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Federal Department of the Environment,
Transport, Energy and Communications DETEC

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Hydro-CH2018 Coordination meeting: Summary and results

Haus des Sports Ittigen, 10.5.17: 9:45 – 15:45

Reference: Q194-0558

1. Introduction and overview

Aims of the meeting:

- Next milestones in the Hydro-CH2018 program
- Information about the CH2018 climate scenarios
- Climate scenarios to be used in Hydro-CH2018
- Guidelines for the synthesis report
- Networking

2. Presentation of CH2018 scenarios: data products, simulation ensemble and their availability

Implications for Hydro-CH2018:

- Prototype data sets should become available in the 2nd half of 2017 for research (publication embargo)
- For RCP8.5 more than 20 downscaled simulations will be available in transient mode (daily resolution). For other emission scenarios (i.e. RCP2.6 / RCP4.5) the same set of downscaled simulations will be provided. However, not all of them will be transient (due to methodological constraints of the pattern-scaling approach)
- Gridded products (2km x 2km) are only provided for temperature
- Scripts for impact modeling should be implemented in a way that they can be easily updated if a new data set of CH2018 is released
- Selection of the «most suitable» scenario/simulations strongly depends on the research question and the sensitivity of the impact system

3. Discussion on climate scenarios Hydro-CH2018

The aim of the discussion was to compile the Hydro-CH2018 «user needs» (from research projects) and to work towards consensus of which scenarios to be used (even though this strongly depends on the research question). Furthermore, limitations and potential solutions (work-around) should be identified and discussed.

Leading questions:

- How many scenarios can be handled? (infrastructure/capacity per research project)
- What are the specific needs of each project (specific model selection, sensitive parameters / indices / season) and to what extent can these be considered?
- How to deal with data limitations (i.e. raster vs. point, missing data, non-transient scenarios)

Results:

Group 1 (heavy users)

Summary: Most projects plan to work with all transient scenarios. A pre-selection of scenarios is therefore not necessary. For precipitation only station data will be provided by CH2018. This causes a big problem for all projects, since spatial information of precipitation is needed. If the spatial information will not be provided by CH2018, the projects will have to do the interpolation themselves. Possible solutions which were discussed:

- CH2018 will provide a list for which stations which parameters will be available
- The bias corrected 11x11 km RCP raster will be made available for Hyro-CH2018. They could either be used directly or as a validation/calibration dataset for the interpolation.
- CH2018 / MeteoSwiss produces the gridded data in a similar manner as for temperature (quantile mapping) but does not include it into the "official" launch of CH2018 (due to methodological concerns) → would have to be discussed internally in CH2018 first. Evaluation of alternative methods: e.g. applying the kriging interpolation method that is used to produce the Rhires-products available for today's climate from MeteoSwiss → would have to be discussed internally at MeteoSwiss first.
- From the hydrologic point of view, both procedures would still be more accurate/give better results than the less sophisticated interpolation technics used in the hydrological models.
- One Hydro-CH2018 project might do the interpolation and make it available to all other projects. It should be avoided that each project does its own interpolation leading to incomparable results.
- Reference period for all projects is 1981-2010

Project	Capacity	Resolution
Hydrological Scenarios Uni Bern	All transient	500x500m and HRUs
Snow and Ice	All transient	50km^2, elevation bands
FORHYCS-ICE	All transient	2x2km (Meteo-input), 200x200m (Model)
Water balance and droughts	All transient	11kmx11km
Stochastic downscaling ETHZ	All 3 RCP, several model runs per RCP	2x2km

Group 2 (moderate users)

Summary: All of the projects can manage 2-5 (but not more) scenarios, to be chosen depending on their focus (adaptation or mitigation). All of them require the parameters T and P (if possible, the phase of P), and radiation in a daily resolution (transient). Humidity and wind speed are required for the AgriAdapt and the water temperature projects. Concerning the indicators, the temporal sequence in general and the duration of dry/wet periods in particular are important for all of the projects. Water ponding (AgriAdapt) and frequency distribution of P (water temperature) are further requested. All seasons are of interest. The limitations include the station vs. grid interpolation for all parameters but for P specifically (especially in high altitudes for the groundwater project). Daily temperature amplitudes, gridded wind speed information, start of season (onset or vegetation growth) and

longwave radiation (cloud cover) would be of great interest to the water temperature projects to parametrize shadowed areas in their model. These additional requested variables, however, will likely not be part of the official set of CH2018 scenarios.

Project	Capacity	Needs and sensitivities	Limitations
AgriAdapt	3-5 (Focus adaptation)	P: T, P, rad, hum, wind speed I: dry and wet period lenths, heatwaves, water ponding S: all seasons	Interpolation (station to grid)
Stream and lake water temperature (+Interplay discharge and water temperature)	Lakes: max. 3 (for 3D) Streams: 2-3 (depending on number of case studies)	P: T, P, rad, wind speed, phase of P (liquid/solid) I: Duration of dry and wet periods, frequency distribution of P S: all seasons	Daily temperature amplitudes, wind speed gridded, start of vegetation growth and cloud cover
Groundwater storage dynamics alpine catchments	3-5 (Focus mitigation)	P: T, P, phase of P, rad I: Duration of dry and wet periods S: all seasons	Interpolation especially at high altitudes

P: Parameter I: Indices S: Season

Decisions:
A group consisting of Jan Seibert, Ole Rössler, Massimiliano Zappa, Peter Molnar, Andreas Fischer (and eventually other persons from the MCH/CH2018 side) and Petra Schmocker-Fackel will discuss further proceedings.

4. Presentation of research projects

Each of the research projects was shortly presented. The presentations will be uploaded on the Hydro-CH2018 website.

5. Discussion on synthesis report

Decisions:

- BAFU compiles a template for all chapter authors containing formal (min./max. number of pages, font, line spacing) as well as content-related guidelines (general structure, mandatory information to be contained)
- BAFU sets up an online collaboration platform (sharepoint) to share and exchange important information (i.e. mailing lists, contact persons for each chapter, preliminary documents, “living” list of references)
- BAFU identifies potential thematic overlaps and asks responsible authors to coordinate chapters bilaterally or asks BAFU to organize a meeting
- BAFU will check whether DOI number can be given to each chapter

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