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Quantitative analysis of the Ring effect in OMI spectra

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The Ring effect describes the so-called 'filling-in' of solar Fraunhofer lines in the spectra of scattered sun light compared to direct sun light observations. It was first observed by Shefov (1959) and Grainger and Ring (1962). Observations of the Ring effect can be used to investigate details of the atmospheric radiative transfer. The filling-in of Fraunhofer lines depends in particular on the presence and properties of clouds and aerosols. The Ring effect can in principle be analysed throughout the whole UV/visible wavelength range, but the strongest signals are usually found in the UV.
In spite of the strong spectral features caused by the Ring effect, its quantitative analysis is a challenge because of its high spectral correlation with instrumental effects, e.g. spectral stray light or changes of the instrument slit function.
Here we present a quantitative analysis of the global distribution of the strength of the Ring effect retrieved from spectra of the OMI satellite instrument.