A New System and Service for Climate Monitoring in the Cryosphere

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The EuroClim system and service, developed within the European Commission's fifth Framework Programme, is an advanced tool for climate monitoring and modelling. The system observes cryospheric variables using satellites and in situ measurement stations and produces a portfolio of products based on these observations. The system also provides climate model products, from both historical runs and a scenario run. The climate modelling results are provided as another product portfolio. All products are available through a web service developed by the project. The system is currently semi-operational and in transition into a fully operational service.

The system monitors sea ice for the whole Arctic Ocean, the Greenland ice sheet, glaciers in Svalbard and seasonal snow in Fennoscandia. A comprehensive set of sea ice, glacier and snow variables is retrieved, which is the basis for the product portfolio. The regional climate model covers Europe as well as the Arctic region. For all the retrieved geophysical variables digital maps are available. There are also products for various types of climate-change indicators. These are typically variables derived from time series of map products. A significant amount of scientific research has been carried out by the EuroClim project in order to be able to establish the necessary algorithms and models required for a long-term operational service for time-consistent monitoring and modelling.

The EuroClim system includes a network of processing and storage nodes hosted by various organisations involved in climate monitoring. A special node hosts the web service, which includes functionality for searching, browsing and downloading of products. The service also intends establishing an approximately 25-years historic record of selected cryospheric variables in order to provide a baseline dataset for climate modelling and statistical analyses.

The intention is to let the EuroClim service be a part of the Global Monitoring for Environment and Security (GMES) system under development in Europe. GMES will be Europe's contribution to the intergovernmental Group of Earth Observations' (GEO) system of systems (GEOSS). The service will be free of charge for scientific applications.

The presentation will explain and show examples of the main products provided by the service. It will also briefly describe the system and the algorithms behind the variables retrieved. Plans for further development will be outlined, and a dialogue with the conference participants is encouraged in order to receive expert feedback on the most useful way of development for supporting climate monitoring of the cryosphere in general.