Controls on Sea-Air CO_2 Flux in EBUS

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Abstract

Working to understand what controls historical variability in Sea-Air CO_2 Flux in Eastern Boundary Upwelling Systems. I use FG_CO2 output from the CESM Large Ensemble and correlate it to various climate indices derived from model output.

1 California Current

1.1 Study Site

For simplicity, I am using the latitudinal bounds set up by Chavez and Messié [2009]. This equates to 34N - 44N for the CCS. In terms of longitude, I want to approach it similarly to Turi et al. [2014]. In the future, I can make this banded if needed (0-100km, 100-400km, etc.), but for now, 4 regions by 3 bands per region is a lot to work with. Instead, I am just restricting it to 800km offshore and bounded by 10 degrees of latitude for standardization.

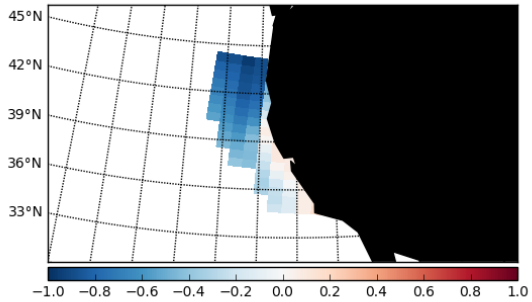

Figure 1: Time-averaged (1920-2015) and ensemble-averaged sea-air CO_2 flux (FGCO2). Simply depicting the region over which time series are analyzed/correlated with respect to climate indices.

References

Francisco P Chavez and Monique Messié. A comparison of eastern boundary upwelling ecosystems. *Progress in Oceanography*, 83(1):80–96, 2009.

G. Turi, Z. Lachkar, and N. Gruber. Spatiotemporal variability and drivers of pco_2 and air–sea co_2 fluxes in the california current system: an eddy-resolving modeling study. *Biogeosciences*, 11(3):671–690, 2014. doi: 10.5194/bg-11-671-2014. URL `http://www.biogeosciences.net/11/671/2014/`.