Geophysical Research Abstracts
Vol. 21, EGU2019-5572, 2019
EGU General Assembly 2019

Synergy between RN and Infrasound observations and ATM simulations: Case of Bogoslof Volcano

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The International Monitoring System (IMS) developed by the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) is a global system of monitoring stations, using four complementary technologies: seismic, hydroacoustic, infrasound and radionuclide. The radionuclide network comprises 80 stations, of which more than 60 are certified. The aim of radionuclide stations (RN) is a global monitoring of radioactive aerosols and radioactive noble gases supported by the atmospheric transport modeling (ATM) system.

RN stations monitor various radioactive aerosols but Beryllium-7 (Be7) is one of two natural radionuclides measured on a daily basis. It has been already demonstrated that an influx of aerosol particles e.g. dust at high levels (3-10 km) tends to locally increase surface Be7 concentrations in area under the influence of subsiding dust plume. This study will demonstrate a similar mechanism for volcanic ash as observed at the RN station, USP71 (55.3 N, 160.5 W) in Alaska, during the series of volcanic eruptions of Alaska's Bogoslof volcano registered between December 2016 and May 2017 by the IMS infrasound stations. To monitor the arrival time of volcanic ash plumes at USP71, the ATM results were used.