Production of IASI FDR and CDRs at EUMETSAT

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ABSTRACT

The Infrared Atmospheric Sounding Interferometer (IASI) onboard the three Metop satellites has been providing vital data for atmospheric monitoring and weather forecasting for over 17 years. EUMETSAT has undertaken a comprehensive reprocessing of the IASI data to enhance data quality and extend usability for climate applications. The reprocessing effort encompasses both level 1 and level 2 data resulting in a creation of a IASI Fundamental Data Record (FDR) and several Climate Data Records (CDRs).

The second release of the IASI FDR addressed and corrects the small bias of about 0.2 K found in the CO_2 band (15 μm) when comparing IASI with Cross-track Infrared Sounder (CrIS) measurements. This bias was due to a suboptimal linearity correction, which introduced a discontinuity in the near real time radiances, thereby affecting the time consistency of the record and the consistency between the instruments. Additionally, EUMETSAT has released the IASI Principal Component Scores (PCS) FDR from Metop-A and -B. Principal component compression (PCC) is applied to the IASI Level 1c radiance spectra significantly reducing the size of the measurement files by up to a factor of 50. Using Eigenvector files, the spectra can be reconstructed from the PCS files for downstream applications.

Several Metop-A and -B CDRs were released using EUMETSAT and AC-SAF algorithms, including all-sky temperature and humidity profiles and various trace gas such as the CO and SO_2. An O_3 CDR has been processed but has not yet been released.

This presentation will outline the available IASI FDRs and CDRs emphasizing their validation results and potential usage. It will also highlight EUMETSAT's efforts to ensure the continuity and reliability of satellite-derived climate records and the importance of maintaining high-quality, consistent data records for long-term climate monitoring and research.