Chemical processes of the atmosphere in the circumpolar region

Principal Investigator, Affiliation
Yutaka Matsumi
Solar-Terrestrial Environment laboratory, Nagoya University

Corresponding Post
Yutaka Matsumi
E-mail: matsumi@stelab.nagoya-u.ac.jp Fax: -81-533-89-5593

Cooperative researcher/ institution in Japan
Kenshi Takahashi, Solar-Terrestrial Environment laboratory, Nagoya University
Isao Murata, Graduate School of Environmental studies, Tohoku University
Hideaki Nakane, National Institute for Environmental Studies
Masahiro Kawasaki, Graduate School of Engineering, Kyoto University
Reijiro Takahashi Graduate School of International Cultural Studies, Tohoku University

Cooperative foreign researcher/ institution
Vladimir Koshelev, Russian Solar-Terrestrial Physics Laboratory
William R.Simpson・ Geophysical Institute, University of Alaska, Fairbanks, USA

Related International Research Project

Description of the Program

Carbon monoxide and volatile organics compounds (VOCs) which are emitted from boreal forest fires in Siberia are monitored using ground-based Fourier spectrometer systems. Transportation processes of those gases over Siberia, Alaska and Japan and photochemical reaction processes which generate tropospheric ozone are studied. The Fourier transformed infrared spectrometer system is installed in Irkutsk, Siberia and long and short term variations of atmospheric concentrations of CO, O3 and VOCs are measured. In-situ, high-sensitive and fast-response instruments for atmospheric methane and stable isotopes of carbon dioxide are developed using cavity ring-down spectroscopic techniques with lasers. The developed instruments are used for estimations of the emission rate of methane and carbon dioxide from swamps affected by boreal forest fires in the Siberia and Alaska. The effects of aerosol

on air pollution and on local and global climate are studied by the sampling and analysis of aerosols generated by Siberian forest fires in Siberia and Alaska.