Assessment of interseasonal relationship between snow cover and atmospheric conditions in Siberia from different datasets

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GOAL

to assess the persistence of the relationship between the snow cover established in the autumn in Siberia and the atmospheric conditions of this territory that are formed in the following winter

Data and Method

* **DATA**

(Obs., NCEP2, ERA-Interim, INMCM4)

Snow cover data – the Global Snow Lab of the Rutgers University (https://climate.rutgers.edu/snowcover/);

AO index – National Weather Service Climate Prediction Center (NOAA NWS CPC) / NCEP2

Geopotential Height – NCEP2 reanalysis

Original and detrended data were considered.

* **REGION**

Western Siberia (WS): 55-74 N and 60-90 E.

* **METHOD**

Pearson correlation analysis –

the correlation coefficients between Siberian snow cover area and the AO index were calculated for the whole time period 1979-2016, as well as for all nested periods.

Wave propagation from surface to atmosphere was considered.

Results and Conclusion

5 June (Wed.)

Welcome to my poster!

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INTRODUCTION

Influence of autumn snow cover anomalies in the middle and high latitudes of the Northern Hemisphere on atmospheric conditions that form in a subsequent winter season has been of considerable interest to the scientific community for many years.

Due to the climatic features of Eurasia, the most extensive snow cover is formed in the Siberian part of Eurasia. According to the satellite observations of the National Oceanic and Atmospheric Research Administration (NOAA), the main snow cover formation in Siberia occurs precisely in October, that is associated with the change of seasons and the corresponding change of the atmospheric circulation for this territory.

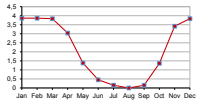

Figure 1. *Snow cover area over Western Siberia, mln.km², data of the Global Snow Lab of the Rutgers University*

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Original and detrended data were considered.

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METHOD

The correlation coefficients between Siberian snow cover area and the AO index were calculated for the whole time period 1979-2016, as well as for all nested periods.

RESULTS

All Nested Periods Correlation

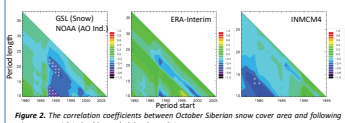

Figure 2. *The correlation coefficients between October Siberian snow cover area and following winter mean AO index (detrended data), α = 0.1 .*

Table 1. *Generalized assessment of the manifestation of a statistically significant linear relationship*

	Dec		Jan		Feb		DJF	
	Orig.	Detr.	Orig.	Detr.	Orig.	Detr.	Orig.	Detr.
GSL + NOAA								
ERA-Interim								
INMCM4								

Correlation between Siberian October Snow Cover and Geopotential height

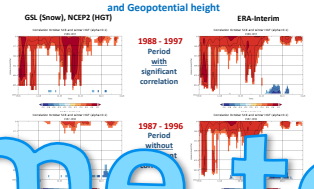

Figure 3. *Correlation between October snow cover and geopotential height anomaly, detrended data, α = 0.1*

Interannual variability

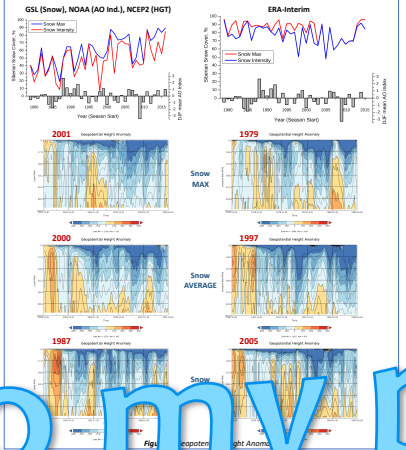

Figure 4. *Geopotential Height Anomaly*

CONCLUSION

- **The obtained result showed the sensitivity of the manifestation of a statistically significant linear relationship between snow cover areain Siberia in October and the AO index in the following winter to the choice of the time interval for the study.**
- **It can be assumed that the considered mechanism of the interseason influence of snow cover variation on atmospheric conditions does not in itself control, but it can be used to explain the nature of the interaction of processes for those periods where a significant linear relationship has been found.**

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