Co-development of methods to utilize uncertain multi-model based information on freshwater-related hazards of climate change in Morocco, Algeria, and Tunisia (MAT)

Workshop Programme

November 12th and 13th, 2018
Venue: Université Le Mans, Le Mans, France

Aim of the workshop: 1) To gain understanding of the potential of multi-model based information and the information needs of stakeholders involved in climate change adaptation planning in MAT countries. 2) To co-construct Bayesian network structures of critical local climate change risks as potential means for integrating quantitative global-scale hydrological hazard information into local climate change risk management.

Host: **Le Mans Université-ESO-CNRS, Goethe University Frankfurt**
Moderation: Dr. Laura Woltersdorf
Contact: Prof. Yamna Djellouli (yamna.djellouli@univ-lemans.fr)

Conference Language: English, French

Monday, November 12th: Quantifying climate change impacts on water based on multi-model ensemble output

9h00-9h15	Welcome by **Laurent Bourquin**, the vice president of research and **Gerald BILLARD** directeur ESO, Université Le Mans. Opening of the workshop: Prof. **Petra DÖLL**, Goethe University Frankfurt, Prof. **Yamna DJELLOULI**, Université Le Mans
9h15-9h40	Introduction to CO-MICC project and this workshop: Prof. **Petra DÖLL**
9h40-10h00	Introduction of workshop participants: Dr. **Laura WOLTERSDORF**
10h00-10h30	Presentation of expert interview results: Dr. **Laura WOLTERSDORF**, Basin-scale workshop results: Prof. **Yamna DJELLOULI** - Challenges related to climate change impacts on the water sector - Integration of climate change in own work - Data needs - Perception graphs of experts *Aim: To understand perspectives, challenges and data needs of experts as well as informing participants on sub-scale needs*
10h30-11h00	Current state of scientific research on potential future climate change impacts on water: multi-model ensembles of global climate and hydrological models: Prof. **Petra DÖLL** *Aim: To better understand the current state of scientific knowledge of climate change impacts on water including uncertainty*
11h00-11h15	Tea break

11h15-12h00	Relevant variables and diagnostics (indicators) for freshwater-related adaptation strategies: **Fabian KNEIER** *Aim: To learn which diagnostics are important and most relevant for stakeholders when developing adaptation plans*
12h00-13h00	Options for presenting/communicating potential climate change impacts as quantified by multi-model ensembles: part I - Expert evaluation (groups of 2 people): **Asali PEIRIS** *Aim: To get feedback on potential ways for presenting information contained in multi-model ensembles*
13h00-14h30	Lunch

14h30-15h45	Reliability of global hydrological model output :
	  1. Plenary discussion on (experts') doubts regarding global hydrological model (GHM) output: collecting ideas on cards. Dr. **Jan POLCHER**
	    Q : Under what circumstances would you use the outputs of global hydrological models for supporting climate change adaptation ?
	    Q : What hinders you to use the outputs of global hydrological models ?
	    Q : Multi-model ensembles (MMEs) provide not only one value of change but also related uncertainty information. Under what circumstances would you use the uncertainty information for supporting climate change risk management?
	  2. Addressing doubts regarding global hydrological model applicability from the modelers' perspective, showing fit to current conditions: **Asali PEIRIS**
	
	Aim: To learn about potential applicability and constraints for using GHM output and uncertainty information based on multi-model ensembles.

15h45-16h00	Tea break
16h00-16h30	Options for presenting/communicating potential climate change impacts as quantified by multi-model ensembles: part II – Summary of expert evaluation: Dr. **Jan POLCHER** *Aim: To summarize feedback on potential ways for presenting information contained in multi-model ensembles*

16h30-18h40	Existing web portals as example "mock-up" and suggested improvements: **Carina ZANG**
	
	  1) Web portal
	  2) Uncertainties
	  3) User stories
	
	Aim: To understand the needs of users concerning the provision of relevant data on the web portal

19h30	Dinner

Tuesday, November 13th: Developing a Bayesian network structure to assess the risks of climate change on water using multi-model ensemble information

8h30 – 8h45	Synthesis of the results of day 1: **Fabian KNEIER**
8h45 – 9h10	Identifying freshwater-related key risks of climate change that need to be managed: Prof. **Petra DÖLL** 1. Introduction (15 min) 2. Break-out groups by country (30 min) 3. Presentation of results in plenary (15 min) *Aim: To identify major water-related problems (risks) caused by climate change, by identifying relevant variables and defining risk metrics/critical states, and to explore potential use of multi-model ensemble data.*
9h45-10h10	Presentation of an exemplary model structure based on expert interviews and literature: Dr. **Laura WOLTERSDORF**, Goethe University Frankfurt *Aim: To learn how to develop a causal network describing a climate change risk.*
10h10-10h25	Tea break
10h25-12h15	Developing a network structure to estimate the risks of climate change on water availability: Dr. **Laura WOLTERSDORF** (Petra DÖLL and Fabian KNEIER) 1. Expert construction of model structure for the problem and risk developed during previous session (same 3 break out groups) (30 Min.) 2. Presentation of developed structures (15 Min.) 3. Development of one network structure in plenary based on exemplary network structure from expert interviews and on previously developed networks (45 Min.) *Aim: To learn how to jointly develop a network structure for managing climate change risks for water supply due to climate change that is relevant for all experts, with focus on integrating multi-model output variables, for further investigation within the CO-MICC project.*
12h15-12h25	Questionnaire for evaluating the process of co-production and impact: Dr. **Laura WOLTERSDORF** *Aim: To understand the effectiveness of the workshop and obtain recommendations for improvements*
12h25-12h40	Wrap-up and outlook: Prof. **Petra DÖLL,** Dr. **Jan POLCHER** *Aim: To reach a common understanding of workshop achievements and agree on next steps*
12h40-12h50	Feedback from participants
12h50-13h00	Closing Words: Prof. **Petra DÖLL**, Goethe University Frankfurt, Prof. **Yamna DJELLOULI**, Université Le Mans
13h00-14h00	Lunch