

SwissMetNet – the new automated meteorological Network of Switzerland: Transition from former to new Network, Data Management and first Results

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The Federal Office of Meteorology and Climatology MeteoSwiss operates the official meteorological and climatological network of Switzerland. The measurements are used for various purposes, e.g. as input for numerical weather predictions, meteorological warnings or climate analysis and monitoring. MeteoSwiss also acts as official data provider for scientific, economic, governmental and private studies and applications. Typical customers can be found among civil aviation, governmental agencies, universities, insurance companies, tourism and private users.

In 1998 an inquiry among users and customers was carried out for evaluating the requirements for a new network. In the following, an overall strategy for upper air and ground-based measurements was developed within a measuring concept. As a consequence, the project *SwissMetNet* was launched in 2001 with the aim to renew and unify the ground-based networks ANETZ (automated network of 72 stations built between 1975 and 1989 with eye observations at some stations), ENET (supplementary automated network of 44 stations for storm and avalanche warnings built in the 1990's), KLIMA (conventional network of 25 stations with manual instrumental and eye observations) and AERO (network for eye observations at 17 stations mainly used for civil aviation). In a first phase, the ANETZ stations are being renewed since 2005.

The automation of ground-based meteorological networks has become a high priority among many national weather services. The transition from manual instrumental readings to fully automated weather stations is a highly complex task. New measuring techniques not only influence the quality and availability of the single measurements but have also large consequences for data transmission, storage, control, analysis and processing. In the beginning of automation, the climatological needs of a new network were often neglected as the stations were mainly intended for providing real-time data for meteorological applications like now-casting. The installation of automated weather stations can, therefore, have a large impact on the homogeneity of a climatological time series in terms of site relocation, sampling rate of the measurements, instrumental characteristics, data logging systems at the station, reliability of the data transmission, data storage, post-processing etc. For cost-benefit considerations, MeteoSwiss seeks to cover both meteorological and climatological needs within the new

network by exploiting the broad technical and scientific knowledge based on the existing (automated) networks on the one hand - e.g. in terms of climate analysis - and by integrating new findings gained with special scientific networks on the other hand.

The present contribution outlines the principal ideas and the concept behind the new network. The transition from the former to the new network (station management, data control, and parallel measurements for climatological needs) is described and illustrated with first results from new SwissMetNet stations. The general data flux from the stations to the MeteoSwiss Data Warehouse including data control, analysis and processing is also presented.