

## Biogeochemical and freshwater impacts on the tropical and subtropical Atlantic due to Amazon River plume variability

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We present results from a 1/6degree coupled physical and biogeochemical model of the Atlantic Ocean. Our efforts are focused on understanding the role of the Amazon River in influencing the physics and biogeochemistry of the tropical Atlantic. The river plume brings roughly twice as much freshwater into the tropical Atlantic as precipitation associated with the Inter Tropical Convergence Zone. Most of this freshwater makes its way into the North Atlantic subtropical gyre, and thus contributes to the salinity balance of the surface limb of the meridional overturning cell. Associated with the river plume, are nitrogen fixation, and carbon export. In this study we examine the interannual variability in river plume dynamics associated with 20 years of model run with 6 hourly surface forcing from the ERA40 reanalysis. Additional experiments examine the role of river transport variability in the salinity dynamics and carbon export of the tropics and in export of freshwater from the tropics.