Tailored Weather Radar Products for use in Aviation



Thomas Wetter

Thomas Wetter and Dirk Zinkhan

The customer requirements for the use of weather radar products and data in aviation dictate the tailoring of the products and service provisions to these particular needs. To facilitate the use of weather radar in Air Traffic Management strategic and tactical use, General Aviation self-briefing & navigation and Total Airport Management, a broad range of products and services has been developed and deployed by the Aeronautical Meteorological Service of the German national weather Service DWD.

Weather Radar Data Foundation for Aviation in DWD

European volume data composite (every 15 minutes) are employed.

Tailored aviation WX radar products are predominantly based on the reflectivity measurements of the national radar composite of the precipitation scan and the correspondent European aviation radar composite EuRadCom comprising data from Austria, Belgium, France, Germany, the Netherlands and Switzerland. Both composites have a base resolution of 1x1 km and are available every 5 minutes. Furthermore national single site volume scan products (every 5 minutes) and an

Data products for Air Traffic Control (ATC)

For the near real-time application of WX radar in ATC different vectorised data products of EuRadCom are supplied to ATC Centres of EUROCONTROL and Deutsche Flugsicherung (DFS). Corresponding to the individual requirements of the various airspace usages (e.g. UIR, FIR, FIS) the data supply is either sub-divided in individual classes of severity or provided at full data resolution for the following processing at the users' end.

The main data formats used are the ASTERIX Cat.9 V.2 for the direct implementation in RADNET and HDF5 defined in the OPERA Data Information Model ODIM_H5.

Tailored Graphical Products

For applications in Total Airport Management and General Aviation self-briefing the DWD Aeronautical Meteorological Service provides a broad range of local and regional graphical products - often combined with lightning data.

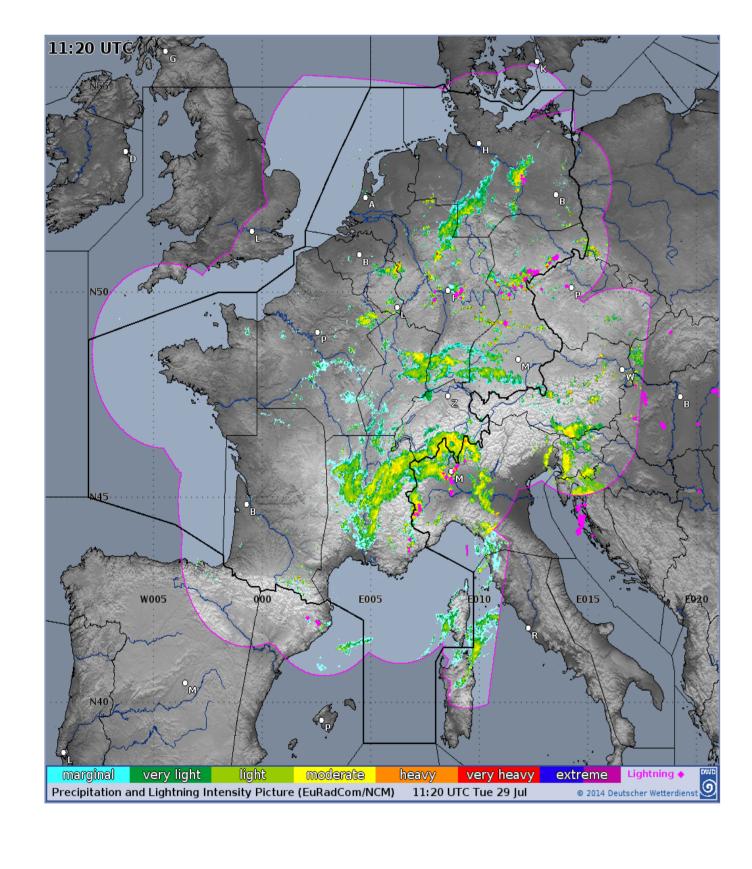
The base map used in most products comprises high resolution orography, international and regional airports, major cities, national and continental borders, rivers and lakes, highways, a grid of parallels and meridians, and for international airports individual distance rings and direction markers. The usage of colours in the base map is on purpose avoided to leave the full colour spectre for the depiction of the meteorological data.

All graphical products depict the data coverage, the validity time of the radar measurement and the corresponding legend with precipitation intensities to avert possible misinterpretation after redistribution of the digital products.

