Supplement of Biogeosciences, 16, 797–810, 2019
https://doi.org/10.5194/bg-16-797-2019-supplement

Biogeosciences Open Access EGU

Supplement of

Variations in the summer oceanic pCO_2 and carbon sink in Prydz Bay using the self-organizing map analysis approach

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We used four datasets including SST, CHL, MLD, and SSS to train the SOM. We downloaded daily data from AVHRR ONLY sea surface temperature for SST of 1/4o spatial resolution (see Fig.S1) (https://www.ncdc.noaa.gov/oisst). CHL data was downloaded from MODIS-Aqua 8-D composite chlorophyll-a at a space resolution of 4km (http://oceancolor.gsfc.nasa.gov, see Fig. S2). SSS and MLD data were from the daily 1/12° global analysis and forecast product from the Copernicus Marine Environment Monitoring Service (CMEMS, http://marine.copernicus.eu/, see Fig. S3-4). Sea ice concentration is from the daily 3.125-km AMSR2 dataset (https://seaice.uni-bremen.de, see Fig. S5). Daily ASCAT wind speed data (http://www.remss.com/, see Fig. S6) of 1/4 degree was downloaded to calculate the air-sea carbon flux. Daily datasets were first averaged to be 8-d field regarded as weekly for this study and re-gridded with a horizontal resolution of $0.1^{o} \cdot 0.1^{o}$ from 63°E to 83°E and 64°S to 70°S. From the beginning of February to the early of March we have four independent week series, which are week-1 (from 02/02/2015 to 02/09/2015), week-2 (from 02/10/2015 to 02/17/2015), week-3 (from 02/18/2015 to 02/25/2015), and week-4 (from 02/26/2015 to 03/05/2015).

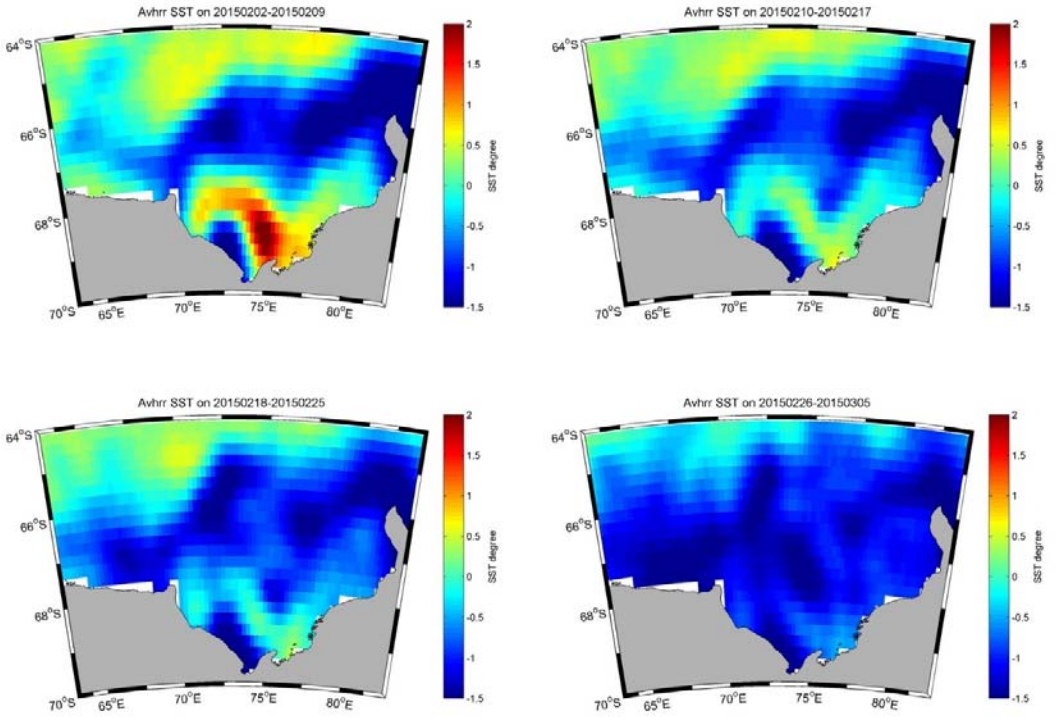

Figure S1. Spatiotemporal distribution of 8-D averaged SST from Avhrr (resolution of 1/4) for SOM-derived air-sea carbon flux estimates.

