



## **Retrieval of aerosol layer height in the oxygen A-band: case studies using synthetic and multiple remote sensing data**

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From a satellite perspective, a tropospheric scattering/absorbing layer, consisting of cloud droplets or aerosols, screens the oxygen column below it and changes its absorption band (centered at 761 nm), according to both micro- and macro-physical layer properties. An algorithm based on the sensitivity of the oxygen absorption to a change in vertical displacement of such layers has been developed and tested against synthetic data. Several atmosphere scenarios (calculated from measurements of the ground-based AERONET network) have been simulated, and it will be shown that the uncertainty on the surface reflection value is the dominant error source of the retrieved aerosol layer height. Subsequently, the algorithm is applied to selected case studies from multiple passive sensors, such as MERIS, SCIAMACHY and GOME-2. They encompass dust outbreaks over desert regions as well as plumes injected in the atmosphere by volcanic eruptions. The developed algorithm will be then applied to the forthcoming ESA Sentinel 5-precursor mission, equipped with the TROPOMI instrument.