

## ***Interactive comment on “Uncertainty of the global oceanic CO<sub>2</sub> uptake induced by wind forcing: quantification and spatial analysis” by Alizée Roobaert et al.***

### **Anonymous Referee #2**

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Review of manuscript "Uncertainty of the global oceanic CO<sub>2</sub> uptake induced by wind forcing: quantification and spatial analysis" by Alizée Roobaert, Goulven G. Laruelle, Peter Landschützer, and Pierre Regnier

In their manuscript the authors present an in depth study of the impact of different gridded wind speed data products - such as CCMP, ERA, NCEP1 and NCEP2 - utilized to determine air sea fluxes of carbon dioxide on global and regional scales. Therefore they combined those data with a globally re-gridded sea surface climatology of pCO<sub>2</sub> values covering the years from 1991 to 2011. By employing different parameterizations for the calculation of CO<sub>2</sub> fluxes they found a strong dependence of this number on the

C1

choice of the specific wind speed product.

To constrain the variability of air to sea fluxes of CO<sub>2</sub> is of great importance for assessing the global ocean carbon sink and the concomitant acidification. In order to minimize the error in the flux calculations the authors propose to recalibrate the piston velocities (k-formulations) for the respective wind speed data product.

The manuscript is well written and contains important informations and innovations. The methods and results are clearly presented. However, the manuscript would benefit from a short discussion of the consequences for Earth system modeling. What is the expected impact of the findings in this study on model projections regarding the evolution of the future carbon sink? A short clarifying paragraph would be helpful.

I recommend publication in “Biogeosciences”

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C2