Department of Geography & Environmental Science

University of Reading

BUILDING RESEARCH PARTNERSHIPS TO SUPPORT THE EVIDENCE BASE

Dr Joanna Clark

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Co-Director, Loddon Observatory

Principal Investigator LANDWISE

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OUTLINE

- New £1.25m NERC grant: LANDWISE
- Journey to LANDWISE….
  - Small impact project with Loddon Catchment Partnership (LCP), building on previous engagement
  - Wider engagement around emerging themes
  - Partner collaboration with teaching
  - Partner collaboration with PhDs and research projects
  - Building the network for LANDWISE
- Reflections on building Academic Partnerships

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LANDWISE PROJECT

LANDWISE: LAND Management in lowland catchments for Integrated flood riSk rEduction

NERC Strategic Programme: Evaluating the Effectiveness of Natural Flood Management

Funding: £1.25m NERC + £400k in kind + £300k from UoR

4 year project (2017-2020)

LANDWISE Team

University of Reading, British Geological Survey, Centre for Ecology and Hydrology, University of Gloucestershire, Forest Research, JBA Consulting, CGI Group, Environment Agency, Defra, Natural England, JBA Trust, University of Sheffield, Forestry Commission, Agrimetrics, National Farmers Union, The National Trust, Affinity Water, National Flood Forum, Loddon Valley Residents Association, Swallowfield Flood Resilience Group, Pang Valley Flood Forum, Farm and Wildlife Advisory Group (SE), Farm and Wildlife Advisory Group (SW), Wilts Soil and Root Innovators, Penn Croft Farm, Hendred Farm Partnership, Fincham Farm Partnership, Kingsclere Estate, Farmer Guardians of the Upper Thames, Loddon Fisheries & Conservation Consultative, Blackwater Valle Countryside Partnership, Wild Oxfordshire, Foundation for Water Research, Action for River Kennet, South East Rivers Trust, Freshwater Habitats Trust, Berkshire, Buckinghamshire & Oxfordshire Wildlife Trust, Westcountry Rivers Trust, Wokingham Borough Council, West Berkshire Council, Hart District Council, Swindon Borough Council, Thames Regional Flood & Coastal Committee

NFM OPTIONS

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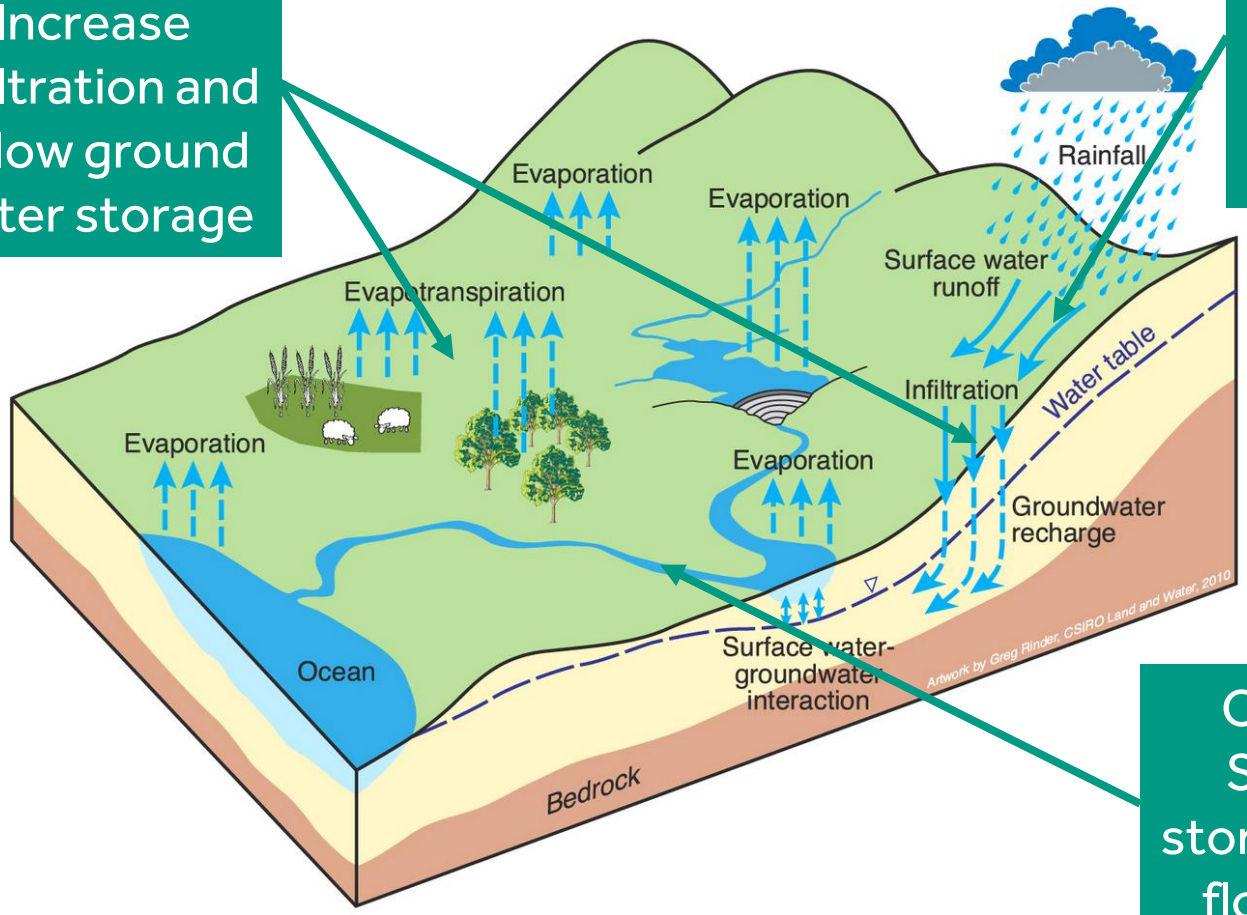
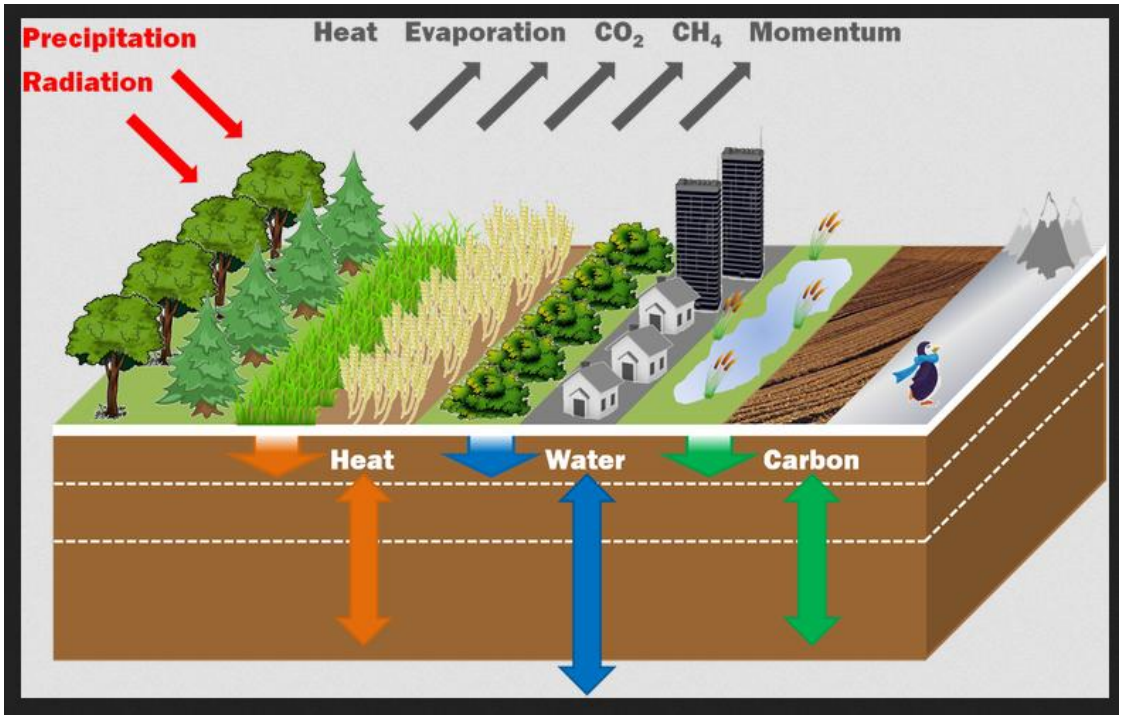
Option 1: Increase infiltration and below ground water storage

