NATURAL ENVIRONMENT RESEARCH COUNCIL

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Flood Organisation Science and Technology Exchange Research

UNIVERSITY OF OXFORD

'Communicating' flood science to Local Authorities: A bridge over troubled waters

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Beyond PPS25: Should uncertainty in flood risk mapping make a difference?

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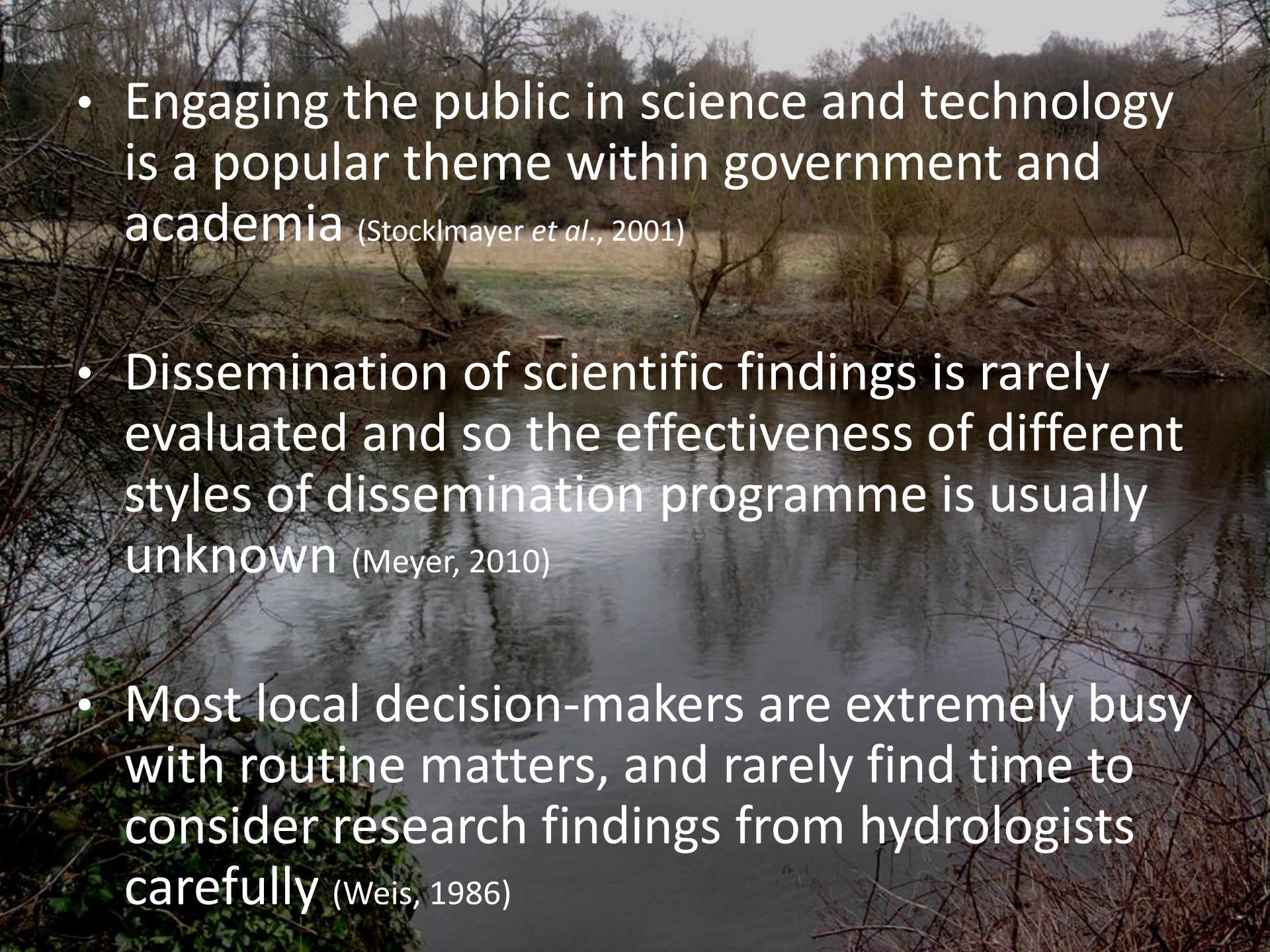
- Following the serious 2007 floods the Pitt Report called for wider public participation in decision making.
- Recommended strong and coordinated action, close inter-agency cooperation.
- Increasing the roles of Environment Agency and Local Authorities.

