

Impact of anomalous high temperature anomaly in the 2020 spring-summer on terrestrial environment across Siberia

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Siberia has been experiences one of the most distinct warming trends across global, and this tendency will continue in future. Among the effects of global climate change, extreme climate anomaly is one of the important issues. Siberia experienced anomalous high temperature in 2020 spring to summer. However, the effects of the anomaly on terrestrial environment have not been studied so far. In this study, we analyzed multiple satellite remote sensing datasets/products and model outputs to understand the response of terrestrial environment to the warming. We detected clear positive anomaly in land surface temperature, and it exceeds over five degree above long-term (20 years) mean based on MODIS products. Snow cover duration also show much earlier snowmelt (e.g. one month) compared with the normal. NDVI and LAI also consistently shows positive anomalies in March to June seasons. Gross primary productivity (GPP) also shows 10-20% larger than those of normal years. We will report further progress on this analysis, including river outflow, whole carbon cycle (including respiration). Further analysis is expected to include greenhouse gas observing satellite data, such as GOSAT, to detect carbon atmospheric CO₂ concentration signals.

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