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Ground based monitoring of channel and floodplain inundation dynamics

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Monitoring of floodplain inundation is one of the key issues in respect to hydraulic model calibration, especially for 2-dimensional modeling of floodplains. While in recent years the use of remote sensing products for flood mapping have received a large boost by new techniques and platforms (LiDAR, SAR, optical system, both satellite and airborn) and proved to be a significant step forward in floodplain inundation model calibration, they are not the encompassing answer to the chronic lack of data of floodplain inundation. Due to the singular nature of floods and restrictions in sensor availability, overpass frequencies, unfavorable atmospheric conditions and difficulties in signal interpretation, remote sensing products usually provide only a short but spatially extensive view on the inundation process. In order to get a more encompassing picture of the inundation dynamics, time series of flood parameters have to be collected in the floodplains itself. In order to overcome the intrinsic problem of testing flood monitoring equipment in a short termed research project, an extensive ground-based flood monitoring system was established within the WISDOM (www.wisdom.caf.dlr.de) project in the Mekong Delta. Due to annual flood rhythm flood condition could be guaranteed within the projects duration.
The test site Tam Nong in the Plain of Reeds in the Delta was equipped with 21 water level pressure gauges, 7 turbidity sensors and 2 GPS buoys, all designed to run autonomously for a period of 6 month and sampling data in short termed intervals. The collected data show a detailed picture of the inundation and sediment dynamics in the whole area including tidal influence and dike overtopping. This unique data set will be used in combination with spatial explicit water masks derived by remote sensing for 2D hydraulic model calibration.