- Science-based learning is not strong with local authorities.
- And communication between flood research and local authorities is poor.



- Engaging the public in science and technology is a popular theme within government and academia (Stocklmayer *et al*., 2001)

- Dissemination of scientific findings is rarely evaluated and so the effectiveness of different styles of dissemination programme is usually unknown (Meyer, 2010)

- Most local decision-makers are extremely busy with routine matters, and rarely find time to consider research findings from hydrologists carefully (Weis, 1986)

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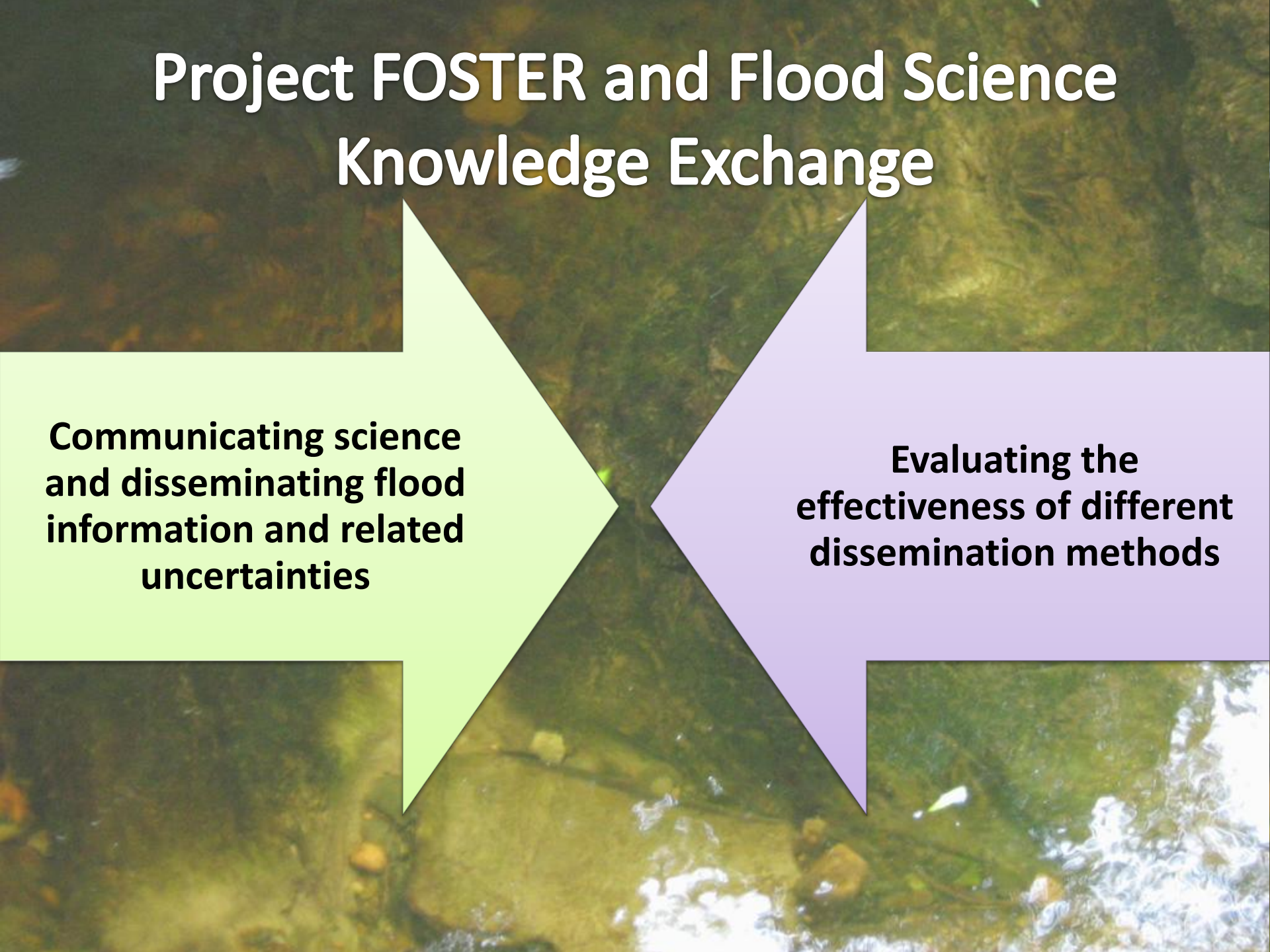
GLIF project (small NERC FREE grant, P.I Roberts 2008-9)

