



Opportunities for Natural Flood Management and Monitoring Impact – Yorkshire iCASP

Prof Joseph Holden

www.icasp.org.uk

 @YorkshireiCASP



What is iCASP?



Yorkshire Integrated Catchment Solutions Programme (iCASP) - £6million partnership to enable access to evidence for integrated catchment management, funded by the Natural Environment Research Council

Aim: By 2022, ensure environmental science is used to generate £50million+ of benefits to Yorkshire's economy, thereby contributing to the UK Industrial Strategy.

Partnership



Yorkshire
Wildlife Trust



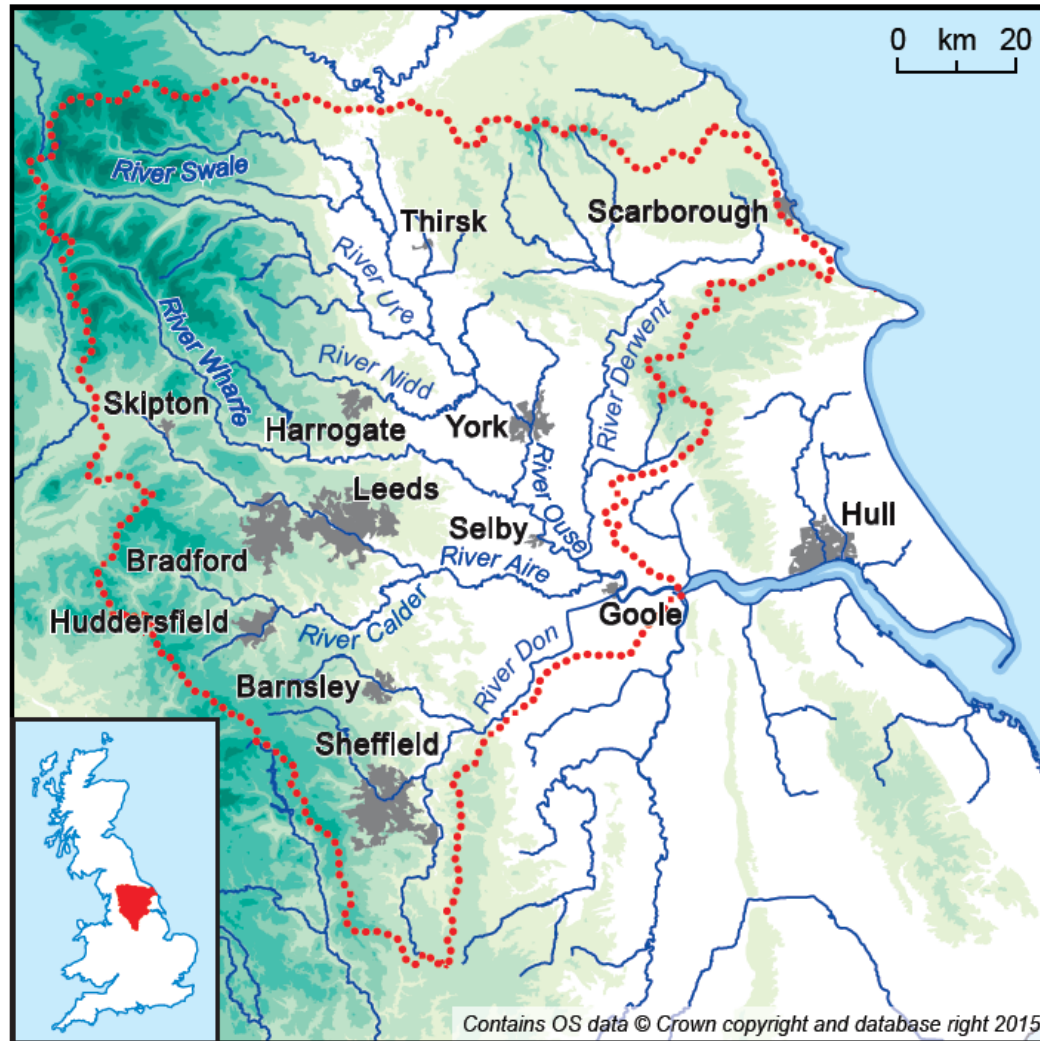
ARUP



Peatland Programme



Area covered by iCASP – River Ouse drainage basin



iCASP Themes

- Promoting the **resilience** of Yorkshire's cities
- Mitigating **drought and flood risk** in the context of **climate change**
- Improving the delivery of **flood forecasts**
- Developing approaches to improve ecological and chemical status of surface and groundwaters, and **water quality** entering treatment works
- Enhancing **carbon sequestration** in soils and woodlands
- Supporting **sustainable agriculture**

