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Results of measurements of the state of the ozone layer in East Antarctica

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Regions with an expected low anthropogenic load are of particular interest for monitoring small gas components of the atmosphere. Under such conditions, the concentration of ozone is determined by natural processes. One of these regions is East Antarctica.

The experimental part of the research included:

- Complex of meteorological observations;
- Measurement of total ozone column (TOC) in the vertical column of the atmosphere;
- Monitoring of spectra, levels and doses of surface solar radiation;

The research was carried out in the areas where the Belarusian Antarctic expeditions were based: the stations "Mount Vechernaya" and "Progress".

The measurements were carried out by a two-channel filter photometer PION-F and an ultraviolet spectroradiometer PION-UV, developed at the NOMREC. When determining the TOC values, the method was used, which consists in restoring the TOC values by analyzing the spectral distribution of the illumination density of the Earth's surface in the UV range. According to this method, the TOC values can be obtained using the ratio of illuminances at two wavelengths of the solar spectrum, one of which falls in the region of sufficiently strong absorption of atmospheric ozone, and the other is outside this region.

During the Belarusian Antarctic expeditions, a significant amount of experimental data was obtained (more than 100,000 spectra of energy illumination, more than 1,000 average daily values of TOC, etc.). The accumulated array of experimental data can be used to study theoretical problems and solve applied problems.

This paper presents a description of the dynamics of TOC in the atmosphere of East Antarctica during the period of seasonal expeditions 2014-2020.