



DELTA IN TIMES OF CLIMATE CHANGE II INTERNATIONAL CONFERENCE

OPPORTUNITIES FOR PEOPLE, SCIENCE, CITIES AND BUSINESS
ROTTERDAM THE NETHERLANDS, 24–26 SEPTEMBER 2014

Deltas in Depth scientific sessions	
Deltas in Depth 11. Decision support tools and risk assessment	
DD 11.1 Risk assessment and management	
Chair	Prof. Dr. Richard Klein
Presentations	<ul style="list-style-type: none">• Arno Bouwman, PBL Netherlands Environmental Assessment Agency, the Netherlands• PhD Marloes Bakker, Utrecht University, the Netherlands• Prof. Robert Nicholls, University of Southampton, United Kingdom• MSc Marten Hillen, Royal HaskoningDHV, Singapore• PhD Per Wikman-Svahn, Rock Ethics Institute, Pennsylvania State University, USA

This session on decision support tools and risk assessment covered a large variety of methods and experiences related to decision support for climate change adaptation. From quantifying changes in flood risk on a global scale to modelling changes in ecosystem services in Bangladesh and from the role of communication in flood risk plan design to the role of water management organisations in avoiding transboundary water conflicts.

Arno Bouwman (Netherlands Environmental Assessment Agency PBL) started off with a talk on global trends in flood risk, summarizing preliminary results of a project for UN HABITAT. The study was motivated by the global population increase in flood prone areas and the need to obtain insight into the most vulnerable areas. The method starts with a global hydrological/hydraulic model that calculates river flows worldwide. This information is downscaled with a regional inundation model to obtain inundation maps. These maps are then overlaid with population and GDP maps. A key assumption is that protection levels are equal everywhere, which is not the case in practice. Recently, actual protection levels on a European scale have become available, but on the global scale a first inventory has only just started. Bouwman demonstrated how the method can assist in ranking cities on how vulnerable they are for future flooding.

Marloes Bakker (Utrecht University, the Netherlands) presented a method combining the global results of the first presentation with a measure of institutional capacity to assess vulnerability of transboundary river basins. According to Ms Bakker, water is especially a source of conflict when countries lack institutional capacity to organise water management. The institutional capacity was measured by counting the number of water management organisations, treaties, and international river basin commissions. One participant suggested to also take into account whether these organisations are active or not, because the existence of an organisation does not necessarily mean it is effective.

Robert Nicholls (University Southampton, UK) provided a summary of the ESPA delta project. This project aims to assess the relationship between ecosystem services and livelihood/poverty in delta's exposed to climate change, with a focus on coastal Bangladesh. He showed that deltas are dynamic systems, not only in terms of physical processes, but also in terms of socio-economics as well as their interactions with the physical system: 'there is more going on than just sea level rise.' The project





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tries to model the different connected systems in order to understand the change in ecosystem services (such as agricultural production from fisheries). Mr Nicholls pointed out that the process of model development, together with people from different disciplines and background, allowed a better conceptualization of the problem. This may be a more valuable outcome of the project than just having a model built. He believes that the assessment approach developed in this ESPA project could be used in other deltas as well (reference to presentation by Attila Lazar in DD 11.3, on the specifics of the model).

Marten Hillen (Royal HaskoningDHV, Singapore) demonstrated the importance of flood risk communication in order to engage the community in flood risk management plan design. He showed one of the winning plans for the 'Rebuild by Design' competition following the hurricane Sandy flood event in New York/New Jersey. Mr Hillen experienced that their plan based on monetised flood risk was not sufficient to receive funds. Apparently, a good plan is not enough in the United States, if the community is not involved. To cope with this problem, they decided to invest in a communication plan that focused on explained the risk in simple terms to the public. This yielded a lot of engagement by the local community and finally a plan that convinced the government to invest. Mr Hillen believes this way of getting the public involved could be a model for other high-density urban areas.

The final presentation, by Per Wikman-Svahn (Swedish Defence Research Agency and KTH Royal Institute of Technology, Sweden) discussed the role of value judgements in planning for sea level rise. Uncertainty in climate change projections does not only originate from epistemic (knowledge) uncertainty, but also from non-epistemic assumptions due to social and ethical differences between scientists. He demonstrated the effect of these uncertainties by comparing worst-case projections of global mean sea level rise (see figure) from a large range of literature. According to Mr Wikman-Svahn, the distinction between epistemic and non-epistemic sources of uncertainty helps understanding reasons for different climate change projections. A comment from the audience: we could learn from other fields such as nuclear power and medical science.

All presentations covered some form of decision support and therefore Mr Klein initiated the discussion by questioning the value of decision support tools: do they support decisions or do they provoke discussion? Some find that the benefit is in the discussion that arises from developing and applying the decision support tools, while others state that the tools are only as good as the person who uses it. On the other hand, one participant noted, we must realise that climate science is much more accurate than any other science (economics, social science). It was concluded that tools are meant to stimulate discussion and create awareness. We all know that urgency to take decisions is only felt after a climate-related event has really occurred.





Upper Bounds of Some Recent GMSLR Projections for year 2100

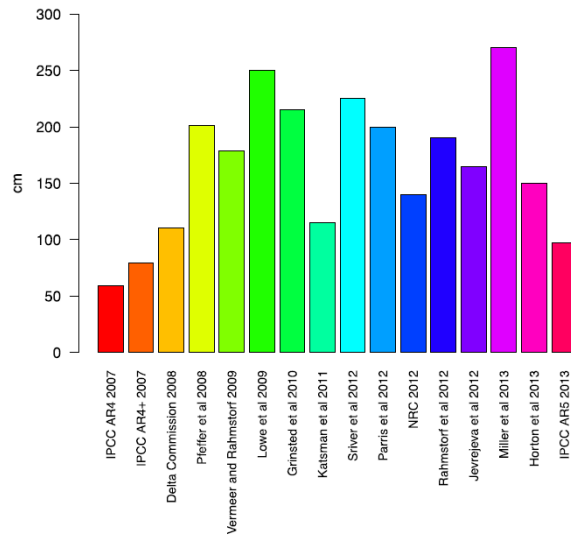


Figure with Mr Wikman-Svahn 's presentation