Legacy

- Resilient region
- Connections built between researchers, practitioners & decision-makers
- Important player in future regional growth & investment decisions
- Become a national capability - UK iCASP ?
- International export – globally leading integrated catchment solutions



Co-produced projects - examples

- Designing peatland restoration plans to optimise ecosystem service delivery
- Agricultural land-use evidence for public goods delivery (flood risk, water quality, soil health)
- Monitoring and modelling support for Natural Flood Management (NFM) pilots

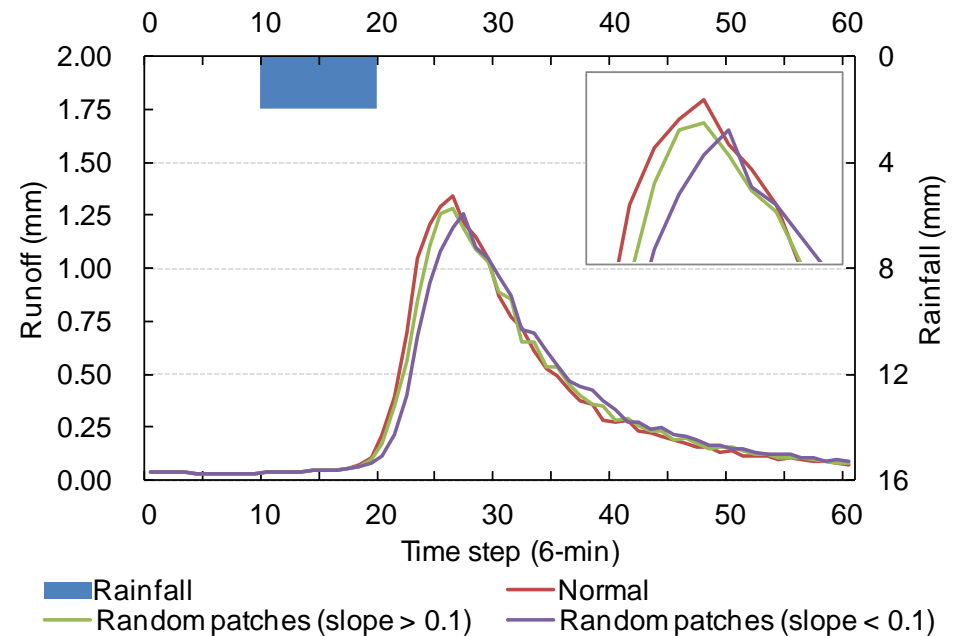
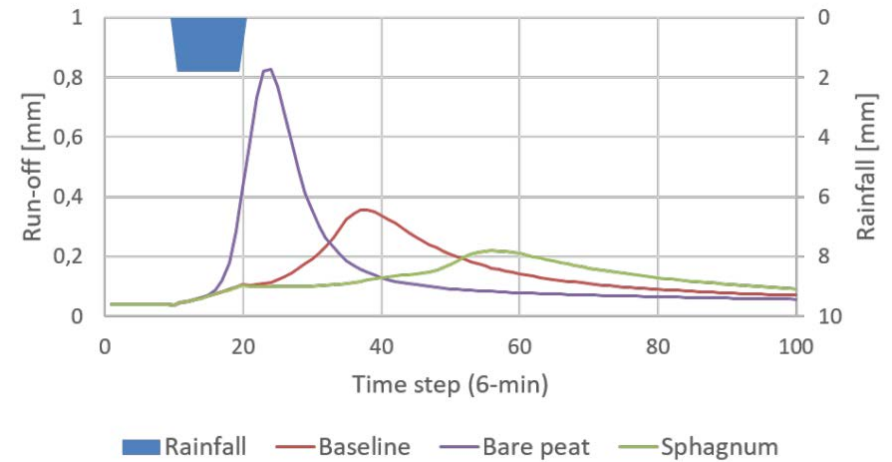
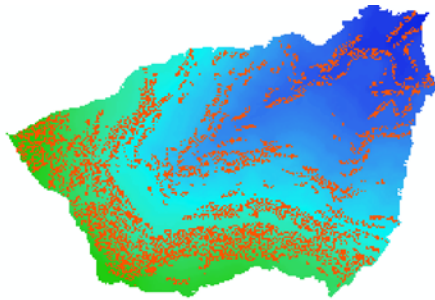


Previous research

Revegetation of bare peat areas reduces the flood peak – the effects are greater for the heaviest/extreme rainfall events



