SOUTH EAST EUROPE
Transnational Cooperation Programme

DMCSEE
Drought Management Centre for Southeastern Europe
e-newsletter

Programme co-funded by the EUROPEAN UNION

Drought Management Centre for Southeastern Europe

IN THIS ISSUE:

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MARCH 2010

Jointly for our common future

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Introduction

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Fresh water is one of the most important natural resources. Availability of fresh water is defined by the weather and climate of a certain area. Unfavourable short-term or long-term weather conditions are among the major reasons for the migration of people across the Earth, while searching for better living conditions. South-eastern Europe is not affected as severely as some other parts in the world; however, drought occurrence designates areas with insufficient water resources also in this region. There is a long history of droughts in the area and these events will continue to occur in the future, possibly with increasing impacts, due to foreseen climate change and increasing climate variability.

Southeastern Europe has confronted severe, long-lasting drought episodes in the last decades. It became evident that actions to mitigate negative impacts have to be taken. A proposal to establish Drought Management Centre for Southeastern Europe (DMCSEE) was elaborated by several international organizations and finalised by the Environmental Agency of Slovenia. The main aim of this project is to improve drought preparedness by elaboration of risk assessment and early warning system and to reduce drought impacts. DMCSEE Project will achieve this aim through several specific objectives:

- Preparation of regional drought monitoring, analysis and early warning products that should be available on a near real-time basis to relevant users.
- Assessment of regional vulnerability (mainly in agriculture) to drought impacts should raise awareness of possible drought impacts.
- Organization of training events and national seminars that will improve drought preparedness, monitoring and management in participating countries.

One of the most important tasks (formulated among project deliverables) is to make sure that developed products remain in operation after the termination of project.

The Project is coordinated by the Environmental agency of Slovenia. There are altogether 15 partners from 9 SEE countries participating in the project. 8 of them are national meteorological services, which will take care of the implementation of near real time drought monitoring products. Other partners are agricultural universities and institutes, regional and national water authorities and regional developmental agencies. These partners have had experience with drought impacts. All the partners will work together to prepare an effective and risk-based regional drought monitoring system.

