



Storm Environment Studies with IASI L2 Data

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The main application of IASI measurements is data assimilation in NWP models. Temperature and water vapour profiles are available as part of the IASI L2 product which is derived by a statistical method called Piece-Wise Linear Regression. This method allows retrieving temperature, water-vapour and ozone profiles as well as surface skin temperature in all-sky conditions using measurements also from microwave sensors (AMSU and MHS) onboard Metop satellite.

Using these profiles, different instability indices (e.g. Lifted Index, CAPE) and water vapour content in different layers can be determined, which provides information on the convective environment. Instability indices are used by forecasters to estimate the potential for convection.

For several Central European convective cases (flash floods, windstorms, high lightning activity) we studied the convective environment and the evolution of deep convection with satellite, NWP and in situ data. These data were also compared to each other to assess the benefit of the IASI profiles. We found that IASI L2 parameters contained useful information for nowcasting purposes, first of all in situations when the forecasts were not so accurate. The IASI L2 profiles also often confirmed presence of mesoscale features (e.g. elevated layers of dry air), which were forecast by NWP models but could be not verified by other observations. As these profiles have larger uncertainties close to the surface, correction of these values by surface measurements might be needed.