But revegetating in some locations have a greater impact than others

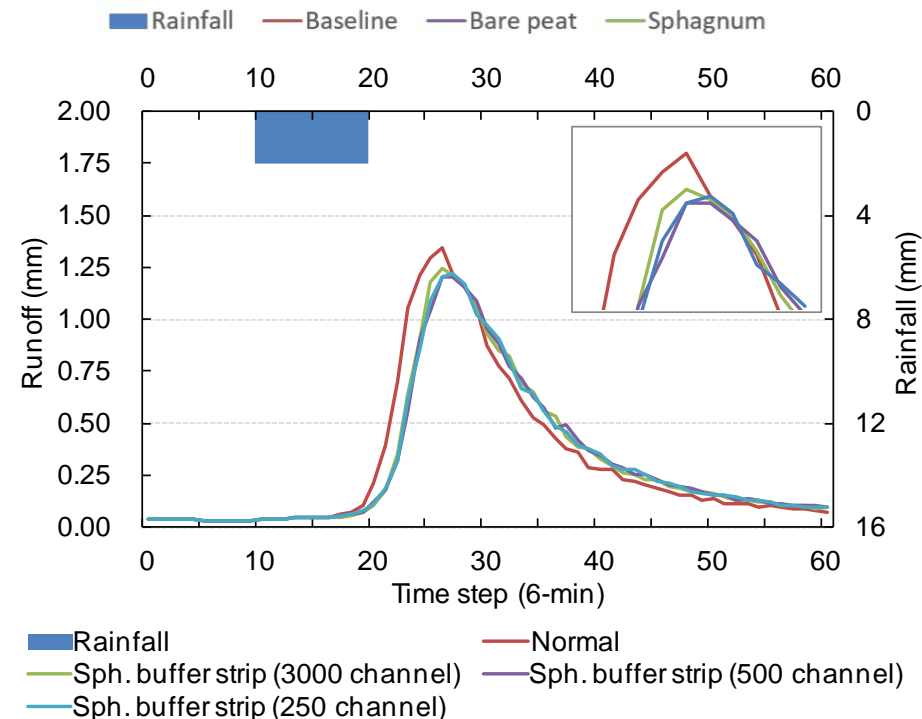
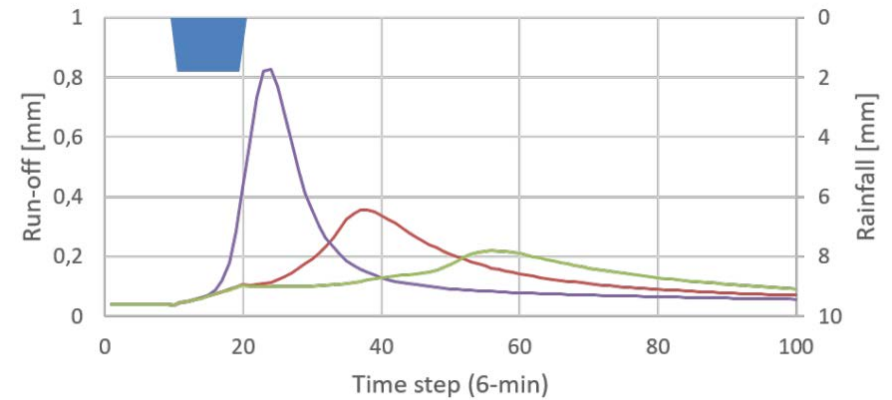


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Bishopdale – research

- Coverdale & Bishopdale modelling shows very effective flow peak reduction & delay occurs when you focus on creating rougher surface vegetation along stream & river corridors.
- Bishopdale – e.g. tree planting along river corridors (only up to 3% of catchment area), can reduce flow peak by as much as 50 % and delay the flow by 3hrs (18 mm 1-hr rainfall).

