



Coupled Atmosphere-Ocean water cycle and possible future changes

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As the water is a major component of the global coupled system, tracing the water in both the atmosphere and ocean is of utmost importance for present as well as for future climates. In the present study, we have calculated one single water overturning stream function for both the ocean and atmosphere in order to follow the large-scale freshwater circulation. Hence, the stream lines through the surface correspond to the Evaporation - Precipitation fluxes. The results reveal that atmospheric water cells are transporting moisture towards the Inter Tropical Convergence Zone (ITCZ) and from the sub-tropics to the mid-latitudes. These atmospheric cells are in fact a continuation of the oceanic overturning cells. Comparing the present day climate with the future scenario, we have recognised that cross-equatorial flow will increase and transport more moisture towards the ITCZ in the near future. In the northern hemisphere, the atmospheric water cell which extends from the sub-tropics to the mid latitudes is linked with the North Atlantic deep water (NADW) and in the southern hemisphere, similar type of atmospheric water cell is a continuation of the Antarctic bottom water (AABW).