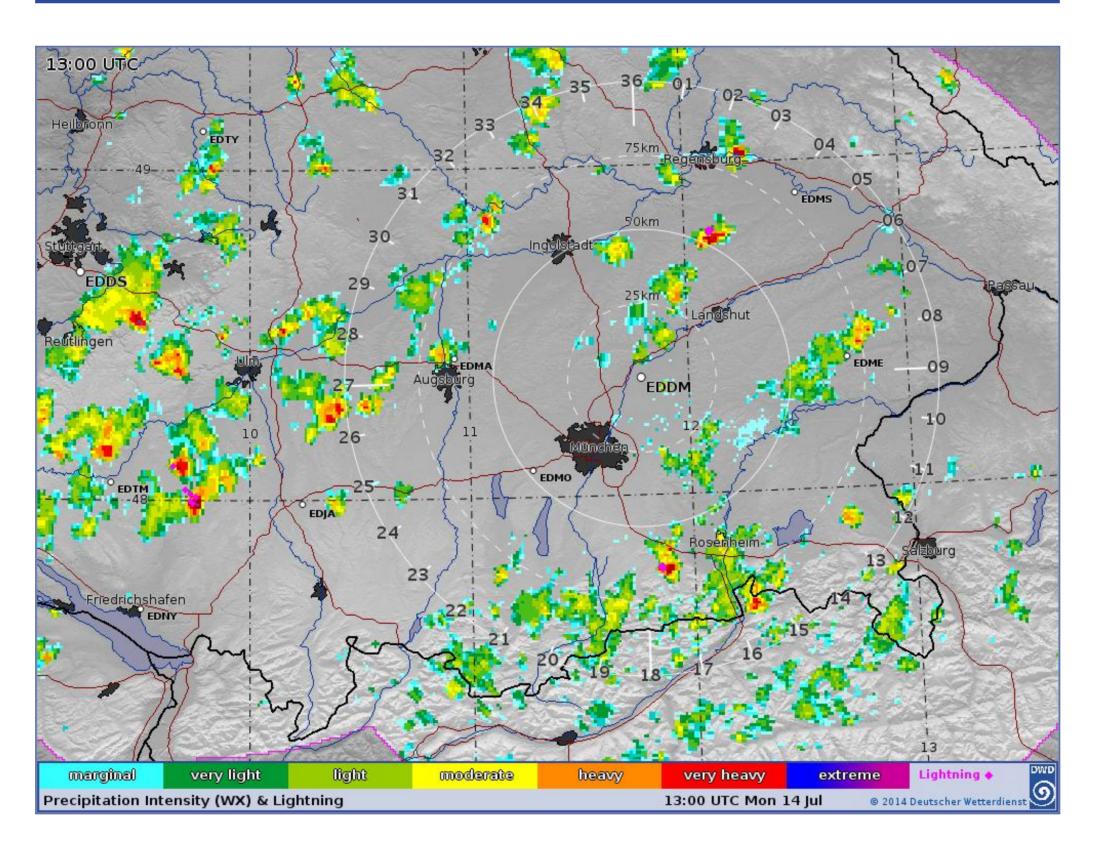
Meteorological Airport Briefing and Self-Briefing Portals

For aeronautical users all graphical radar products are provided in a correspondent portal, alternatively showing the most recent product or an animation of the 6 - 20 newest pictures.

