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Intercomparison cloud products from GOME-2 L1 and SCIAMACHY

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The second Global Ozone Monitoring Experiment (GOME-2) was launched onboard the first European meteorological polar satellite, MetOp-A, on 19 October 2006 in a sun-synchronous orbit, with an overpass time at about 9:30 local time. GOME-2 has a pixel size of 40x80 km^2 and a swath of 1920 km, so it has almost daily global coverage. The aim of GOME-2 is to monitor ozone, NO_2, and other stratospheric and tropospheric trace gases and aerosols. Since clouds strongly affect the detection of trace gases and aerosols, the FRESCO cloud algorithm is implemented in the operational L0-1 processor of GOME-2 to provide users with a first cloud estimation. The FRESCO algorithm uses the O_2 A-band at about 760 nm, and has been applied to GOME and SCIAMACHY measurements for several years. The FRESCO cloud products (effective cloud fraction and cloud pressure) have been validated with products from other algorithms (e.g. from PMDs) and other sensors namely, satellite IR and groundbased Lidar/Radar instruments.

The GOME-2 L1 cloud product has been compared with SCIAMACHY FRESCO cloud data (sc-v4) for one day of global data on 6 November 2007. Because of the 30 minutes of difference in measurement time and different viewing geometries, we could not expect that exactly the same cloud information was measured by GOME-2 and SCIAMACHY. The GOME-2 and SCIAMACHY effective cloud fractions have very good agreement; the mean effective cloud fraction difference is 0.0008+/- 0.0977. The cloud pressures also have a very good linear correlation, the mean cloud pressure difference is about -20 hPa for almost fully cloudy scenes and about 2.7 hPa if the cloud fractions are larger than 0.05. In the FRESCO algorithm the sun glint is retrieved

as a low cloud. For the sun glint pixels the GOME-2 and SCIAMACHY effective cloud fraction difference is about 0.007, which is comparable to the effective cloud fraction difference.