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Recent status of drought

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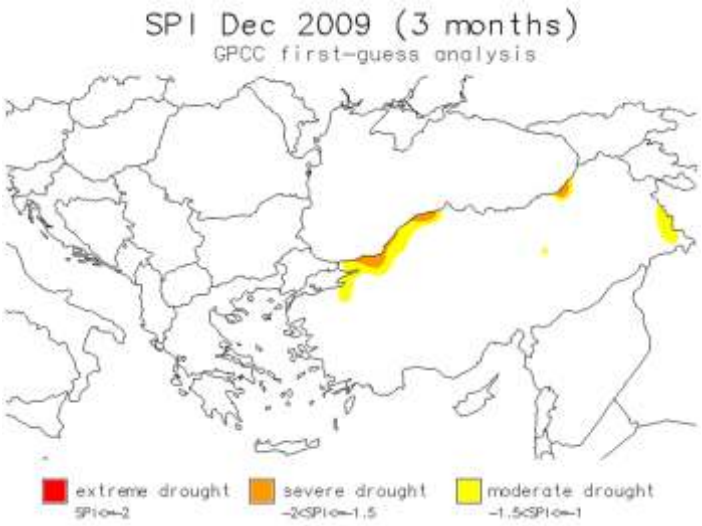
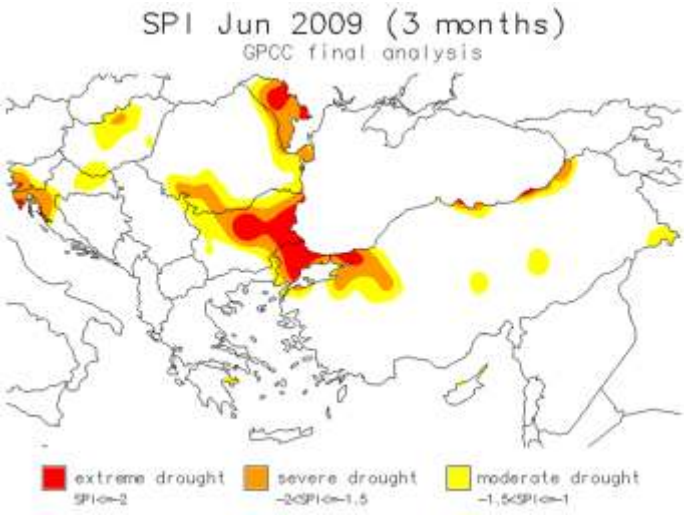
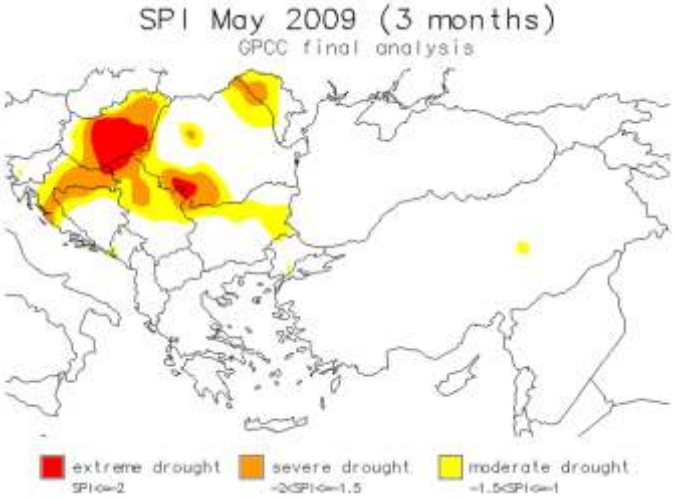
In the last three months of the year 2009, precipitation amounts seem to be close to normal values with respect to long year average. None of the last three months demonstrated important short or medium term deviation; this is demonstrated by 3-months SPI index calculated for October-December period.



Year 2009 in general was not so favourable. Summer and spring situation brought troubles to some parts of the region. In early summer, the eastern part of the Balkan peninsula (mainly eastern Bulgaria) experienced severe negative anomaly of precipitation. As reported by BTA, yield of some crops was reduced up to 30% and some settlements experienced reduced water supply regime.



Earlier in 2009, parts of the Carpathian basin experienced severe drought. Croatian »dnevnik.hr« reported up to 35% losses in agricultural region of Slavonia. According to the Budapest business journal, 17 million euro relief was needed in order to compensate and alleviate drought damage in agriculture.



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Drought monitoring - one of central tasks of the DMCSEE project

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Since even bare definition of drought onset, duration and severity is complex and very different for various economic and social sectors, drought monitoring is not a straight-forward task. It is not possible to monitor the development of drought by using single meteorological parameter. The most frequently implemented solution to this problem is to combine various parameters into drought indicators which enable us to follow drought and its developing characteristics. DMCSEE project is approaching this problem by using standard and well known tools. One of the fundamental missions of DMCSEE is to integrate drought indicators in effective drought monitoring system, which will enable the identification of regions, experiencing drought conditions.

Drought consequences accumulate slowly and through long periods of time. In general, there are four different types of drought: meteorological, agricultural, hydrological and socio-economic drought. Each type requires adjusted approach in order to be monitored. Meteorological drought depends only on precipitation deficit and on the duration of the period with precipitation deficit. Agricultural drought refers to situations with insufficient soil moisture levels to meet the plant needs for water during vegetation period. Soil moisture and related severity of agricultural drought are related mainly to precipitation deficit and other parameters (wind, high temperatures) that cause soil dryness. Hydrological drought occurs after longer periods of precipitation deficit (normally it occurs after meteorological and agricultural drought). Socio-economic drought occurs when water deficiency starts to affect human life; it connects economic standards with elements of meteorological, agricultural and hydrological drought.

