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Flood Risk Management in the Context of Change: A UK Perspective

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FCERM.net
Flooding & Coastal Erosion Risk Management Network

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Joint EPSRC & EA funding.

- Knowledge of location, ownership, condition and impact of flooding infrastructure assets.
- Land use issues: slow replanting following tree harvesting, soil compaction. Is catchment approach is picking this up?
- Climate change is being modelled, data is being gathered and updated. Is this being translated into practical guidance.
- Are different sectors of society disproportionately disadvantage by flooding?

IAHR AIRH
International Association for Hydro-Environment Engineering and Research

Supported by
Spain Water and IWHR, China

Distinctly Ambitious
www.hw.ac.uk

Accounting for Climate Change Uncertainty in Flood Hazard Prediction

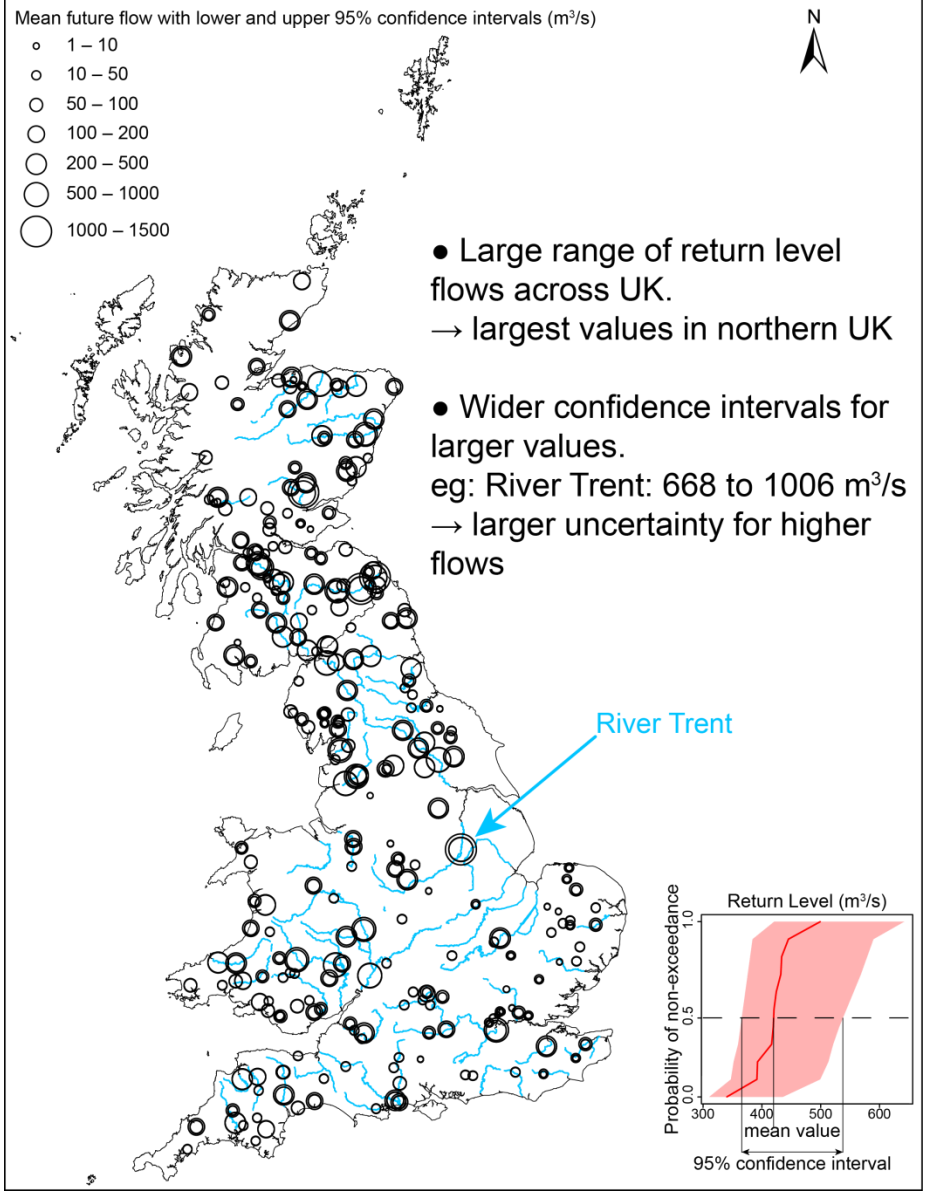
EPSRC funded project: January 2015 to July 2016 (Beevers and Collet)

