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Tropical responses to North Atlantic freshwater discharge n a comprehensive coupled GCM

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At least 24 Dansgaard-Oeschger events punctuate the last ice age. There is strong evidence in proxy records that these events are associated with substantial changes in the Atlantic meridional overturning current (MOC) and global sea level variations. A recent concept is the thermal-freshwater bipolar seesaw which was found in a model consisting of a comprehensive ocean component coupled to an atmosphere of reduced complexity (Knutti et al. 2004, Nature). Using the comprehensive Community Climate System Model CCSM3.0 of the National Center for Atmospheric Research (NCAR), we perturb the climate by a freshwater pulse into North Atlantic (50 to 70 degree North). Over a period of 100 years the freshwater discharge is increased from 0 Sv up to a maximum of 1 Sv, followed by a 100 years decrease to 0 Sv. This simulation is compared with a control simulation forced by perpetual 1990 conditions. We will present detailed analyses of sea surface temperature and precipitation changes in the tropics and their relation to the delivery of freshwater and the evolution of climate in the North Atlantic.