

## **OPERA 4 - The new phase of Operational Weather Radar Network in Europe**

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The operational weather radar network in Europe consists of around 180 radars managed by national meteorological services in 30 countries. Co-operation and exchange of both data and experiences is coordinated in OPERA, the operational programme for weather radar networking. OPERA has been working since the 1990's within EUMETNET, the grouping of European Meteorological Services.

An essential part of the OPERA work is the documentation of the members' best practices in radar operation and data production, and the making of joint recommendations, e.g. on the interferences caused by other microwave sources and the disturbances caused by wind turbines. Hence the expertise of the most experienced members is made available to all members supporting the development of the network as a whole. All these reports and recommendations are publicly available on the OPERA website, for use by the wider meteorological community including the industry. Web-based tools for visualization of radar locations from the OPERA Radar Database as well as radar data itself were developed within OPERA. These tools utilize Google Maps API and are helpful in checking of metadata information of individual radars and also for identification of possible sources of decreased quality of radar data (e.g. remaining ground clutter caused by wind farms).

We can summarize the OPERA history by saying that the first phase agreed on common format for data exchange, the second phase discussed which products should be exchanged, the third one developed compositing methods and a hub for the practical exchange. In the fourth phase, 2013-2017, the OPERA users are much more involved. Rather than only talking about exchange of data and expertise between radar departments in different countries, users such as NWP and hydrologists are actively involved in development through the OPERA User Group