



A new climate observatory facility in Tiksi, Russia

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For the International Polar Year, the atmospheric measurement programs at a number of intensive observing sites are being coordinated through the IPY Activity “International Arctic Systems for Observing the Atmosphere”. Existing observatory sites include Barrow/Alaska, Alert and Eureka/Canada, Summit/Greenland, and Ny-Alesund/Norway. For atmospheric measurements, ‘intensive’ indicates that in addition to routine meteorological measurements, additional measurements are made of air chemistry/quality measurements made by the Global Atmospheric Watch (GAW) program, the surface radiation measurements of the Base Line Surface Radiation Network (BSRN) program and cloud property/atmospheric radiation measurement pioneered by the Atmospheric Radiation Measurement (ARM) program.

A major physical gap in this circum-polar system is the entire Siberian region of Russian. Consequently, Tiksi, Russia has been selected as a location for development of a new intensive Arctic Observatory site that will support measurements that can contribute to the GAW/BSRN/ARM programs. In addition filling a geographical gap, Tiksi has been identified as a particularly important region scientifically for the following reasons:

- (1) It is located at the confluence of Atlantic and Pacific influences on the Arctic Atmosphere resulting in a wide variety of air masses affecting the climate at Tiksi. Consequently a wide range of conditions are expected ranging from pristine to polluted providing a natural laboratory to assess radiative effects of aerosols and resulting cloud properties.
- (2) Tiksi is located near the mouth of the Lena River which is the second largest

river draining into the Arctic Ocean. The Lena is the only major Russian River for which most of the drainage basin is underlain by permafrost making it hydrologically complex and particularly vulnerable to climatic warming.

(3) The Laptev Sea is an area of significant ice production, and wide variability is at least particularly attributed to synoptic perturbations. Having an observatory central to this region will lead to a better understanding of processes that lead to decreases in the perennial pack.

The existing weather station in Tiksi was rebuilt in the summer of 2006 with adequate resources and laboratory space for additional instrumentation for climate studies and monitoring. Present plans are to build a second facility in the summer of 2007 that will be placed close to the weather station but with surrounding terrain that is horizontally homogenous and with a significant clean air sector. The second facility will include towers, roof space and air sampling stacks that will be suitable for GAW station measurements.

The primary purpose of this EGU presentation will be to inform the International Research community of the resources that are available at this new facility and to solicit scientific partnerships for long-term climate monitoring. Present measurement programs being planned by the U.S. National Oceanic and Atmospheric Administration, the Finnish Meteorological Institute, the Arctic and Antarctic Research Institute of Roshydromet and the Norwegian Institute for Air Research will also be described.