High resolution climatology
- towards climate change services

A central repository for gridded data in the MeteoSwiss Data Warehouse

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The significance of gridded data in meteorology and climatology has increased remarkably over the last years. New products of observing systems such as radars, improved interpolation techniques, spatial analyses or modeling procedures have already led to a proliferated amount of available grid data within the meteorological and climatological community.

Since these products are generated by different systems the format in which they are delivered can vary quite much. To facilitate the combined use of different gridded data sets (f. ex. rain accumulation based on radar data and interpolated rainfall based on observations) MeteoSwiss decided to incorporate them in one central data repository. It's been the strategy of MeteoSwiss over the last ten years to store and manage all of its data in a single central data platform – the MeteoSwiss Data Warehouse - which is completely metadata driven. After the integration of all kind of historical and current surface data the system was extended in 2009 to store different types of upper air data. The last release of this Data Warehouse project focuses on grid data to complete MeteoSwiss' data integration strategy.

This release comprises both the storage of different types of gridded datasets being delivered in various data formats into one single grid database and its data management. Here from datasets, which have originally been created in different data formats (f. ex. gif and netCDF), can be exported in whatever format is supported by the system. This procedure facilitates to a great extent the combined analyses of grid data originating in different data sources. Additionally interfaces to other software packages such as R allow direct access to the grid database. Web applications are implemented to allow users to carry out predefined spatial analyses such as spatial aggregation for a user specified extent of the dataset.

After evaluating different solutions MeteoSwiss decided to implement its system using existing GIS-Technologies. FME was chosen as spatial ETL Tool for the format transformations between both input and output files and database. It also provides an interface for users of the statistic software 'R'. ArcGIS Server is applied for the data management as well as for the implementation of web applications.