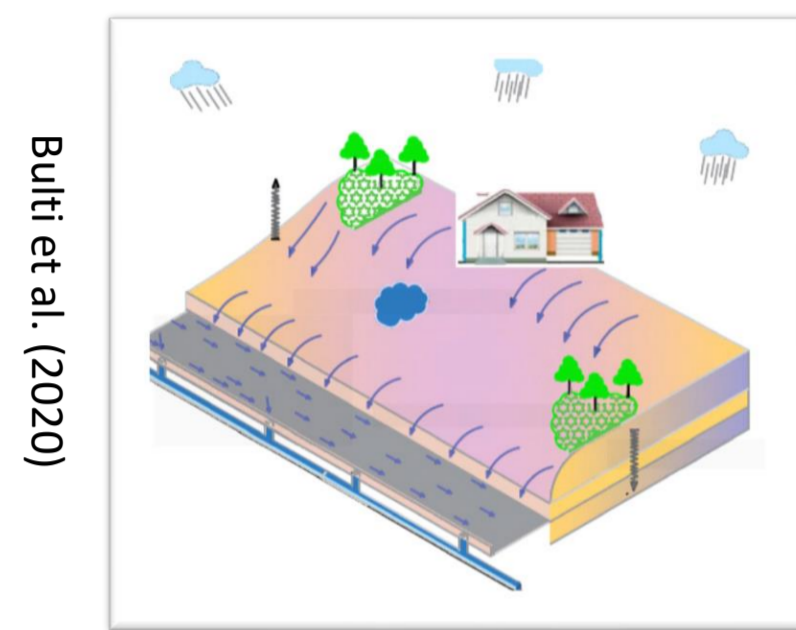
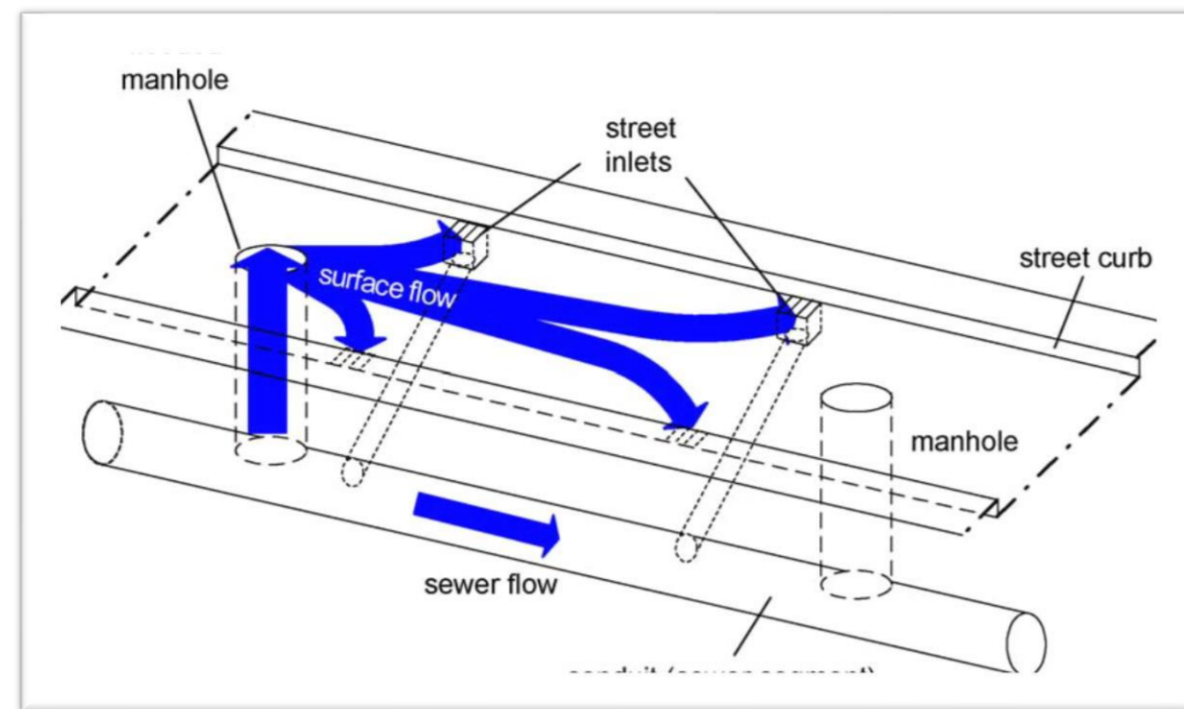


