



GOME-2 Calibration results

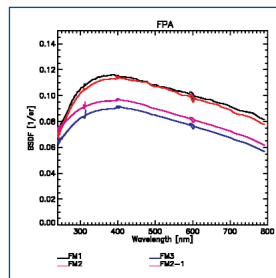
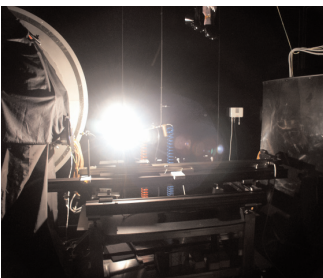
General

The GOME-2 instrument is calibrated in the Vacuum Calibration Facility at TNO Science and Industry. Only the sun-angle and scan-angle dependencies were calibrated in ambient conditions.



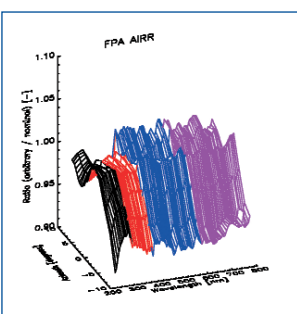
Radiometric calibration

The absolute radiometric calibration has been performed using a NIST calibrated FEL lamp. The instrument BSDF has been determined using these FEL measurements. Note that for FM1 and FM2 the BSDF is higher than for FM3 and FM2-1. This is because FM3 and FM2-1 are equipped with the Quasi Volume Diffuser (QVD) and FM1 and FM2 are equipped with the Aluminium diffuser. In the mean time all instruments (FM2-1 is in fact the refurbished FM2) are equipped with the QVD. Note also that the QVD instrument has a far smoother BSDF.

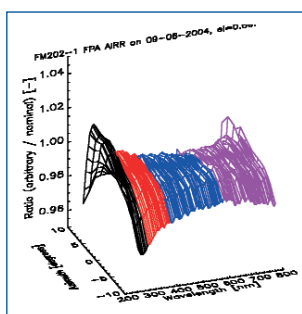


Sun diffuser

With the replacement of the Aluminium diffuser with the Quasi Volume Diffuser (QVD) the spectral features caused by the diffuser are minimized. This is most



Aluminium Diffuser



Quasi Volume Diffuser

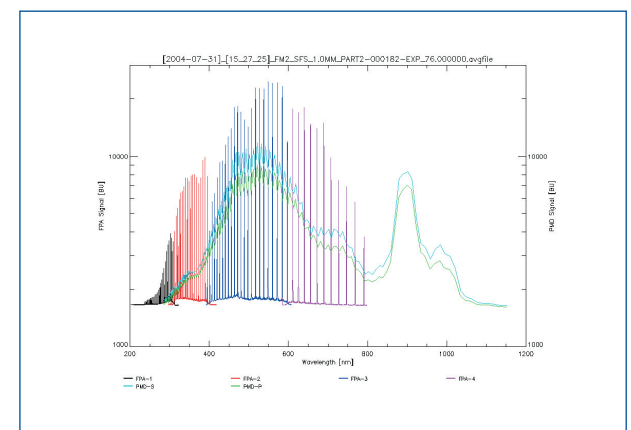
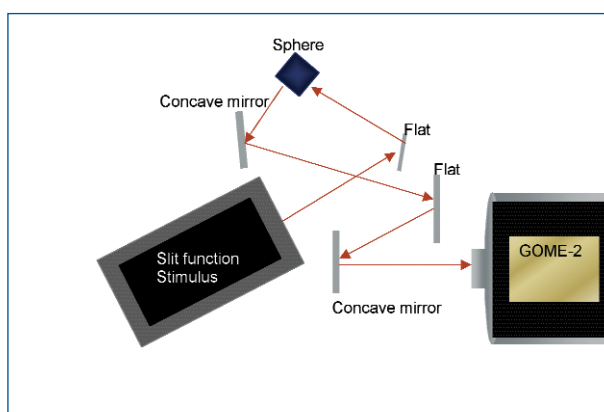
pronounced with the sun-angle dependency measurements where smaller features are observed (structure in wavelength direction).

A side effect of the new QVD is that the angle dependence of the BSDF is smaller; note that in the presented graphs the z-axis ranges are different.

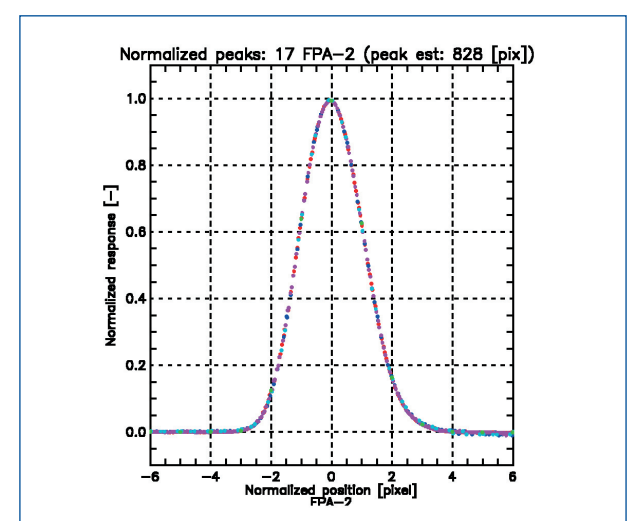
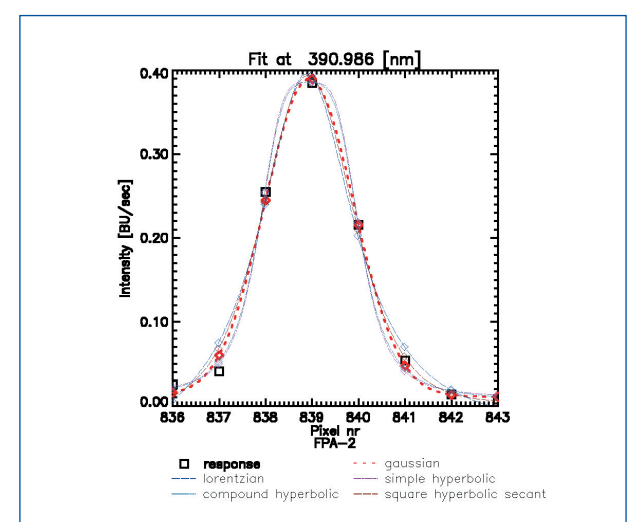
Slit-function

The GOME-2 slit-function is traditionally determined using a spectral line source. However in the case of the GOME-2 calibrations it was decided to measure the slit function more accurately using a dedicated stimulus. This stimulus uses an Echelle grating to produce a large number of spectral lines, which are regularly spaced over the spectrum. By changing the Echelle grating angle the lines can "move" across the spectrum with sub-pixel (i.e. GOME-2 pixels) steps. This enables the measurement of the GOME-2 slit-function at sub-pixel level.

A small sphere is used to ensure homogenous illumination of the GOME-2 slit. The small sphere is to prevent too much loss of signal. With the use of mirrors GOME-2 is "looking" inside the sphere.



Example of an output of the slit function stimulus measured by the GOME-2 instrument.



Example of GOME-2 slit-function estimations. The figure above shows measured points from the spectral lines source measurement as black squares. The lines are functional fits through these points. The figure below shows measured points from the slit-function stimulus from the quicklook analysis.