Geophysical Research Abstracts
Vol. 15, EGU2013-1452, 2013
EGU General Assembly 2013

How stationary is the Siberian snow - Arctic Oscillation relationship over the 20th century ?

Yannick Peings, Hervé Douville, and Eric Brun
Météo-France, CNRM, Toulouse, France

Both observational and numerical studies suggest that fall snow cover extent over Eurasia is linked to subsequent winter variations in the predominant Northern Hemisphere (NH) teleconnection pattern, known as the Arctic Oscillation (AO). The present study uses the recent 20CR reanalysis to explore the snow-AO relationship over the entire 20th century for the first time. 20CR is first shown to have a consistently realistic simulation of the onset of the Eurasian snow cover compared to a large number of in-situ observations. It is then used to explore the snow-AO relationship over both the satellite and pre-satellite periods. Results show that this teleconnection is not stationary and did not emerge until the 1970's. The possible modulation of the teleconnection by the Quasi-Biennal Oscillation (QBO) is then discussed using a reconstructed QBO index, as it could have favored the influence of snow anomalies on the Arctic Oscillation in recent decades. This study highlights the limitations of empirical seasonal forecasting techniques and suggests the need for a better understanding of the non-linear interactions between the multiple drivers of the wintertime northern hemisphere extratropical variability.