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CONTROL ID: 1494030

TITLE: Variations of cloud fraction and cloud types over Northern Eurasia in the last decades

ABSTRACT BODY: We assess changes of total and low cloud fraction and the occurrence of different cloud types including convective clouds over Northern Eurasia during last three decades (1984-2011). Our analysis is based on visual daytime routine observations from more than 1600 Russian meteorological stations. Satellite data (ISCCP, AVHRR) are also analyzed.
Generally, cloud fraction tends to increase over Northern Eurasia during the accounting period. A major increase of total cloud fraction and a decrease of the number of days without clouds are revealed in spring and autumn mostly due to an increase of the occurrence of convective and non-precipitating stratiform clouds. In contrast, the occurrence of Nimbostratus clouds tends to decrease. In general, the ratio between the occurrence of Cumulonimbus and Nimbostratus clouds has increased in the last decade compare to previous ones. Over some regions, a decrease of total cloud fraction and an increase of the number of days without clouds are noted.
Possible causes of changes in cloud fraction and cloud types are discussed. Sensitivity of cloudiness to temperature changes are evaluated for different regions of Russia. The relationship of cloud variations with extratropical cyclonic/anticyclonic characteristics is analyzed. The relationship with quasistationary atmospheric centers of action (including Azores and Siberian Highs, Aleutian and Icelandic Lows) is assessed as well.
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INDEX TERMS: [3310] ATMOSPHERIC PROCESSES / Clouds and cloud feedbacks, [1616] GLOBAL CHANGE / Climate variability, [1637] GLOBAL CHANGE / Regional climate change.

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