



## **North Atlantic Origin of Interdecadal variability of Siberian High**

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We suggest that the changes in the mean atmospheric circulation structure in the North Atlantic Ocean upstream region of Eurasian continent play an important role in the interdecadal variability of Siberian High (SH) through the modulation of Ural blocking frequency. Previous studies suggested that the interdecadal variability of SH is partly explained by the Arctic Oscillation. However, in this study, we emphasize the role of 'Warm Arctic and Cold Eurasia (WACE)', which is the second mode of winter surface air temperature variability over Eurasia. We show that the correlation between SH and WACE is high in general compared to that between SH and AO. However, the correlation between SH and WACE does not always exhibit high constant value. It shows a distinctive interdecadal fluctuation in the correlation. We found that this fluctuation in the correlation is due to the interdecadal fluctuation of the continental trough over the North Atlantic and the resultant strengthening of in-situ atmospheric baroclinicity. This accompanies changes in the transient vorticity flux divergence which leads to the downstream wave development and anomalous anticyclonic flow near Ural region. Obviously, the existence of anticyclonic flow over Ural region helps more frequent occurrence of Ural blocking and it is shown that this condition favors positive WACE event, which links to an intensified SH.