- County and District Councillors relied on when taking decisions
- **anecdote, assumptions** and **personal experience.**

- Challenged by unfamiliar scientific **language.**

- Scientific **uncertainty**, use of **probabilistic** information and risk scenarios, probable max rainfall/flood levels, pluvial and groundwater flooding characteristic, routes and velocities of water through natural and human impacted catchments, storage displace effects of **floodplain** development, potential for SUDs were almost ***unknown***.

- Majority of stakeholders regarded their own understandings of the scientific background to flood management ***totally inadequate*** for their roles.


Project FOSTER and Flood Science Knowledge Exchange
Communicating science and disseminating flood information and related uncertainties
Evaluating the effectiveness of different dissemination methods

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Over arching aims

- To improve the flood science understandings of users within Local Authorities, namely Worcestershire, Warwickshire and Gloucestershire County Councils.

- Evaluate a mix of science communication methods to Local Authorities.

- Explore best practice in science communication to enable flood scientists to disseminate their findings more appropriately.

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Objectives

- Research and evaluate user needs
- Draw together cutting edge scientific flood data
- Translate and represent science case studies from NERC FREE programme and other relevant research projects
- Design a user driven set of flood science workshops
- Incorporate three contrasting learning and delivery science education and knowledge exchange styles
- Evaluate the effectiveness of the workshops
- Analyse best practice in flood science communication
- Disseminate findings to a wide audience

