

Dynamics of North Atlantic weather regimes

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Abstract

Low-frequency extratropical atmospheric variability has been studied for several decades as it exerts a strong influence on medium range weather forecasts and largely determines the occurrence of high-impact weather events. I will first introduce the concept of weather regimes and compare it with other concepts of low-frequency atmospheric variability. Then, my presentation will describe dynamics of wintertime North Atlantic weather regimes using reanalysis datasets and their relationship with synoptic and planetary Rossby waves. The maintenance of weather regimes and transitions from one regime to another are shown to be closely linked with the propagation of planetary Rossby wave trains and breaking of synoptic baroclinic waves. The second part of my presentation will be focused on weather regimes from mid-September to mid-October 2016, a period marked by the international field campaign NAWDEX which was dedicated to the study of diabatic processes along the North Atlantic storm track. The predictability of the blocking event of early October 2016 will be more particularly analyzed using the ensemble prediction system developed at Météo-France.