Standardized Precipitation Index (SPI) is a relatively recently developed drought index, which is based solely on long term precipitation data. It represents the transformation of the precipitation time series into standardized variable. Beside standardization, its main advantages are simplicity and variable time scale which can cover all instances of drought impacts. Due to its favourable characteristics it is promoted by WMO as one of the standard tools that should be calculated and published worldwide. DMCSEE approach is to create a network of partner institutions with the capacity to provide their users with SPI calculations.

Another approach to the assessment of drought situation is the use of ratio of the annual precipitation amount and the annual derived variables related to evapotranspiration. One of the indices with described characteristics and regional origin is the Palfai Aridity Index (PAI).

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PAI offers even some forecasting possibilities; using long term precipitation and temperature forecast (or simply climatological conditions). PAI provides an outlook of the situation until the end of the year based on the given spring conditions. SPI and PAI were chosen to be the first drought indicators implemented in the framework of DMCSEE project. It is our hope that the combination of them with some additional data (such as satellite-based snow pack water equivalent estimation) will prove to be useful. There are other tools that might be potentially implemented, if necessity occurs (such as limited area atmospheric models used as an analyzing tool, point water balance models, water demand calculations etc.).

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Recent events

DMCSEE Kick-off Meeting

Date: 16th – 18th September

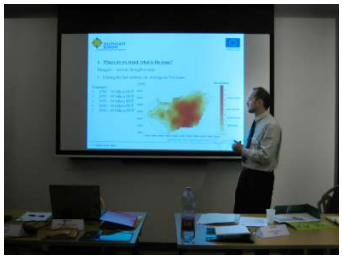
Location: OMSZ, Kitaibel Pál u. 1., Budapest, Hungary

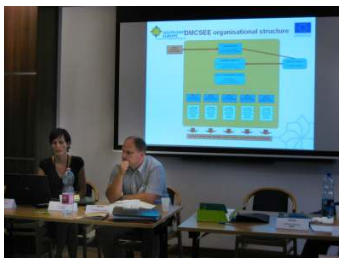
The kick-off meeting of DMCSEE took place between 16th – 18th September in OMSZ's headquarters in Budapest.

During the kick-off meeting the procedures of preparation of the partners' inputs and communication between LP, WP leaders, task leaders and other partners were defined. Reporting and administrative issues were presented and finalised.

The content of each WP was analysed; the communication strategy and the means to achieve it were discussed.

Conclusions were reached, the role of each partner was defined and the "to do list" for the following activities accompanied with deadlines for each WP was prepared.





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2nd DMCSEE Meeting

Date: February 1st – 2nd

Location: OMSZ, Kitaibel Pál u. 1., Budapest, Hungary

The 2nd DMCSEE Consortium Meeting took place at the headquarters of the Hungarian meteorological service (OMSZ) in Budapest, Hungary, between 1st and 2nd February 2010. During the meeting an overview of the project activities from kick-off meeting (September 2009) until the 2nd meeting was made. Reporting procedures and deadlines were presented and a reporting workshop was organized by the lead partner's subcontractor Alianta. The updated Management Plan was presented as well as administrative and reporting procedures for ERDF and IPA partners. DMCSEE's website and intranet was presented by the project partner GEORAMA to the consortium. The already implemented dissemination activities were presented and the implementation and monitoring of the Communication Plan was discussed. All work package leaders participated at the Quality Management Board meeting. Work on work packages dealing with drought monitoring (WP3), risk assessment (WP4) and training (WP5) was discussed and deadlines for each task were set. The work and deadlines were presented on the next day to all partners.

OMSZ and the Agricultural University of Athens (AUA) who lead WP3 and WP4) presented the work that had been done until then and analysed the steps that should be undertaken by all partners for the proceeding of the project. Presentations were followed by discussion; throughout the meeting the partners had the opportunity to present what they had done on the project until then and what their experiences were. Finally, conclusions and "to do list" were defined and the internal deadlines were set.