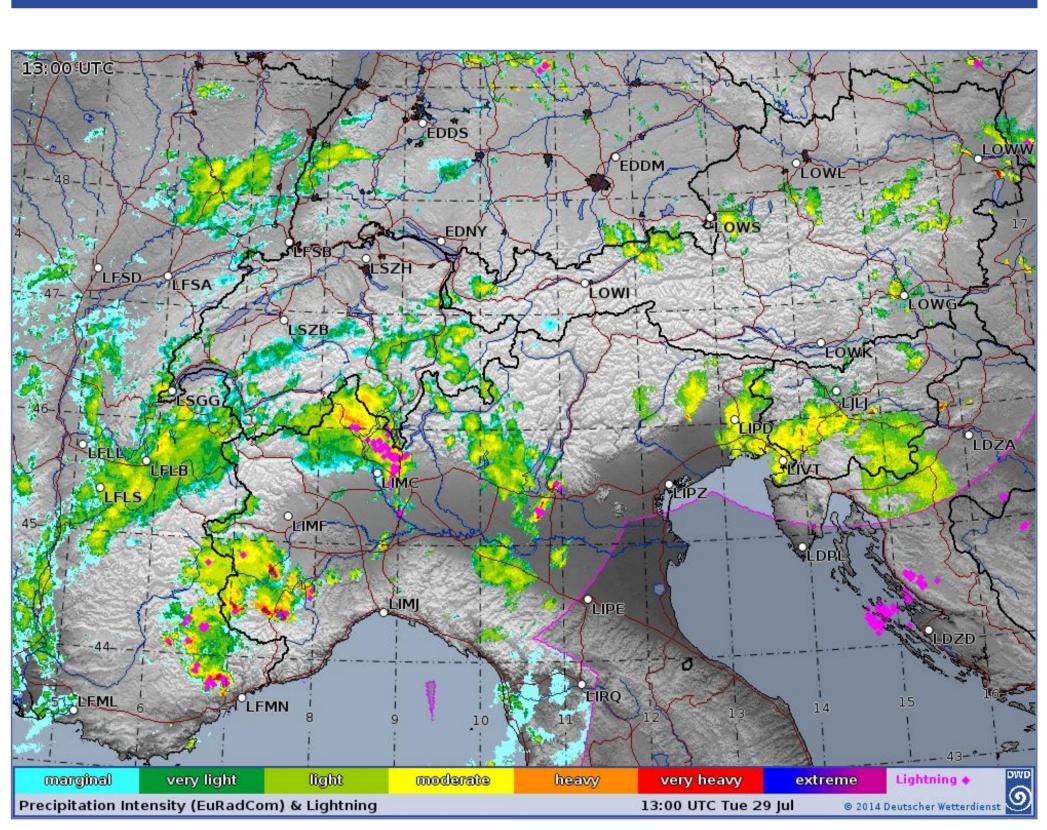
EuRadCom & Lightning Data



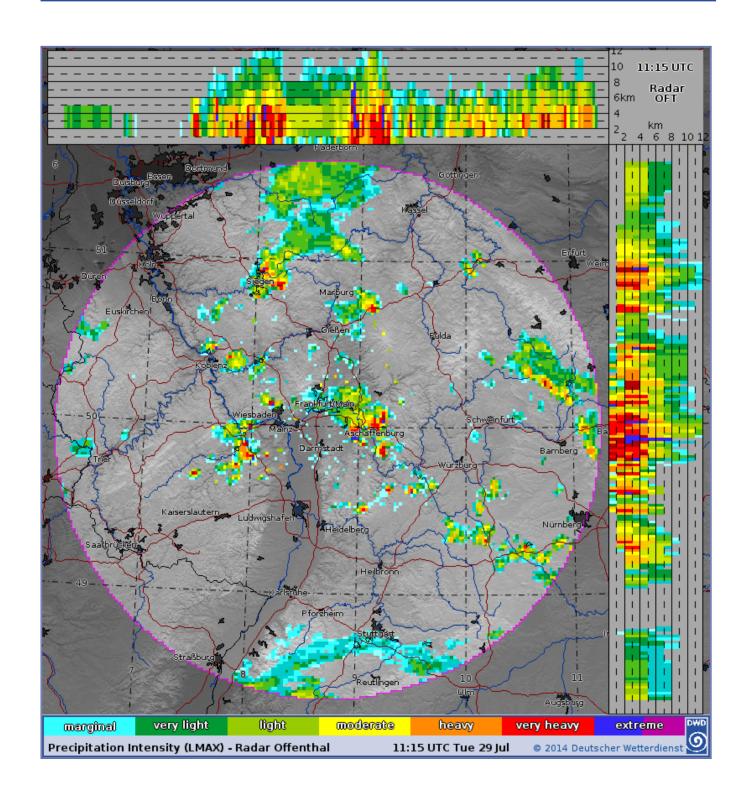
Local Map Selection for an International Airport



