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## The teleconnection between the Siberian snow-albedo feedback and the spring East Asian dust cycle : based on Last Millennium Ensemble

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According to the reanalysis data of recent years, the Siberian snow-albedo feedback is found to play a crucial role on the spring East Asian dust cycle by influence local energy budget and circulation. By analyzing the CESM Last Millennium Ensemble conducted by National Center for Atmospheric Research (NCAR), we found that the spring East Asian dust burden is significantly correlated with the snow-albedo over Siberia during the past millennium. The correlation coefficient between the snow depth over Siberia and the East Asian dust burden reaches to 0.56. The cloud fraction over Siberia is also correlated with the dust burden with a coefficient of 0.40. The Siberian snow cover reflects shortwave radiation and cools down the lower and middle troposphere, which leads to more clouds and snows occurring over Siberia. The increased cloud cover therefore reflects more shortwave to cool down the surface as a positive feedback. The cooling of lower troposphere over Siberia induces cyclonic wind anomalies around the region, enhances the westerly winds over the East Asian deserts which locate on the south side of Siberia and finally promotes the East Asian dust cycle.

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