

## OZONE TOPICS IN THE RUSSIAN FEDERATIONS (ABSTRACT)

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Jadin Evgeny ALEXANDROVICH (Central Aerological Observatory, Moscow) is researching several topics dealing with ozone and stayed in Japan Meteorological Research Institute by September 1994. I introduce some of his papers.

(1) Dynamics of ozone anomalies in the Northern Hemisphere

In the Northern Hemisphere "mini-ozone holes (below 275 D.U.)" have appeared many times. The causes of formation of mini-ozone holes over the Northern Hemisphere in January 1986 and 1987 are discussed. Comparison of the calculated three-dimensional flows and total ozone content variations showed that the formation and evolution of ozone mini-holes over the North Atlantic, Europe, and Siberia are determined by variations in wave activity and the direction of the eddy transport of ozone by planetary waves. Weakness of wave activity and anomalous transport from lower latitudes may be the cause of mini-ozone holes.

(2) Interannual ozone anomalies and temperature variations over the Atlantic

The causes of the interannual total ozone variations in the Northern Hemisphere in wintertime are considered. The mechanism of the influence of the interannual SST variation on the ozone anomalies in wintertime is associated with interannual variations of stratospheric wave activity. It is shown that the interannual total ozone variations over Europe in wintertime correlate well with the interannual Atlantic temperature variations in the west-east direction.

(3) A long-term cycle in the sea surface temperature variations, lower stratospheric temperature, and total ozone in mid-latitudes

The analysis of interannual variability of upper tropospheric temperature at mid-latitude stations of South America in winter showed that temperature variations are correlated with the surface temperature of the Central Pacific Ocean rather than with the 11-year solar cycle. It has also been found that interannual variations in the number of cyclones crossing the North Atlantic in winter in year with the western phase of the quasibiennial cycle agrees well with the behavior of the first orthogonal eigenfunction of the interannual variation in the temperature of the Atlantic. Higher negative correlations of the Pacific surface temperature with the variations in total ozone content at Mauna Loa (19°N, 155°W) in winter are found. These and other data confirm the hypothesis about the existence of a long-term cycle in the range of low-frequency variability of the temperatures of the Atlantic and Pacific Oceans. This cycle may be responsible for long-term variations in atmospheric parameters.

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