

Response to Anonymous Referee #2 :

Dear Referee,

Thank you for your interest in this manuscript and for the comments and suggestions you make.

I reply to all your comments and suggestions to change hereafter in blue.

Best regards,

Loren Carrere

General comments:

No method is numerically explained using an equation/equations – the authors should consider adding these for clarity and for ease of anyone else wanting to repeat or carry out a similar analysis.

LC: the equations used has been added in section 3.2 and also in section 4.2.

Detailed comments:

L136: How is this map constructed?

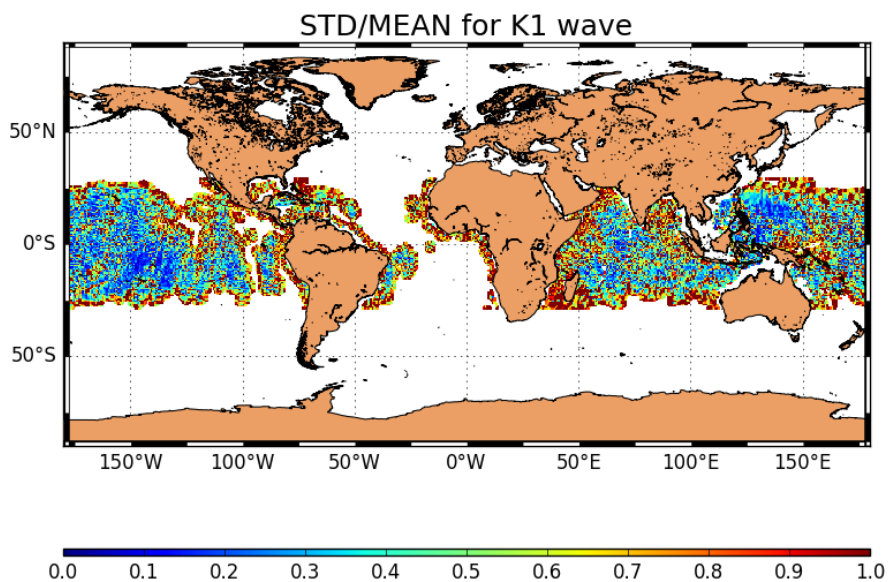
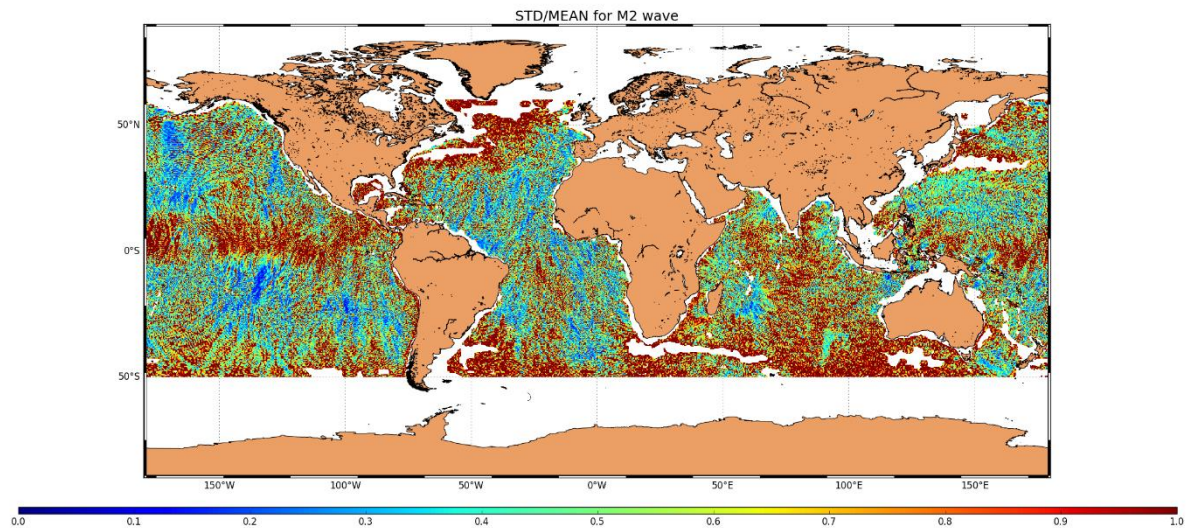
LC: the complete description of the method used is available in the paper Ray and Zaron 2016 (section 3 for the construction of the empirical maps): this reference and a few more sentences have been added in the text.

L240: Why do you specifically select these two regions for the comparison?

LC: These 2 regions are the more energetic regions of all the seven considered. Moreover, all 7 models are available on NPAC region, and the amplitude of baroclinic tides is important both for M2 and diurnal tides on LUZON. Info added in the text.

L294: Does a simple standard deviation give you the most robust measure of variation between the models? Would you not expect larger variations in areas with larger amplitudes? What about including a measure of e.g. STD normalised by the mean amplitude?

LC: I have also computed the STD normalised by the mean amplitude (cf figure below), but values become very big in large regions due to the fact that amplitude of IT is very weak in many places ... generally, the value of this ratio is about 0.2-0.3 around IT generation regions and some clear beams patterns where models agree with each other are detected. I've added a comment on the value of this ratio in the text: line 329-330.



L296: Why does the DUSHAW increase the STD so much?

LC: because DUSHAW's maps are noisier on wider regions and likely include some more different patterns than other models and also locally greater phase differences. DUSHAW model also includes some discontinuities between areas used to compute the global solution. Some comments have been added in the text.

Lines 333-357: What time periods do the two datasets span?

LC: information added in table 3

L390: What resolution do the JS and CS tracks have?

LC: both are 1-Hz along-track measurements = LRM. The information is added in introduction + section 4.1 which describes the data.

Table 4: check that the highlighted values really correspond to the best reduction. E.g. for J2, crossover, Madagascar EGBERT gives the best reduction, not ZARON.

LC: corrected

Figure 13: In this figure the caption (percentage of IT signal removed) does not correspond to the y-axis label (ratio of power spectral density ($\text{cm}^2 \cdot \text{km}$))

LC: I've changed the figure caption to: Normalized difference of the power spectral density of J2 SLA as a function of wavelength

Figures general:

- You tend to use the same color bars for all subplots in your images. You could plot one large colorbar at the bottom with labels that have a bigger font size. The resulting white space could be used to make the plot titles larger (see next comment).

- Your subplot titles include information that is repeated multiple times – e.g. in Fig. 7 all subplots have 'Mission j2, cycles. . .' – could this go in the caption? Make the plot headers larger as they are not legible at 100% size.

LC: I increased the size of the plot headers in most of figures to make them more legible.

Technical comments:

LC: All technical comments proposed have been taken into account.

L49: at -> et

L57: coming -> upcoming

L88: proposed -> presented

L108: fit -> fitted

L109-110: grammar

Table 2: use consistent notation (comma or dot)

L296: notice -> note

L375: The altimeter SSH using successively each of the IT corrections tested → The altimeter SSH using IT corrections from each model, respectively, . . . (successively is used in a confusing way more than once in the document – check the other occurrences)

L432: ZHAO model -> the ZHAO model

L433: four models, RAY -> four models RAY, . . .

L450: notice -> note

Figure 9a: RRAY -> RAY