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Cascading uncertainty from climate to hydrological models: some thoughts on the River Nile

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The presentation reviews recent studies that analyse the effects of climate change on the water resources of the River Nile Basin (RNB). The presentation firstly describes current water-related issues on the RNB showing the particular vulnerability to environmental changes of this large territory. Secondly, observed trends in hydrological data (such as temperature, precipitation, river discharge), as reported in the scientific literature, are presented. Thirdly, recent modelling exercises to analyse to effects of climate changes on the RNB are critically analysed.
The presentation focuses on the many sources of uncertainty affecting the entire modelling chain (i.e. climate modelling, spatial and temporal downscaling, hydrological modelling, and impact assessment). In particular, two contrasting issues are discussed: the need to better recognise and characterise the uncertainty of climate change impacts on the hydrology of the RNB and the necessity to effectively support decision-makers and propose adaptation strategies and measures.
This critical revision pointed out the need for a good practice on climate change impact studies: 1) results should not be presented by should not be presented in a deterministic way, 2) ensembles should be used to reflect the large variability in climate model predictions, 3) the performance of the models on historical data should be provided, and 4) appropriate uncertainty analysis techniques should be applied.