- Future Flows project (Prudhomme et al. 2013) model extreme events under non-stationary conditions using climate influenced flows.

  i. Return period flows estimated for 20, 100 and 200 RP events
  ii. For the short and medium term planning horizons: 2030, 2050

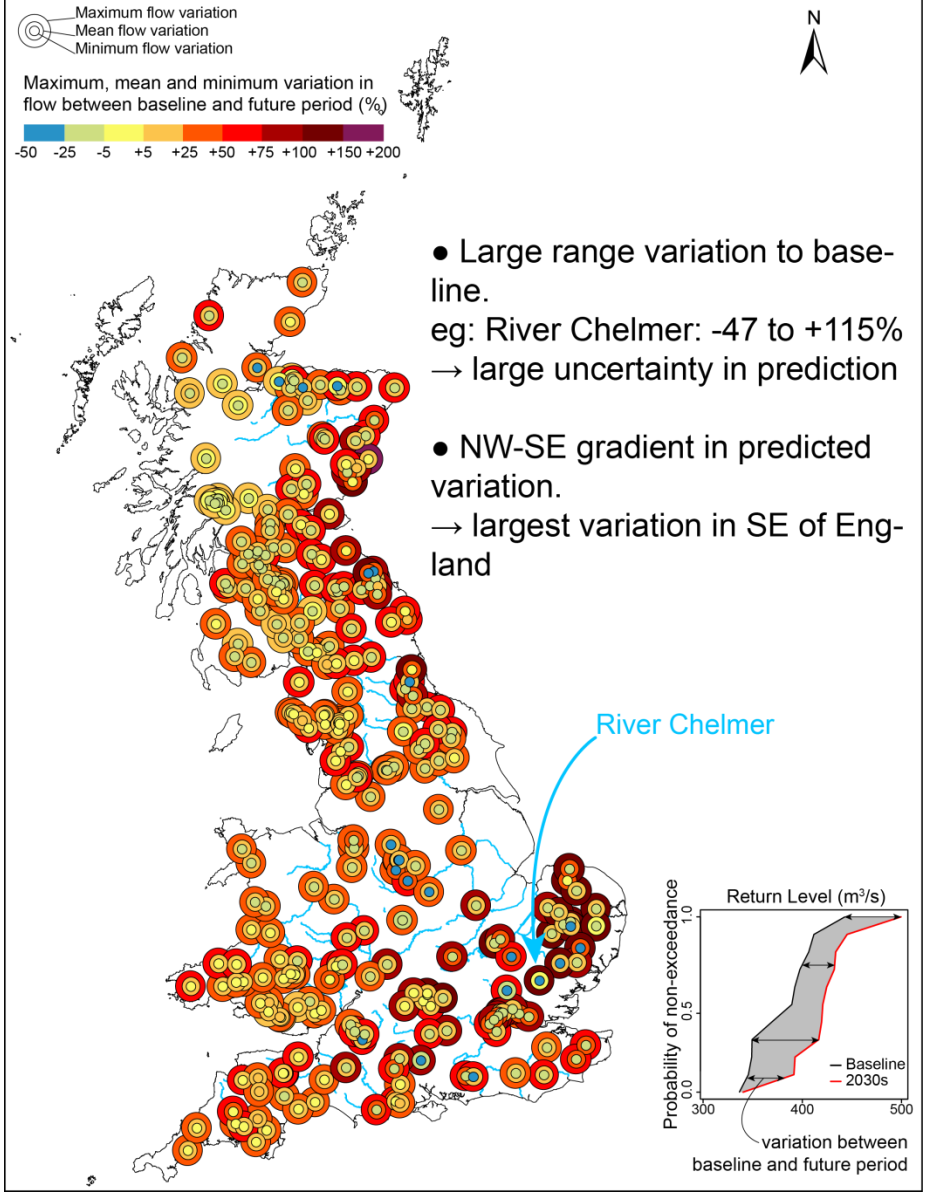
- Create maps which capture the uncertainty in flood hazard (extent, depth and velocity).

