

„Last-mile evacuation“ – Inundation scenarios and flow analysis

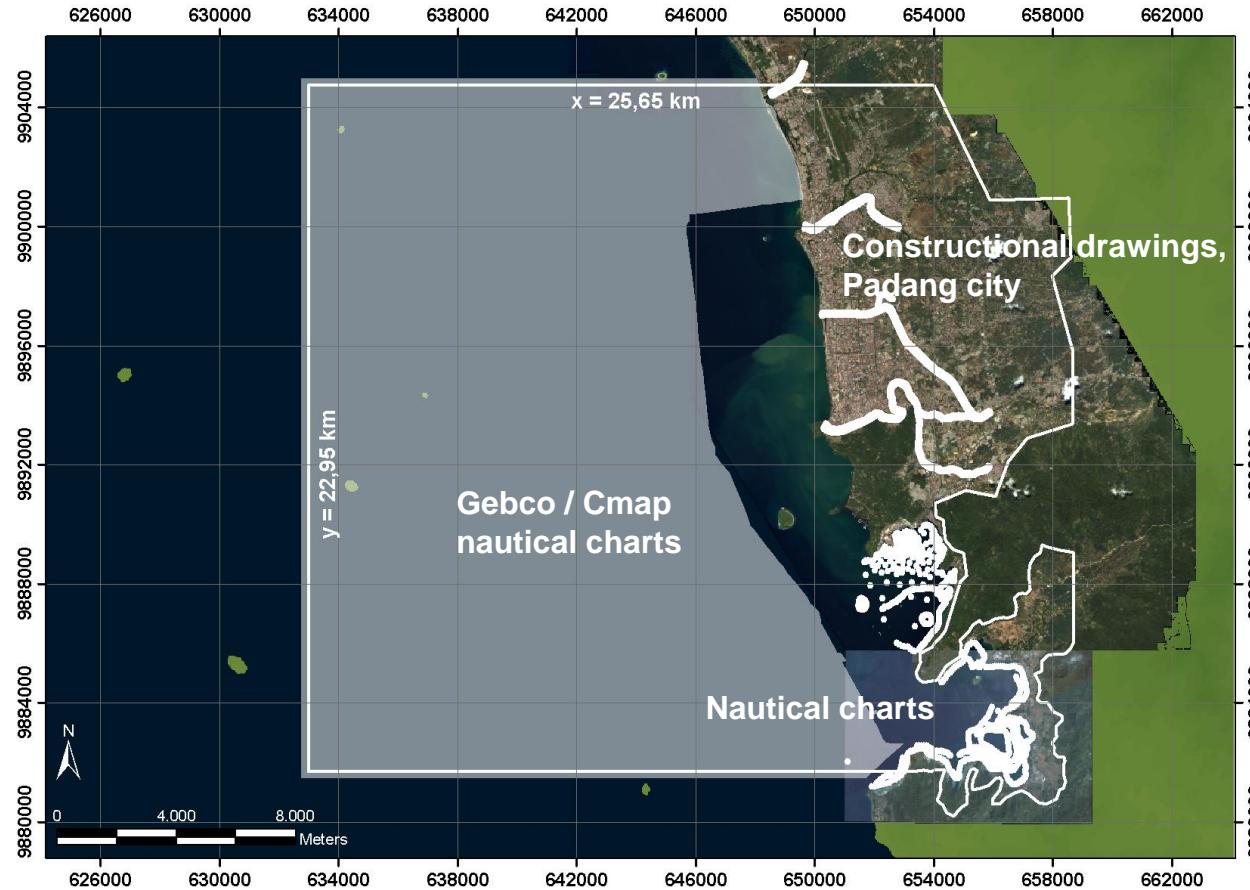
7. FZK-Kolloquium "Potenziale für die Maritime Wirtschaft"
March 26, 2009, Hannover

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(DFG/BMBF grant: 03G0666B)
www.last-mile-evacuation.de