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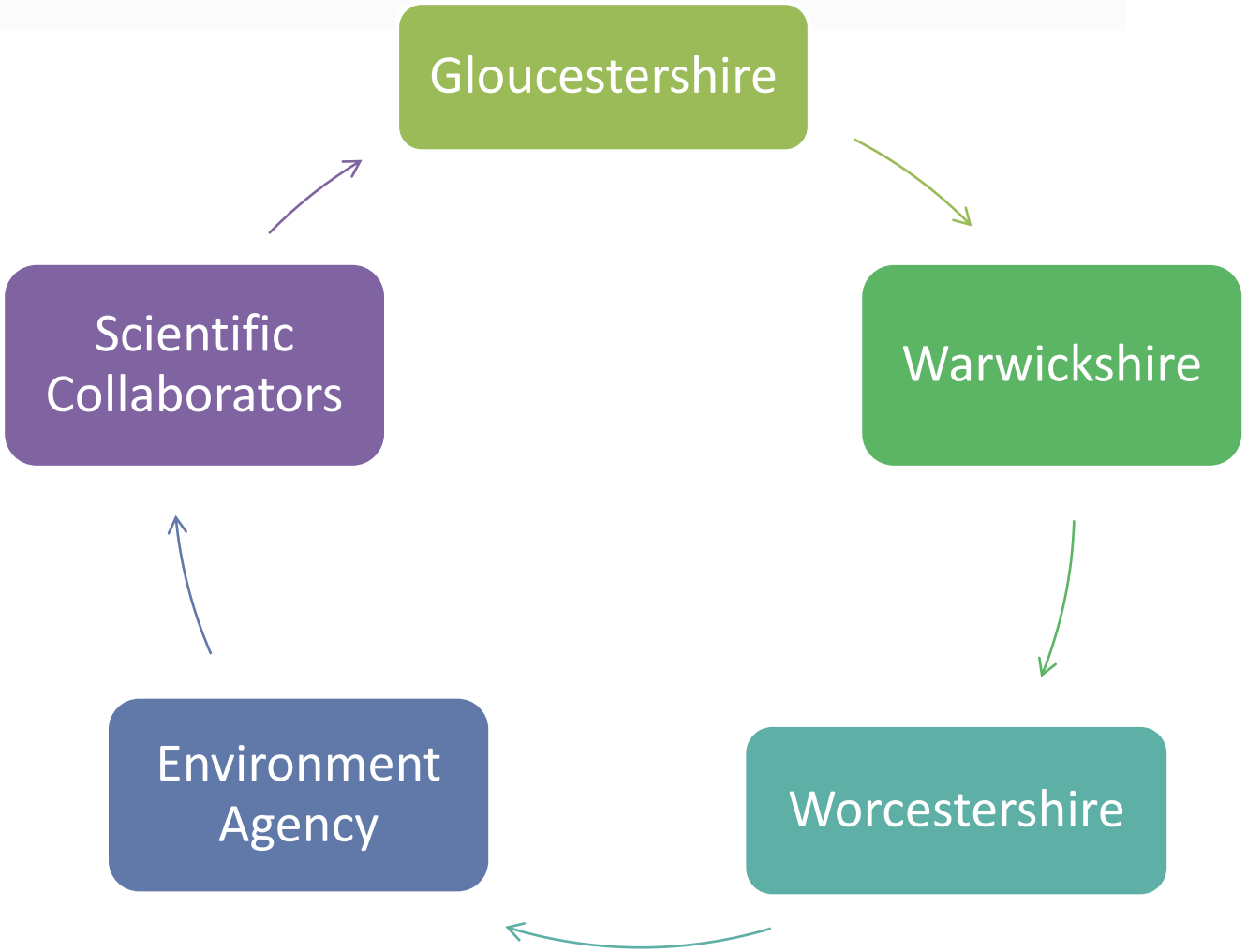

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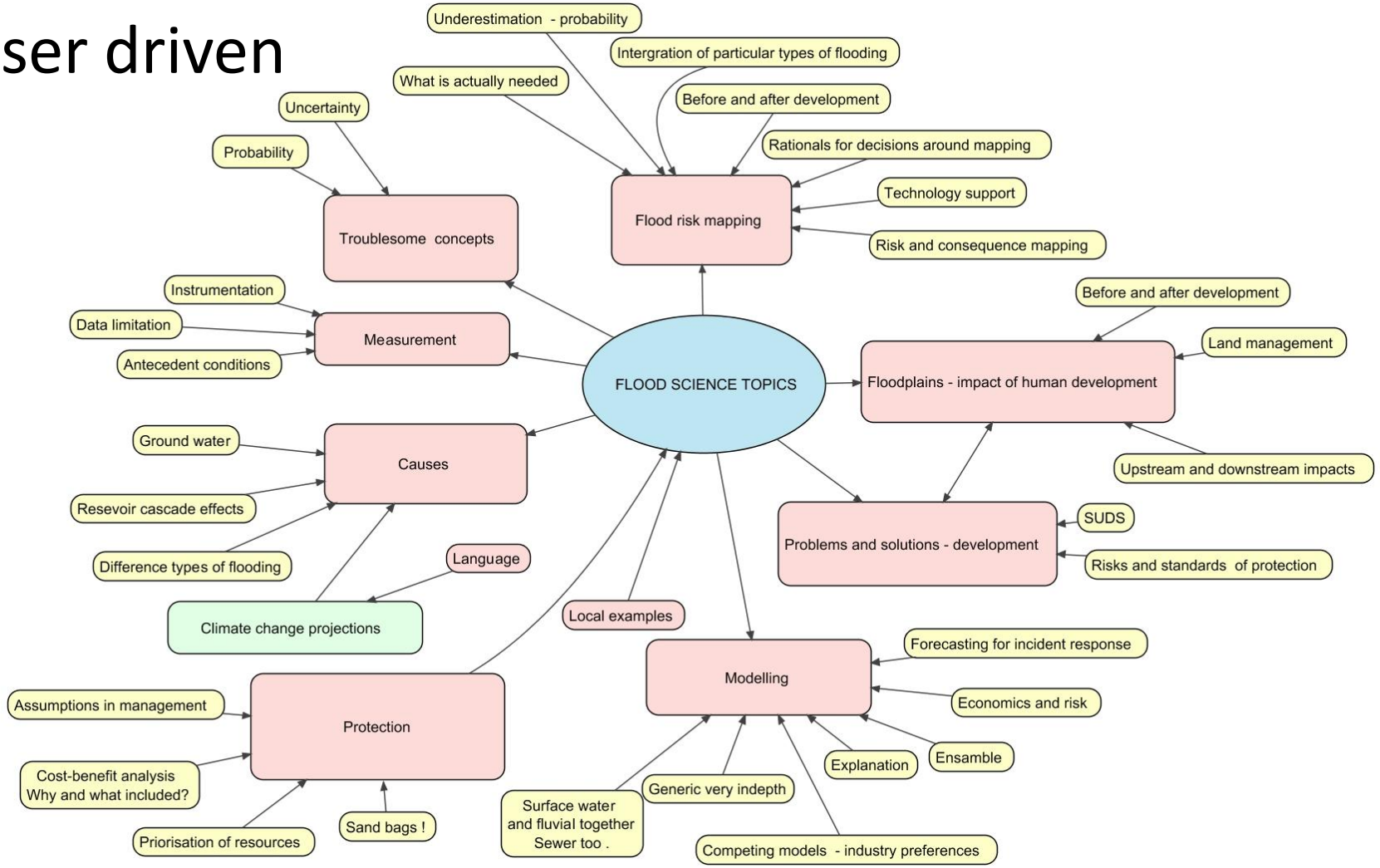
User driven



