch-and-roll buoys.

4) Clarify the definition of "the main wave systems".

5) Justify further the use of Eq (7) instead of Eq (5), and define the parameter d(delta)mk for Omk.

6) The conclusion on the "optimal" numbers of direction and frequency for decomposition is weakly supported as those are the up-limits of the tests carried out.

7) In Fig. 3 labelling is unclear.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 3967, 2013.