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Intercomparison of integrated IASI and AATSR calibrated radiances at 11 and 12 μm

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Abstract. The mission objectives of the Infrared Atmospheric Sounding Interferometer (IASI) are driven by the needs of the Numerical Weather Prediction (NWP) and climate monitoring communities. These objectives rely upon the IASI instrument being able to measure top of atmosphere radiances accurately. This paper presents a technique and first results for the validation of the radiometric calibration of radiances for IASI, using a cross-calibration with the Advanced Along Track Scanning Radiometer (AATSR). The AATSR is able to measure Brightness Temperature (BT) to an accuracy of 30 mK, and by applying the AATSR spectral filter functions to the IASI measured radiances we are able to compare AATSR and IASI Brightness Temperatures. By choosing coincident data points that are over the sea and in clear sky conditions, a threshold of homogeneity is derived. It is found that in these homogenous conditions, the IASI BTs agree with those measured by the AATSR to within 0.3 K, with an uncertainty of order 0.1 K. The agreement is particularly good at 11 μm where the difference is less than 0.1 K. These first results indicate that IASI is meeting its target objective of 0.5 K accuracy. It is believed that a refinement of the AATSR spectral filter functions will hopefully permit a tighter error constraint on the quality of the IASI data and hence further assessment of the climate quality of the radiances.

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