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Long-Term Radiometric Performance of the SCIAMACHY Quartz Tungsten Halogen Lamp

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The SCanning Imaging Absorption spectroMeter for Atmospheric CHartographY (SCIAMACHY) is part of the atmospheric chemistry payload of ESAś Environmental Satellite ENVISAT. Since 2002, SCIAMACHY provides the amount and global distribution of various atmospheric constituents relevant in the contexts of ozone chemistry, air pollution and climate change. Originally designed for a 5-year mission, the SCIAMACHY instrument is still working well and ready for the planned mission extension until 2010 or even further.

Calibration and monitoring of the instrument performance are a pre-requisite for a continuously high data product quality. Here, results from the monitoring of the optical performance of the SCIAMACHY instrument are presented. Emphasis is placed on the investigation of the performance of the SCIAMACHY internal Quartz Tungsten Halogen (QTH) lamp. This type of lamp has been used for monitoring the radiometric performance of an UV-VIS-SWIR Earth observation sensor over mission lifetime for the first time. The analysis of regular in-flight measurements has shown the radiometric stability of the SCIAMACHY QTH lamp over time especially in the visible/NIR spectral range. Lamps of this type are therefore considered as useful components for further spaceborne spectroscopic missions, as they provide a relatively cheap and reliable mean for (at least relative) radiometric calibration and monitoring.