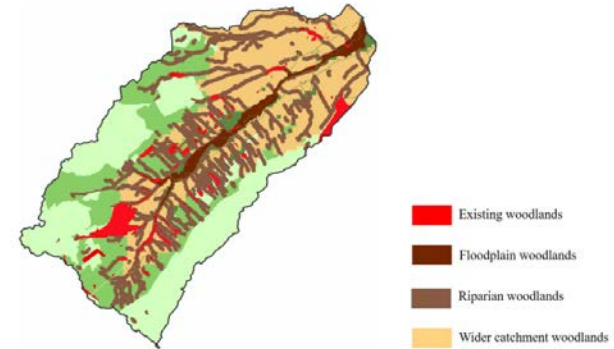
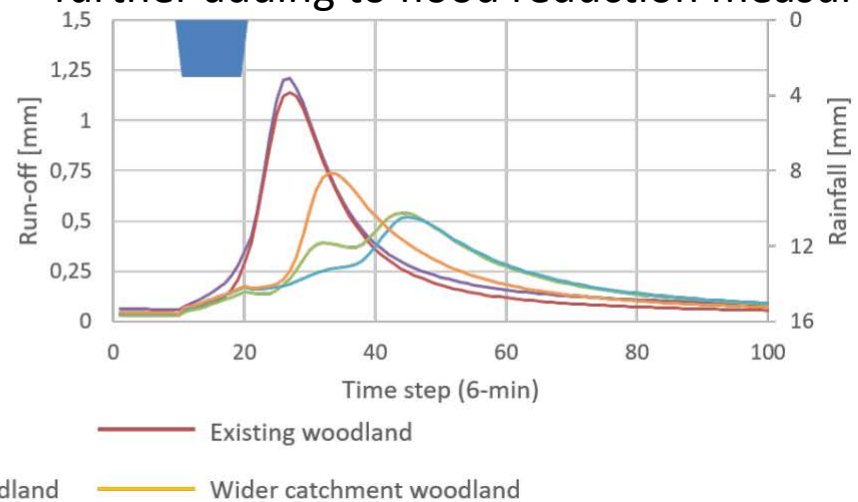
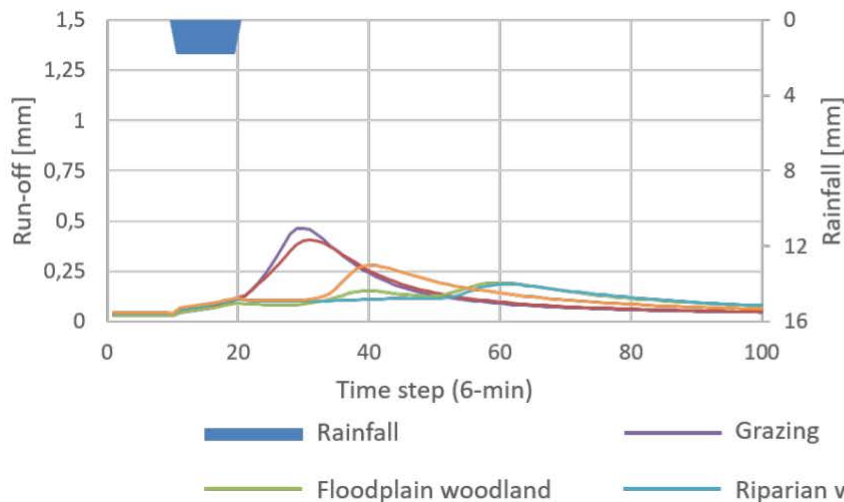


Figure 3.5: Map of the different woodland scenarios (from the Environment Agency Mapping potential for WWNP, 2017)

Some of the soil in these river corridor areas is very compacted – but if we exclude sheep from them to protect trees, the compaction significantly reduces after **only 5 years** – further adding to flood reduction measures.



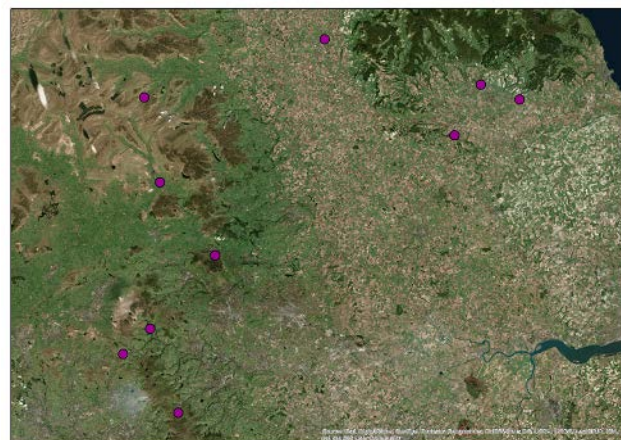
Supporting NFM pilots

Dr Richard Grayson is the lead iCASP impact fellow, r.grayson@leeds.ac.uk



Working with Defra-funded NFM pilots in Yorkshire, e.g. North Yorkshire NFM catchment programme (incl. Bishopdale), to:

- Collate baseline data
- Establish monitoring systems and protocols (incl. multiple benefits of NFM)
- Select and site NFM interventions
- Interpret data on NFM outcomes
- Road-test and refine EA guidance
- Consolidating evidence
- Community of practice



Deliver evidence and guidance that will influence national implementation and financing of NFM

Supporting NFM pilots - impact

Locally:

- support the success of the NFM pilots

Regionally:

- experience exchange between pilots,
- broaden knowledge on NFM implementation,
- inform larger flood alleviation schemes (York, Leeds, Sheffield), catchment management plans, Yorkshire Regional Flood and Coastal Committee

Nationally:

- input to national guidance
- robust performance of NFM pilots will influence confidence in NFM measures impacting government policies and funding (e.g. Flood Grant-in-Aid)
- supporting implementation of 25 Year Environment Plan





Professor Joe Holden is iCASP Director



Rob Munroe is Programme Manager



Dr Richard Grayson is an iCASP Impact Translation Fellow

Susan Ballard is Communication Officer



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