



Impact of the North Atlantic Ocean over East Asia

Paul-Arthur Monerie, Jon Robson, Buwen Dong, and Dan Hodson

University of Reading, Department of Meteorology, Reading, United Kingdom (pmonerie@gmail.com)

We performed several sensitivity experiments to assess the impact of the North Atlantic Ocean over East Asia. The pattern of the Atlantic Multidecadal Variability is imposed by warming the Ocean through changing the Atmosphere-Ocean heat fluxes. We used the MetUM-goml climate model that is composed by an atmosphere model coupled to a mixed layer model. Fifteen members are performed and represent both a negative and a positive phase of the Atlantic Multidecadal Variability. We then found an impact of the North Atlantic Ocean over East Asia. The warming of the North Atlantic leads to a reduction in sea level pressure, a northward shift of the Intertropical convergence zone and an increase in precipitation over the tropical Atlantic Ocean. These changes lead to the propagation of a Rossby wave, to a quasi-baroclinic structure of the atmosphere over the North Atlantic and a barotropic structure of the atmosphere over East Asia. The surface temperature increases then over East Asia due to an anomalously strong temperature advection. These results confirm a previous study in which we proposed that the Eastern Asian climate are predictable years head due to the high predictability of the temperature over the North Atlantic and due to the inertia of the Ocean dynamic.