

## Ground-based and Aircraft Observations of Greenhouse Gases, Aerosols, and other Trace Species Carried out in Siberia, Russia

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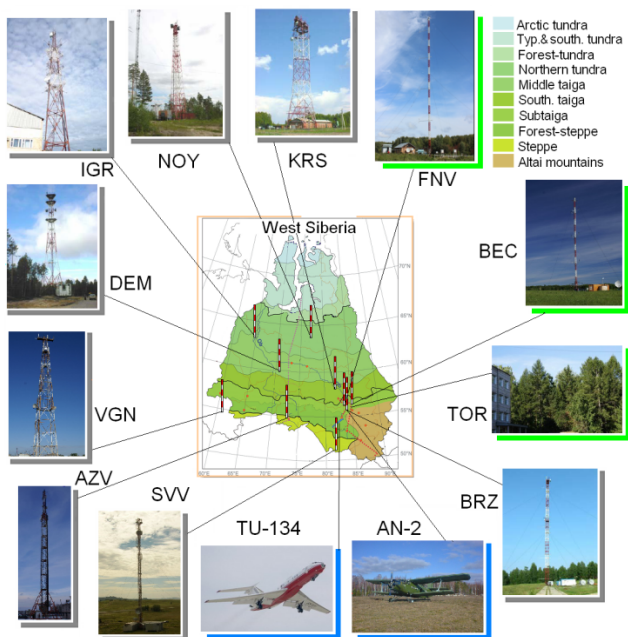
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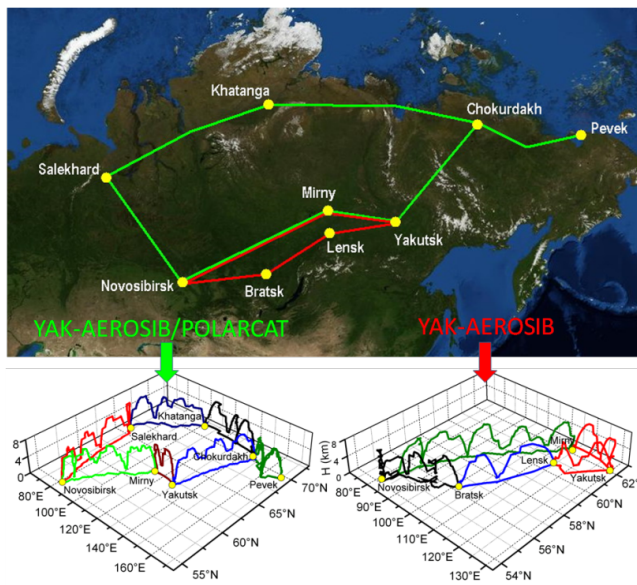
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Siberia covers a vast area of the land surface of the Northern Hemisphere (NH). Its various ecosystems are very sensitive to a climate change, so investigation of the atmospheric composition in this region is of great importance for understanding land-atmosphere exchange processes and possible feedbacks in the whole NH. In spite of recognizing the problem, continuous and comprehensive measurements are still lacking. In order to understand what happens in Siberia, the Institute of Atmospheric Optics of the Siberian Branch of the Russian Academy of Science (IAO SB RAS) combined its own efforts with several institutions from Japan and France to fill up the gap in observational data. Here, we present some results of long-term and large-scale cooperative studies of the Siberian airshed undertaken over the past two decades.



**Figure 1.** Joint NIES-IAO ground-based network for GHG monitoring (JR-STATION; gray shade), IAO own stations (aerosols and trace gases; green shade), Joint NIES-IAO regional aircraft observations of GHG (blue shade).



**Figure 2.** Map of flight routes and a pattern of the large-scale airborne campaigns (IAO-LSCE-LA-LATMOS): YAK-AEROSIB – 2006 (2 campaigns), 2007, 2008, 2010, 2012, 2013); YAK-AEROSIB/POLARCAT – 2008.