Option 2: Slow the flow of water from hillslope to river



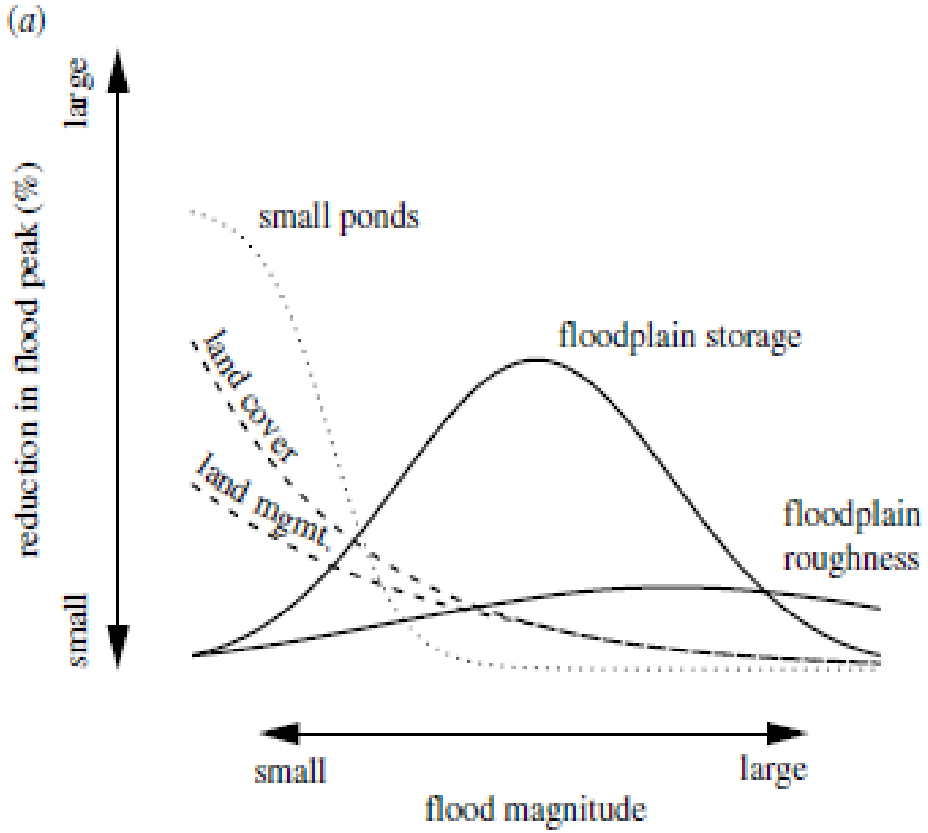
Option 3: Slow and store water on floodplains