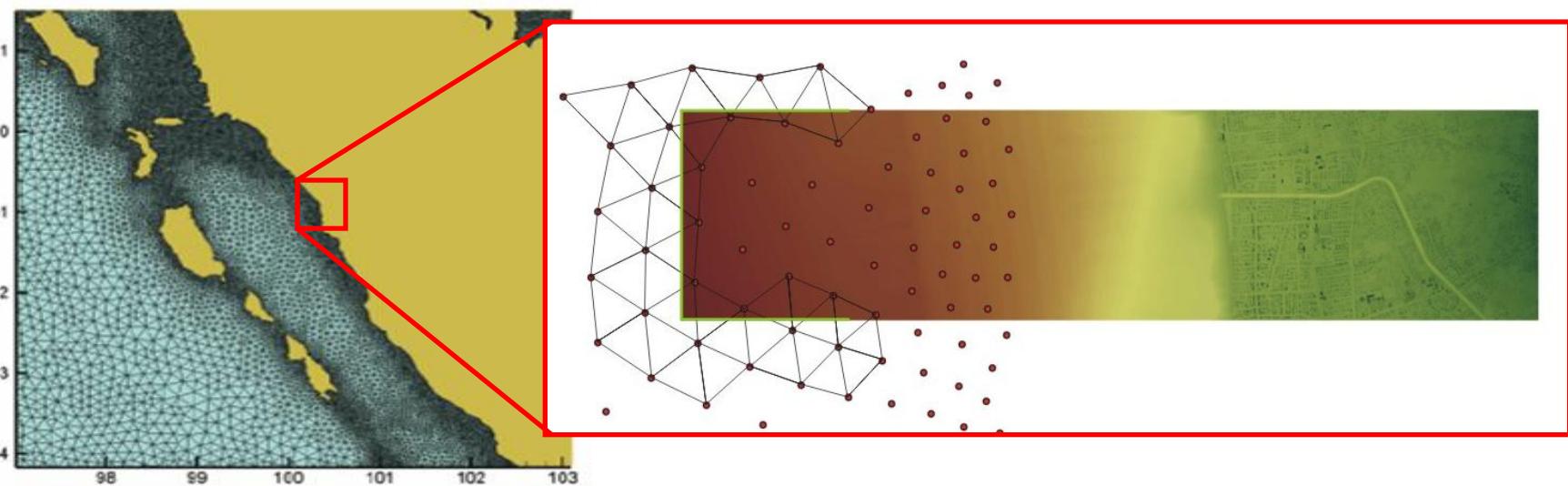
Domain and geo-database

- Preliminary study finished (coarse geo-database)
- Full model established (highest resolved geo-database available)