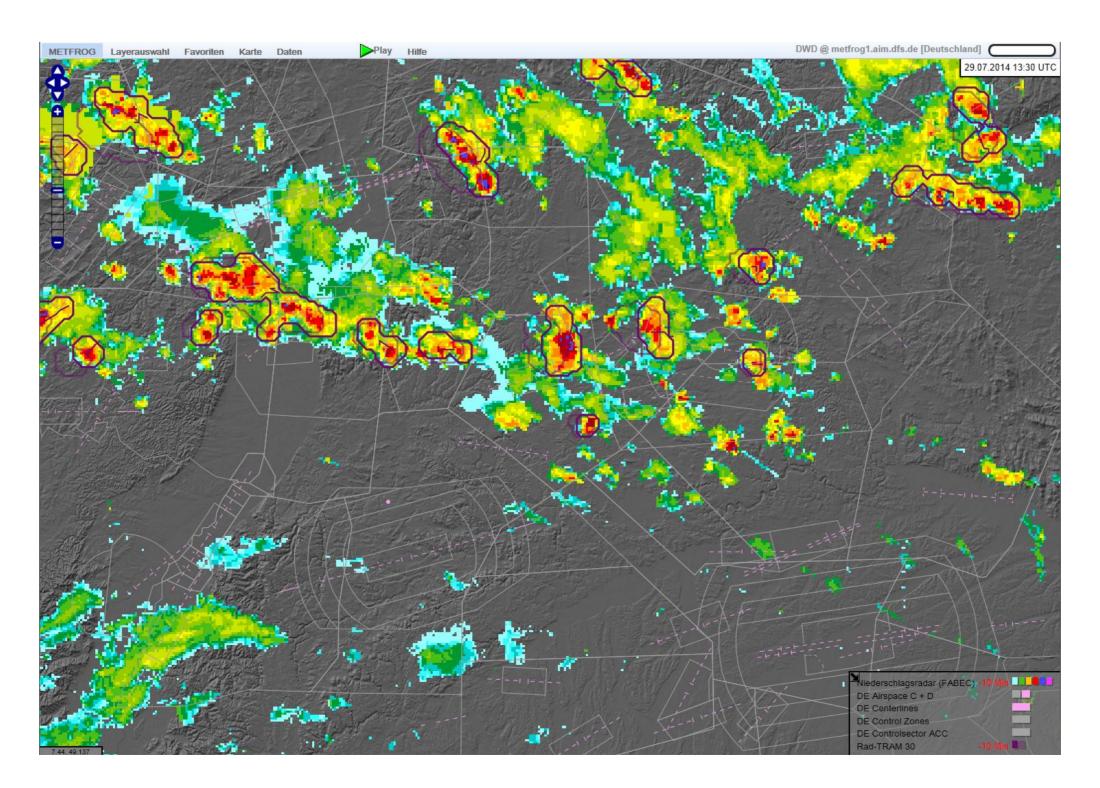
Local Map Selection for the Alps



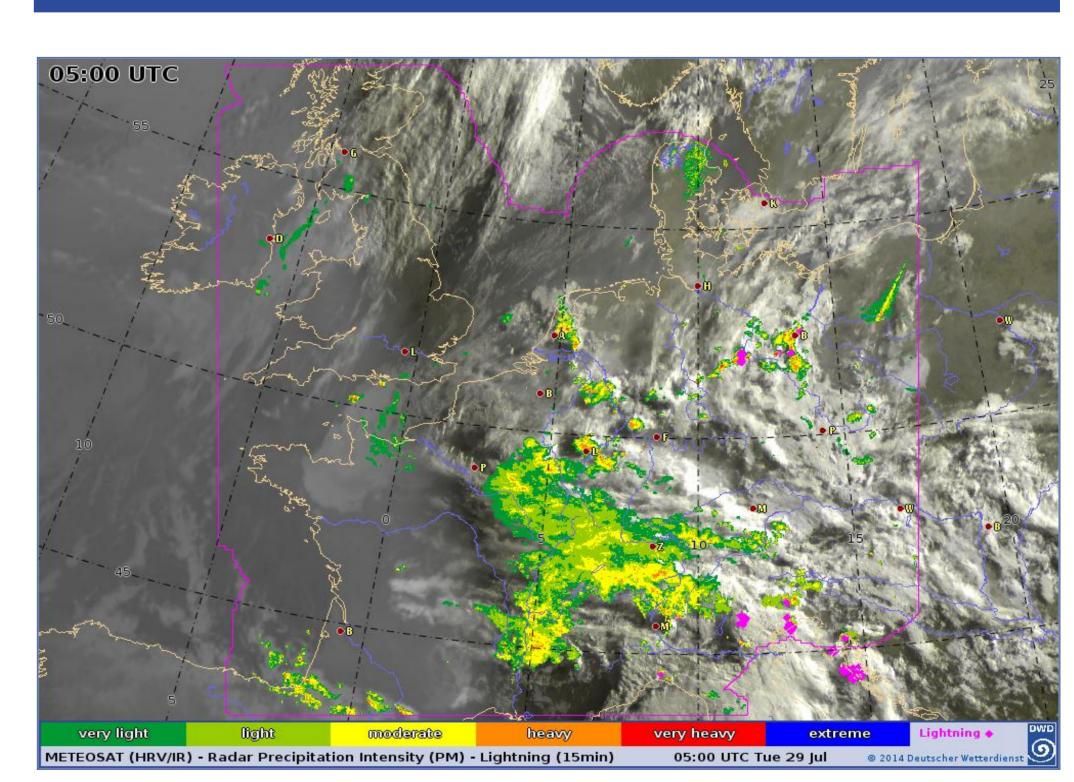
Single Radar Site Products



Integration & Visualisation in ATC Side Display of DFS



Combination of Satellite, Radar and Lightning Data





DWD - Systems and Operations of the Aeronautical Meteorological Service Frankfurter Straße 135, 63067 Offenbach am Main, Germany Email: Thomas.Wetter@dwd.de