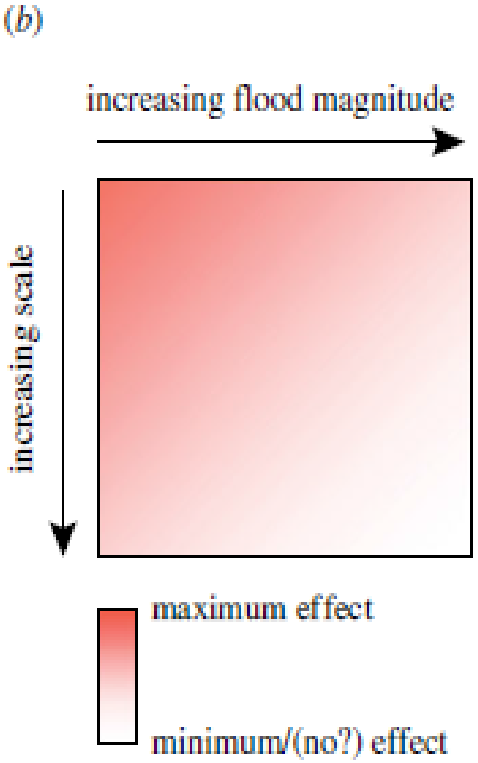
OPTION 1: MANAGE LAND SURFACE



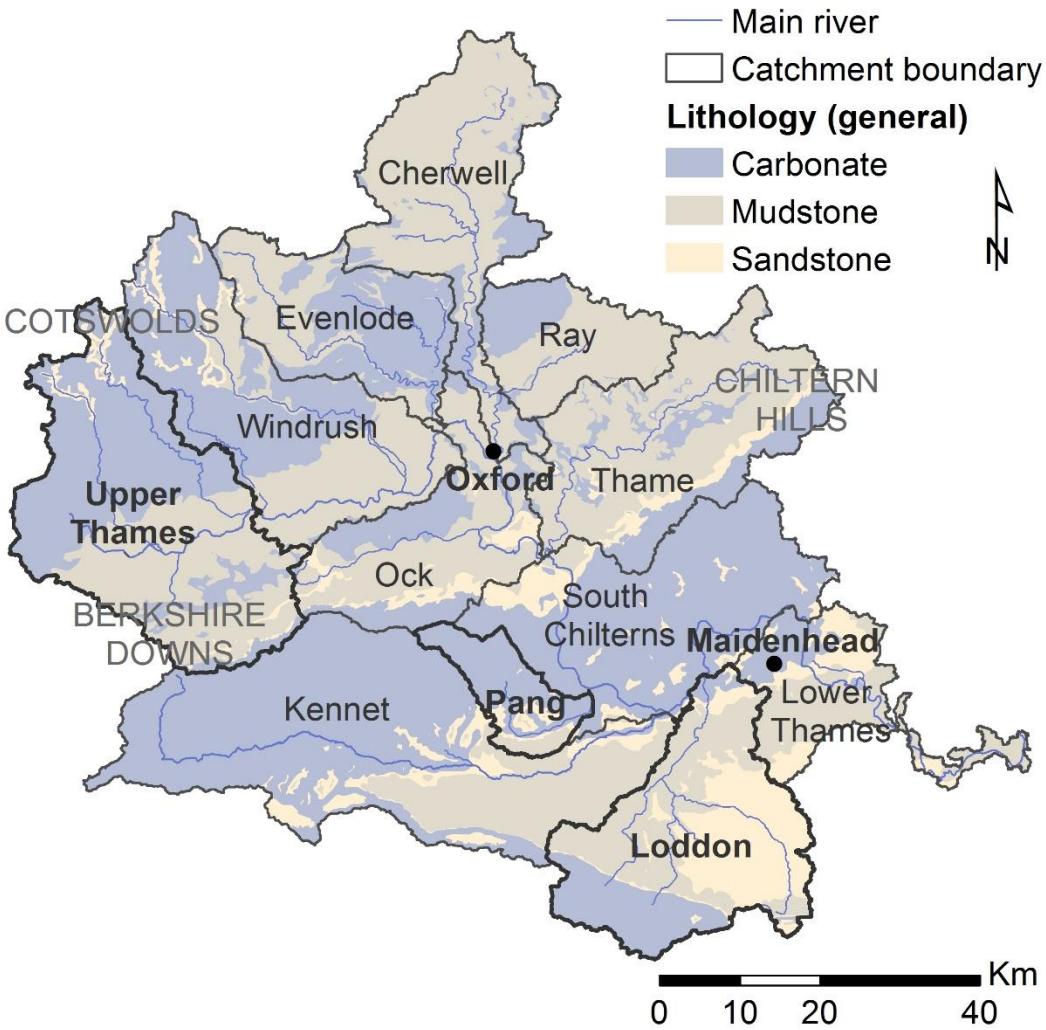
TESTING A THEORETICAL FRAMEWORK

- Dadson et al (2017) propose a conceptual framework for NFM measures





LOCATION



Scale

Fields (*everywhere*)

Catchments:

- Upper Thames
- Pang
- Loddon

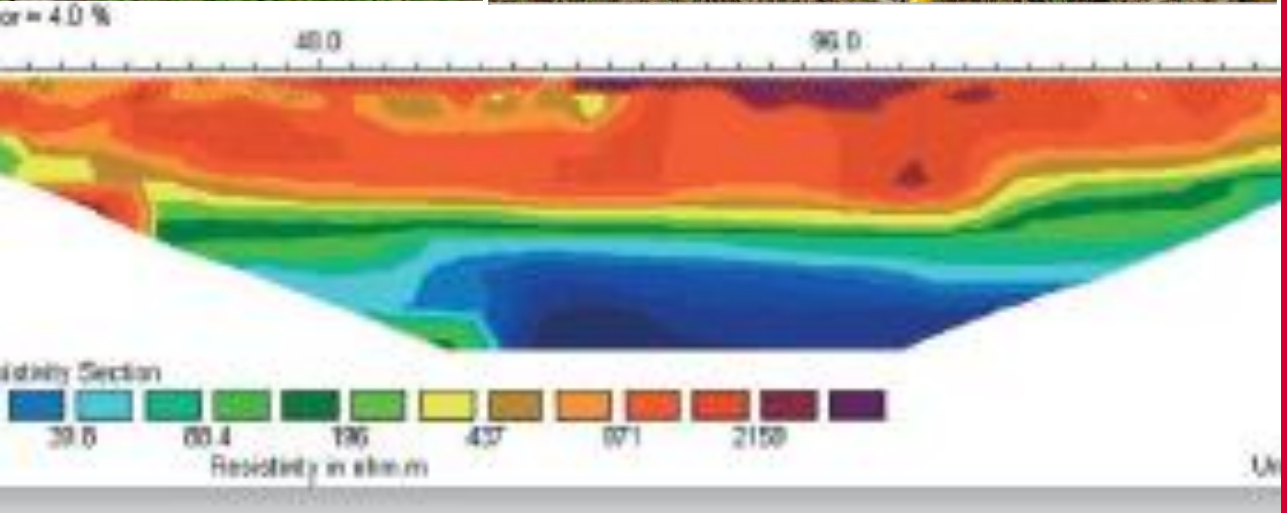
River Basin:

- Upstream Oxford
- Upstream Maidenhead

LIMITLESS **POTENTIAL** | LIMITLESS **OPPORTUNITIES** | LIMITLESS **IMPACT**

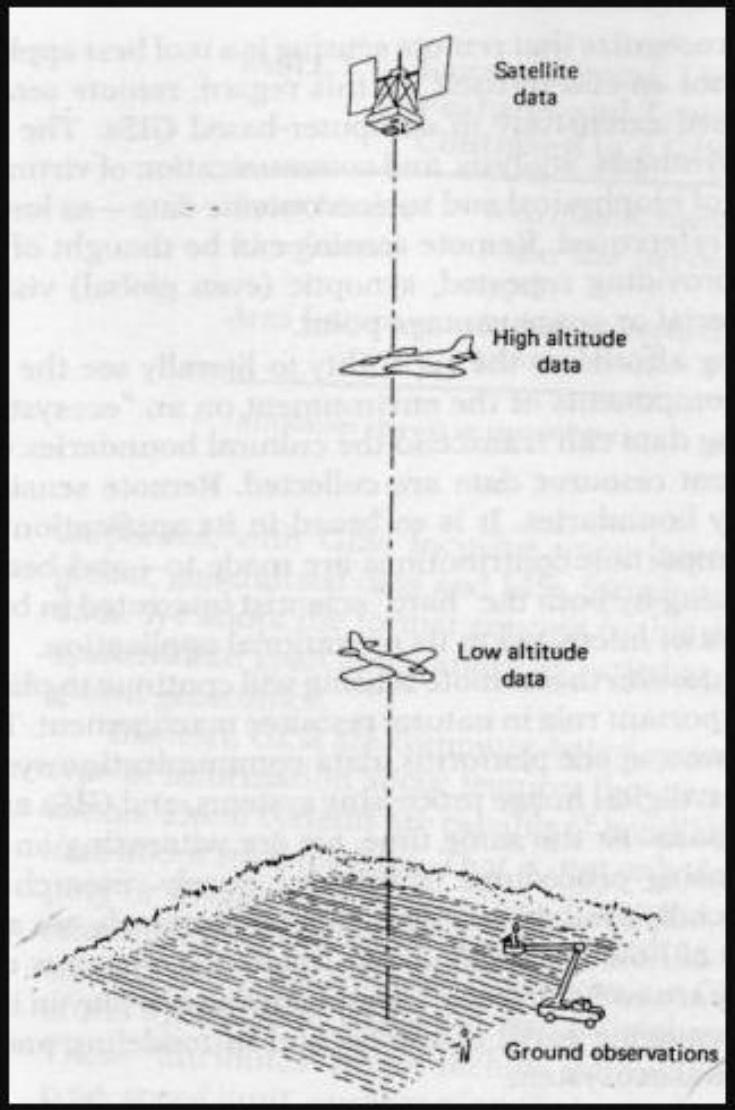
OB 1: LOCAL KNOWLEDGE & SCENARIOS

- Collate available data
- Calculate the catchment flood mitigation capacity needed
- Local knowledge about land management
- Local knowledge about current and future land management scenarios