## ANALYSIS OF THE STATE OF ART

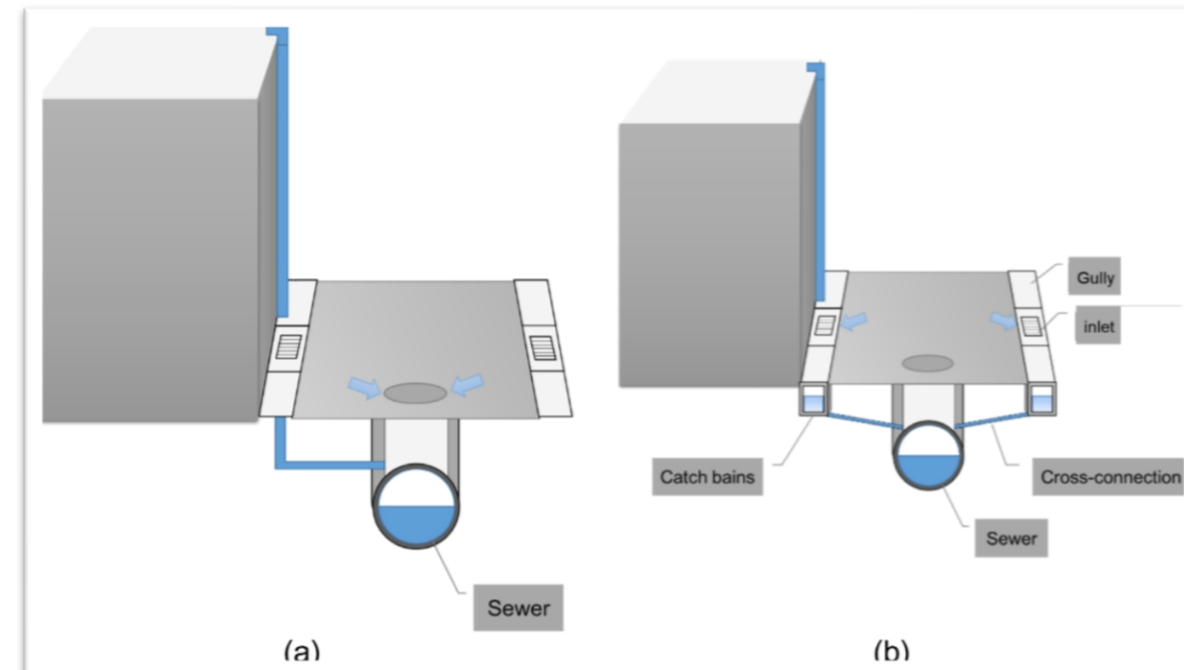


Bulti et al. (2020)

The work includes a comprehensive investigation of the integration of 1D and 2D hydraulic and hydrological models, incorporating a scrutiny of available literature and identifying constraints in existing software.



