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Observation Preprocessing System for RC LACE (OPLACE)

Alena Trojáková (1), Máté Mile (2), and Martina Tudor (3)
(3) Croatian Meteorologlical and Hydrological Service, Research, Zagreb, Croatia (tudor@cirus.dhz.hr), (1) Czech Hydrometeorological Institute, (2) Hungarian Meteorological Service

The observation pre-processing of measured data to be used in data assimilation of numerical weather prediction (NWP) model is a demanding task. It requires handling the raw data, including receiving it in real time, transferring, processing, quality check and storage. Each type of measurements requires specific procedures for each to these steps. Small national weather services seldom have the means to develop it on their own. It is still a major obstacle in developing local data assimilation suites.

Within the framework of the RC LACE consortium (consisting of Austria, Czech Republic, Croatia, Hungary, Romania, Slovakia and Slovenia), a common observation preprocessing system (OPLACE) has been built up. The preprocessing may include simple quality control and format conversions but also more advanced data processing. OPLACE is hosted by Hungarian Meteorological Institute (OMSZ) since 2009 and currently provides surface synoptic data, upper-air sounding, wind profiler, and aircraft observations. Besides conventional observations, there are also various remote sensing data, such as AMSU-A, AMSU-B, HIRS, ATMS, IASI and SEVIRI radiances, atmospheric motion winds, and sea wind measurements (ASCAT). Furthermore, RC LACE NHMSs exchange their dense national surface synoptic measurements and high-resolution aircraft Mode-S MRAR data in real time in OPLACE. RC LACE might have the first trans-national agreement to exchange observations in real time for operational NWP among so many countries.

The system delivers processed and quality checked data that can be used by the data assimilation procedures, for both surface and upper-air data assimilation using various algorithms. OPLACE has enabled national weather services members of RC LACE to develop local NWP using data assimilation and other services are becoming involved.