



Enhancing data quality and data publication with the MeteoIO library - The example of the Global Cryosphere Watch

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The MeteoIO library has been designed as a meteorological data pre-processing library for numerical models. It was designed to read data from a variety of sources, standardize it into a unique representation (parameters naming and units) as well as filter, correct, resample and spatially interpolate it according to the end user's configuration. After ten years of development, it has moved from being a simple library to a data preparation Swiss army knife. It can be used outside of numerical models to build standalone operational applications such as monitoring the data quality from a measurement network or converting disparate measurements data sets into a common format.

This latter application is developed for the needs of the World Meteorological Organization's Global Cryosphere Watch (GCW) which is an international mechanism for supporting all key cryospheric in-situ and remote sensing observations. To this effect, GCW builds up a global network of so called GCW CryoNet stations that report metadata to the GCW data-portal and provide means to access data using a decentralized model. A majority of the measuring stations are operated by universities and research organizations, which are not familiar with the WMO metadata and data exchange mechanisms and do not have the resources to adopt them. The MeteoIO library offers a way to prepare the data for publication on the GCW data-portal by reading the measurements in their native format as they are generated by the organization in charge of the station, performing some data filtering, filling some data gaps (all according to the configuration performed by the local organization) and writing out the data in a standardized format and schema, according to WMO recommendations (based on the NetCDF common data model and the CF convention).

A successful demonstration project for coupling a small data-center with the GCW Data Portal was initiated in 2015, in collaboration with the WSL Institute for Snow and Avalanche Research (SLF). The results achieved have provided a template for interoperability with data centers contributing to the GCW observing network.