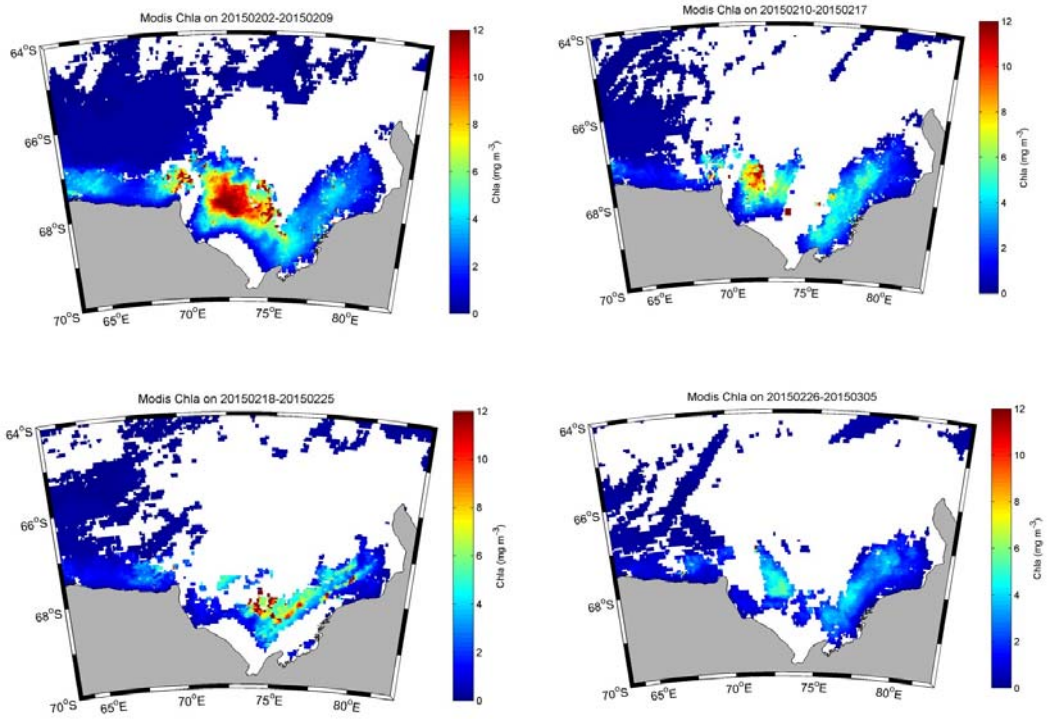

Figure S2. Spatiotemporal distribution of 8-D composite Chla from Modis (resolution of 4km) for SOM-derived pCO_2 estimates.

