

Minutes from the CHASE-PL Project meeting in Warsaw

Tuesday - 8 July 2014

The meeting of the CHASE-PL (Climate change impact assessment for selected sectors in Poland) Project was held in the premises of the Faculty of Civil and Environmental Engineering of Warsaw University of Life Sciences (SGGW) in Warsaw, on Tuesday, 8 July 2014. The meeting started a brief welcome and introduction by Prof. Okruszko and Dr Piniewski, followed by a short self-presentation of all participants. Next, participants of the Work Packages 1, 2 and 3 (WP1, WP2, WP3) showed their current progress.

Prof. Kundzewicz from the Institute for Agricultural and Forest Environment of the Polish Academy of Sciences (IAFE PAS) talked about the progress in WP1, data availability and presented an idea of a connection between climate change in Poland and mortality rates. Still in Poland during winter there is high mortality due to hypothermia and also mortality rises during summer extreme heat waves. WP1 will try to acquire (daily) mortality and health data from Polish Central Statistical Office (GUS) and in this respect collaboration with Poznan Medical University is considered. Prof. Kundzewicz also said about the availability of climate data from before 1951 (of interest for WP2) for Warsaw and Krakow (temperature only) and from 1893 for Potsdam. Prof. Okruszko (SGGW) requested for adding an index "The latest day with frost" to the list of indices calculated in WP1.

Next, Dr. Førland from Norwegian Meteorological Institute (Met Norway) gave a presentation about progress in WP2. WP2 has acquired meteorological data from 82 stations from Polish Institute of Meteorology and Water Management (IMGW) through WP1, thanks to the high-level agreement between Prof. Hov and the Director of IMGW. Empirical-Statistical Downscaling (ESD) method developed in Norway will be applied to downscale seasonal temperature and precipitation projections (from different sources GCMs, including CMIP5) to the level of selected IMGW stations. Projections will be generated for low, mean and high changes in temperature and precipitation for the next 50-100 years. Another task involves using output from the Regional Climate Models (RCMs). The finest resolution in EuroCordex RCMs is 12 km. An optimal method for bias correction will be applied and the final resolution of gridded

output can be even 1 km. Also Met Norway has an advanced snow model (but with modest parameter demands) and would be interested to test it in Poland.

Next, a set of presentations concerning WP3 was held by scientists from SGGW. First, Dr. Mikołaj Piniewski talked about overview of goals, review of tasks and current progress. He started from model-based assessment of climate change impacts in the Vistula and Odra basins. The SWAT model will be applied in order to quantify climate change impacts on water systems, agricultural production, nutrient losses and aquatic and riparian ecosystems (through developing e-flow requirements). The model will be used in two level approach: at a large scale (i.e. the whole Vistula and Odra basins) and at a meso-scale (in two selected sub-catchments: the Upper Narew and the Barycz). Dr. Piniewski listed the tasks in WP3 and stressed a few research questions e.g. how to isolate “pure” climate change impacts from other impacts, to include or to neglect projected change in atmospheric CO₂ and which water quality parameters should be of primary interest from the point of climate change impacts. Also he covered the problem of freely available global data and said about creating two different variants of the model: the ‘light’ (or cheap) version, which will solely be built upon freely available (often global) data and the ‘heavy’ (or expensive) version built upon the best available data, acquired from various Polish bodies, rarely for free. Dr. Piniewski also presented ideas for calibration approaches/strategies to be used in the large-scale models. Calibration will involve using daily flow data from 100+ small and medium-sized non-nested catchments.

Following, M.Sc. Eng. Mateusz Szcześniak presented the concept of large-scale modelling of the Vistula and the Odra basins, concentrating mainly on the sources and specification of data used to build the SWAT model structure in both the ‘light’ and ‘heavy’ variants. He also presented shortly the current progress of developing the SWAT model setup of the Upper Vistula and Odra basins focusing on the first step which is watershed delineation.

