

The Tiksi, Russia Hydrometeorological International Facility for Atmospheric, Terrestrial and Ocean Observations: First Measurements and Future Plans

A. Makshtas¹, T. Uttal², O. Dmitrieva³, T. Laurila⁴, S.J. Oltmans⁵, A. Reshetnikov⁶, R.C. Schnell², E. Asmi⁴, H.J. Diamond², M. Aurela⁴, E.G. Dutton², V. Kustov¹, I. Repina⁷, A. Artamonov⁷, A. Konoplev⁸, A. Rychkov⁸, R. Albee⁹, M. Okraszewski⁹, D. Apartsev¹, B. Holben¹⁰, M. Sorokin¹⁰, A. Sinyakov³, E. Volkov³, M. Ivanova³, V. Kondreyev³, V. Ivakhov⁶, E. Estes¹¹, B. Vasek² and A. Kuzmichov¹

¹Arctic and Antarctic Research Institute, St. Petersburg 199397, Russian Federation; 7-812-355-6163, E-mail: maksh@aari.ru

²NOAA Earth System Research Laboratory, Boulder, CO 80305

³Hydrometeorological Observatory of Tiksi, Tiksi, Russia

⁴Finnish Meteorological Institute, Helsinki, Finland

⁵Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO 80309

⁶Main Geophysical Observatory, Saint Petersburg 194021, Russian Federation

⁷Russian Academy of Science, Moscow, Russia

⁸Research and Production Association "Typhoon" Institute, Obninsk, Russia

⁹Science and Technology Corporation, Boulder, CO 80305

¹⁰National Aeronautics Space Administration (NASA), Greenbelt, MD 20771

¹¹Cherokee Services Group, Ft Collins, CO 80525, USA

During the International Polar Year within the framework of Activity 196 "International Arctic Systems for Observing the Atmospheres" key task was "Creation of the Atmospheric Observatory of Climatic Monitoring in Tiksi, Russia". This task has been realized by the combined efforts of Roshydromet, NOAA, National Science Foundation, NASA, the Russian Academy of Science, the Sakha Republic and the Finish Meteorological Institute. The current observatory features modernized communications, power, laboratory and office facilities which are suitable for supporting the collection of quantitative data on atmospheric structure and processes as well as associated ocean and land parameters in order to further studies of weather and climate. The Tiksi science program has had a preliminary focus on supporting International networks, such as Global Atmosphere Watch (atmospheric gases and aerosols), Baseline Surface Radiation Network (atmospheric radiation), Climate Reference Network (climate grade weather observations), the International Permafrost Association, and AeroNET (aerosol optical depth). The measurements are currently being made of a number of key measurements of surface and atmospheric radiation, the permafrost active layer, black carbon, surface ozone, atmospheric optical depth, aerosol concentrations, water vapor, methane and CO₂ fluxes, greenhouse gases and persistent organic pollutants.

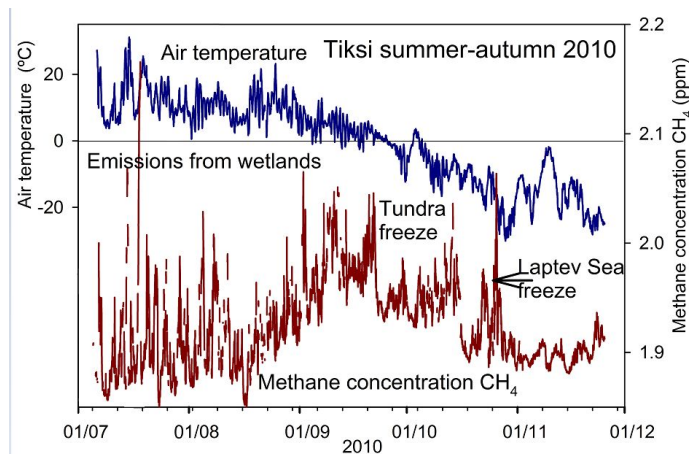


Figure 1. Methane flux signature during fall freeze of the tundra and sea-ice at the Tiksi Hydrometeorological Observatory in the Sakha Republic, Russia.