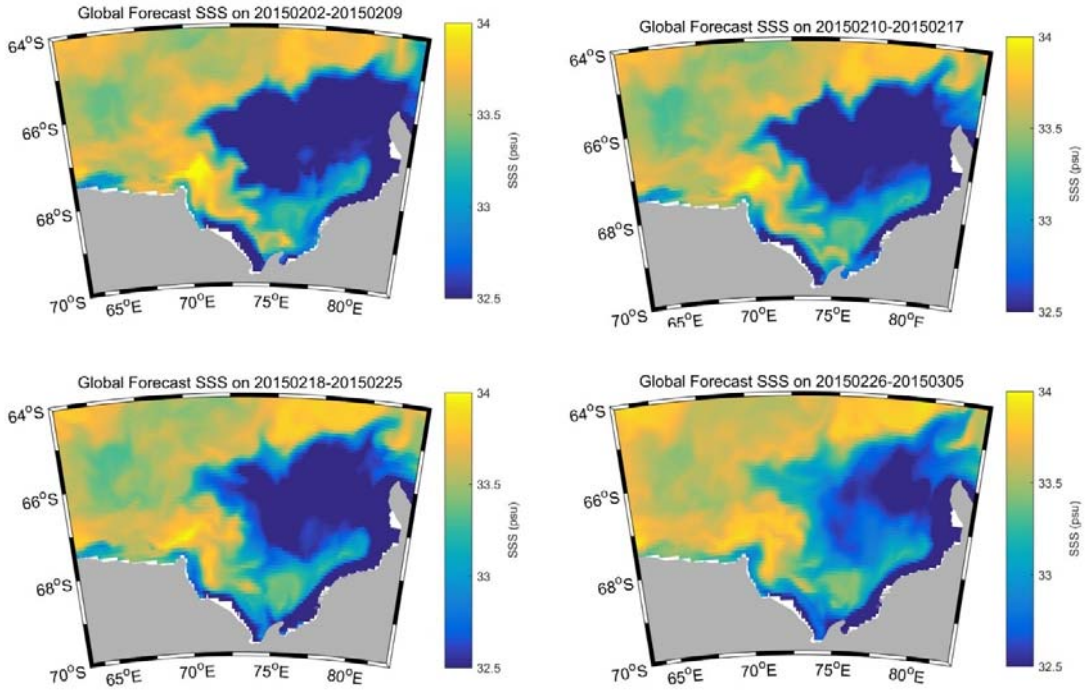

Figure S3. Spatiotemporal distribution of 8-D averaged Global Forecast SSS (1/12) for SOM_derived pCO_2 estimates.

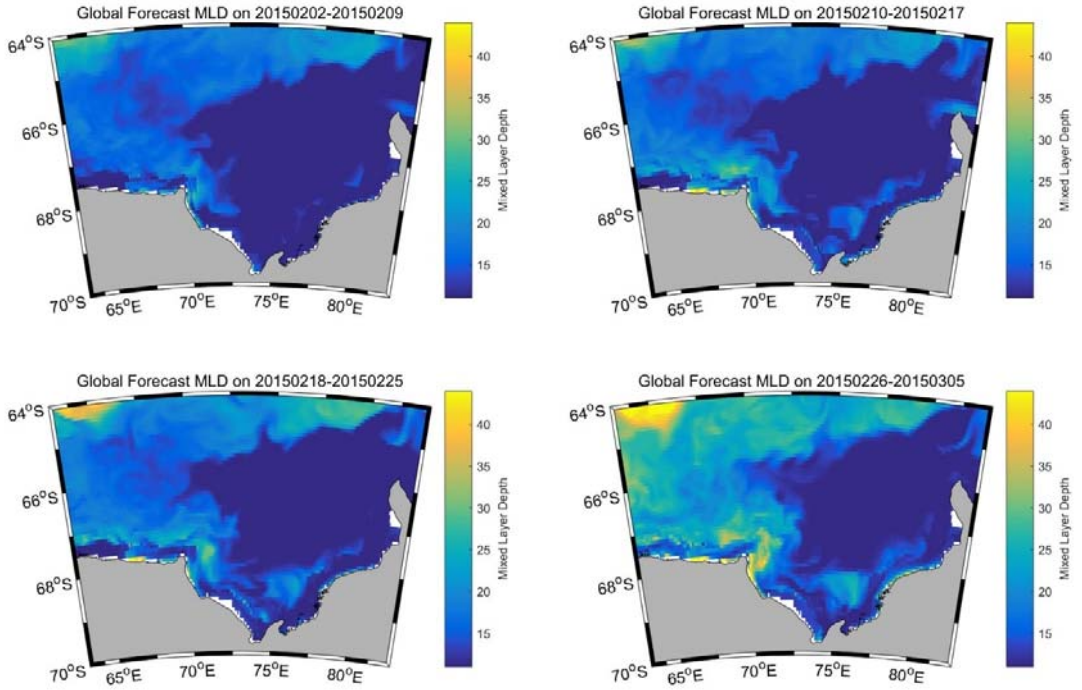

Figure S4. Spatiotemporal distribution of 8-D averaged Global Forecast MLD(1/12) for SOM_derived pCO_2 estimates.

