EUMETNET
ECSN
European Climate Support Network

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ECSN Annual Report 2006

Prepared by the ECSN Manager, December 2006

General remarks

At its 28th Meeting the EUMETNET Council has decided to continue the ECSN Programme for a fourth phase, starting on 1 January 2007 for a four year period, with KNMI as the new Responsible Member and Aryan van Engelen as Programme Manager.
After a successful period of six years as Responsible Member for the EUMETNET-ECSN Optional Programme, MeteoSwiss will hand over the mandate to KNMI with the best wishes for a further successful period. The retiring ECSN Manager, Dr. Walter Kirchhofer, will step back with thanks to the EUMETNET Council for supporting the ECSN Programme, and in gratitude to the Project Leaders and to the ECSN Advisory Committee Members for their very kind co-operation during all these years.

At its 28th Meeting the EUMETNET Council has approved the new Showcase EUORGRID project with SMHI as Responsible Member and Christer Persson as Project Manager.

The 11th ECSN Advisory Committee (EAC) Meeting has taken place in Exeter, UK, 21-23 June 2006. The Meeting was well organized by the UK Met Office. It was an interesting and fruitful meeting, also with regard to new activities.

This year's Conference of the European Meteorological Society (EMS) together with the European Conference on Applied Climatology (ECAC), EMS/ECAC-2006, has taken place in Ljubljana, Slovenia, 4-8 September 2006.
The scientific part of the ECAC Conference was managed by the ECAC Advisory Board (EAB), assisted by ECSN and by selected conveners. This joint EMS/ECAC-2006 Conference has been the most successful event so far. Not only because of the large number of participants of about 500, but also because of the high scientific level.

European Climate Assessment & Dataset (KNMI)

The ECSN Programme ECA&D is widely recognized as a EUMETNET baseline dataset, not only by the European NMHS's but also by a number of strategic bodies as WMO, EEA and the EU research Community. The programme serves also as platform for data collation for ENSEMBLES Wp 5.1. With the introduction of the series collected for ENSEMBLES, the ECA&D database contains 1864 stations, of which 1100 stations provide free downloadable series of temperature, precipitation, pressure, sunshine, cloudiness, humidity and snow depth. Altogether 7301 series.

The employee, dedicated to ECA&D, has left the organization in January. In order to assure the quality of the project execution and in order to set up internal arrangements for continuation of the dataset project, the Council was asked, and it agreed, that the available budget for the formal project period 2003-2006 may be applied to extend the project period to 6 months.

In the beginning of 2007 the launching of the third European Climate Assessment Report is fo-

reseen. The various composing chapters and the input, generally in the form of text-boxes, will be prepared by international partners.

The EC-FP6 project "Millennium", focussing on a climate reconstruction of the last 1000 years in Europe, invited ECA&D to collaborate. The benefit is that ECA&D will provide the Millennium research with long instrumental data series and vice versa that ECA&D will be fed with new additional long observational series from the research world.

The collaboration was enlightened at the 6th ECAC Conference in Ljubljana, Slovenia, September 2006. The presentations were given related to ECA&D and to the co-operation with ENSEMBLES in order to strengthen the co-operation with the participants.

ENSEMBLES (KNMI, MeteoSwiss)

As the ENSEMBLES dataset is embedded in ECA&D, the homogeneity of each temperature and precipitation series is tested with the absolute homogeneity test of Wijngaard et al. (2003) that is implemented in the database. Additionally, at the same time, a first version of the ENSEMBLES dataset has been tested by MeteoSwiss using an automated relative homogenization procedure. It combines a method to derive deviation series (Steinacker et al., 2000) with Alexandersson's homogeneity test (Alexandersson, 1986). The results of this relative procedure revealed that only 9 to 32 % of the series are homogeneous for the period 1960-2000, depending on the climate variable. A journal paper in which this homogeneity procedure is tested and the results for the ENSEMBLES dataset are described is in progress.

