



## **FRESCO v6: improvements in cloud detection and new applications**

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The FRESCO (Fast Retrieval scheme for Clouds from the Oxygen A band) cloud retrieval algorithm has been developed as a simple but fast and efficient algorithm for GOME, SCIAMACHY and GOME-2. FRESCO employs the O<sub>2</sub> A band at 760 nm to detect clouds. The FRESCO effective cloud fraction and cloud pressure have been used in the trace gas retrievals from GOME, SCIAMACHY and GOME-2. FRESCO v6 is an upgrade of the current FRESCO+ by using new databases and by providing more products. FRESCO v6 uses the high spatial resolution surface albedo climatologies derived from MERIS and the latest O<sub>2</sub> line parameters from HITRAN 2008. Therefore the effective cloud fraction and cloud pressure are more accurately derived. Besides the widely used effective cloud fraction and cloud pressure products, FRESCO v6 provides scene albedo and scene pressure for every pixel and the broadband surface solar irradiance for non-snow/ice pixels. In previous FRESCO versions, the scene albedo and scene pressure were only retrieved for pixels over snow/ice surface. The scene pressure could be interesting for cases with optically thick absorbing aerosol layers, for example for smoke aerosols and volcanic ash. The broadband surface solar irradiances (SSI) are derived from the effective cloud fractions using the MAGIC algorithm (Mesoscale Atmospheric Global Irradiance Code). The consistency and the accurate calibration of the GOME and SCIAMACHY instruments make it possible to construct a stable SSI time series for climate research. In this presentation we will demonstrate the improvements of the FRESCO v6 products and give some examples for the application of the new products.