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Validation of IASI-derived water vapour profiles using COPS data

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The presented work is a validation of the IASI water vapour integrated columns by means of comparison with GPS measurements and water vapour volume mixing ratio profiles using in situ and remote sensing data, such as GPS tomography, LIDAR measurements and radiosoundings in the framework of the COPS project (Convective and Orographically-induced Precipitation Study) which took place in the summer of 2007. It consists in the retrieval of the water vapour volume mixing ratio profiles from 1 to 20 km using IASI level 1C radiance spectra. Using the Atmosphit software, the radiance spectra are inverted following the optimal estimation method (Rodgers, 2000). An a priori profile and its corresponding covariance matrix are determined using the ERA-Interim archive available at ECMWF on a three years period (2004-2005). A cloud cover classification derived every 15 minutes from MSG/SEVIRI is used along with daily land surface temperature and monthly emissivity derived from MODIS to select the IASI spectra to be compared with the in situ and remote sensing measurements performed during the COPS campaign.