At the same time, new series have been collected and a second version of the dataset has been created. The number of series available for the gridding project is now 1357 for maximum temperature, 1361 for minimum temperature, 1218 for mean temperature, 1838 for precipitation, 266 for air pressure and 154 for snow depth.

Four interpolation methods have been compared for the development of the gridded data sets: namely natural neighbour interpolation, angular distance weighting, kriging and thin plate splines. Much effort has gone into improving the kriging method so that it now provides the most skillful estimates of all methods in a cross validation exercise. This is very promising as extensions to the kriging method using simulations provides one of the most robust ways to assess spatial uncertainty arising from the interpolation process. The conditional interpolation method is now implemented and a comparison is currently being made with the other methods. Since this method estimates area average rainfall directly we can not assess its skill using the cross validation procedure that has been used until now. The reduced space optimal interpolation method was investigated as another potential method but deemed inappropriate for this exercise due to insufficient spatial density of the station network. Our final comparison will therefore focus on five interpolation methods.

The station network for the ENSEMBLES gridded dataset is still slowly expanding, and work on the quality control of the series and homogeneity testing is still ongoing. Five interpolation methods to produce the final daily grids for minimum, maximum and mean temperature, precipitation, snow depth and air pressure have been nearly completed. The best method for each

variable will be selected. There could be a different method for each variable but all temperature variables will be done using the same method. Whether the snow depth series will be interpolated depends on the final station availability. The present network seems to be too low to create a gridded snow depth dataset. The dataset of observational series that will be used to create the European high-resolution daily gridded datasets now counts 2033 stations.

At the 6th European Conference on Applied Climatology in Ljubljana, September 2006, 3 ENSEMBLES presentations were given. MeteoSwiss presented a poster with the title "Testing an automated homogenization procedure for large multivariate datasets". KNMI reported on changes in small, medium and heavy precipitation events over Europe as analysed from the ENSEMBLES precipitation series. Finally, scientists from Oxford University gave a presentation on the correlation decay distances of the daily temperature and precipitation data.

Generate Climate Monitoring Products / European Climate Information System (DWD)

The ECSN project Generate Climate Monitoring Products had been completed successfully early in 2004. Since then the GCMP communication platform: http://www.gcmp.dwd.de is maintained quasi operationally. Meanwhile 19 NMHS's contribute to this platform.

The GCMP system and responsibility has been moved from DWD-Hamburg to DWD-Offenbach. The GCMP platform will be continued at least until the beginning of 2007; then it is planned that operations will switch over to the successor platform EuCLIS which will also be maintained by DWD. In any case, GCMP will not be stopped before EuCLIS is able to provide all present GCMP products. GCMP products are still checked at least monthly by DWD for completeness and the website is updated as far as necessary.

The implementation of the new EuCLIS system will be accompanied by an RA VI questionnaire, inviting Members to specify their requirements for further evolution of a European climate monitoring platform.

The EuCLIS application has been installed successfully on an internal DWD computer and is in an internal testing phase. A number of tests have been carried out at DWD. Also some documentation (system manual, administrator manual) has been prepared in German and English. A second test phase will follow with participation of the NMHSs of the UK, France, Belgium and Germany. During this test phase it is planned that a small selection of products of these four countries could be inserted into the new system. After this second test phase an improved official release of EuCLIS can go public in a preoperational state to be filled by the other member states with their own products.

The EuCLIS prototype has been presented at the ECAC conference in Ljubljana in September. During some discussions at the conference, many representatives of European NMHS expressed their interest in contributing products to EuCLIS; among them also some representatives of NMHSs who did not contribute before to GCMP are interested in this project.

