



## **Observation of volcanic aerosol transfer over Siberian - Far Eastern lidar network**

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Now there are three stratospheric lidar stations in Siberia and Far East. The first of them has been in operation for a few decades in Institute of Atmosphere Optics SB RAS, Tomsk. The other two stations were build under technical support of Tomsk specialists in U.G. Shafer Institute of Cosmophysical Iinvestigations and Aeronomy SB RAS, Yakutsk, in 2004 and in Institute of Cosmophysical Researches and Radio Wave Propagation, Kamchatka, in 2007. These three stations are intended for monitoring of vertical structure of aerosol and temperature fields in the middle atmosphere. The presence of ionospheric and meteorological stations at these locations enables to compare lidar stations and satellite data with ground based and balloon data.

Several considerable eruptions have taken place in northern hemisphere over the last three years, Kasatochi and Okmok volcano eruptions on Aleutian Islands in summer of 2008, and Sarychev peak volcano eruption in summer of 2009 , as well as Eyjafjallajokull volcano eruption in spring of 2010 in Iceland.

Aerosol layers, resulting from volcanic activity, have been observed in the upper troposphere and the stratosphere over Tomsk. Confirmation of volcanic origin of aerosol layers has been obtained by back trajectories method. In these investigations the original procedure of back trajectory calculations based on wind velocity satellite data from BADC has been applied.

The obtained trajectories correspond well to trajectories calculated by application of HYSPLIT software package, available at NOAA site. The results of calculations, in their turn, have been confirmed by satellite data on carbon dioxide atmosphere pollution after volcanic eruption.

As a result of lidar monitoring of an aerosol during volcanic eruption such as Sarychev peak, it has been revealed, that even rather weak eruptions can result in the significant filling up of the stratosphere with volcanic eruption product.

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