Notes on EBUS CO2 Publication

Introduction

1. Brief description of EBUS (includes upwelling process, complexities, ecosystem productivity, etc.)
   1. First SOCCR (<http://cdiac.ess-dive.lbl.gov/SOCCR/pdf/sap2-2-final-all.pdf)> section 15.1.1 discusses the complex dynamics of CO2 in coastal margins. Mentions disagreement as to weather the coastlines are a sink or source of CO2 to the atmosphere. Mentions that great uncertainties remain because these carbon fluxes are complex and rapidly changing (good motivator for this paper).
2. Discussion of CO2 fluxes
   1. Coastal systems have a large flux density but likely don’t contribute significantly to the global carbon cycle.
      1. Muller-Karger (2005) : <http://onlinelibrary.wiley.com/doi/10.1029/2004GL021346/full)>
   2. Are they a net sink or source to the atmosphere? (Complex and variable dynamics)
      1. (Thomas et al 2004) <http://science.sciencemag.org/content/304/5673/1005> -- study focusing on the North Sea which is sensitive to spring blooms and extrapolates to global oceans. Probably not terribly relevant to our paper.
      2. Comment on Thomas et al 2004 <http://science.sciencemag.org/content/306/5701/1477.3> -- points out that global extrapolation from North Sea data isn’t reasonable.
      3. (Tsunogai et al 1999) <http://onlinelibrary.wiley.com/doi/10.1034/j.1600-0889.1999.t01-2-00010.x/full> -- originator of this “coastal pump” hypothesis. Makes good points, but again focuses on the East China Sea which isn’t relevant to our study. Looking for something that comments on the complex dynamics of an eastern boundary upwelling system.
      4. (Cai et al. 2006) <http://onlinelibrary.wiley.com/doi/10.1029/2006GL026219/full> -- Great paper with subsection on upwelling systems. Low-latitude systems (e.g. HumCS) are generally sources of CO2 to the atmosphere due to persistent winds and warm waters. Mid-latitude systems tend to be sinks of CO2 due to biological uptake and cold surface temperatures but are seasonally variable. In generally, upwelling systems are extremely dynamic and highly variable.
      5. <https://search.proquest.com/docview/1950381710?pq-origsite=gscholar>
      6. <http://onlinelibrary.wiley.com/doi/10.1002/2014GB004832/full>
3. Discussion of variability in EBUS and CO2 fluxes
4. Implications, need for large ensemble