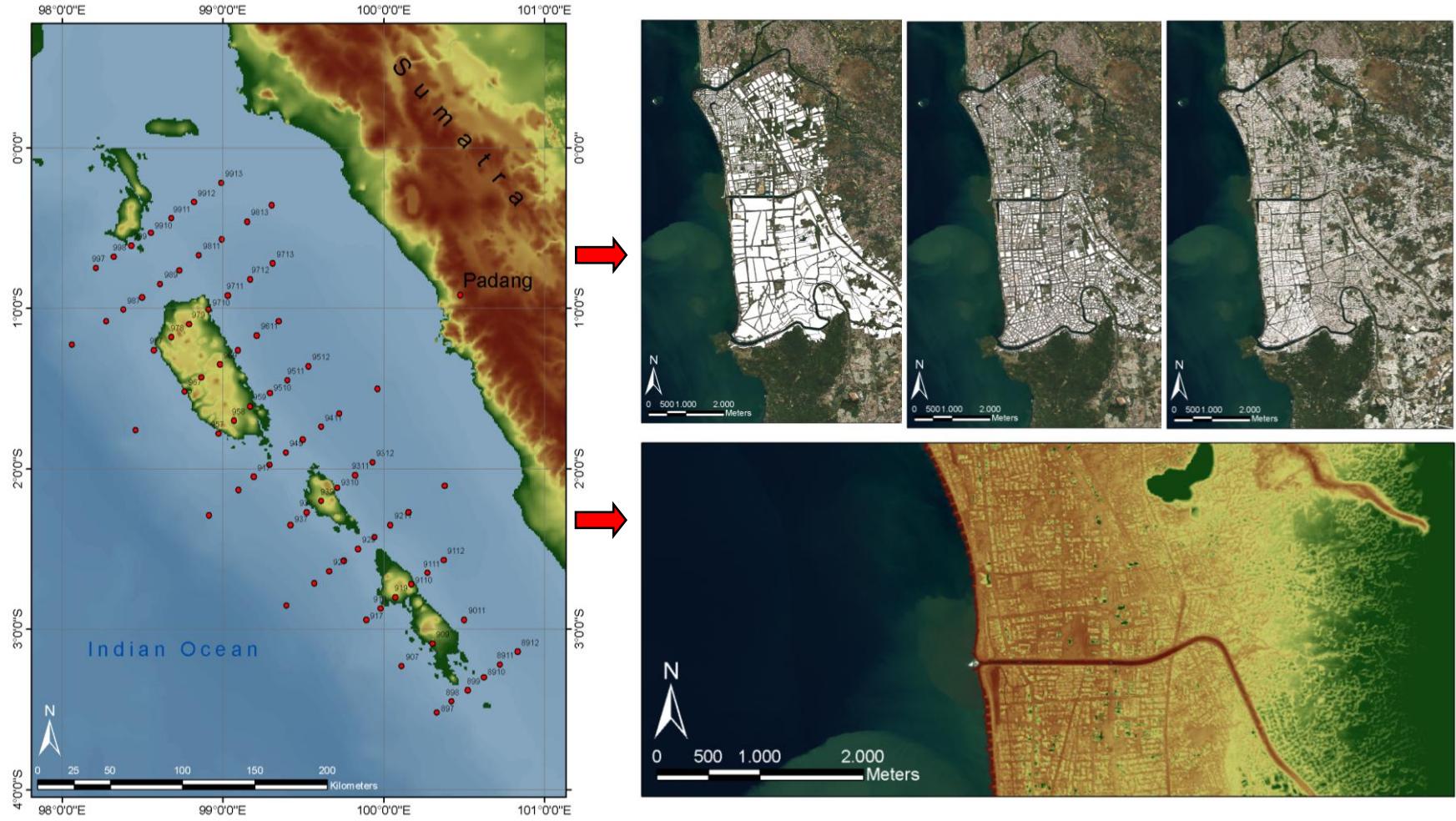
Coupling ANUGA with TsunAWI

- TsunAWI (Behrens et al., 2008)
 - NLSW equation, source generation
 - Finite-element method on an unstructured mesh
- ANUGA (Nielsen et al. 2007)
 - NLSW equation, on land flow
 - Finite-volume-method, unstruct., triang. cells
 - Open Source, wetting and drying, captures hydraulic jumps, MPI-implementation
- Coupling ANUGA and TsunAWI – two step hybrid approach



