**Tropospheric BrO product: verification results**

- Verification data set: total of ~200 orbits
- Reference data from scientific BrO product provided by BIRA.
- Polar maps of the SGP and the reference algorithm results for 13th October 2006

**New L2 format (cont.)**

- Compatibility, conformity and harmonization
  - with data products of other instruments on ENVISAT, which have originally been delivered in the ENVISAT format, and for which a NetCDF-based format is considered
  - with level 2 file formats of other instruments on past or future atmospheric chemistry missions, especially TROPOMI on Sentinel 5 Precursor
  - with climate and forecast meta data conventions

**Cloud flagging using limb spectra**

In limb mode SCIAMACHY measures light scattered along the line-of-sight. If the line-of-sight intersects a cloud at a certain height, the measurements differ from cloud free measurements. For the clouds detection, ratios of spectral measurements in two wavelength region are used (at 750 nm and 1090 nm). In an ideal atmosphere, consisting only of molecules, the difference between radiances at two wavelengths about 300 nm apart is large ($I \sim \lambda^{-4}$), while for larger particles like cloud droplets this difference is reduced ($I \sim \lambda^{-3}$).

The SCIAMACHY cloud detection algorithm (SCODA) [2] is already implemented in the L1b-2 operational processor (since version 5.02 released in 2012). SCODA considerably improved the limb trace gas retrievals in the upper troposphere/lower stratosphere region. Since then the scientific version of SCODA has been reviewed and further improved. These latest modifications are currently being implemented into the operational processor.

SCODA distinguished four different cloud types:
- water/ice/aerosol clouds (WCL)
- water/ice clouds (ICL)
- polar stratospheric clouds (PSC)
- noctilucent clouds (NLC).

Comparing to the previous version of SCODA small changes will be undertaken:
- geometrical constraints for PSCs
- maximal solar zenith angle for which the detection is still performed
- maximal allowed and warning heights for all types of clouds
- updated thresholds for detection of all types of clouds

**Global map**

Global map ($2^\circ 	imes 2^\circ$) of the annual mean cloud top height (in km) for 2000. The superimposed red rectangles show the approximate size of three consecutive SCIAMACHY limb scans.

**References**