Review of

# Estimation of extreme wave heights return period from short-term interpolation of multi-mission satellite data: application to the South Atlantic

by J. Salcedo-Castro et al.

## Recommendation

**Major revisions.**

## Synopsis

The paper describes a method to estimate long-term (10, 25, and 50 years) wave height return values from altimeter data. Along-track SWH values are interpolated in $2 \times 2^{\circ}$ grid boxes. The results are validated against in-situ (buoy) measurements and compared to estimates based on ERA-Interim data.

## Discussion

This is a revised version, and I have not reviewed the original version. I therefore concentrate on the remarks of the original reviewer #2. That reviewer mainly asked for additional information. Although the authors state that they have improved the manuscript in reaction to remarks 1, 3, and 4, I cannot see much of additional information, especially not for remarks 3 and 4.

In section 3 a comparison is made between return values derived from the altimeter data and from ERA-Interim (Figs. 7-9). While the *patterns* found from both products are very similar, the altimeter-derived values are lower than those from ERA-Interim, especially in the south-western part of the domain where the differences reach several metres. That's quite a lot. The authors shortly mention this difference, but make no attempt to explain it. Given the size of the discrepancy this is unacceptable. Could the altimeter data be of insufficient quality (or spatio-temporal density) to obtain reliable estimates of return values? What if you sub-sample the ERA-Interim data at the altimeter measurements, and then process and analyse them in the same way as the altimeter data?

## Detailed comments

Page and line numbers refer to the manuscript version with track-changes.

**p 3, l 21** Croisé-fillon → Croisé-Fillon (also in References)

**p 3, l 32** swh → SWH

**p 12, lines 29-32** Why do you expect these geographical pattern of changes? And what is the relation of this statement with the preceding sentence about seasonal and monthly periods?