
 [EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-OS Ocean Sciences & Ocean Environment

[A-OS10]Atlantic climate variability, and its global impacts and predictability

convener:Ingo Richter(JAMSTEC Japan Agency for Marine-Earth Science and Technology), Noel S Keenlyside (Geophysical Institute Bergen), Carlos R Mechoso (共同), Yoshimitsu Chikamoto(Utah State University)

Sun. May 20, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

The Atlantic Ocean is subject to pronounced climate variations that occur on a wide range of time scales and can be globally connected to variations in other oceans and over continents. Atlantic multi-decadal variability (AMV) associated with the Atlantic meridional overturning circulation (AMOC) has long been known to have global impacts. In particular, AMV has been linked to changes in the Indian, Asian and South American summer monsoons, and also to changes in the Pacific associated with the "global hiatus". Interannual variability in the equatorial and subtropical Atlantic has also been shown to influence global climate, including over Asia. The freshening of the North Atlantic by melting of the Greenland ice cap is expected to influence all ocean basins via atmospheric bridges. Likewise, misrepresentation of the AMOC in climate models has been associated with model biases in the entire Northern Hemisphere. This session seeks observational, modeling, and theoretical studies on the mechanisms that determine the Atlantic mean climate and variability, as well as the predictability and global impacts of such variability. We also seek studies that evaluate climate model performance in the region. Topics include atmosphere-ocean-cloud interactions in the tropical Atlantic and their remote impacts; relationships between tropical and mid/high latitude variability; air-sea interaction along the Gulf Stream and its influence on cyclones and storm track evolution; variability in the Benguela upwelling region; influence of Agulhas leakage on the South Atlantic; coupled climate models biases in the region and their impacts; AMOC and long-term climate change.

[AOS10-P01]South Atlantic Anti-Cyclone as a driver of Atlantic Niño variability

*Noel S Keenlyside¹, William Cabos², Dmitry Sein³, Shunya Koseki¹, Hyacinth Nnamchi⁴ (1.Geophysical Institute, University of Bergen and Bjerknes Centre, Norway, 2.University of Alcalá, Spain, 3.Alfred Wegener Institute for Polar and Marine Research, Germany, 4.University of Nigeria, Nigeria)

Keywords:Tropical Atlantic, Climate Prediction, Atlantic Niño, Climate Modelling

Atlantic Niño variability remains poorly understood and predicted, despite exhibiting some apparent similarities to the El Niño Southern Oscillation. Here we show that extra-tropical influences play a dominant role in driving Atlantic Niño variability, bringing a new dimension to our understanding. We assess the role of extra-tropical atmospheric variability in driving observed Atlantic variability by comparing ensemble simulations with two configurations of a regional coupled climate model. In one case the South Atlantic Anticyclone is prescribed at the southern boundary of the regional atmospheric model, while in the other it is simulated within the domain. In both configurations, atmospheric reanalysis drive the global ocean model outside of the coupled domain and are prescribed as boundary conditions to the regional atmospheric model. Extra-tropical southern hemisphere variability can explain around 50% of the observed Atlantic Niño variability. The greatest impact is from boreal spring and autumn. Comparing models different resolution and parameterisations shows the importance of representing the link between SAA and equatorial Atlantic variability in capturing the observed Atlantic Niño variability. The link between the two regions appears related to

thermodynamic ocean-atmosphere interaction.