

Data Manager Activity
Progress Report

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Progress summary

The core of RC LACE Data Manager (DM) activity has been the maintenance and development of the common Observation Pre-processing system for LACE (OPLACE). The OPLACE system reliability and testing environment has been improved. The OPLACE was extended by AMDAR humidity observations and to support radiance assimilation of new sensors the data from the cross-track scanning Advanced Technology Microwave Sounder (ATMS) were implemented. Regarding non-LACE countries access to the OPLACE, a negotiation with Tunisia was finalized and the access to OPLACE essential data was granted.

The exchange of surface synoptic data within RC LACE is working well and the regular overview was prepared. A negotiation with KNMI was finalized and Mode-S Enhanced Surveillance (EHS) aircraft temperature and wind observation has extended available high resolution aircraft data in the OPLACE since August 2016.

An ODB related support and help with configuration and usage of data assimilation applications have been provided. A simple scripts for the 3DVAR testing was updated for cy40t1. There has been a very limited progress of the Continuous Observation Processing Environment (COPE) project and the testing of the COPE framework is planned for this autumn.

Scientific and technical main activities and achievements, major events

Action: OPLACE

Description and objectives: Meteorological observations are a key aspect of data assimilation and verification. The OPLACE was built with aim of providing available observations in an appropriate format for data assimilation to RC LACE Members. A regular maintenance is required in order to provide stable and reliable bases for operational purposes and further extensions by new data is essential for a general progress in area of data assimilation.

Efforts: 2.5 person months

Status: A new OPLACE parallel suite environment was implemented to simplify testing of the system upgrades and to be complaint with HMS IT requirements. The OPLACE system maintenance further comprised a few bug-fixies for TEMP and wind profiler data handling and data volumes of aircraft and wind profiler data were upgraded to ensure a reliable data acquisition.

The AMDAR pre-processing was extended to handle humidity observations available on board of several Lufthansa aircraft. In addition, the aircraft data were expanded by high-resolution Mode-S EHS data from KNMI. To support data assimilation of new satellite sensors the data from the cross-track scanning

Advanced Technology Microwave Sounder (ATMS) were implemented to the OPLACE system.

The Traditional Alphanumeric Codes to BUFR (TAC2BUFR) migration for sounding has been tackled. Generally an adaptation of the OPLACE for the TAC2BUFR migration is progressing rather slowly. The OPLACE uses operationally still only TEMP TAC messages, because there are issues with availability and quality of TEMP BUFR data. There is only very small difference in a number of TEMP TAC (due to changes in TEMP network itself), so the operational use of TAC reports is not affected by TAC to BUFR migration yet.

The non-LACE countries showed an interest to access the OPLACE. The agreement with Tunisia was signed and the access to the OPLACE essential data was provided (the national data and EUMETSAT data are not included due to data policy). Two one-month stays of Tunisian colleagues have been planned for 2016 in LACE countries on subject of the GPS data assimilation and the testing of available COPE prototypes to reproduce the current observation preprocessing chain.

Action: Data exchange

Description and objectives: The substantial number of local observations is available in LACE countries. The main objective is to ensure an exchange of data, which have a potential for data assimilation and verification.

Efforts: 1.0 person month

Status: The exchange of the surface synoptic data within RC LACE is working well and there are Members, which use the data already operationally. The data (mostly not available in GTS) are provided by the Members to OPLACE-national, only Slovenia and Slovakia provide also essential and additional data available in GTS. A coverage of the exchanged data is illustrated on Figure 1.

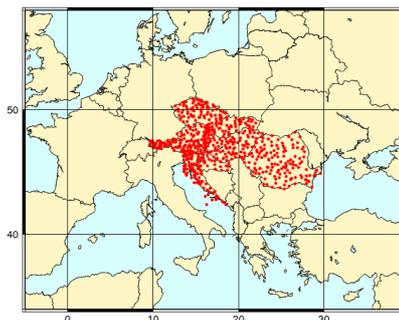


Fig 1: Geographical distribution of exchanged national synoptic data

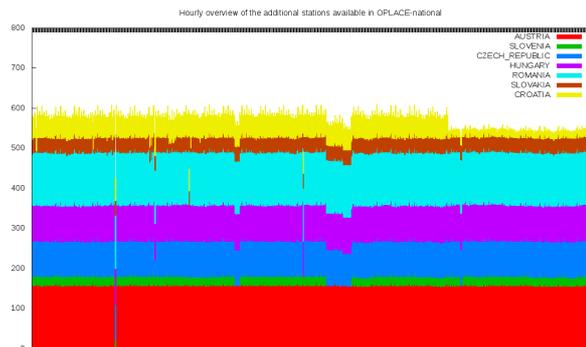


Fig 2: Hourly number of stations exchanged during August 2016

Hourly availability statistics for August 2016 are shown on Figure 2. A few drop-outs in the data provision were experienced, but overall the system is stable and reliable for an operational use. A decrease of the number of data from Croatia by the end of August was caused by a redesign of the national data preprocessing, which

comprised among others a removal of the GTS data. The overall number of exchanged data is fairly stable. There were only a couple of canceled/replaced stations, while Slovakia and Croatia added 13 and 20 stations respectively. Regular review of the exchanged data was prepared for August 2016 and detailed statistics are available in a dedicated appendix.

