

HORIZONTAL AND VERTICAL MOVEMENTS IN THE OZONE LAYER

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The variations of the total ozone at Middle Asian stations, several others of the former USSR and Tromso, Norway: were examined by auto- and cross-correlation analysis. Periodic processes with amplitude of tens of DU and period of 15 to 25 days occurred simultaneously at many stations. The movement of this wave disturbance is directed to southeast, but at high latitude stations, Murmansk and Tromso, the zonal component becomes westward. The ozone variations over the Middle Asia were compared with the weather maps at the 500 and 100 hPa levels, and southwest movement was found there too. The main cause of decrease and increase of total ozone content in this region is ascending and descending air streams, because there is a significant and negative correlation between the heights of the 100 hPa and 500 hPa levels and the ozone. The ozone column density is positively correlated with the temperature at the 100 hPa and negatively at the 500 hPa. No observed time delay between ozone and temperature changes is found, indicating that the correlation is caused by vertical motions itself. The effect of chemical reactions then seems to have minor importance.