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Training on Climatological Homogenization and Interpolation Methods

Date: February 2nd – 5th

Location: OMSZ, Kitaibel Pál u. 1., Budapest, Hungary

The main aim of the training that followed the meeting was to improve knowledge and capacities of DMCSEE project partners in climatological practices which are necessary for drought monitoring. Since drought is usually defined as deviation from "normal conditions", it is crucial to ensure good knowledge of "normal conditions" and a capacity to analyse deviations.

Homogenization as a technique for elimination of features in data series that are not connected to the climate was introduced by **Olivier Mestre** from Meteo-France, one of leading scientists in this field. Comprehensive theoretical introduction was followed by practical examples of temperature and precipitation data treatment.

Introduction was followed by practical work using MASH software, developed by Hungarian meteorological service (OMSZ) and presented by **Tamas Szentimrey**. One of advantages of the MASH software (which is available for project partners and was distributed to the participants during the training) is a large degree of automatisation.

The second part of the workshop started with a presentation of SAGA GIS software, which was presented by **Akos Nemeth** from OMSZ. Spatial manipulation and presentation of drought monitoring products often require use of GIS software. SAGA GIS is a free software and therefore available for everybody. SAGA was also distributed to participants.

Lectures on spatial interpolation started with a presentation of **Mojca Dolinar** from the Environmental Agency of Slovenia (EARS). She has presented standard applications of geostatistics for spatial interpolation of climatological and drought monitoring data. Next lecturer, **Reinhardt Schiemann** from Meteo Swiss, presented some more advanced applications mainly for complex terrain.

The practical part of the interpolation session was opened by an introduction to optimal interpolation with emphasis on SPI interpolation by **Tamas Szentimrey** and followed by **Zita Bihari** from OMSZ who presented MISH software. MISH is a software, developed by OMSZ which applies
statistical interpolation technique with use of past data; that makes it particularly useful for
meteorological applications such as drought monitoring.

The last lecture, given by **Gregor Gregorič** from EARS summarized expectations within the project. He has provided participants with further examples and demonstrations of drought monitoring products along with a few hints of how to proceed with project work.

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Forthcoming actions

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BALWOIS Conference

The Fourth International Scientific Conference BALWOIS 2010 will be held in Ohrid (FYROM) **from 25 to 29 May 2010**.

The purpose of the conference is to provide a solutions-based forum and to exchange information regarding research activities and plans for studying the relationship between climate and environment to improve the quantity and quality of water, and engineering, and current policies from state and federal agencies. Attendees will include scientists and engineers, managers, legislators, and policy makers responsible for issues dealing with water. It is the intent of this conference to bring forward the concerns and impending problems (and offer solutions) that are developing with regards to the availability and quality of water, and the consequences to aquatic ecosystems and human environment, not only at the Balkan scale, but wider.

BALWOIS 2010 is a platform for creating partnerships in solving water scarcity problems, floods, droughts, environmental degradation and risk affecting different regions. The conference is designed to facilitate sharing of experiences in water issues and management through the presentation of scientific and technical papers and posters on planning research and development activities.

A specific session will be dedicated to DMCSEE project; it will focus on drought monitoring and related risks mitigation.

For more information please visit **www.balwois.com**

3rd DMCSEE meeting and Training on irrigation scheduling systems

3rd DMCSEE meeting and Training on irrigation scheduling systems will take place between 7th and 11th June 2010. Training will be dedicated to work on ISAREG model. ISAREG is a simulation tool for computing the soil water balance, generating alternative irrigation schedules and evaluating the respective impacts on crop yields. It can potentially also be applied as a tool to monitor potential water requirements and severity of droughts.