The provision of the high resolution aircraft observation Mode-S MRAR (Meteorological Routine Air Report) from Slovenia has worked well in 2016. Furthermore, the negotiation with KNMI was finalized and the data exchange has been extended by Mode-S EHS (Enhanced Surveillance) data from KNMI. The data coverage is illustrated on Figure 3 and 4. All Members are kindly encouraged to investigate availability of Mode-S data in their countries and to test available data in their data assimilation applications.

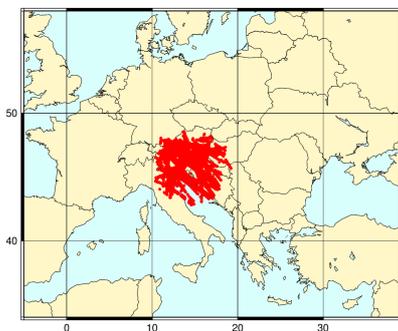


Fig 3: Geographical distribution of Mode-S MRAR data from Slovenia.

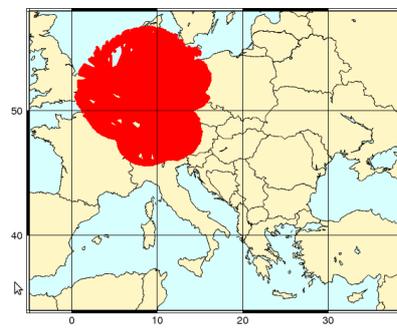


Fig 4: Geographical distribution of Mode-S EHS data from KNMI.

Action: ODB support

Description and objectives: The main objective is to provide observation database (ODB) related support and to help with configuration and usage of ODB and related applications at RC LACE members' site. The DM also acts as a contact point for the Continuous Observation Processing Environment (COPE) project initiated by ECMWF, which is expected to provide a new framework for a quasi-continuous, more scalable and timely observation processing including conversion to ODB.

Efforts: 1.0 person months

Status: An ODB related support was provided upon request. The update of simple scripts to run 3DVAR with conventional observations for cy40t1 was prepared, see RC LACE Forum for more details, <http://www.rlace.eu/forum/viewtopic.php?f=30&t=49>. The sample is intended as a simple example and/or a technical tool for a testing of the 3DVAR functionality and it is available also on the Météo France HPC.

There has been a very limited progress on COPE. A testing of the COPE framework is planned for this autumn.

List of actions, deliverables including status

Subject: ODB support

Deliverables: cy40t1 update of simple scripts to test 3DVAR was prepared;

Status: DONE

Subject: OPLACE

Deliverables: OPLACE maintenance and development (AMDAR Q & ATMS added);

Status: PERMANENT

Subject: Data exchange

Deliverables: data overview and MODE-S EHS data from KNMI added;

Status: DONE

Documents and publications

Activities of management, coordination and communication

- 1) 26th LACE Steering Committee meeting, 3-4 March, Hnanice, the Czech Republic.
- 2) Joint 26th ALADIN Workshop & HIRLAM All Staff Meeting 2016, 4-8 April 2016, Lisbon, Portugal.
- 3) 38th EWGLAM and 23rd SRNWP Meeting, 5-8 October 2016, Rome, Italy.

Summary of resources/means

| Subject | Resource | | LACE | |
|----------------------|-------------|---------------|---------------|-------------|
| | planned | realized | planned | realized |
| ODB support | 2 PM | 1.0 PM | | |
| OPLACE | 3 PM | 2.5 PM | 0.5 PM | 0 PM |
| Data exchange | 1 PM | 1.0 PM | | |
| Total: | 6 PM | 4.5 PM | 0.5 PM | 0 PM |

Problems and opportunities

As more and more data are processed by the OPLACE system, a number of technical issues increases, e.g. new formats require a new processing tools, more data need more storage, I/O operations and a performance of the system should be taken into account. Moreover, a development and extensions of the observation monitoring system to the new data is delayed due to lack of time.

The adaptation of the OPLACE to the TAC2BUFR migration is progressing slowly and there starts to appear related issues, e.g. with availability of surface observations (the extreme temperatures, precipitation) for verification purposes.