Flood workshops Part 1	
Sessions	**Resources and sub-topics**
Ice-breaker activity	
Introduction to floods	• Local examples
What is the impact of a flood?	• Video from 2007 flood from Gloucestershire
Introduce the River Severn Catchment	• BGS fly-through, photos and video
What causes flooding?	• Visualisation from Nick Reynard CEH of rainfall and river response • Need to bring in concepts of timings and scale
How can we measure floods? Introduce in sequence according to scale	• Instrumentation demonstration and bring in uncertainty • CS Paul Smith, LEC, Gridstix network • CS Guy Schurmann, University of Bristol, remote sensing, Tewkesbury case study
How do we forecast floods?	• Flood Forecast Centre video • Human influences Land-use, Catchment surface, Diversion channels, Urban development What is the level of interference?
What is a flood plain and how can we visualise the it and the flood? Introduce different scales of mapping 1. Flood plain mapping – what is a flood plain 2. EA map 3. Local setting maps	1. BGS geological indicators of flood plain 2. CS James Porter, King's College London, discuss the EA map 3. CS Geoff Parkin – monitoring and mapping using local information – video of flood and model from slides
Reflection and round up	

Flood Workshops part 2	
Sessions	**Resources and sub-topics**
Welcome and re-cap	• Community digital interviews (Lindsey McEwen)
How are the magnitudes of different floods estimated? Discussing probability and return periods	• CS David Leedal, LEC, probability and flood inundation model • CS Jeff Neal, University of Bristol,
Modelling	
How can this be measure in terms of impact? **E.g.** • Economic impact • Service disruption • Business losses etc	• CS Tim Fewtrell, University of Bristol, Risk analysis modelling • Visualisation of graph – economic loss vs recurrence interval
What about future flood events? • Climate change • Re-cap on human impact, SUDS	Case studies at different scales • CS Nick Reynard, FRACAS, CEH, UK scale model and uncertainty. • Cs Helen Yi, Hannah Cloke, King's College London, River Severn modelling for climate change
But how certain is this?	• CS Sebastien Norbert, King's college London, Flood science uncertainty
Finish with mini round table discussion based on Cypress garden case study	
Reflection and round up	

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User driven content trialled via three learning experiences