GEV results for 20-year return period in 2030 : estimation of mean future return level flows



- Large range of return level flows across UK.
  → largest values in northern UK
- Wider confidence intervals for larger values.
  eg: River Trent: 668 to 1006 m³/s
  → larger uncertainty for higher flows

GEV results for 20-year return period in 2030 : estimation of variation to baseline



- Large range variation to baseline.
  eg: River Chelmer: -47 to +115%
  → large uncertainty in prediction
- NW-SE gradient in predicted variation.
  → largest variation in SE of England

Flood Disadvantage

- Flood disadvantage depends on a number of social factors.
- UK studies are typically based based on Census data.
- Census data is constrained by:
    i. spatial resolution,
    ii. number of variables considered, and
    iii. how often it is updated.
- Use of commercial provides potential for higher resolution data (property level), more up to date information and more variables

Flood Disadvantage

Ongoing EPSRC Impact Acceleration Account project utilising Experian Mosaic™ data to investigate:

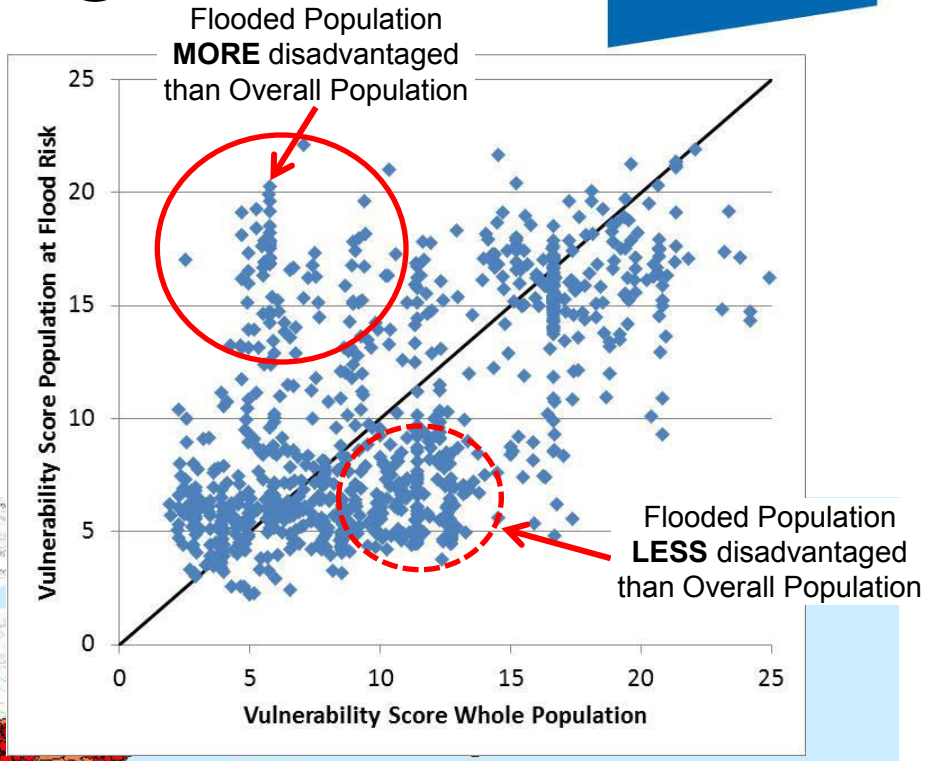
i. Whether population at risk of flooding is more/less disadvantaged than overall population.

