

## ***Interactive comment on “On the differences between two semi-empirical sea-level models for the last two millennia” by M. Vermeer et al.***

**M. Vermeer et al.**

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Received and published: 1 November 2012

We thank Dr Jevrejeva for her remarks, and address below those issues not addressed in our reply to Dr Grinsted's review comments.

- Dr Jevrejeva suggested that we test and compare both semi-empirical models (K11 and G10) with the other sea-level proxy reconstructions depicted in Kemp et al. (2011)'s Figure 3. We do not believe that this would be a helpful exercise because of limitations in several of those data sets including large uncertainties, lack of temporal resolution and variable quality. We prefer to use the North Carolina dataset because we believe it to be of good quality and an approximation of multi-centennial global sea level within its stated uncertainties.

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- In our comparison of the amount of 20th Century sea-level rise, our stated uncertainty for the North Carolina proxy data (which this reviewer and Dr Grinsted find too optimistic) is  $\pm 10$  cm, with serial correlation assumed on the relevant, inter-decadal time scale. This uncertainty structure applies equally to the 20th Century and earlier proxy data. For a trend-fit to 20th Century data only, this implies a systematic uncertainty in the sea-level rise estimate (whether 24 or 29 cm) that is not expressed in the quality-of-fit result of  $\pm 5$  cm. Therefore the greater discrepancy seen with reference values for global sea-level rise over the 20th Century is not surprising, nor significant.

### References

Kemp AC, et al. (2011) Climate related sea-level variations over the past two millennia. *Proc Natl Acad Sci USA* 108:11017–11022.

Grinsted, A.: Biased analysis and presentation. Interactive comment on “On the differences between two semi-empirical sea-level models for the last two millennia” by M. Vermeer et al., *Clim. Past Discuss.* 8, C1408-1426, 2012.

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Interactive comment on *Clim. Past Discuss.*, 8, 3551, 2012.