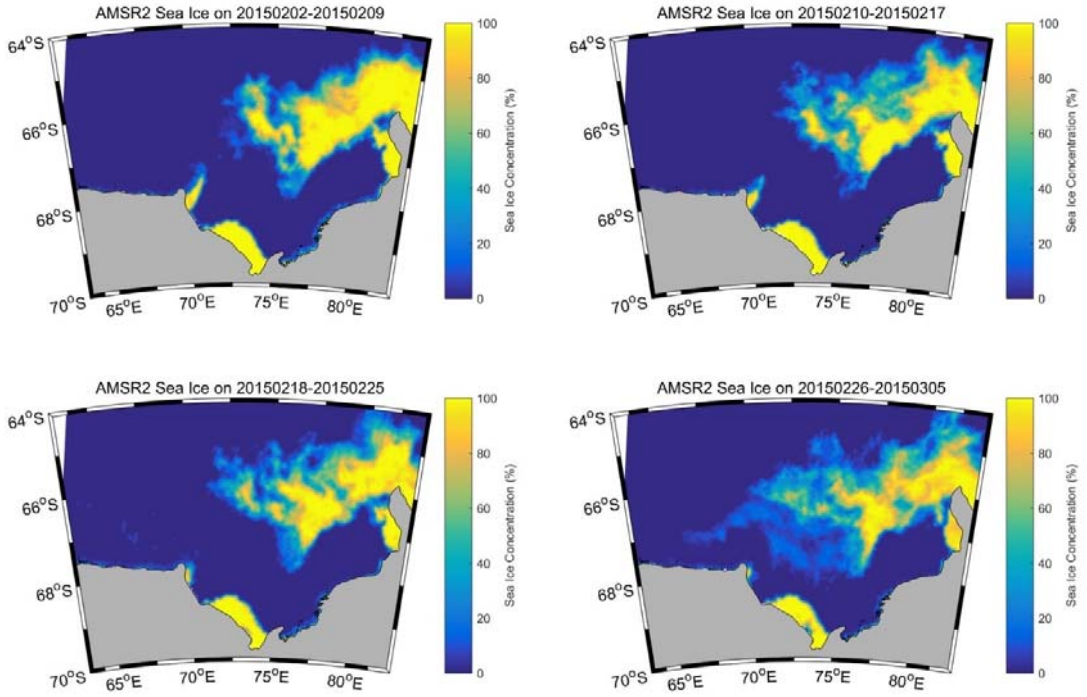

Figure S5. Spatiotemporal distribution of 8-D averaged AMSR2 sea ice concentration (3.125km) for SOM_derived pCO_2 estimates.

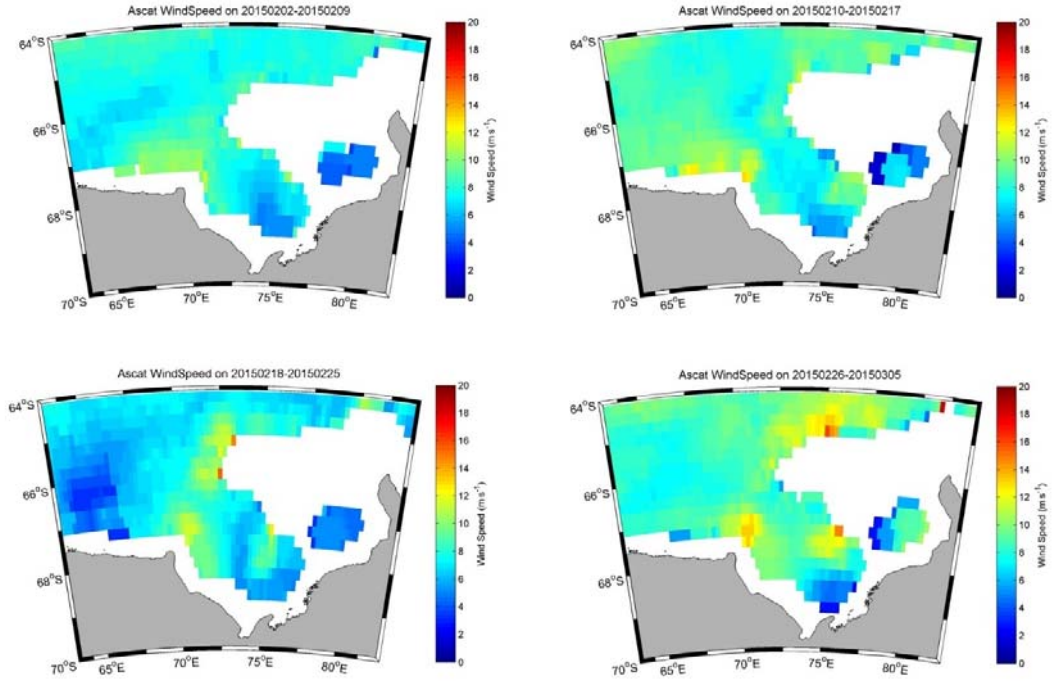

Figure S6. Spatiotemporal distribution of 8-D averaged Ascat wind speed (1/4) for SOM_derived pCO_2 estimates.