OB2: FIELD DATA

- Collate available data
- Broad scale survey of basic soil surface properties
- Detailed survey of soil surface and subsurface properties
- Data to support remote sensing and modelling work

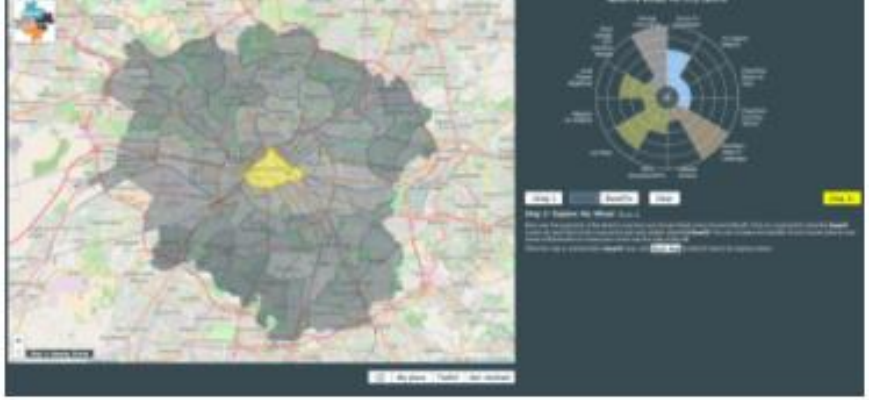


OB3: REMOTE SENSING

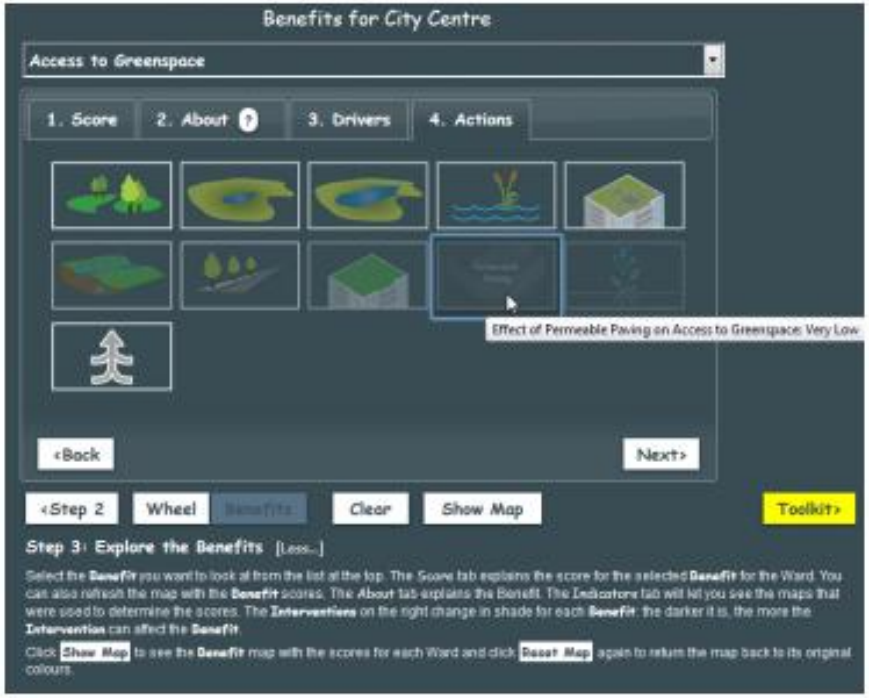
- Detailed site surveys below ground and above (drones)
- Catchment wide satellite data
- Focus on soil moisture and vegetation properties that affect evapotranspiration

OB4: MODELLING

- Integrate land surface, catchment rainfall-runoff, groundwater and river channel models
- Start with the Pang, move to Upper Thames and Loddon, then wider river basin
- Sensitivity analysis
- Run locally developed scenarios



Users can move their cursor over the BOUNTY Benefits Wheel to see how their neighbourhood scores for each benefit, or compare how areas compare by moving over the map.



The IEA designed easily identifiable icons. Potential innovations change the shade of each benefit icon, which goes darker the more

OB5: VISUALISE & EXPLORE

- Develop easy to use web-based applications to help people use data and knowledge to inform NFM planning decisions

COMMUNICATION & ENGAGEMENT

- Annual West Thames Workshop for everyone to share knowledge
- Field meetings hosted by partners
- Web site and social media
- Educational resources developed to support evaluation work
- Reports to feed in to post-Brexit agri-environment schemes
- Development of an on-line course on NFM

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[MY] JOURNEY TO LANDWISE....

