Potential and issues in large scale flood inundation modelling

Giuliano Di Baldassarre (1), Luigia Brandimarte (1,2), Francesco Dottori (3), Maurizio Mazzoleni (2), and Kun Yan (2)

(1) University of Uppsala, Uppsala, Sweden, (2) UNESCO-IHE, Institute for Water Education, Delft, The Netherlands, (3) Joint Research Centre, Ispra, Italy (francesco.dottori@jrc.ec.europa.eu)

The last years have seen a growing research interest on large scale flood inundation modelling. Nowadays, modelling tools and datasets allow for analyzing flooding processes at regional, continental and even global scale with an increasing level of detail. As a result, several research works have already addressed this topic using different methodologies of varying complexity. The potential of these studies is certainly enormous. Large scale flood inundation modelling can provide valuable information in areas where few information and studies were previously available. They can provide a consistent framework for a comprehensive assessment of flooding processes in the river basins of world's large rivers, as well as impacts of future climate scenarios. To make the most of such a potential, we believe it is necessary, on the one hand, to understand strengths and limitations of the existing methodologies, and on the other hand, to discuss possibilities and implications of using large scale flood models for operational flood risk assessment and management. Where should researchers put their effort, in order to develop useful and reliable methodologies and outcomes? How the information coming from large scale flood inundation studies can be used by stakeholders? How should we use this information where previous higher resolution studies exist, or where official studies are available?