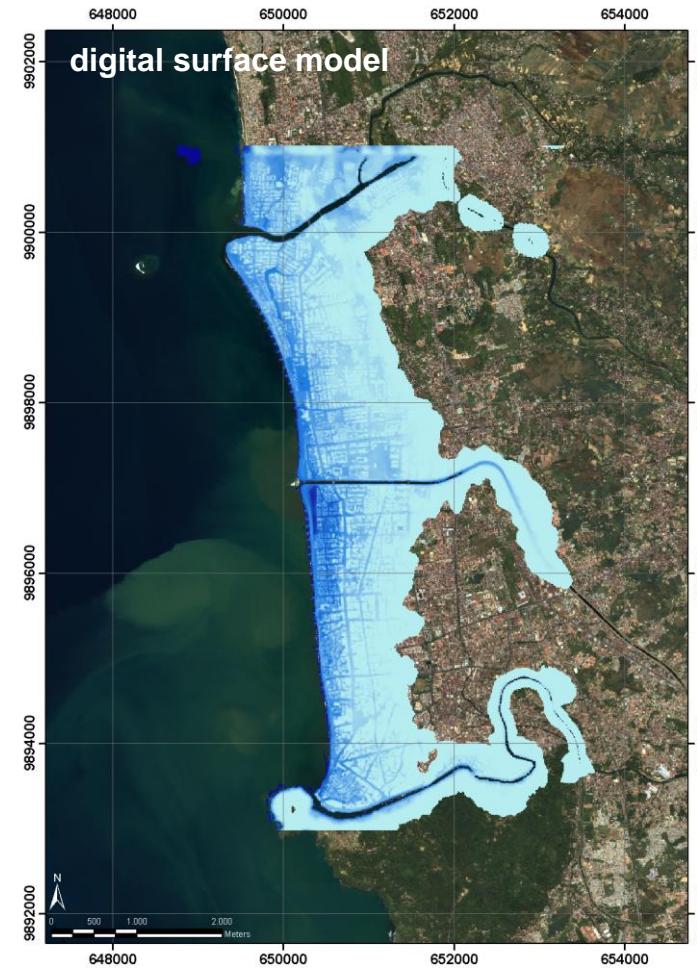
Modeling strategy

- Multi-hazard approach (AWI, GITEWS), footprint of houses and digital surface model



