"Sensing of the subsurface, surface and atmospheric characteristics using MTVZA-GY microwave imager/sounder data from new Russian meteorological satellite Meteor-M N 2"

Abstract - On July 8, 2014 meteorological satellite "Meteor-M" No. 2 with a module of temperature and humidity atmospheric sensing MTVZA-GY was launched on a circular sun-synchronous orbit. Microwave radiometer MTVZA-GY has 16 scanner channels at frequencies of 10.65, 18.7, 23.8, 31.5, 36.5, 42.0, 48.0 and 91.65 GHz and 13 sounder channels at frequencies in the ranges of 52-57 and 176-191 GHz and carries out conical scanning of the Earth at angle of incidence 65°. Swath width is 1500 km. The brightness temperatures TBs were computed by numerical integration of microwave radiative transfer equation using the radiosonde and reanalysis atmospheric profiles as the input information. The TBs for the Amazon forest and the Ocean under clear sky and weak winds were selected for the vicarious calibration. The long-term stability of MTVZA-GY operation was examined by analysis of time series of TBs measured over the Eastern Antarctica (Dome C), Greenland (GEOSummit) and Amazon rain forest test areas. TBs time series were also obtained for the GCOM-W1 AMSR2 measurements. MTVZA-GY data were used for study of severe marine weather systems.

Outlines
1. Background. Meteor-M N 1 and N 2 MTVZA-GY microwave imager/scanner
2. On-board and vicarious calibration of MTVZA-GY
3. Time series of brightness temperatures, MTVZA-GY and GCOM-W1 AMSR2
   3.1 Antarctica and Greenland
   3.2 Amazon rain forest and Ocean
   3.3 Troposphere and stratosphere
3. Examples