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# Climate data record of IASI temperature and humidity from Metop-A and B

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IASI is an infrared sounder providing atmospheric profile and surface information. The IASI system includes three instruments that are mounted on the Metop satellite series. Metop-A, B, and -C were launched in 2006, 2012 and 2018, respectively. In 2018, EUMETSAT reprocessed the L1c products for IASI on-board Metop-A (IASI-A). The reprocessing took into account some evolution in the operational processing chain a) The “Day-2 evolution” algorithms (product format changes, quality flags, as well as cloud and land/sea information), b) The slight improvement of the spectral harmonization in February 2011 (affecting mainly the CO channels) and c) To fill the few gaps found in the time-series. The reprocessed data have been generated with the latest version of the IASI L1 processing chain (version 8.0) and its optimized instrument and processing tuning. There was a slight positive impact on the data quality. The quality of the L1C products from IASI on board Metop-B (IASI-B) is inline with the reprocessed IASI-A. There is currently no need for a IASI-B reprocessing.

The potential value of IASI Level 2 temperature and humidity profile for climate research was highlighted by the GEWEX water vapour assessment. Thanks to the homogeneous and high quality IASI level 1c data, EUMETSAT is reprocessing the temperature and humidity profiles using the fast statistical ‘all-sky’ retrieval (PWLR3) for the entire period covered by the three ISAI instruments. This new IASI climate data record will be useful as a thermodynamic climate record but also to serve as a consistent input to subsequent climate applications e.g. in atmospheric composition, air quality or cloud studies.

We present here the complete reprocessing cycle of IASI data from IASI level 1 to level 2. Emphasis will be on the new EUMETSAT IASI climate data record of temperature and humidity profiles: its underlying algorithm, contents and properties (e.g. quality control parameters, yield, coverage) as well as preliminary validation results.