NERC IMPACT PROJECT TEAM

Joanna Clark
Soil, Catchments

Simon Mortimer
Grass, Farming

Alison Bailey
Farm Economics

Simon Potts
Bees, Farming

Tom Breeze
Bees, Economics

Jess Neumann
Mapping

Geoff Griffiths
Mapping

David Macdonald
Flooding

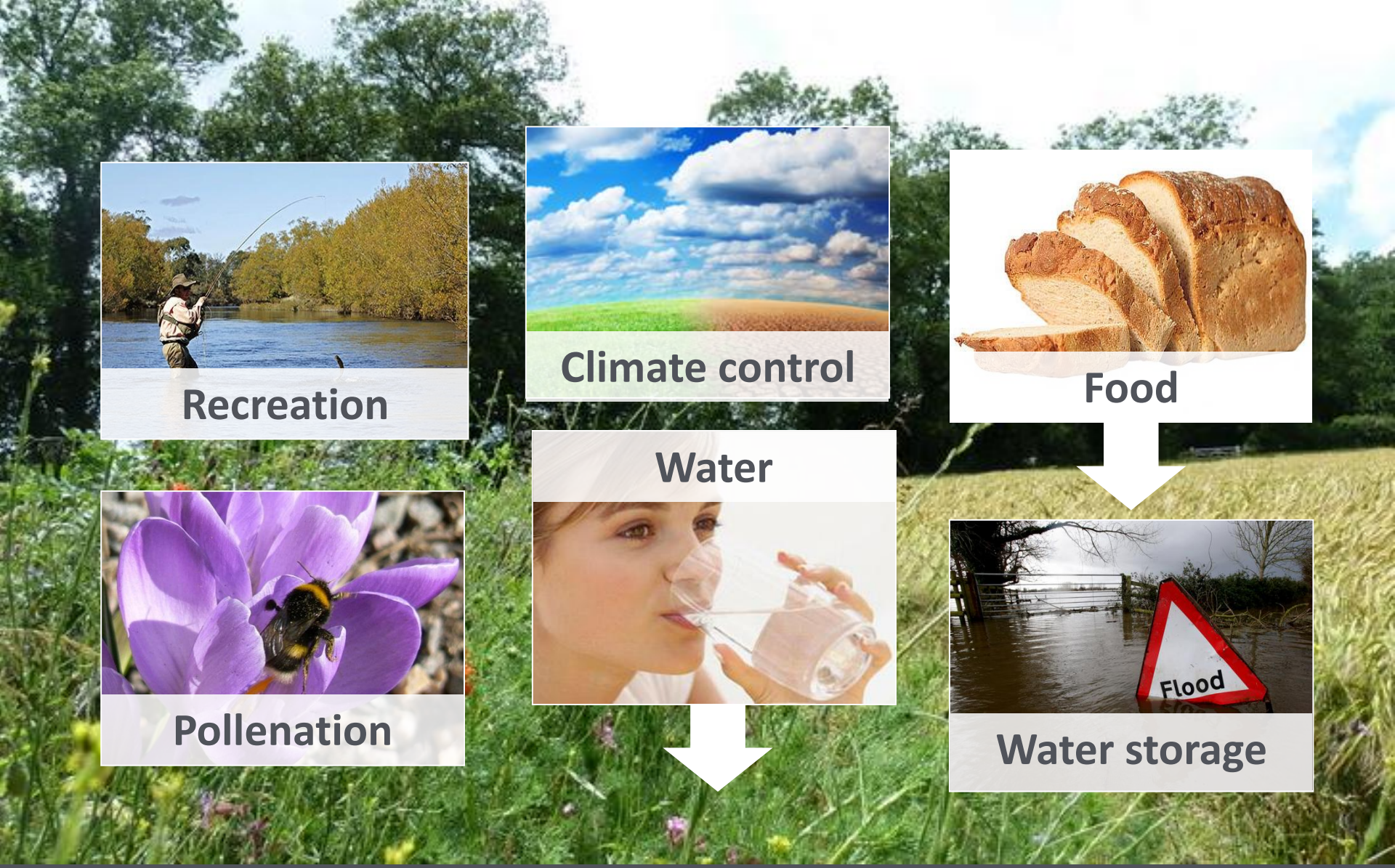
Anne Verhoef
Soil Water

Hannah Cloke
Flooding

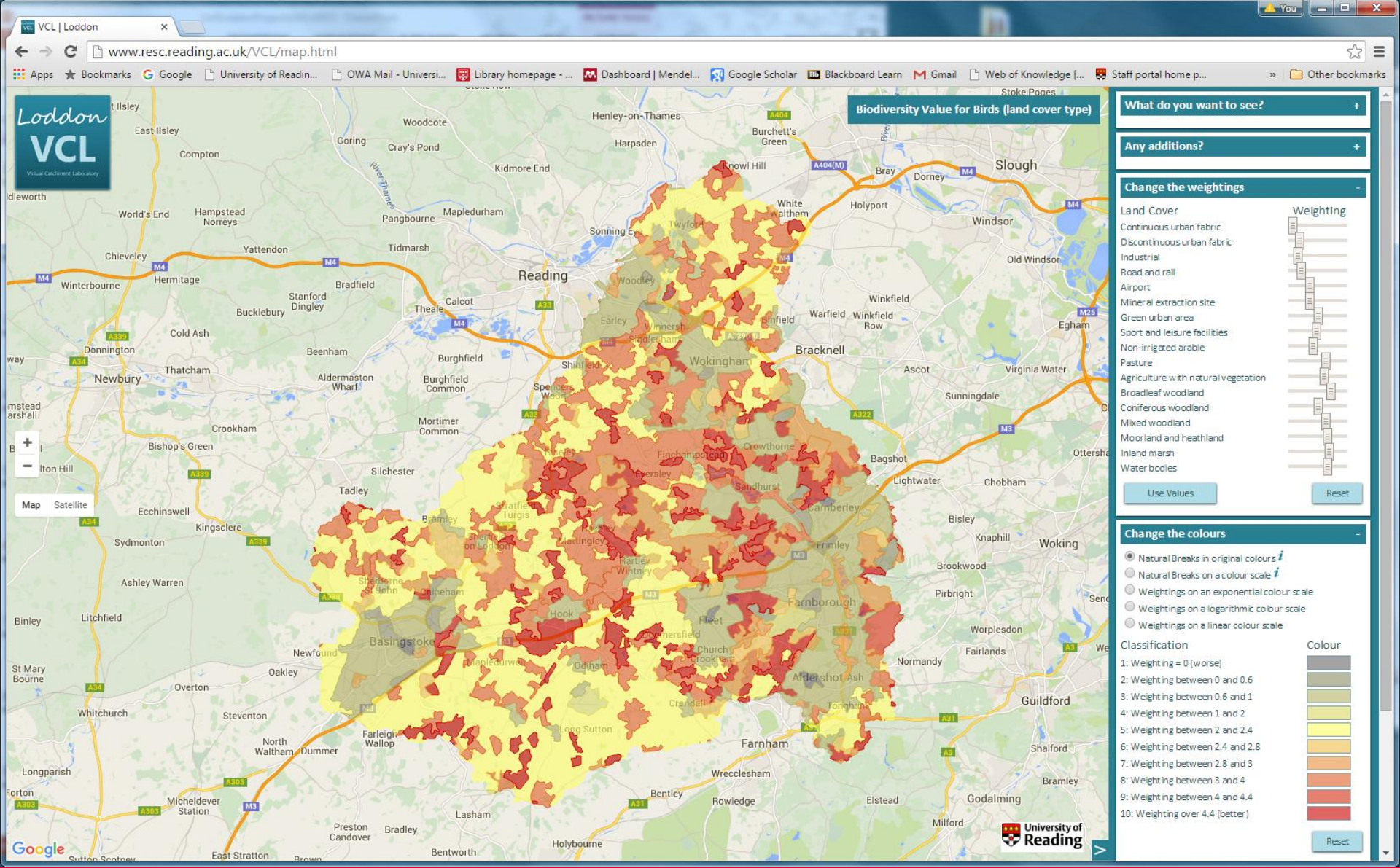
Barbara Percy
Software

Gavin Parker
Planning


Hart
DISTRICT COUNCIL
enterprise M3
CAMBERLEY NATURAL HISTORY SOCIETY
RUSHMOOR
BOROUGH COUNCIL
THE wildlife TRUSTS
West Berkshire
COUNCIL
CLA Country Land & Business Association
TVERC
Thames Water
The Basingstoke Canal Society
Environment Agency
MINISTRY OF DEFENCE
Loddon Catchment Partnership
NFU
NATURAL BASINGSTOKE
COMMUNITY ACTION FOR NATURE ON YOUR DOORSTEP
WILD TROUT TRUST
www.wildtrout.org
Forestry Commission
Hampshire County Council
Basingstoke Canal Authority
NATURAL ENGLAND
WOKINGHAM BOROUGH COUNCIL
National Trust
Cove Brook GREENWAY
south east water
Blackwater Valley Countryside Partnership
Basingstoke and Deane
Hampshire Association of Local Councils
Catchment Based Approach
Partnerships for Action



EXAMPLE ECOSYSTEM SERVICES



VIRTUAL CATCHMENT LABORATORY

Barbara Percy, Jess Neumann, Tom Breeze

WHAT IS LODDON OBSERVATORY?

