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Simultaneous microwave measurements of middle atmospheric ozone and temperature during sudden stratospheric warming

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At the present time we carry out the experimental campaign aimed to study the response of middle atmosphere on current sudden stratospheric warming above Nizhny Novgorod, Russia (56N, 44E). The equipment consists of two room-temperature radiometers which specially have been designed to detect emission ozone line at 110.8 GHz and atmospheric radiation in the frequency range 52.5 – 54.5 GHz accordingly. Two digital fast Fourier transform spectroanalyzers developed by "Acqiris" are employed for signal analysis in the intermediate frequency range 0.05-1 GHz with the effective resolution 61 KHz. For retrieval vertical profiles of ozone and temperature from radiometric data we apply novel method based on Bayesian approach to inverse problems which assumes a construction of probability distribution of the characteristics of retrieved profiles with taking into account measurement noise and available a priori information about possible distributions of ozone and temperature in the middle atmosphere.
Here we are going to introduce the fist results of the campaign in comparison with Aura MLS data and temperature maps from High Resolution Transport Model MIMOSA.

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