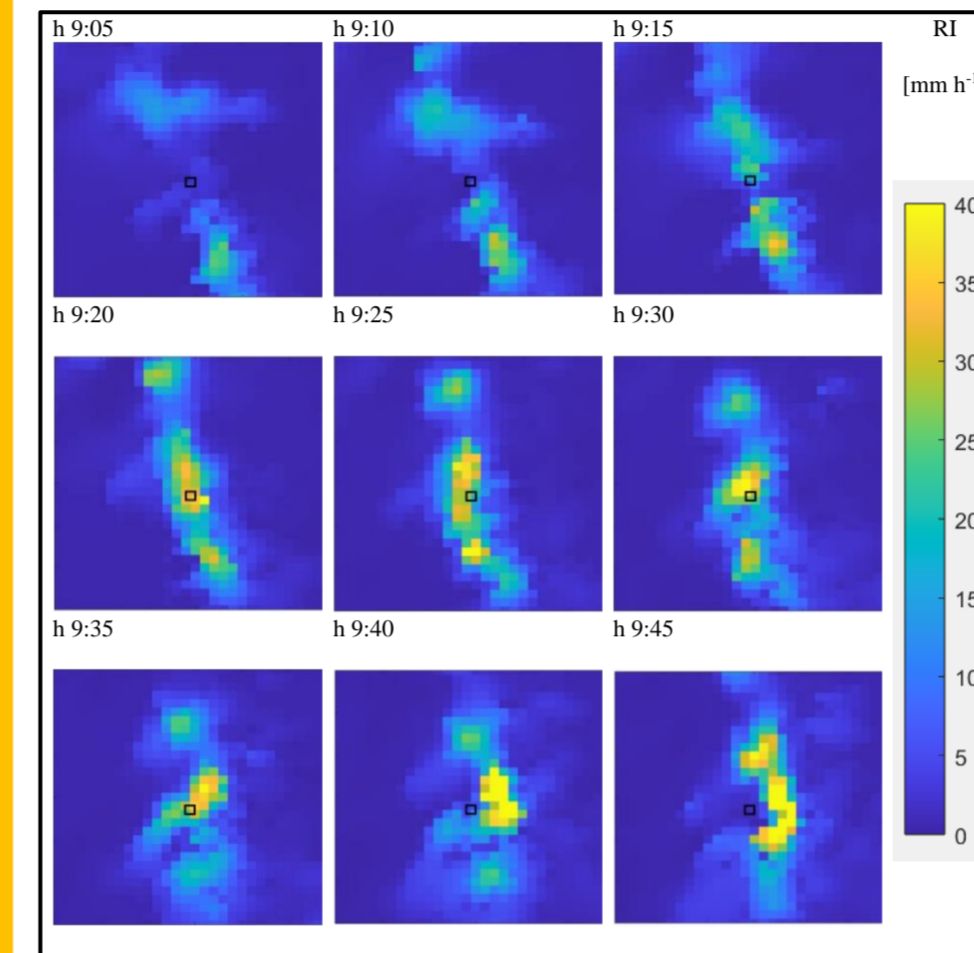
Smith et al. (2004)