- **Integrated platform for research-teaching-impact** to support sustainable societies
- **Physical focal point** for cross-disciplinary research in our local area
- **Social network** within UoR and outside with academic and non-academic partners
- [Developing] **Physical infrastructure** for monitoring, modelling and experimental work on UoR Farms and wider catchment
- [Developing] **Virtual infrastructure** to store and share data, models, research, activities etc.
- 'High-level' **inclusive** definition to enable others to define their contribution

- **Core values: Long-term relationships, cross-disciplinary, participatory**

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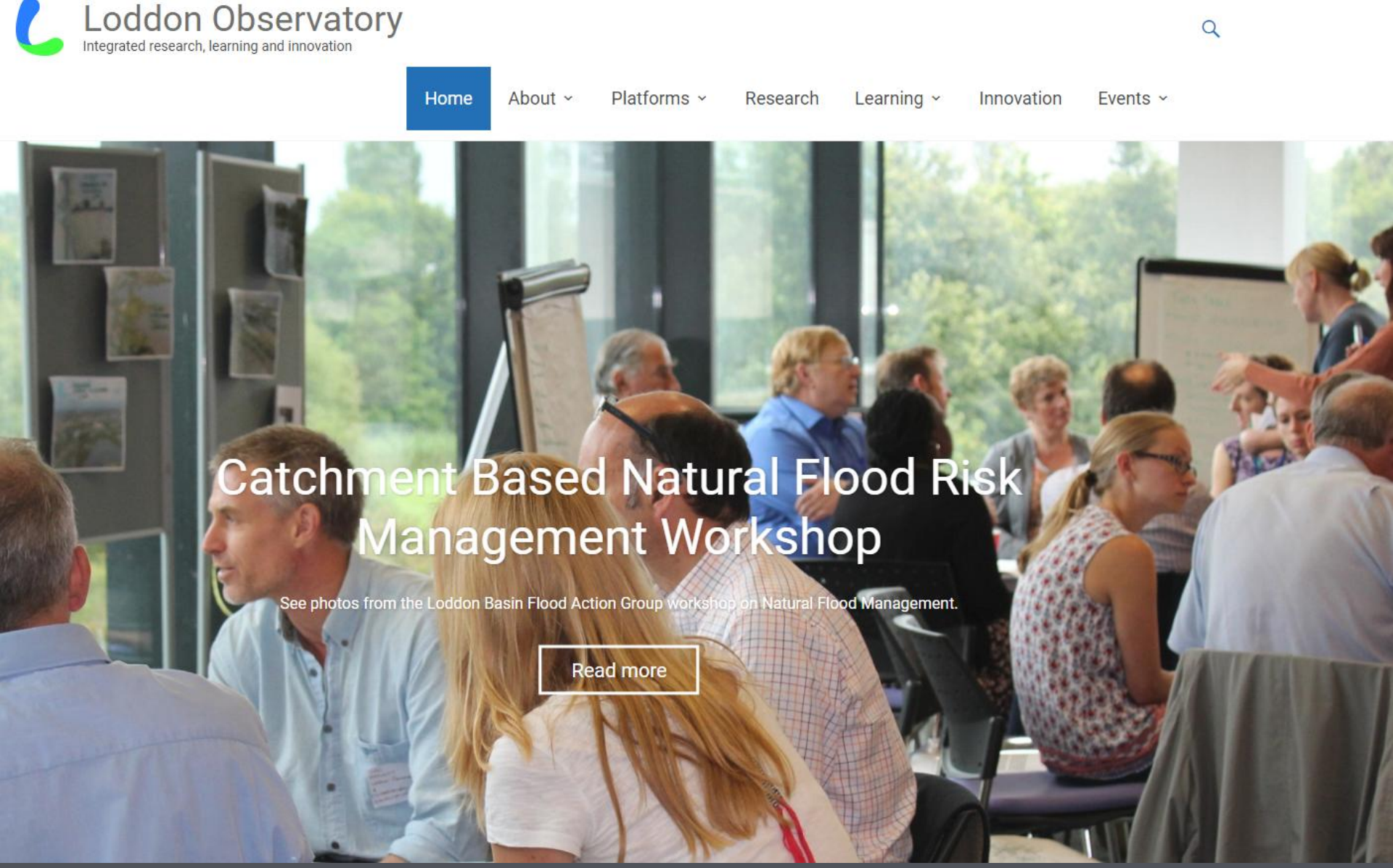
THE FIVE PRINCIPLES OF KNOWLEDGE EXCHANGE

1. **Co-design** project and embed KE
2. **Represent** and embed key stakeholders in research
3. **Engage** in two-way dialogue, build long-term relationships, **co-produce**
4. **Impact** identify quick wins and timing
5. **Reflect and sustain**

Participatory Approach

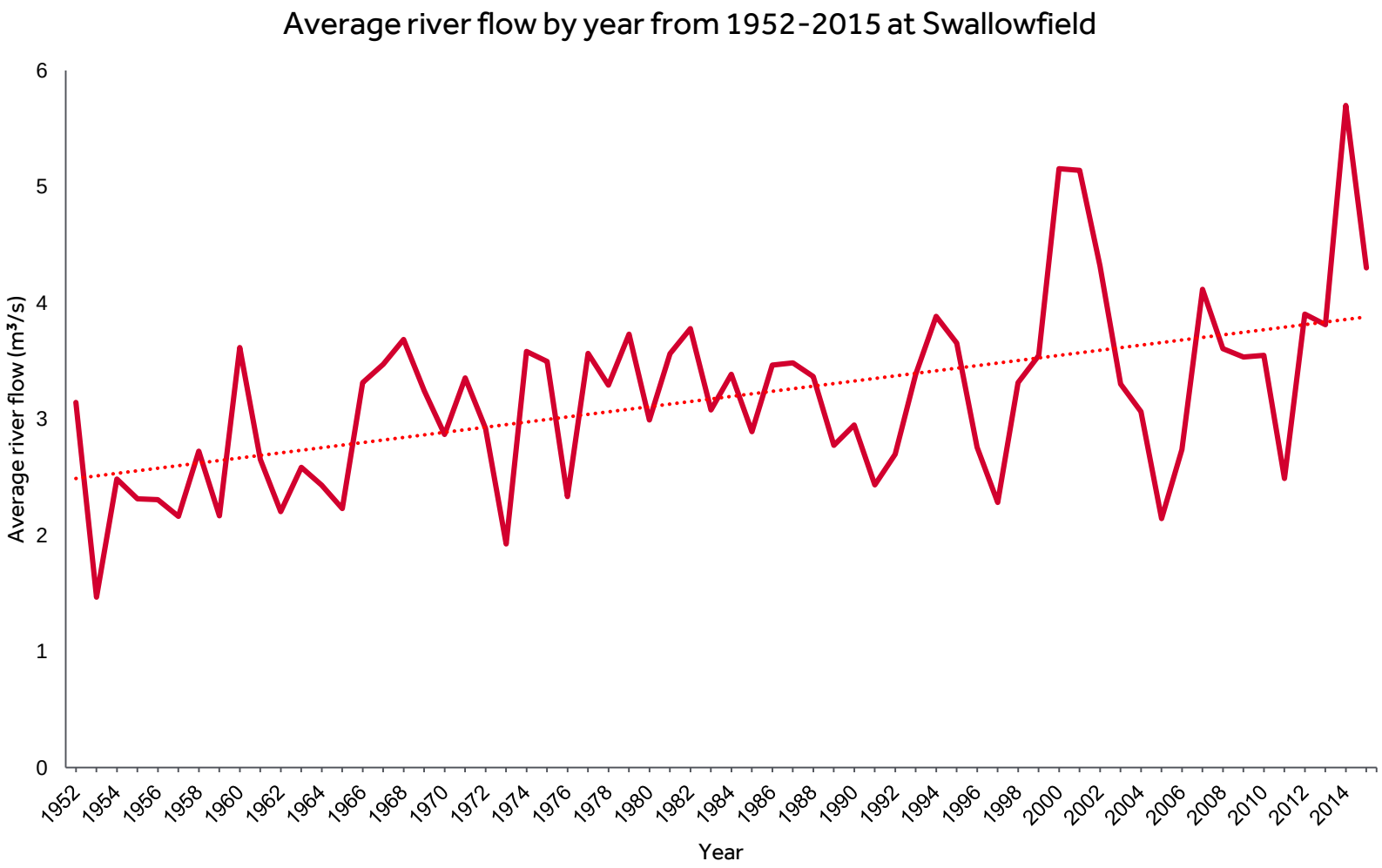
Reed et al. (2014) Journal of Environmental Management 146: 337-345.