Virtual online workshops

- Collaborating with The Open University through Second life

Tutor- led workshops

- Face-to-face workshops
- Discussions and activities
- Talking head videos

Participant- led workshops

Avonbury County Council
'here for the community'

- Role-play based
- Based on two scenarios –
  - Communicating flood science during an emergency
  - Planning for a future development

Participant-driven

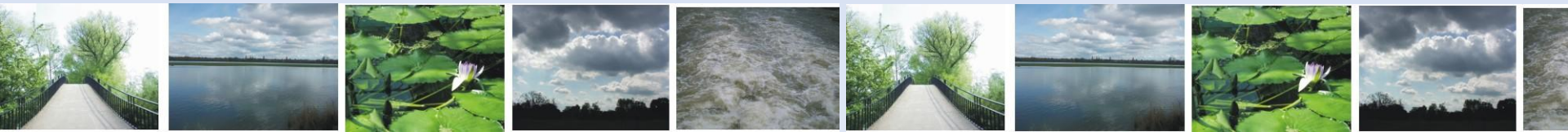
- Role-play
- Two scenarios
  - Communication
  - Planning ahead
- Talking heads and visualisations

Tutor-driven

- More conventional workshops
- Talking heads and visualisations

Discussions and reflections will be encouraged

video



Primarily based on tutor driven workshops

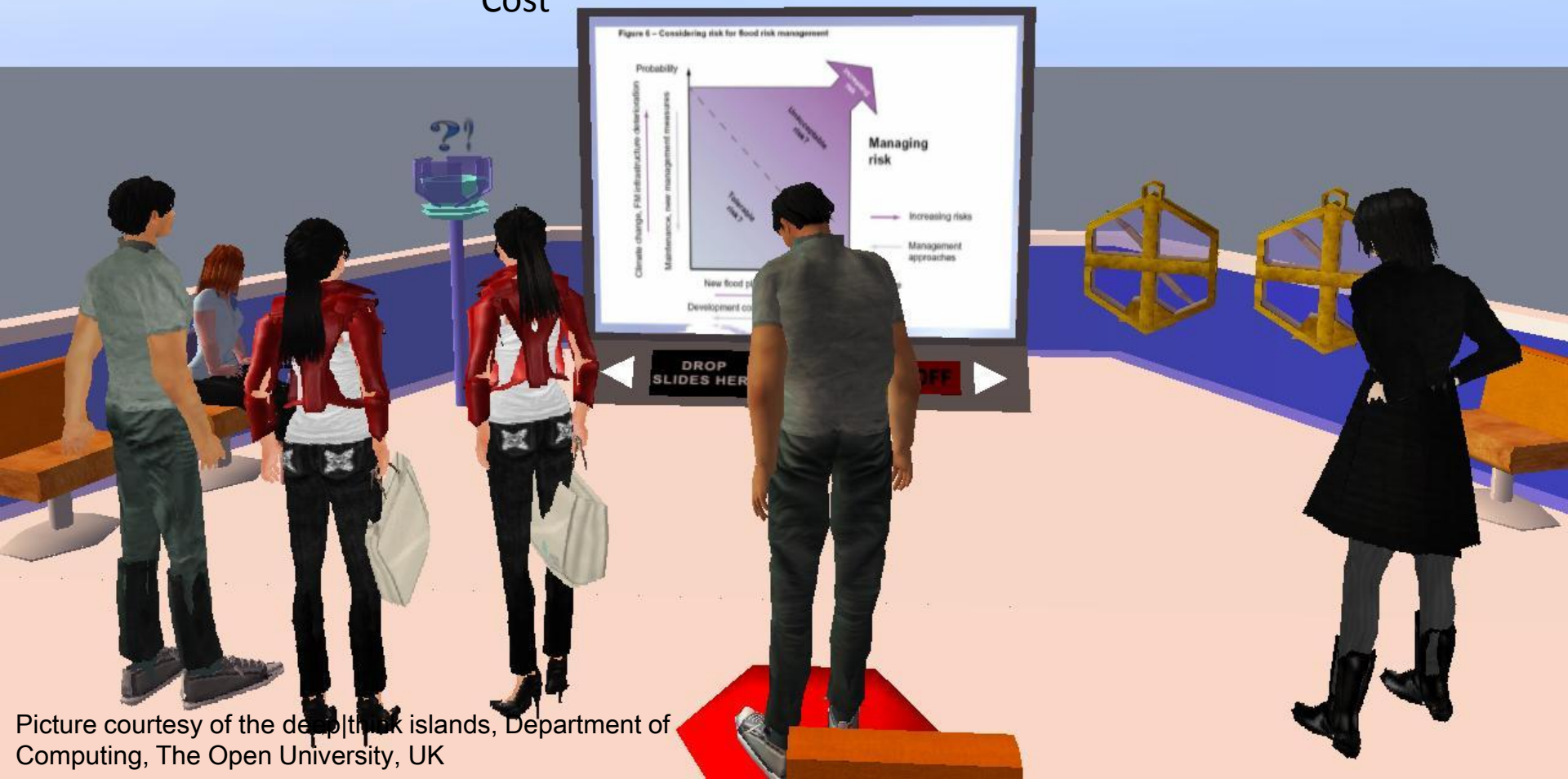
Jarmon (2009)

