

## *Presentation Title*: Future flood and food risk under climate change

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### Abstract :

My recent major research topic is “too much” and “too little” water issues under future climate and socio-economic conditions. In this presentation, two different global-scale studies are introduced; one about “too much” water and the other about “too little” water.

As a “too much” water study, I would take an example of future global flood risk. The summary taken and modified from a journal paper is as follows. Here, I will show global flood risk for the end of this century based on the outputs of 11 climate models. For it, a state-of-the-art global river routing model with an inundation scheme was employed to compute river discharge and inundation area. An ensemble of projections under a new high-concentration scenario demonstrates a large increase in flood frequency in Southeast Asia, Peninsular India, eastern Africa and the northern half of the Andes, with small uncertainty in the direction of change. In certain areas of the world, however, flood frequency is projected to decrease. Another larger ensemble of projections under four new GHGs concentration scenarios reveals that the global exposure to floods would increase depending on the degree of warming, but interannual variability of the exposure may imply the necessity of adaptation before significant warming.

As a “too little” water study, I would take an example of future food (not flood!) risk. “Too little” water could cause water scarcity for irrigation water that corresponds to 70% of total water withdrawal, then possibly causing health risk. Here, the target is risk of health damage attributable to undernourishment under climate and socio-economic changes. This study assesses health damage using Disability Adjusted Life Years (DALYs) under the latest future climate change scenario that includes socio-economic changes. A model for estimating DALYs attributable to childhood underweight (DA<sub>t</sub>U) is developed using the relationship between DA<sub>t</sub>U and childhood stunting. The results show that socioeconomic condition has a greater impact on future health damage than climate change though there are uncertainties. Differences in the projected amount of precipitation have an impact on the results especially in South Asia. Other climate conditions and differences in global economic models can also be critical factors for future health damage.

Future DA<sub>t</sub>U (health risk due to food) changes under climate and socio-economic changes.