ENGAGEMENT & CO-PRODUCTION

2015 LODDON OBSERVATORY DISSERTATION STUDENTS

ENVIRONMENT AGENCY FLOW DATA



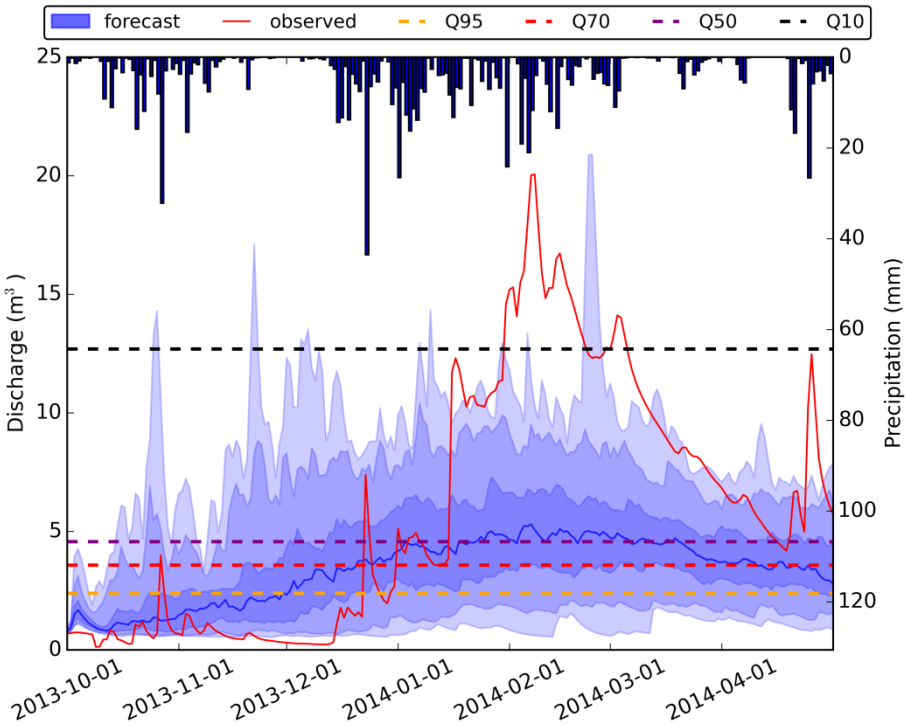
Johnathan Cocks, Part 3 BSc Geography

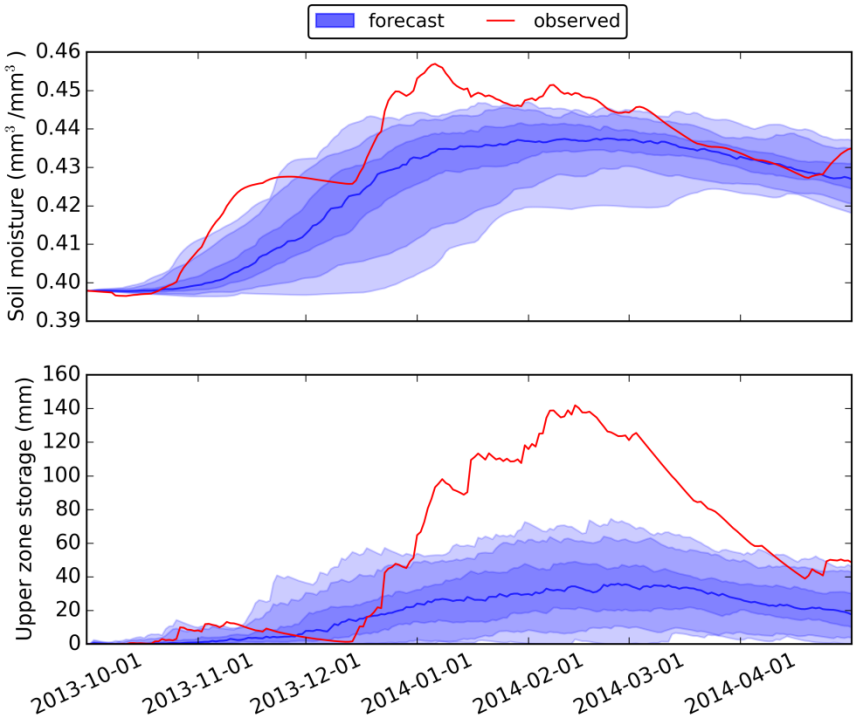
LODDON CATCHMENT CONSULTANTS 2015-16

Compound floods (fluvial, pluvial and groundwater) – Thames, UK

“The co-occurrence of high rainfall, high streamflow and high groundwater discharge”

Seasonal (7 month) outputs…





Funded under the Horizon 2020 Framework Programme of the European Union

Grant Agreement No 641811

TWENTY65: SENSORS IN LODDON

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TWENTY65:
DATA ACCESS BY TELEMETRY

