

**bg-2014-527**

**Reconstruction of super-resolution fields of ocean pCO<sub>2</sub> and air-sea fluxes of CO<sub>2</sub> from satellite imagery in the Southeastern Atlantic**

Comments to authors:

Some of the comments from a reviewer have not been properly addressed by the authors. Before publication all comments listed must be satisfactorily addressed:

- Particularly a valid discussion why the authors use their set predictor data is vital:
  - Please provide interpretation as to why chlorophyll and SST are the only predictor data used in the method. Indicate and explain why not e.g. sea surface height? There are many possible combinations which might influence your overall results and errors.
- Regarding possible misunderstanding on the reviewer's comment regarding the atmospheric xCO<sub>2</sub>: you use GLOBALVIEW atmospheric xCO<sub>2</sub> data, but for the flux calculation you use the partial pressure difference between ocean and atmosphere, hence (pCO<sub>2</sub>ocean - pCO<sub>2</sub>atmosphere). However, GLOBALVIEW xCO<sub>2</sub> is not available in partial pressure units, but reported as molar fraction (in ppm). As mentioned in the initial review, GLOBALVIEW CO<sub>2</sub> data needs conversion from xCO<sub>2</sub> to pCO<sub>2</sub> in order to calculate the partial pressure difference and the flux, e.g. using the equations in Dickson et al. 2007 (otherwise you calculate pCO<sub>2</sub>ocean - xCO<sub>2</sub>atmosphere). The question is: have you converted xCO<sub>2</sub>atmosphere to pCO<sub>2</sub>atmosphere, since the difference between the two can make a difference locally, depending on the sea level pressure?