



Flood inundation modelling in data-poor areas: a case study

Kun Yan (1), Giuliano Di Baldassarre (1), Florian Pappenberger (2), and Dimitri Solomatine (1)

(1) UNESCO-IHE, Institute for Water Education, Delft, the Netherlands, (2) European Centre for Medium Range Weather Forecasts, Reading, UK

One of the main obstacles in mapping flood hazard in data scarce areas is the difficulty in estimating the design flood, i.e. river discharge corresponding to a given return period. This exercise can be carried out via regionalization techniques, which are based on flood data of regions with similar hydro-climatic conditions, or physically based model cascades. In this context, we compared the flood extents maps derived for a river reach of the Blue Nile following two alternative methods: i) regional envelope curve (REC), whereby design floods (e.g. 1-in-20 and 1-in-100 year flood peaks) are derived from African envelope curves (Padi et al., 2011) and physical model cascade (PMC), whereby design floods are calculated from the physical model chain of the European Centre for Medium Range Weather Forecasts (ECMWF, Pappenberger et al., 2012). The two design flood estimates are then used as input of a 2D hydraulic model LISFLOOD-FP and the simulated flood extents are quantitatively evaluated by comparing to a reference flood extent model, which uses design floods estimated from in situ data. The results show the complexity in assessing flood hazard in data scarce area as PMC largely overestimates, while REC underestimates, the flood extents.