Rebuttal letter

Manuscript Number: ODYN-D-16-00155

First, we would like to thank the reviewers again for their valuable and clarifying comments. The manuscript is revised accordingly.

Below is our rebuttal against each comment from the reviewers.

|  |  |
| --- | --- |
| **First reviewer** | **Our comments** |
| I still believe it is useful to add a figure, in addition to Figure 6, showing water amplitude and phase without tidal correction. In this way, the impact of the tidal correction on tidal propagation becomes visible. | Since we do not have any measured fields, but time series at specific locations, we believe that it is better to discuss the tidal propagation through the time series at specific points. We have therefore included results from two stations (Viker and Oscarsborg), one at the boundary and one in the inner area. As shown for example in Fig. 4, the improvement is better closer to the open boundary. We have therefore included a whole paragraph on tidal propagation. |
| It should be mentioned that, although there is improvement for the semi-diurnal components, this is hardly the case for the diurnal ones. | It is now specified that the amplitude for K1 actually increased at Viker. The remaining discrepancies in the diurnal and quarter diurnal constituents at Oscarsborg indicate challenges that might be caused by a misrepresentation of the propagation. A discussion on this matter is also included. |
| Caption of Figure 1: change first phrase to “Location of the Oslofjord in Norway”. | Corrected. |
| Section 3 line 9: change “have” to “has”. | Corrected. |

|  |  |
| --- | --- |
| **Second reviewer** | **Our comments** |
| Correlation: It is not clear to me if the correlation is between observed and modelled waterlevels, error and observed values…? I would make this clear. | The correlation and RMS error are between observed and modelled water levels. This is now specified in the table legend. |
| section 5, page 10, lines 19-30. Here a more thorough analysis of the results is done by adding QQ plots (Figure 4) and PDF plots (Figure 5). However, I would consider changing the order in which the text refers to these two, since it first points to Figure 5 and then to Figure 4. Since some mention to the correlation is done in the immediately preceding lines (17-18), I would link this to the analysis of the QQ plots, which visually also say something about correlation. A more extended analysis of the QQ plots could be included. I would then lastly talk about the PDF plots, which also come later in figure numbering. | Good point. Figure 4 and 5 are now referred to in the order they are numbered. A more extended analysis of the QQ plots is also added. |
| Page 12, line 43: “has” instead of “have”. | Corrected |