

Determining aerosol plume height from two GEO imagers: Lessons from MISR and GOES

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Abstract –

Aerosol plume height is a key parameter to determine impacts of particulate matters generated from biomass burning, wind-blowing dust, and volcano eruption. Retrieving cloud top height from stereo imageries from two GOES (Geostationary Operational Environmental Satellites) have been demonstrated since 1970's and the principle should work for aerosol plumes if they are optically thick. The stereo technique has also been used by MISR (Multiangle Imaging SpectroRadiometer) since 2000 that has nine look angles along track to provide aerosol height measurements. Knowing the height of volcano aerosol layers is as important as tracking the ash plume flow for aviation safety. Lack of knowledge about ash plume height during the 2010 Eyjafjallajökuli eruption resulted in the largest air-traffic shutdown in Europe since World War II. We will discuss potential applications of Asian GEO satellites to make stereo measurements for dust and volcano plumes.