**Geoscientific
Model Development
Discussions**

Interactive comment on "Wavelet-based spatial comparison technique for analysing and evaluating two-dimensional geophysical model fields" *by* S. Saux Picart et al.

Anonymous Referee #2

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GENERAL REVIEW The manuscript describes a technique to compare spatial distribution of two geophysical data based on a wavelet analysis. The technique improves and adds significant values to the original method suggested by Casati et al. (2004) by making their method generic, so that a priori knowledge of the dataset, which often differs depending on a specific field of science, is no longer required in the method. As a result, the technique shown in the present manuscript became widely applicable to many other fields of geophysical sciences. This is a significant advancement and contribution to a geophysical community, and would provide more applications and benefit to a wide range of GMDD audience. In conclusion, I would recommend this manuscript for publication in GMDD.

SPECIFIC: L19 P3166: At this point, "the orthogonality" needs to be explained (i.e. the orthogonality in what sense?).

L8 P3167: I guess "the quantile of the data number distribution" may be more explicit phrase than "the quantfle of the distribution".

L13 P3168: Just to be consistent with other variables, $\zeta 0$ (matrix) should be a bold font? (Same in the rest of manuscript)

L21 P3168 In the numerator of Eq. 3, there is a term $<Zq\ \zeta 0>$ where $\zeta 0$ is a weight image that explains valid and invalid data points according to Eq.2. How missing data in the original data set (e.g. satellite SST or Chla) is reflected in Zq at the first place?

L16 P3169: Sigma sign in Eq. 6 misses a range of the summation.

L20 P3171 or Fig.2: What is the significance of a difference between the skill scores, say, 0.6 and 0.7 (or 0.4 and 0.6 etc.)? Please explain to help a reader.

L7-12 P3173: Is this the reason? I may also be because the satellite data were calibrated to the optical-depth-averaged in situ measurements of Chla, rather than that a satellite signal to estimate Chla originates from a certain optical depth.

L15-15 P3173: This statement implies that a value of the spatial scale (i.e. a value of y-axis in Figs.2-3) can actually represent a specific area or region in a data set analyzed. Similarly, a value (actually quantile) on the x-axis also represents a specific area or region (See Fig. 1). Given that, how a skill score for every combination between a special scale and SST/Chla in Figs. 2-3 could be calculated? (Why each box element in Fig2-3 can have a value?)

Fig. 4: Although I know that it is not really necessary, it may be reader-friendly if the scale for the figure is coloured. Also it would be nicer if the location of threshold is actually drawn in the color plot, although it should be read from c) and d).

L19 P3174: "i.e. the orthogonality…". This explanation of the "orthogonality" greatly

help readers to understand, if it appears at the earlier stage of the manuscript.

L27 P3174: "it enable" — "it enables".

L11 P3157: "Optical wavelength satellite data" — consider another word.

C1369