Minocha and Robert (2008)

Encouraging learning in an active participatory environment promotes learning and communication

A stimulating social interactive environment embeds learning and improves enjoyment

Cost



Picture courtesy of the deep|think islands, Department of Computing, The Open University, UK

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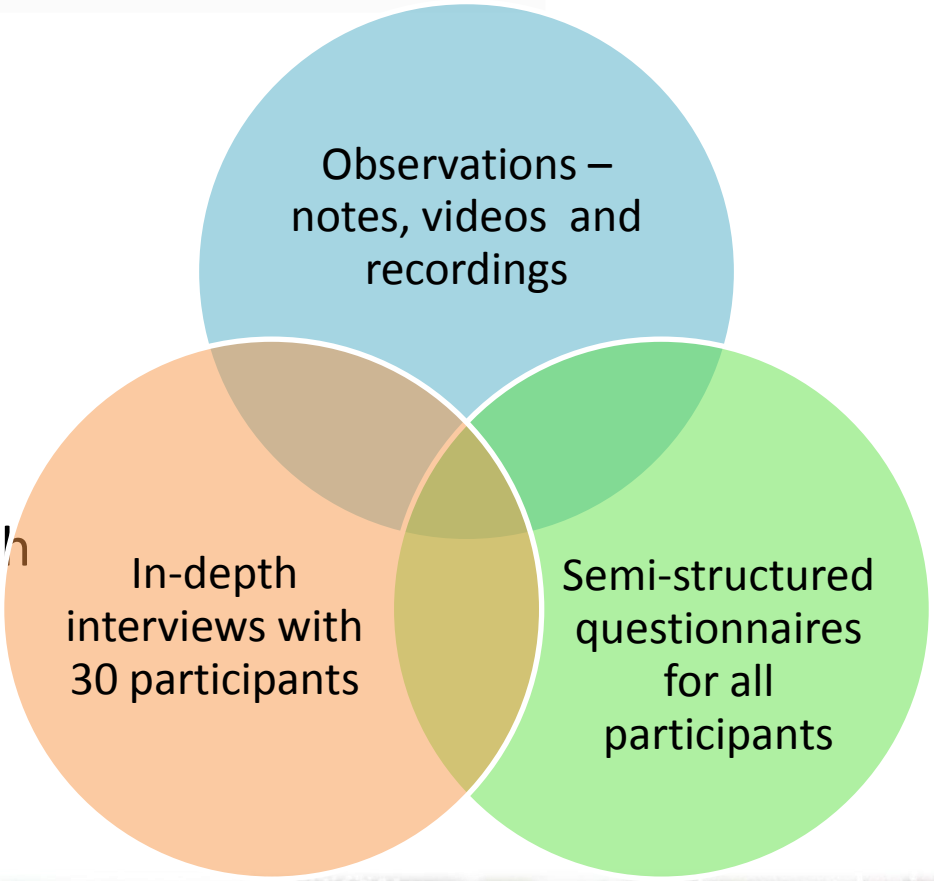
Evaluations

- Quasi-phenomenographic
- Final round table discussions with selection of participants.
- Continuous Partner feedback



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Challenges engaging science with local authorities

- Lack of commitment from scientists
- Continuity of LA workforce
- LA time and work commitments
- Flood orientated events overload
- Flooding not a priority at the moment
- Short term memory of flood impact
- Misunderstandings about flood frequency – it won't happen again...

