



A COMPARISON OF OH NIGHTGLOW VOLUME EMISSION RATES AS MEASURED BY SCIAMACHY AND SABER

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ABSTRACT

Hydroxyl (OH) short-wave infrared emissions arising from OH(4-2, 5-2, 8-5, 9-6) as measured by channel 6 of the SCanning Imaging Absorption spectroMeter for Atmospheric CHartographY (SCIAMACHY) are used to derive OH concentrations of OH($v=4, 5, 8,$ and 9) between 80 km and 96 km. Retrieved concentrations are used to simulate integrated radiances at 1.6 μm and 2.0 μm as measured by the Sounding of the Atmosphere using Broadband Emission Radiometry (SABER) instrument, which are not fully covered by the spectral range of SCIAMACHY. On average, SABER 'unfiltered' data is on the order of 40% (at 1.6 μm) and 20% (at 2.0 μm) larger than the simulations using SCIAMACHY data. 'Unfiltered' SABER data is a product, which accounts for the shape, width, and transmission of the instrument's broadband filters, which do not cover the full ro-vibrational bands of the corresponding OH transitions. It is found that the discrepancy between SCIAMACHY and SABER data can be reduced by more than 50%, if the unfiltering process is carried out manually using published SABER interference filter characteristics and latest Einstein coefficients from the HITRAN database. Remaining differences are discussed with regard to model parameter uncertainties and radiometric calibration.

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