



The role of ocean circulation in setting the NAO variability in the INGV/CMCC coupled GCM.

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In the present study, an oscillatory mode in the North Atlantic sector of the INGV/CMCC coupled general circulation model (Gualdi et al. 2006) with a typical subdecadal timescale is examined in detail. The oscillation involves coordinated changes in SST and atmospheric circulation, with a typical North Atlantic Oscillation (NAO)-like structure. The interplay between mid-to-high latitude SST, ocean circulation variability and the NAO is analysed. A major focus of this study is the role of ocean circulation on the NAO variability, with specific attention on the barotropic wind-driven component. In particular, the role of the Inter-Gyre Gyre (Marshall et al. 2001) as a heat carrier, and its impact on the low frequency modulation of the North Atlantic SST tripole is investigated. A mechanism governing the oscillation is identified, bearing strong similarities with the mid-latitude delayed oscillator paradigm (Marshall et al. 2001; Czaja and Marshall 2001).