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Impact of snow depth and snowmelt on vegetation activity in Siberia: a 12 years study using remote sensing data from SSM/I and AVHRR.

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The vegetation and water cycle at northern latitude plays an important role on the global climate and on the carbon cycle. In particular, feedback mechanisms between snow and vegetation may have a strong impact on the whole boreal system. In this paper we present the results of a joint analysis of Normalised Difference Vegetation Index (NDVI) data derived from AVHRR and snow parameters (snow depth and timing of the snow season) derived from satellite microwave passive measurements (SSM/I) over Central Siberia.

We investigate the influence of snowmelt and snow depth interannual variability on the vegetation activity during the whole growing season and in summer. To better understand the processes involved we also consider the effects of temperature and precipitation on the NDVI. The analysis carried out allows the individuation of different areas where the snowmelt timing and/or the winter snow depth are significantly correlated to the NDVI signal. The relationships observed are interpreted in terms of the length of the growing season, of water availability in water stressed areas and of the thermal insulation of the soil under thicker winter snowpacks.