



Local and remote impacts of anomalous tropical Atlantic freshwater input

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In the framework of global climate change and in the light of IPCC reports, it appears crucial to diagnose and investigate the climate impacts of disruptions of the freshwater cycle. Several experiments where an anomalous freshwater flux is imposed over the tropical Atlantic ocean are carried out using the IPSL-CM4 climate model. Local adjustment of the tropical Atlantic on interannual timescales is first investigated. It is characterized by an anomalous zonal tilt of the thermocline depth accompanied by anomalous cross-equatorial winds. On longer timescales, the anomalous fresh or salty water masses can be traced throughout the North Atlantic ocean, subducting in the center of the subtropical gyre, reaching deep convection areas and invading again the North Atlantic on heavier isopycnals. Indication of a rapid connection of the Tropics with the high latitudes via an atmospheric bridge is also given. Finally, the sensitivity of the processes to the location, length and magnitude of the anomalous forcing is discussed.