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Retrievals of methane from IASI radiance spectra and comparisons with ground-based FTIR measurements

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The Infrared Atmospheric Sounding Interferometer (IASI), launched on 19 October 2006, is a Fourier transform spectrometer onboard METOP-1, observing the radiance of the Earth's surface and atmosphere in nadir mode. The spectral range covers the 645 to 2760 cm^{-1} region with a resolution of 0.35 to 0.5 cm^{-1}.

A line-by-line spectral simulation and inversion code, ASIMUT, has been developed for the retrieval of chemical species from infrared spectra. The code includes an analytical calculation of the Jacobians for use in the inversion part of the algorithm based on the Optimal Estimation Method.

In 2007 we conducted a measurement campaign at St Denis, Île de la Réunion where we performed ground-based solar absorption observations with a infrared Fourier transform spectrometer.

ASIMUT has been used to retrieve methane from the ground-based and collocated satellite measurements. For the latter we selected pixels that are situated over the sea.

In this presentation we will show the retrieval strategies, the resulting methane column time series above St Denis and the comparisons of the satellite data with the ground-based data sets. Vertical profile information in these data sets will also be discussed.