RECENT DEVELOPMENTS AND PERSPECTIVES IN METEOROLOGICAL DATA ASSIMILATION

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In meteorology, the data assimilation techniques have been submitted to drastic evolutions during the last 20 or 30 years. This is true for algorithmic aspects, but also for the variety of observations which are used as input to the data assimilation schemes. The main incentive for developing sophisticated and efficient data assimilation techniques in meteorology has been (and still is) the Numerical Weather Prediction (NWP) application. Nowadays, data assimilation for NWP is often the driving applications for National Meteorological Services (NMS) when they have to choose and calibrate their computer resources.

With NWP models becoming more and more complex, there is a progressive need for data assimilation schemes able to handle the ocean, the land surface properties and the atmospheric chemistry, not only for predicting the weather but also for climate applications. Re-analysing long periods (40 years typically) through a consistent NWP data assimilation scheme has become almost a standard exercise which produces high-quality data sets for climate applications.