Challenges for translating science

Making science:

- Practical
- Interesting
- Understandable
- Sustainable

Addressing uncertainty:

- Through scientists
- Through problem solving and exploratory learning

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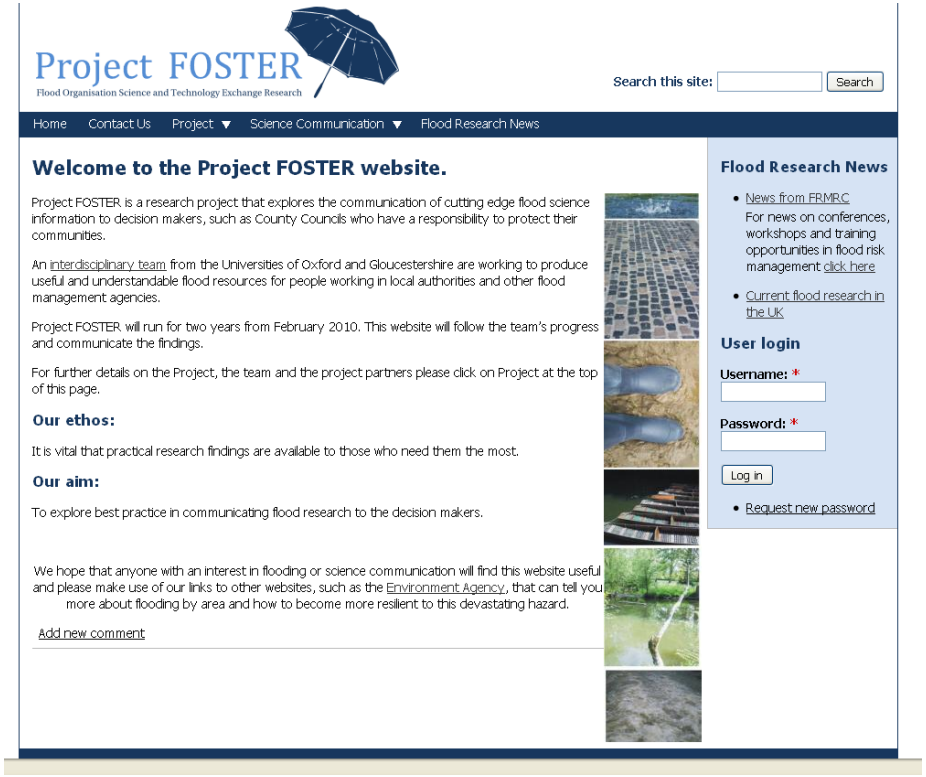
Dissemination

- Website www.foster.ox.ac.uk
- Variety of publications
  - Local Authorities bulletins
  - Academic Journals
  - EA publications
  - Publically accessible reports
- Seminar series
- Conferences
- Workshops and public talks



Practical Flood Research

Flood Hazard Research Centre, University of Middlesex and Earth Science/ESKTN, University of Oxford Joint Seminar Series

- Encouraging collaborations between stakeholders and flood science
- First seminar was held at fhrc on 20th September.
- Lost in translation: communicating flood science to professional stakeholders

Feedback:

- Attendees wanted to network and have an **informal exchange of ideas**
- They found the **interactive discussions** an excellent form of communication and although the **wide range of attending stakeholders** was praised they would like this to be expanded further.

- **Spring 2011- Communicating flood risk to the public.**
- **Summer 2011– Engaging business in flood risk research and management.**
- For more information visit www.foster.ox.ac.uk
- Or email Kate Donovan, Katherine.Donovan@earth.ox.ac.uk
- or Meghan Alexander at fhrc, MA1679@live.mdx.ac.uk

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