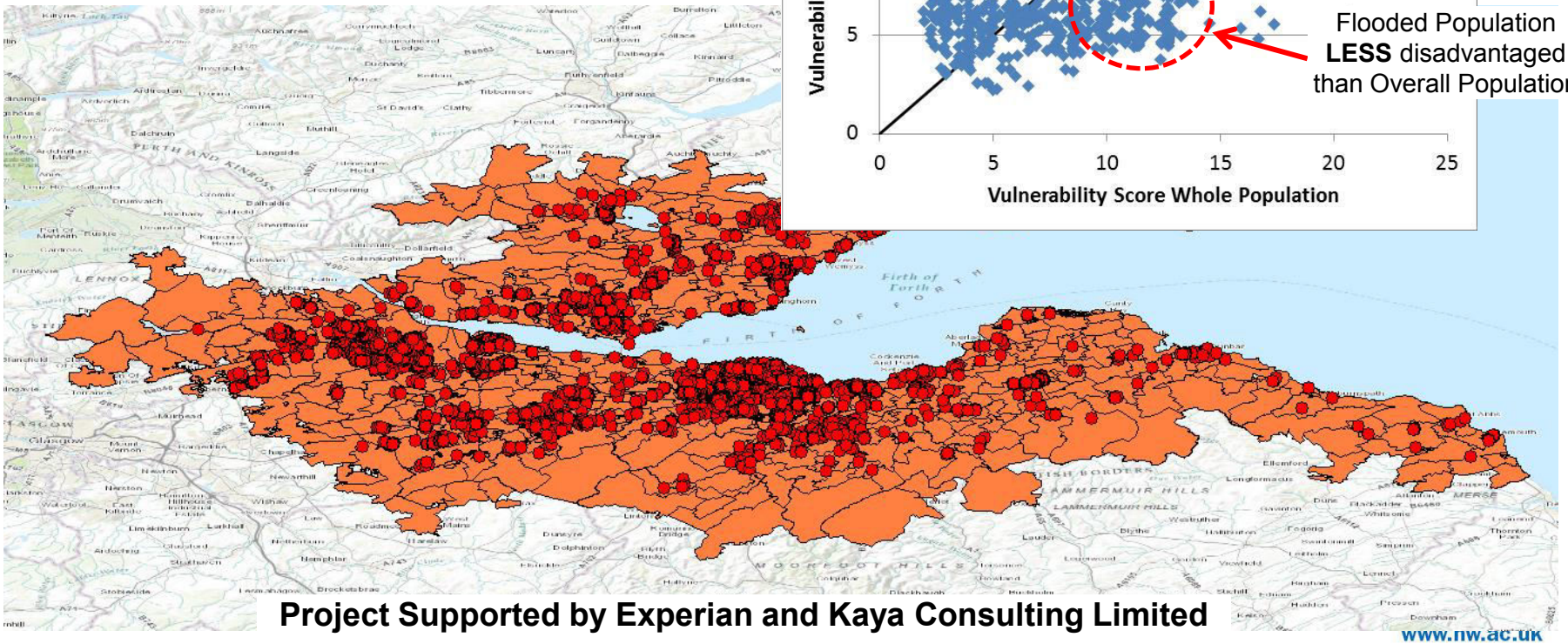
ii. Who is at risk of flooding and whether better means of communicating flood risk can be developed

iii. Whether better measures of flood disadvantage can be developed

Flood Disadvantage

Average 'Disadvantage Score' for each Output Area. (income, home ownership, long term health, ethnicity, etc.)





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Thank You