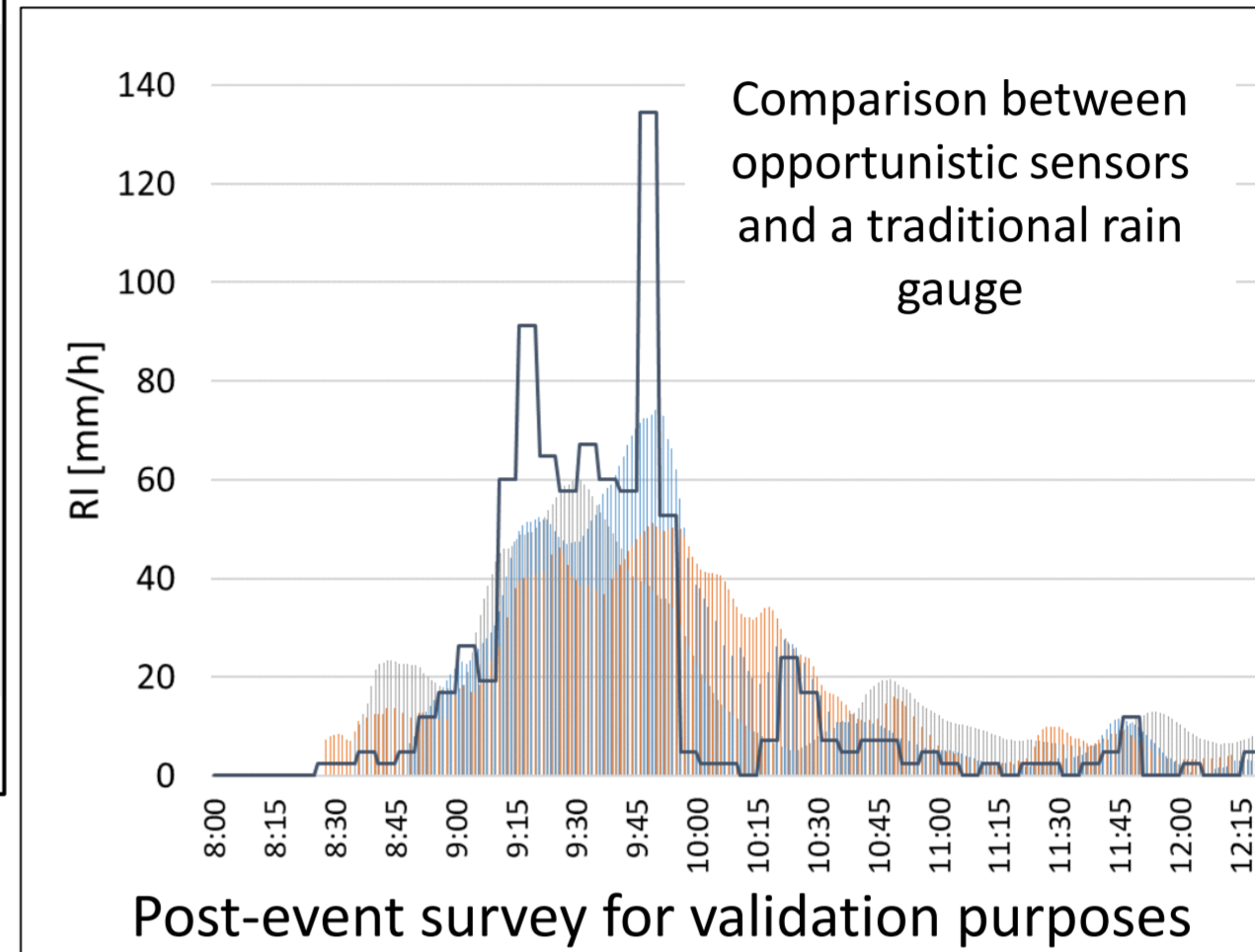
T.J.Chang et al. (2018)

