

# Community Modelling in support of local hydroresilience

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# Objective

**Introduce ‘Community Modelling’: a participatory method enabling local people to use scientific tools to engage with the management of hydroclimatic risks**

**Presentation outline:**

- 1) Background**
- 2) Case studies**
- 3) Conclusions**



# Research context

Multidisciplinary research projects on floods and droughts with local public participation

1) *Understanding environmental knowledge controversies: The case of flood risk management 2007-10 (RELU)*

2) *MaRIUS (Managing the risks, impacts and uncertainties of drought and water scarcity 2014-17 (NERC/RCUK))*





# Participatory research

## Environmental Competency Groups (ECGs)

- social and natural scientists with local people
- max 16 people (half science/half local)
- interested individuals
- 1-year, 6 meetings
- co-production of knowledge
- 'slow down the reasoning'



# Lesson 1

*Floods and drought affect the same people in the locations where they occur (v. policy separation)*

Hydroclimatic risks (natural science notion)

Hydroresilience (social science notion)



# Lesson 2

*To have any chance of success ECGs must connect with matters of concern to the public we wish to involve*

**The English general public is not interested in or concerned about drought risk**

*MaRIUS ECG - water management in chalk catchment (causes and impacts of low flows)*





# From ECGs to CM

## ECGs:

- aim to improve scientific knowledge about local environmental problems
- Long-time, resource demanding, expensive

Could we do something aiming to benefit local communities, at reasonable cost?

## *Community Modelling*



# CM format

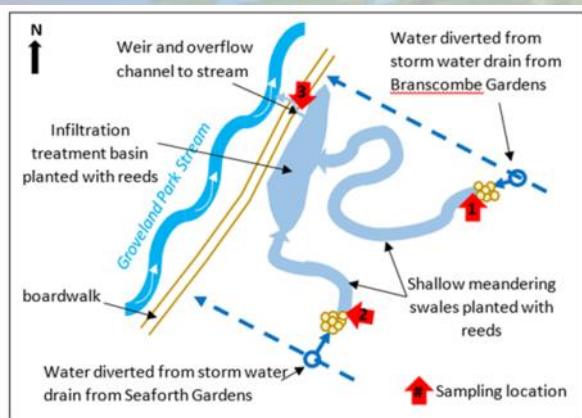
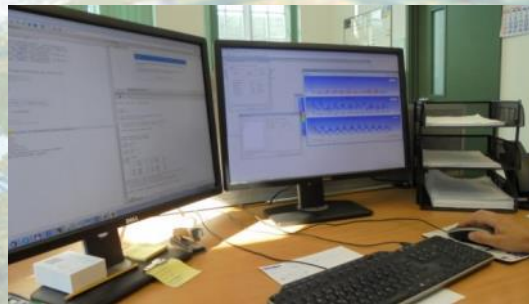
- Facilitator (social scientist)
- Modeller (natural scientist)
- Partner organisation (Rivers Trust)
- Local people
- 3-4 sessions/4-5 months
- ***Output: bespoke computer simulation model to be used in local deliberations***





# CM 1 Water Quality

- London, Thames 21, volunteers
- River Lea, Salmons Brook, new wetlands
- INCA water quality model



# CM 2 Flooding

- Otley, Town Council, local residents
- River Wharfe, Farnley Lane area
- HEC-RAS flood model





# Impacts

## Both local CM projects successful

- Water quality: Thames 21 adopting INCA model in other places; applying for funding modeller to set up models and train local users
- Flooding: Otley CM team and Town Council in collaboration with EA and technical consultants modelling the Wharfe catchment for FRM scheme led by Leeds City Council





# Insights

- Local people are interested and able to use models to analyse risks and potential solutions
- Models can contribute to the coherent articulation of local knowledge
- Familiarity with models can improve local people's ability to communicate with experts advising decision makers



# Issues

- How to multiply CMs?
- Educating modellers and facilitators?
- Making models and data accessible?

*Falls between funding bodies and streams – social science & natural science; applications, local engagement; local impacts, technology development*

