



## Tropospheric ozone from IASI: validation of three scientific products using ozone sondes measurements.

Gaëlle Dufour (1), Maxim Eremenko (1), Alexandra Griesfeller (1), Brice Barret (2), Eric Le Flochmoen (2), Juliette Hadji-Lazaro (3), Cathy Clerbaux (3,4), Daniel Hurtmans (4), Pierre-François Coheur (4), and Jean-Marie Flaud (1)

(1) Laboratoire Interuniversitaire des Systèmes Atmosphériques (LISA), CNRS UMR7583, Universités Paris-Est et Paris Diderot, Créteil, France (gaelle.dufour@lisa.u-pec.fr), (2) Laboratoire d'Aérologie, CNRS UMR5560, Université de Toulouse, Toulouse, France, (3) UPMC Univ. Paris 06, Université Versailles St-Quentin; CNRS/INSU, LATMOS-IPSL, Paris, France, (4) Spectroscopie de l'Atmosphère, Chimie quantique et Photophysique, Université Libre de Bruxelles (U.L.B.), Brussels, Belgium

IASI is a nadir-viewing Fourier transform spectrometer operating in the thermal infrared aboard the MetOp platform since October 2006. One of the main products for atmospheric chemistry studies is tropospheric ozone. In addition to the operational product distributed by EUMETSAT, several scientific products exist and start to be broadly used. In this paper, we present the validation of three scientific tropospheric ozone products: the product derived at the Laboratoire d'Aérologie with the SOFRID algorithm, the product derived at LATMOS/ULB with the FORLI algorithm, and the product derived at LISA with the KOPRA/KOPRAfit algorithm. The three algorithms allow the retrieval of the vertical profile of ozone. The retrieval method and setup as well as some of the auxiliary parameters needed for the retrieval (e.g. temperature profile) are different for each product. The validation of vertical tropospheric profiles and different partial columns are based on the comparison with ozone sonde measurements. The validation exercise covers the period from January 2008 to December 2008 and the tropics and midlatitudes regions. First, a characterization of each product is proposed: the vertical sensitivity is discussed according to the averaging kernel maxima and degrees of freedom, and the distribution of the errors on each product is given. The results of the validation with the ozone sonde measurement are presented separately for the midlatitudes and the tropics. Seasonal performances of the products are also explored. The main conclusion of the validation exercise is that the different products reproduce the tropospheric ozone column with a good confidence (bias < 8%) and with a good accuracy (rmsd < 20%).