More information will be available on **www.dmcsee.eu**

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Profile of 2 DMCSEE Partners

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EARS - Environmental Agency of Slovenia

The Environmental Agency of Slovenia is a body of the Ministry of the Environment and Spatial Planning. Its mission is to monitor, analyse and forecast natural phenomena and processes in the environment, and to reduce natural threats to people and property. EARS was established in 2001; at that time, Hydrometeorological institute and Seismology institute were included (among others) into the new organization. The following tasks are performed by the national services for meteorology, hydrology and seismology:

- preserving natural resources, biodiversity and sustainable development;
- observing, analysing and forecasting natural phenomena and processes in the environment;
- reducing the impact of natural hazards;
- ensuring legal protection and professional assistance to participants in environmental encroachment procedures;
- guiding change of national and personal values system in relation to the environment as well as influencing the value criteria for environmental encroachments;
- ensuring high-quality environmental data for all target groups;
- raising the awareness of people and institutions about the environment and environmental issues.

EARS is DMCSEE project's lead partner and is consequently leading Wp1 (project management). Beside WP1 EARS is leading WP6 (start-up of the permanent DMCSEE) and is responsible for activities within other WPs: in WP2, EARS is responsible for the development of the GIS webbased application for drought products. In WP3 EARS will coordinate the preparation of SPI drought index, in WP 5 EARS will organise training workshops and coordinate the organisation of seminars and will assist AUA and OMSZ for activities within WP3 and WP4. EASR has some experience in drought monitoring from COST projects (COST 718 - http://agromet-cost.bo.ibimet.cnr.it/ and COST 734 -). EARS has also organised workshops such as Roving Seminar on Crop-Yield Weather Modelling (coorganization with WMO, 1999, Ljubljana, Slovenia).

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OMSZ - Hungarian Meteorological Service

The Hungarian Meteorological Service (OMSZ) is a central budget institution which was established in 1870. Being the national meteorological service of Hungary, it is responsible for supplying meteorological, atmospheric environmental and climate information, and for the provision of warnings about severe weather situations in Hungary. All this is based on the extended national and international infrastructures including the observational network over Hungary, the running of telecommunication and informatics system for obtaining all the meteorological data from the Global Telecommunication System of the World Meteorological Organization and the intensive co-operations with various international organisations on the research, development and operative activities. The further incomes of the HMS are ensured by commercial services, national and European Union projects.

OMSZ in DMCSEE project is the Leader of WP3 (Climatology and drought monitoring and mapping system). OMSZ is responsible for the preparation of climate data and maps and for the implementation of drought monitoring systems. Moreover, OMSZ is the Leader of WP5 (Capacity building trainings). In this function OMSZ is responsible for the organisation of thematic trainings on the gathering and processing of data and the organisation of seminars for end users.

Additionally, OMSZ participates in WP4 (Drought risk assessment) by making drought vulnerability estimates based on climatological and geomorphological data. OMSZ has some experience in preparation of climate data and also in the organisation of trainings on homogenization and interpolation.

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CONSORTIUM

EARS
Environmental agency of Slovenia
(SLOVENIA)

IHPS
Slovenian Institute of Hop Research and Brewing
(SLOVENIA)

VITUKI
Environmental Protection and Water Management Research Institute
(HUNGARY)

OMSZ
Hungarian Meteorological Service
(HUNGARY)

ATIKOVIZIG
Directorate for environmental protection and water management of Lower Tisza District
(HUNGARY)

ISSNP
Pushkarov Institute of Soil Science
(BULGARIA)

NIMH
National Institute of Meteorology and Hydrology
(BULGARIA)

Georama -
Regional Development Organization
(GREECE)

AUA
Agricultural University of Athens
(GREECE)

DHMZ
Meteorological and Hydrological Service
(CROATIA)

UNSFA
University of Novi Sad, Faculty of Agriculture, Department of Water Management
(SERBIA)

RHMSS
Republic Hydro-meteorological Service of Serbia
(SERBIA)

HI-M
Hydrometeorological Institute of Montenegro
(MONTENEGRO)

HMS
Ministry for agriculture, forestry and water economy - Hydro-meterological Service
(FYROM)

INEUM
Institute for Energy, Water and Environment
(ALBANIA)

LEAD PARTNER

Environmental agency of Slovenia - EARS

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