Flood Risk in Tours

*Les zones inondables*
- Avec risque humain
- Avec risque horticole
- Sans risque humain

Source: [Carte de France](#)
Collaborative modelling as a methodology for sustainable flood risk management

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Contents

1. The concept of collaborative modelling
2. The framework and examples
3. Conclusion & critical comments
Background

- In order to reduce (urban) flood vulnerability an increased awareness of stakeholders and citizens about potential flood risk & capacity to handle flood risk is crucial.
- For capacity building learning processes are essential.
- Tangible information and target group specified and localised knowledge is needed.

→ interaction
→ simulation and visualisation
→ social learning

### MAIN CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>Cranbrook Catchment (London Borough of Redbridge), UK</th>
<th>River Alster, Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of flood</strong></td>
<td>Pluvial and fluvial</td>
<td>Fluvial Flooding</td>
</tr>
<tr>
<td><strong>Area</strong></td>
<td>9 km²</td>
<td>578 km²</td>
</tr>
<tr>
<td><strong>Frequency of Floods</strong></td>
<td>Most recent events in October 2000 and February 2009</td>
<td>Some during last decades, last flood event 6th February 2011</td>
</tr>
</tbody>
</table>
| **Stakeholder groups** | - Flood management professionals  
                          - emergency managers  
                          - planners and governmental organisation | - Administration and authorities  
                                                                 - emergency managers  
                                                                 - NGOs  
                                                                 - affected people and public |
The concept and goals of collaborative modelling

- **CM**: interactive and iterative process in which stakeholder engagement and communication activities are constantly complemented by modelling and communication tools, such as a collaborative platform
- **Objective of CM:**
  - Create a constructive learning environment
  - Development of a shared understanding of current flood risk
  - Development and evaluation of alternatives for FRM
  - Flood risk alternative testing under different scenarios
  - Support for negotiation and selection of commonly agreed alternatives

*Decentralised Integrated Analysis and Enhancement of Awareness through Collaborative Modelling and Management of Flood Risk*
Processes enabled by series of meetings and workshops with joint participation of stakeholders, flood management authorities, public and researchers

- Supported by web-based platform (Collaborative Platform-CP)

- Collaborative Modelling Exercise (CME) for individual and group ranking of proposed alternatives, with respect to identified objectives

- Supported by web-based tools embedded in the CP
Collaborative modelling in flood risk management
Cranbrook catchment, London Borough of Redbridge, United Kingdom

Discussion Forum:
You are invited to the online discussion forum. Here you can provide your comments about different topics and also share and discuss alternatives for flood risk management with other participants.

Feedback:
Your feedback is very important to us. It will help us to improve this platform and make the best out of it. Click here to provide your comments. Thanks in advance for your valuable contribution.

Downloads and interesting links
- First Collaborative Workshop (14th January 2013): The first Collaborative Workshop took place on January 14th 2013 at Imperial College London.
  - Click here to view some photos of the event.
  - Click here to download the minutes of this workshop.
- Links to download and view information about the London City project.
- Click here to view the current water level at the Kelvin River, via the weather station installed by the Emergency Planning Department of Redbridge.
- Joint Data Base

Communication assisted by the platform
- Links to discussion forum and feedback forms
- Downloadable information about the project
- Links to important events, particularly regarding the series of workshops

Joint Data Base

universität bonn
Geographie
Alternatives

- Define various alternatives (which includes a set of measures)
- Risk assessment
- Evaluation of Alternatives

<table>
<thead>
<tr>
<th>Alternative</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>Doing nothing</td>
<td>Rainwater harvesting</td>
<td>Improved and targeted maintenance regimes of the system</td>
<td>Improved resistance for preventing water from entering properties</td>
<td>Improved rainfall and flood forecasting and warning</td>
</tr>
<tr>
<td>D</td>
<td>Doing nothing</td>
<td>Technical measures</td>
<td>Management of the catchment</td>
<td>Prevention</td>
<td></td>
</tr>
</tbody>
</table>
Alternatives (UK) Web-based mapping for evaluation

- Improved and targeted maintenance regimes for the sewer system
- "Rainwater harvesting"

Results: (related) flood protection efficiency

<table>
<thead>
<tr>
<th>Measure</th>
<th>No building</th>
<th>No flooding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooding area above 30 cm (in total)</td>
<td>390,252</td>
<td>321,348</td>
</tr>
<tr>
<td>Number of flooded buildings</td>
<td>13,791</td>
<td>27,189</td>
</tr>
<tr>
<td>Companies and industries</td>
<td>20,419</td>
<td>55,808</td>
</tr>
<tr>
<td>Important infrastructure</td>
<td>18,794</td>
<td>227,296</td>
</tr>
<tr>
<td>Recreational facilities</td>
<td>59,350</td>
<td>59,852</td>
</tr>
</tbody>
</table>
Collaborative Modelling Exercise (CME)

**Ranking of alternatives**
1. Individual ranking of alternatives by each stakeholder *(Individual profile)*
2. Group ranking of alternatives obtained by aggregated individual rankings *(Group profile)*
3. Negotiation and collaboration, by which individual stakeholders can adapt their individual ranking and consequently the group ranking

**Swimming pool of alternatives**
- Visualisation of the individual positions versus the group as a whole
- Darker blue colours represent more preferred alternatives by the whole group
- Individual ranking of the same alternative with markers
- Different markers (color) for different stakeholder group
- Similar individual rankings grouped in clusters
Conclusion

- The mixed approach of web-based tools and face to face workshops was appreciated and is promising
- Knowledge about values of other stakeholders → support for negotiation and selection of commonly agreed alternatives
- Group ranking indicates about preferences about different stakeholders (objectives, agencies should be responsible for implementation)
- Development of a shared understanding of current flood risk & increased knowledge about system and options

Critical comments

- Almost no technical problems (despite data)
- Motivate SH and PUBLIC – important: technical partner and local champion
- Not clear who and how many will participate
- Different roles (researcher, moderation, organiser, evaluator)
- Organisation, infrastructure

- Future research (i.a.):
  - How can be the “cherry on the top” (CME) used in real processes with high no. of people
  - Only online process without face-to-face meeting
Thank you for your attention!