Next, Dr. Ignacy Kardel presented the meso-scale modelling of the Barycz and Upper Narew catchments with a detailed comparative description of both catchments. In these two catchments process-oriented analyses will be carried out focusing on biodiversity and aquatic/riparian ecosystems and also on possible adaptation/mitigation measures. Dr. Kardel talked also about the design and results of the field survey in the Barycz catchment including field measurements, interviews in wastewater treatment plants, in Stawy Milickie fish ponds company and in local branches of Land Reclamation Boards. He also showed the methodology

for preparation of the land cover map of the Barycz catchment which will be based on Landsat 8 data calibrated using geolocalised crop photos taken during field measurements in the catchment.

Next, Dr. Pusłowska-Tyszevska presented the WP3 task on environmental flow requirements in the meso-scale catchments (Barycz and Upper Narew). She talked about legal background of environmental flow in Poland and showed different approaches of e-flow estimation. The environmental flow volume is an important issue because of the problems related to use of the concept e.g. defining the environmental flow in given river cross-section, imperfect estimation methods, taking into account the requirements of practical water management and sustainable development e.g. setting too big values may be ecologically safe but it may restrict the economic growth of the region.

At the end of the information panel from WP1-WP3 Dr. Piniewski gave introduction to the discussion about interlinkages between WP3 and other WPs, emphasizing that WP3 depends on WP1 and WP2 and it feeds the WP4-6. Then discussion about interlinkages between all WPs took place. It has been stressed that closer collaboration between WP1 and WP2 is needed as there are substantial overlaps between these two work packages. It was clarified that only bias-corrected RCM projections will be used in WP3, so the choice of RCMs is important for both WP2 and WP3 (probably 3-4 different RCM should be chosen to reflect the uncertainty). Selection of RCMs should incorporate the analysis how different RCMs perform in the observed climate in Poland. Also conception about collaboration in snow modelling between Met Norway and SGGW emerged. Met Norway has an advanced model and SGGW can provide a PhD student with experience in snow modelling in Poland. WP1 was also asked to send the full list of stations they analyse to WP3 and WP4. Finally Prof. Kundzewicz suggested that all partners circulate their own publications that could be of interest to other consortium partners. He also promised to circulate a paper from the WATCH project on RCM ranking for Poland.

After the discussion Dr. Kardel held a presentation with information from WP6 on the Interactive Web Mapping System, showing ideas, solutions but also questions. After his talk there was discussion which led to suggesting two server names: KonsekwencjeKlimatu.sggw.pl and ClimateImpact.sggw.pl. Partners (at this stage only WP1) were asked to send sample output to be tested in the prototype of the IWMS. Also it was initially agreed that monthly maps of indices from WP1 will be presented in the IWMS. As for the data download option it is clear that any raw data acquired from the IMGW cannot be enabled for downloading. In contrast,

processed data (e.g. calculated indices, interpolated data) can be made available for download. Prof. Kundzewicz suggested not to follow directly the design of the <http://www.klimafolgenonline.com> and that in the IWMS there should be a clear separation between the observations and the projections. Also he suggested to not to be overambitious with this task. Also MET Norway was asked to share their experience on developing climate (change) websites of similar type.

Next meeting is planned in January/February 2015 in Norway.

Annex

Agenda:

Morning session (10-13)

1. Opening
2. Information from WP1-WP3
 - 2.1 WP1 (PL1, ~20 mins)
 - 2.2 WP2 (N, ~20 mins)
 - 2.3 WP3 (PL2, ~120 mins)
 - 2.3.1 Overview of goals, review of tasks and current progress
 - 2.3.2 Large-scale modelling of the Vistula and the Odra basins
 - 2.3.3 Meso-scale modelling of the Barycz and Upper Narew catchments
 - 2.3.4 Summary of the field survey in the Barycz catchment
 - 2.3.5 A task on environmental flows in the meso-scale catchments
 - 2.3.6 Interlinkages between WP3 and other WPs - introduction

Lunch break (13-14)

Afternoon session (14-16.30)

3. Continuation of point 2 (PL2, if needed)
4. Discussion on interlinkages between all WPs
5. Information from WP6 on the Interactive Web Mapping System (PL2)
6. Summary, general discussion