

**Poster Presentation**

Theme 1.2: The Contemporary Carbon Cycle - Emerging Approaches and Novel Observation Techniques

Keywords: Atmosphere, Greenhouse gas, Carbon uptake, Amazon Atlantic outflow

**Amazon Atlantic outflow region carbon cycling constrained by atmospheric greenhouse gas data**

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Estuaries and near-coastal regions may process substantial amounts of carbon causing a non-negligible carbon uptake from the atmosphere. For purpose of characterizing the greenhouse gas levels of air entering the Amazon basin from the Atlantic we have been measuring regularly greenhouse gas concentrations at several sites along the North-East Atlantic coast of Brazil over approximately the past six years (at some of the sites for much longer). At some of the sites sampling is restricted close to the surface while at other sites we have been measuring vertical profiles. At Salinópolis which is located close to the Amazon outflow region to the Atlantic seasonally strong CO<sub>2</sub> depletion in both surface records and aircraft vertical profiles compared to background sites like Ascension Island is clearly discernible. The seasonality is synchronous with increases in chlorophyll observed from space e.g. by the SeaWiFS mission. Incidentally during the CO<sub>2</sub> depletion period air-mass trajectories tend to pass over the shelf region along the Brazilian coast travelling from the South along the coast. This enables us to apply an air column mass balance approach to estimate the magnitude of the CO<sub>2</sub> flux into the sea along the coast during the blooms. Using the chlorophyll maps we may furthermore extrapolate the flux estimates spatially to obtain an area integrated flux. We will discuss our findings and put our flux estimates into perspective with estimates for productivity and carbon uptake in coastal regions of major tropical rivers as well as the extra-tropics.

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Poster Session (see poster session schedule)