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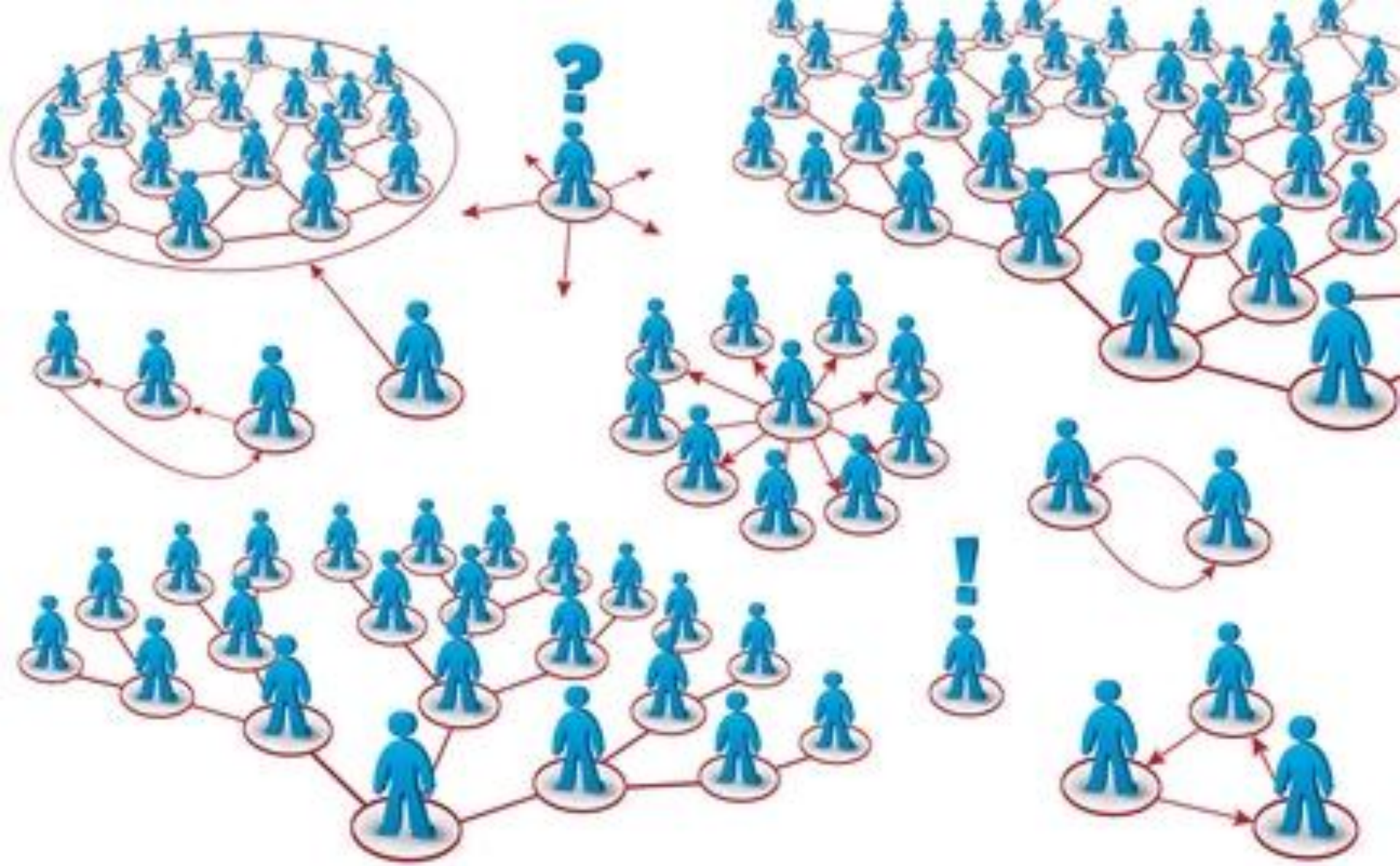

GROWING THE LANDWISE NETWORK

EXAMPLE: NATURAL FLOOD MANAGEMENT

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- **Loddon is at risk from surface, river and groundwater flooding. Active flood groups trying to work with local authorities and EA.**
- 2014-15: NERC Impact Accelerator Project – Ecosystem Services (generally), met key individuals and organisations
- 2015: UoR joined Loddon Catchment Partnership Steering Group
- 2015: Made a video with partners
- 2015: Started linking up dissertation projects with Loddon partners
- 2015-16: Set up Loddon Catchment Consultancy (GV2LCC)
- 2016: Workshop with farmers on woodlands for water
- 2016: Loddon Observatory in successful EPSRC grant (Twenty65)
- 2016: Local flood action group chair (Phiala Mehring) started a PhD
- 2016: Workshop with community, agencies about Natural Flood Management
- Dec 2016: NERC call for NFM proposals working with stakeholders
- July 2017: GV2LCC supporting community led Defra funded NFM projects
- Oct 2017: Awarded £1.25m NERC grant on NFM (LANDWISE)

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REFLECTIONS ON BUILDING ACADEMIC PARTNERSHIPS


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BOEING

ALIGN WITH ACADEMIC DRIVERS

- University missions: enhancing society (economic and non-economic) through teaching and research

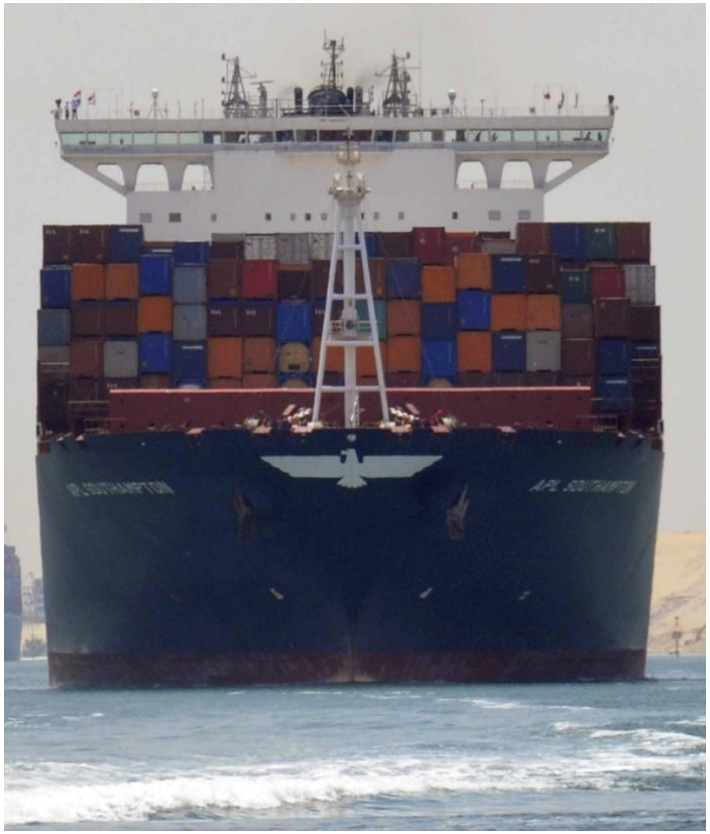
- University performance is measured by:
  - **Research Excellence Framework (REF),** includes:
    - Research grant income
    - Quality of research outputs
    - Quality of 'Impact' (non-academic benefits)
  - **Teaching Excellent Framework (TEF),** incudes:
    - National Student Survey
    - Institutional evaluation

PROJECT GOALS MAY DIFFER

- Gold star research project has very tightly defined questions and/hypotheses to dig in to the details of a problem

- Non-academic partners often need a more holistic approach, and don't always need to same level of detail

TIME & TIMEFRAMES



Agility Spectrum


Motivation
Capacity
Strategic Goals
Network

Find researchers with shared interests

Make time to listen

Build long-term relationships

See researchers as partners (in from the start)