

## Meeting/Workshop Reports

### 3<sup>rd</sup> PannEx Workshop

Cluj-Napoca, Romania  
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The Pannonian Basin Experiment (PannEx) is working towards becoming a new Regional Hydroclimate Project of the GEWEX Hydroclimatology Panel (GHP). The 3<sup>rd</sup> PannEx Workshop was held at the Facultatea de Geografie of the Universitatea Babeş-Bolyai with more than 60 participants from Romania, Hungary, Croatia, Serbia, Ukraine, Slovakia, Italy, France, Spain and The Netherlands. Dănuş Petrea, Dean of the Faculty of Geography, and Daniel David, Vice-Rector for Research, Competitiveness-Excellence, and Scientific Publications of Babeş-Bolyai University, opened the meeting. Mónika Lakatos, Chair of the PannEx International Planning Committee (IPC), Jan Polcher of Laboratoire de Météorologie Dynamique (CNRS), and Joan Cuxart of the University of the Balearic Islands, the latter representing GEWEX, also provided opening remarks.

The goal of PannEx is to enhance Earth science in the Pannonian Basin and contribute to the overall objective of the scientific community to improve the understanding of the climate system, its predictability and its effect on human activities. The workshop had five sessions with targeted scientific discussions led by the authors of the White Book, which lays out the structure and plans for PannEx.

#### *Agricultural Response to Climate Change and Weather Extremes*

Links between climate change and climate variability and crop production in Europe, and the impacts of crops and activities on crop health and yield, were examined using data from field experiments held in Hungary and Croatia. The extension of existing field campaigns and the setup of new field agrometeorological observations were recommended, as they are needed to increase our understanding of climate extremes on crop growth, yield amount and quality.

#### *Extreme Weather and Climate Events as a Risk to Sustainable Development*

Julia Keller of the World Weather Research Programme (WWRP) gave an overview of the program's research activities and discussed synoptic conditions for cold waves and cold spells in Romania, and the impacts of climate variability on forest growth. A suggestion was given to consider various emerging subseasonal and seasonal forecast products available for the countries in the Pannonian Basin.

#### *Water for a Secure Society in Changing Climate Conditions*

A review of water balance studies confirms that there is no uniform method in the modeling of the water balance to study the water cycle, which makes intercomparisons between models difficult. Formulas recently used for estimation of the components of the water balance sometimes contain coefficients that were developed under different climate conditions. One of the important issues raised in this session concerned the many diverse approaches in estimating evaporation in different countries and in different research fields. A common harmonization effort is therefore necessary.

#### *Monitoring and Estimation of Climate Change for Extreme Weather Events*

The results of the European Commission 7<sup>th</sup> Framework Programme (FP7) earthH2Observe Project were presented. Activities on drought monitoring in Slovakia; regional climate modeling in Croatia and Hungary; and emerging rapid prototyping software products related to Earth observations in Romania were discussed. Also, climate characteristics over the Danube and Pannonian Basins and Ukraine were explored, and results of the urban climate observational targeted activities in Budapest were presented to the participants.

#### *Impact and Vulnerability Assessments of Climate Change and Extreme Weather Events on Different Sectors*

Hydrological processes over small watersheds in Romania and advanced hydrological prognostic systems developed in Serbia were discussed. Other sectors tackled in this session included extensive boundary layer observations in Hungary, a project in Croatia that links boundary layer observations with the observed effects of climate change on wine production, evaluation of the low-level jets over the Pannonian Basin as simulated by the European Centre for Medium-range Weather Forecasts (ECMWF) prognostic system, and common meteorological and carbon dioxide observations in the town of Cluj-Napoca.

#### *Future Actions*

The first draft of the PannEx White Book was presented at the GHP meeting held in Gif sur Yvette, France in October 2016. The PannEx IPC have incorporated comments received from the GHP and will send the revised version to the PannEx mailing list for comments in May. After the White Book is finalized, the PannEx Science and Implementation Plan will be distributed for comments.

IPC members Mónika Lakatos and Tamás Weidinger will explore the possibility of organizing the next PannEx workshop in parallel with the European Meteorological Society Conference in Budapest in September 2018. In the meantime, the next IPC meeting on the Science and Implementation Plan will be coordinated by Vladimir Djurdjevic and held in September 2017 at the University of Belgrade.

Discussions concerning funding options, a logo for the initiative, and community growth resulted in concrete suggestions that will be explored in the following months. Workshop presentations and posters are available at: <https://sites.google.com/site/projectpannex/workshops/pannex2017presentations>.