



A SYSTEM FOR CRYOSPHERIC OBSERVATIONS AND CLIMATE MODELLING IN EUROPE

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Climate scenario modelling indicates that our environmental conditions will change with increasing speed in the coming years with one of the most significant changes being a warming of the global climate. Europe is maybe the most sensitive region of the world, and it is not known whether we will experience regional cooling or warming in a future warmer world in general. Therefore, monitoring climate-change in Europe is of utmost importance for preparedness and counteractions.

The EuroClim system, currently under development, will be an advanced tool for climate monitoring and scenario modelling in Europe. The Arctic and the European cryosphere is the main indicator system. Snow and ice variables are extracted from satellite data. The cryospheric information is applied in a regional climate model producing enhanced climate scenarios. Statistical tools extract information needed by users, like extreme weather, changes in the length of the growing season, etc.

The EuroClim system includes sub-systems for extraction of cryospheric variables from remote sensing data. Cryospheric variable products are stored in an advanced, distributed database system connecting all the storage and processing sites comprising the EuroClim network. Each database in the network is an innovative storage system for multi-dimensional raster data. Sub-systems for climate modelling and statistical analysis apply the cryospheric variables in order to do scenario analysis, trend estimation, uncertainty assessments, etc. A web-based system presents the results – from cryospheric products to high-level information showing possible climate changes and consequences thereof.

The project is also establishing a 20-year historic database of selected cryospheric variables in order to have a baseline dataset for climate modelling and statistical analyses. For the future, the database will be updated continuously by the EuroClim system.

About each year, a new climate-modelling scenario will be computed based on the updated cryospheric database. The cryospheric observations will be used for validation in the climate modelling such that observations and modelling results match reasonably well for the time period covered by the database. Based on the validated model, scenarios for 50–100 years will be computed. A regional coupled ocean-atmosphere model, covering Europe, with a global coupled model of coarser resolution making the boundary conditions, is applied.

EuroClim is a project supported by EU and carried out by a consortium of ten European organisations. The three-year project started in September 2001. An early version of the system will be demonstrated in the autumn of 2003.