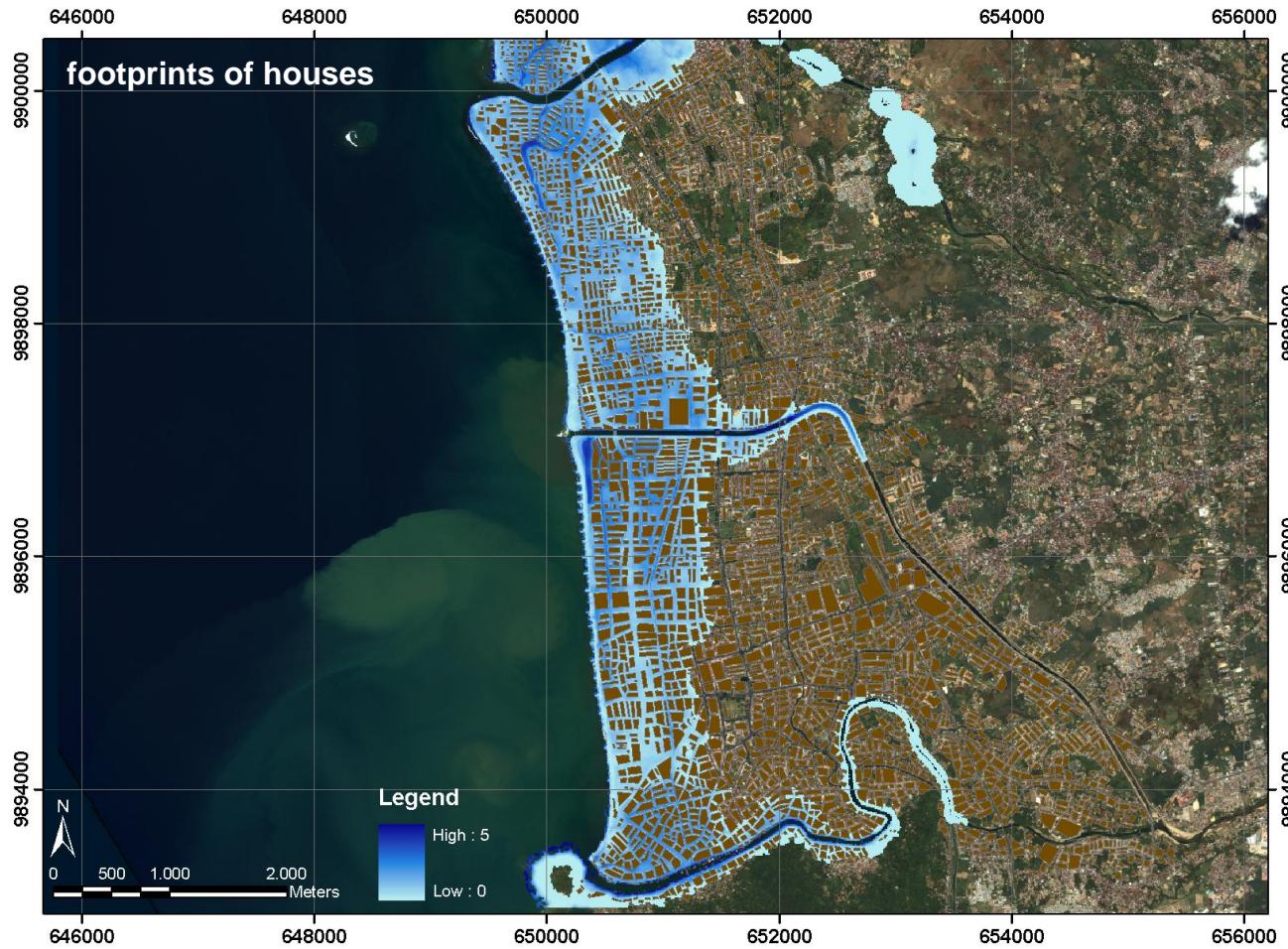
Results I

- Maximum inundated area for two Mw 9.0 events – footprints of houses and DSM



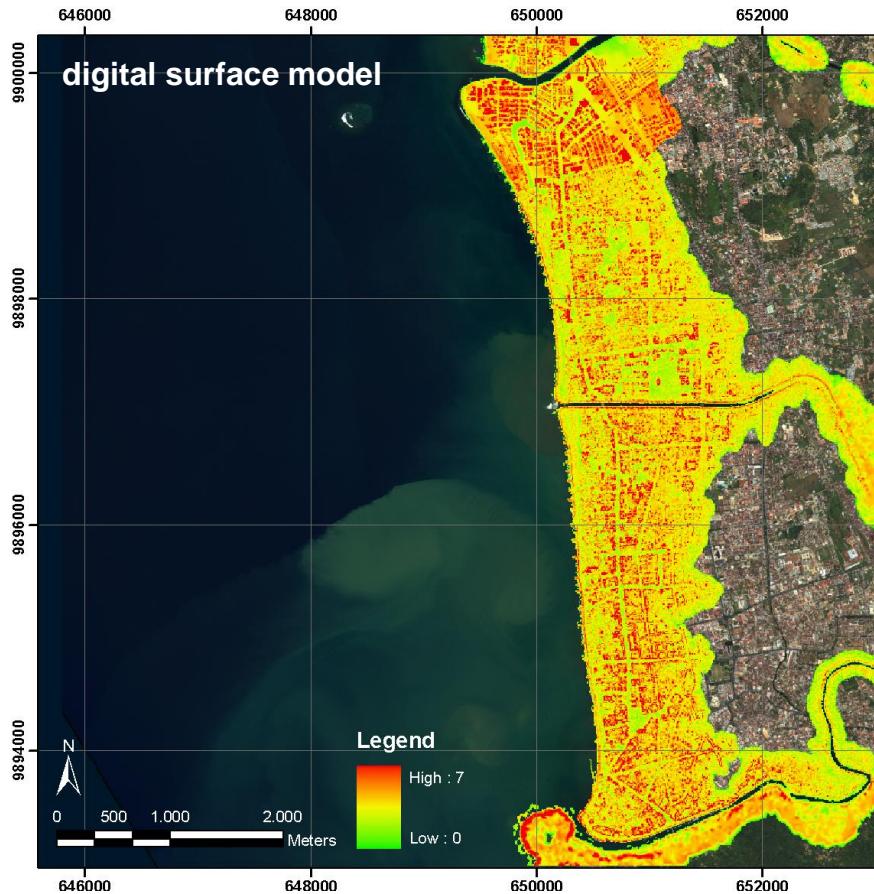
Results II

- Time dependent plot for model run with footprint of houses $t = 60, 240, 420, 600$ s