## IN FIELD MEASUREMENTS

Assessment of the role of the input data in terms of spatial and temporal resolution



Dynamic evolution of a rainfall event as measured by a meteorological radar



Comparison between opportunistic sensors and a traditional rain gauge

Post-event survey for validation purposes

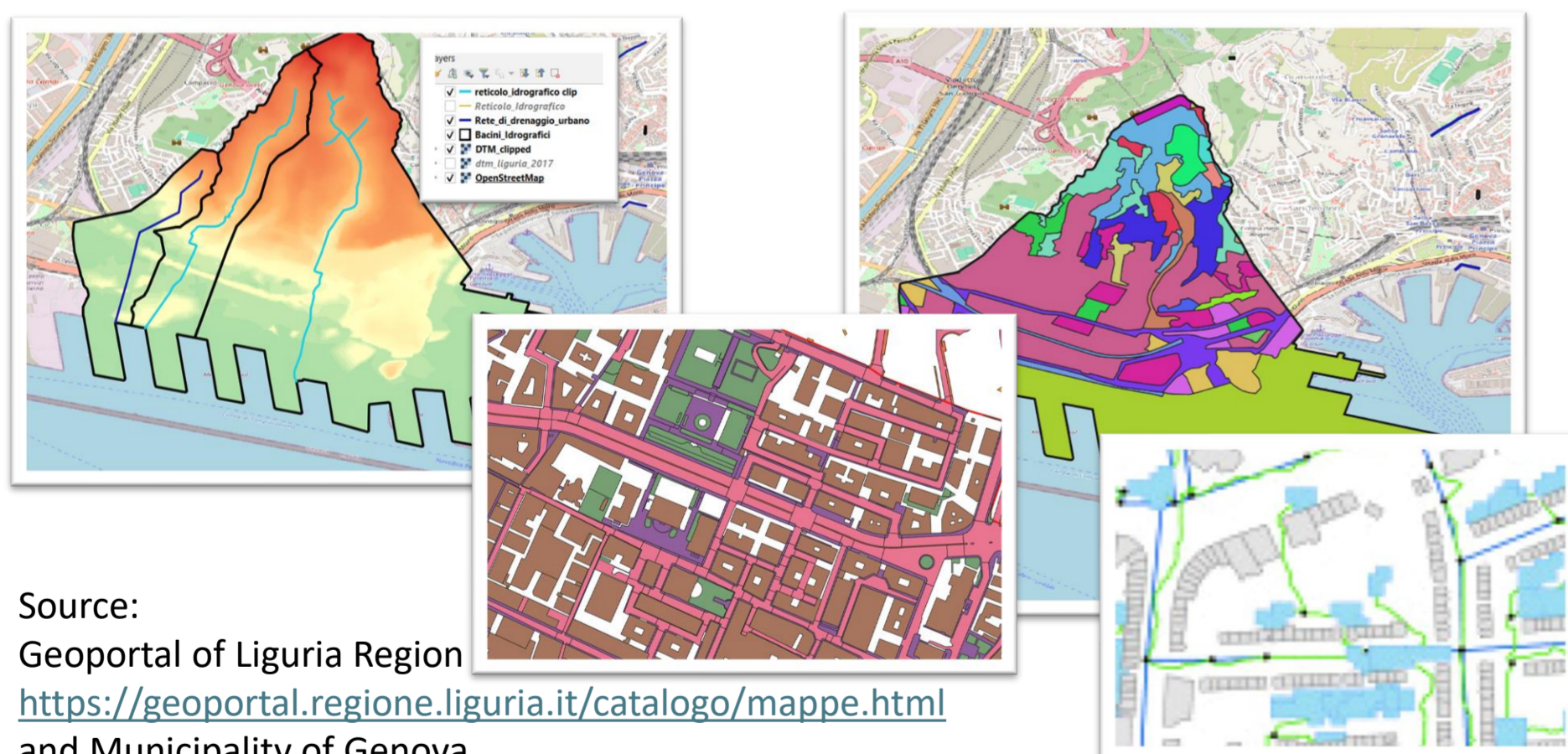


## WORK PLAN

### SOFTWARE AND CODES

Following the analysis of the current state of the art, the subsequent step involves overcoming the current limitations to enhance the representation of hydraulic and hydrological processes at the urban scale.

Examples of the available DTM and land use maps.



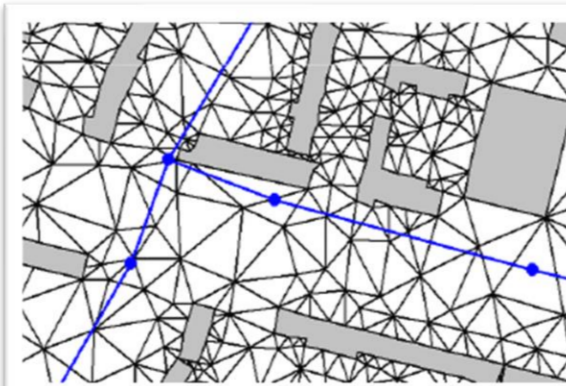
Source: Geoportal of Liguria Region <https://geoportal.regione.liguria.it/catalogo/mappe.html> and Municipality of Genova.

### Analysis of the state of art

Review of 1D and 2D software and their coupling; identification of their limits.

Schematics of the drainage network and computational mesh

Simoes (2011)



### Software and codes

Implementation of specific tools to enhance the representativeness of the hydrologic and hydraulic processes.

### In field measurements

Field data collection to support the validation of numerical results.

Impact of data at different spatial and temporal resolutions on the modelled results.

