



Plume Detection and Plume Top Height Estimation using SLSTR

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We present preliminary results on ash and desert dust plume detection and plume top height estimates based on satellite data from the Sea and Land Surface Temperature Radiometer (SLSTR) aboard Sentinel-3, launched in 2016. The methods are based on the previously developed AATSR Correlation Method (ACM) height estimation algorithm, which utilized the data of the preceding similar instrument, Advanced Along Track Scanning Radiometer (AATSR). The height estimate is based on the stereo-viewing capability of SLSTR, which allows to determine the parallax between the satellite's 55° backward and nadir views, and thus the corresponding height. The ash plume detection is based on the brightness temperature difference between thermal infrared (TIR) channels centered at 11 and 12 μm , which show characteristic signals for both desert dust and ash plumes. The SLSTR instrument provides a unique combination of dual-view capability and a wavelength range from visible to thermal infrared, rendering it an ideal instrument for this work.

Accurate information on the volcanic ash position is important for air traffic safety. The ACM algorithm can provide valuable data of both horizontal and vertical ash dispersion. These data may be useful for comparisons with other volcanic ash and desert dust retrieval methods and dispersion models. The current work is being carried out as part of the H2020 project EUNADICS-AV ("European Natural Disaster Coordination and Information System for Aviation"), which started in October 2016.