Alpine Tmap / HRT-GAR (ZAMG)

The Alpine Tmap project „High Resolution Temperature Climatology in Complex Terrain - demonstrated in the test area Greater Alpine Region (GAR)" officially has been started on 1st January 2006. The kick-off Meeting was held in Vienna, 2-3 February 2006, at the Central Institute of Meteorology and Geodynamic. The meeting assembled participants from Austria, Bosnia, Croatia, Czech Republic, Herzegovina, Hungary, Italy, Norway, Slovenia and Switzerland. At the kick-off Meeting it was agreed to form a core group for spatial modelling (CGSM) within ECSN HRT-GAR. It was also decided that major steps of modelling will be done by ZAMG, based on regular feedback from core group members.

For the Alpine region, a number of national climatologies are representing national or regional temperature distributions. However, due to different methods and scales, all those climatologies are not comparable. The final goal for the project is to provide a temperature climatology for the GAR on a monthly resolution with a spatial resolution of 1 km. In addition to the value itself, the product will allow various applications. For example, a merge of the GAR climatology and the HISTALP temperature data will provide high resolution monthly temperature fields back to 1760. The method was successfully applied to the HISTALP precipitation data and the Alpine precipitation climatology in a collaboration of the University of East Anglia, ZAMG and MeteoSwiss.

In the meantime, ZAMG has collected the data of 1885 stations and could adopt 1733 stations. 1696 of those could be used for the first analyses, 37 will be used later due to their special locations (eg. urban stations). The coordinates of all stations were controlled and corrected if necessary, by contacting the data holders and using metadata. All series were adjusted to the Kämtz mean, the most common mean calculation algorithm of the respective NMSs. Utilising the optimal data situation of the WMO's reference period all data were adjusted to the mean 1961-1990. The period 1971-2000 is foreseen to be prepared in a later step. First analyses were undertaken by calculating multiple linear regressions using altitude, latitude and longitude for the entire GAR, and the respective residuals. A stepwise linear regression was applied to all stations above 1500 m, the so called "high Alpine region". For the lower elevated sites the input of the CGSM for the computation of sub-regional MLRs has to be taken into account, however sub-regions have to be large enough to ensure robust statistical models.

A paper "First steps towards a new Temperature Climatology of the Greater Alpine Region (GAR)" has been prepared and submitted for the Proceedings of the final workshop of COST-719, hosted by the University of Grenoble (France). Further results have also been presented and discussed at the EMS/ECAC-2006 Conference in Ljubljana, 4-8 September , and in November on the occasion of the 1st MedCLIVAR Workshop in Carmona - Seville (Spain).

EUROGRID (SMHI)

With the purpose to organize a new ECSN project with the aim to improve understanding of critical issues related to a realisation of a EUROGRID concept, and to study the interest and feasibility of a follow-on EUROGRID programme, a preliminary project for a Showcase has been worked out.

The proposal for a EUROGRID Showcase was prepared by SMHI in close co-operation with the ECSN Members to create and to promote a rational and quality assured climatological production of high resolution gridded data, based on information from the European National Meteorological and Hydrological Services (NMHSs).

At the 11th ECSN Advisory Committee (EAC) meeting in Exeter, June 2006, the Delegates discussed the Showcase EUROGRID project in depth. The decisions were to postpone the start of the project, to extend it in time and to reduce the cost to cover just the part of management and workshops. The reason behind these recommendations was, that the EUROGRID concept is a key concept within the EUMETNET climate undertaking, and in order to get the agreement of all ECSN Member countries. SMHI has accepted to revise the previous proposal based on the ECSN/ EAC recommendations for presentation to the next Council meeting.

At its 28th Meeting the EUMETNET Council has approved the new Showcase EUORGRID project with SMHI as Responsible Member and Christer Persson as Project Manager.

The project will start on 1 January 2007 and will run for 24 months at a total cost of 65 kEuros.
The following 13 Members have declared their support to the revised project and will contribute financially, namely Austria, Denmark, Finland, France, Germany, Iceland, Ireland, The Netherlands, Norway, Portugal, Spain, Sweden and Switzerland. Italy and United Kingdom will be „in-kind“ participants.

Dr. Walter Kirchhofer
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