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Long-term monitoring of high optical imagery of the stratospheric clouds and their properties new approaches and conclusions



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ABSTRACT

The investigation of weather properties and clouds distribution in the stratosphere is rare, but essential for science. In this research, twenty years of satellite recordings showed the properties of stratospheric clouds approved by GIS (Geographical Information System) and Remote sensing (RS) techniques. This type of clouds covered a small area in the analyzed period, but the results were important for meteorological and climatological condition in the atmosphere. A very tiny layer of water vapor and their low concentration produces a small number of clouds throughout the year. The average altitude of the stratosphere varied between 12 km and 50 km. The stratosphere is very dry; only polar stratospheric clouds (PSCCI) may be found. This type of clouds appears near the poles in the winter season. This research provides the explanation on the climate properties of clouds (water content) in this layer of the atmosphere. The layers of this type of clouds present stable factor of meteorological stability, but have recently been influenced by climate change effects. The new findings of water in the stratosphere were made possible by precise analysis of satellite recordings. The estimated amount of water in the clouds in the stratosphere may be significant for potential cloud seeding in the future.

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