Proposed for oral presentation

EuroClim: Monitoring the crysphere to improve climate change modelling

Rune Solberg

Norwegian Computing Center, P.O. Box 114 Blindern, 0314 Oslo, Norway
Phone: +47 2285 2500, Fax: +47 2269 7660
E-mail: rune.solberg@nr.no; Web: euroclim.nr.no

One of the greatest threats to human beings is climate change. Predictions indicate 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. However, although there will be warming on the global scale there will be large regional variations in climate that will affect various parts of the world differently. In fact, our region 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.

The best natural indicator of global warming is the cryosphere, i.e. masses of sea-ice, snow, and glaciers. The Euro-Arctic ice cover and high-mountain seasonal snow cover should be monitored in order to continuously assess the climatic health of Europe. Observations already indicate that the Arctic may be free of sea ice in summer within 50-100 years. Therefore, it is of great importance to monitor the cryosphere in order to make updated predictions and be able to take the necessary measures in time to limit the consequences to European citizens.

The main objective of the EuroClim project is to develop an advanced climate monitoring and prediction prototype system for Europe, which will contribute to Europe's ability to reduce possible man-made climate changes and to take the necessary measures to limit the consequences of climate change to human lives and the society in general. The system consists of a subsystem for extraction of cryospheric variables from satellite and in situ data. The data processing takes place in various institutes in Europe, which also host an advanced database system for storage and handling of space-time data. The databases are linked together into a virtual monolithic European cryospheric variable database. The time series of cryospheric variables from the past is applied in global and regional climate models focusing on the long-term changes in Europe. The results of the modelling are made available on an Internet server open to the public. There, topics like mean and extreme weather, changes in the cryosphere and biosphere, consequences to human life – like health and infrastructure – can be studied. Additionally, the cryospheric variable database is open to operational user groups, like climate researchers.

EuroClim is a EU RTD project within the IST programme. Ten European research institutes and companies participate in the three-year project, which started in September 2001. The project is currently within the user investigation and system design phase. This will be followed by research on algorithms for extraction of cryospheric variables, improved climate modelling by the use of cryospheric data and development of statistical methodology for analysis of climate data. Then, a system prototype will be developed, followed by a system demonstration in the last year of the project. The presentation includes the outcome of the user needs study and the system design phase.