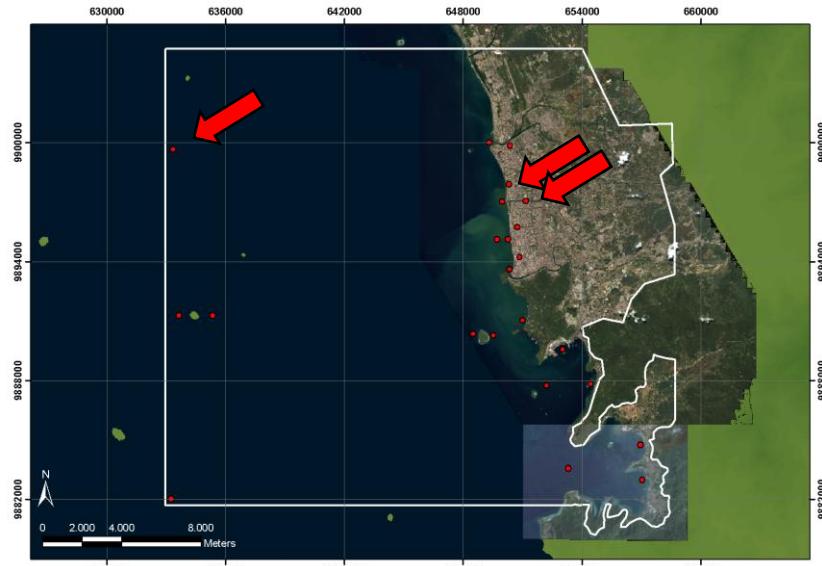
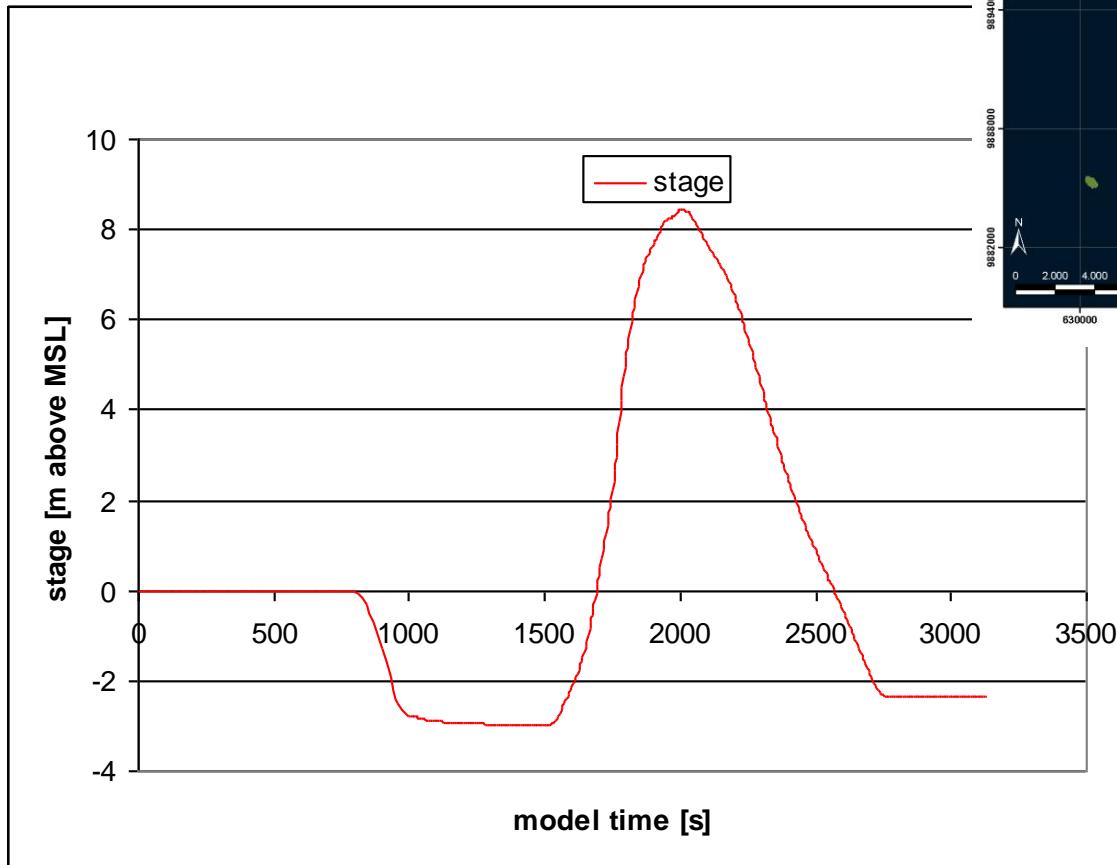
Results III

- Maximum Froude numbers for model runs with DSM and footprints of houses



Results VI

- typical unsteady time series of water stage



Final comments

- Compilation and merging of highest resolved and available geo-datasets
- Final model domain, some minor mesh refinement needed
- Model runs with different scenarios in progress
- Dealing with structures and features on land still under analysis
- Vital links to project partners throughout the inter-disciplinary project, e. g. evacuation planning and 3D-visualisation
- Good communication with local players and stakeholders in Padang
- Physical modeling / Calibration ??

Acknowledgement

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