### Flood hazard and risk maps

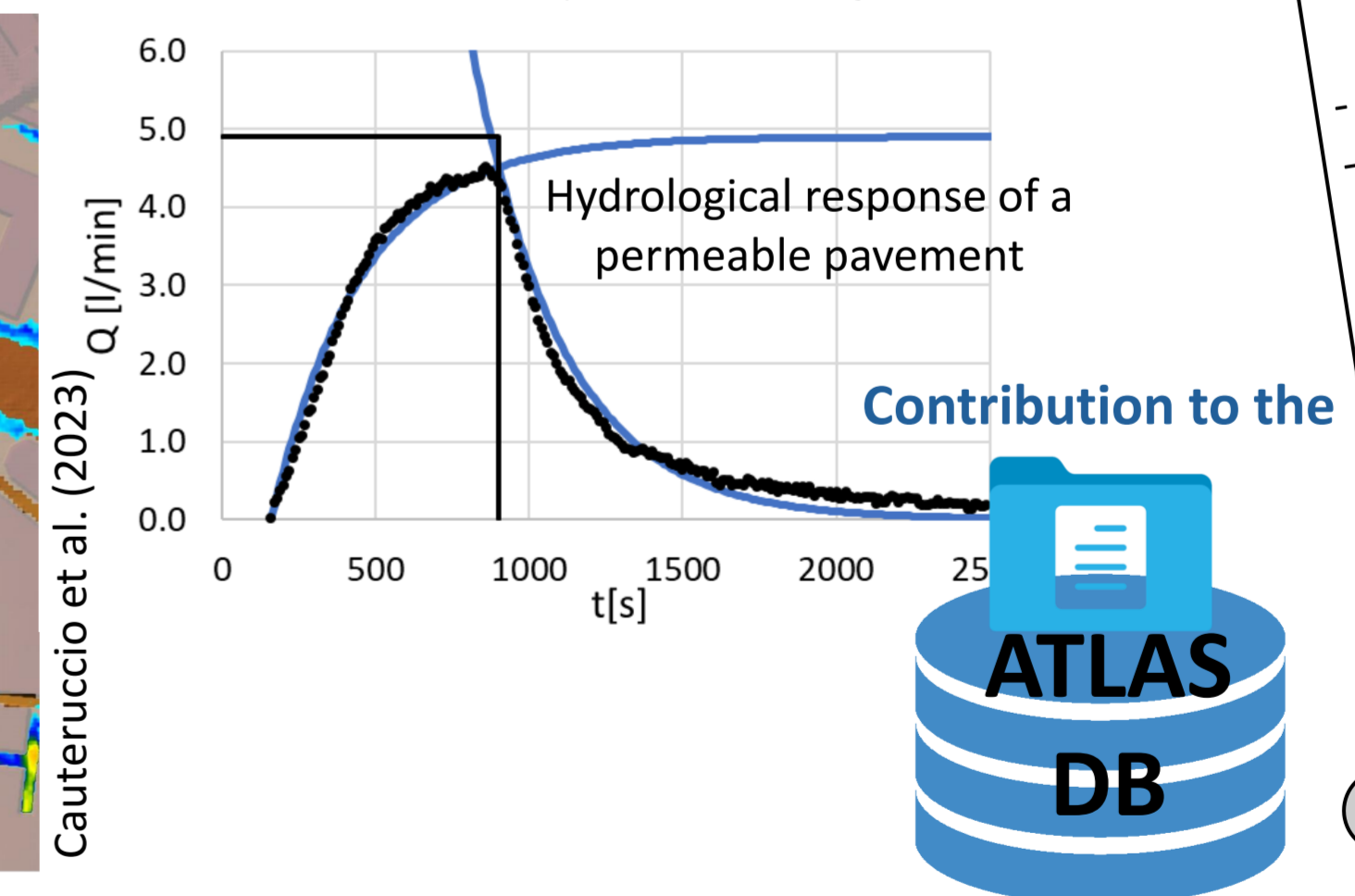
Simulation of a pilot case study on an urban catchment selected in collaboration with the local authorities.

### EXPECTED RESULTS

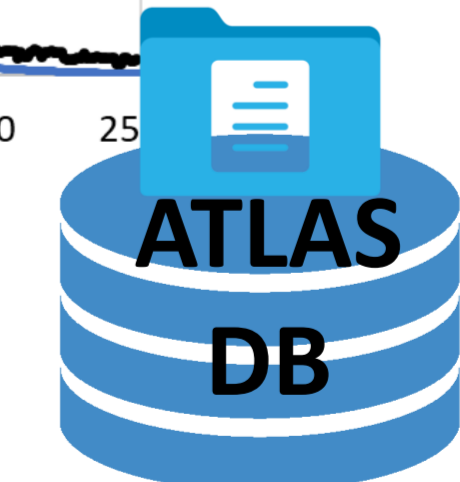
- Pluvial flooding data repository
- Dedicated methodological procedure
- Mitigation strategies

### EXPECTED RESULT

Example of a flood hazard map and a mitigation solution



- Procedure:**
- Data requirements
  - Minimum level of information
  - Data collection
  - Model set-up
  - Validation
  - Flood hazard maps
  - Vulnerability and exposure maps
  - Risk maps
  - Mitigation strategies
  - Etc ...



## References

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