

### 3.2 OPERA PAST, PRESENT AND FUTURE

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The EUMETNET Radar project OPERA is transiting from one programme phase (2013-2018) to next one (2019-2023). So what has been achieved?

A visible difference can be seen in the Pan-European composites produced by the OPERA operational data center (Odyssey). First, the area covered by the composite has been substantially increased by the progressive incorporation of new radars. The quality and the homogeneity of the composite have increased as well. During the first year, the homogenization was mainly due to improvements in incoming data, but from late 2015 the central processing has been cancelling more unwanted echoes than before through non-meteorological echo detection algorithms and the application of a satellite-based cloud mask. This increase in quality has been confirmed with quantitative studies. The negative bias in the northern areas is also obvious, and applications for VPR and different ZR for snow have been developed but not yet applied operationally.

OPERA has defined and maintains the OPERA Data Information Model (ODIM), which is used for description of weather radar data in HDF5 or BUFR format. This format has become the standard for radar data exchange over the Europe. It is vital for running of Odyssey and it has also accelerated bilateral exchange of radar (volume) data between meteorological services.

OPERA has also executed several surveys and studies. Results from a survey about maintenance shows large differences in national maintenance policies, and reveals that the primary causes of missing data are not with the radar itself but are related to issues with the electricity supplies or telecommunications. A survey about application priorities shows that the most important uses of radar data are aviation and severe weather warnings. Importance of other applications such as hydrological applications, NWP assimilation and verification, television and web have a large variability across Europe. These differences of priorities of national meteorological services is the main reason of the wide variability in measurement schedules observed over Europe.

The use of polarimetric radar variables in Europe was also subject of a survey. Currently the largest benefit of dual-polarization radars is in the quality improvement of other data (reflectivity and Doppler), especially in removal of unwanted echoes such as radio interference and wind turbines. Only a limited number of OPERA members are testing dual-pol attenuation correction, and even less have started using this operationally.

In the next programme phase, OPERA is focusing even harder on the needs of users outside the radar community. We have identified several different user types, and discuss splitting the production lines accordingly. What will certainly continue

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is the exchange of knowledge, information and experiences between European radar experts, which has been the heart of OPERA for 20 years.

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