



Extreme Weather & Flooding Response

- Warnings & the Public Weather Service
- Flood Forecasting Centre
- Looking ahead

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Public Weather Service

- Funded by UK Govt
- Coherent range of weather information and warnings enabling the UK public to
 1. make informed decisions in their day-to-day activities
 2. optimise or mitigate against the impact of the weather
 3. contribute to the protection of life, property and basic infrastructure.





Public Weather Service

- NSWWS
- PWS Advisors
- Basic weather forecasts (WEB etc.)
- Customer Centre
- National Meteorological Library
- Archives in Exeter, Edinburgh & Belfast



Public Weather Service

- **NSWWS**
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National Severe Weather Warning Service

- Gales/Storms
- Ice
- Snow
- Heavy Rain (NOT FLOODING)
- Storm Surge
- Blizzard
- Fog
- FREE TO ALL



National Severe Weather Warning Service

- Advisory
- Early
- Flash





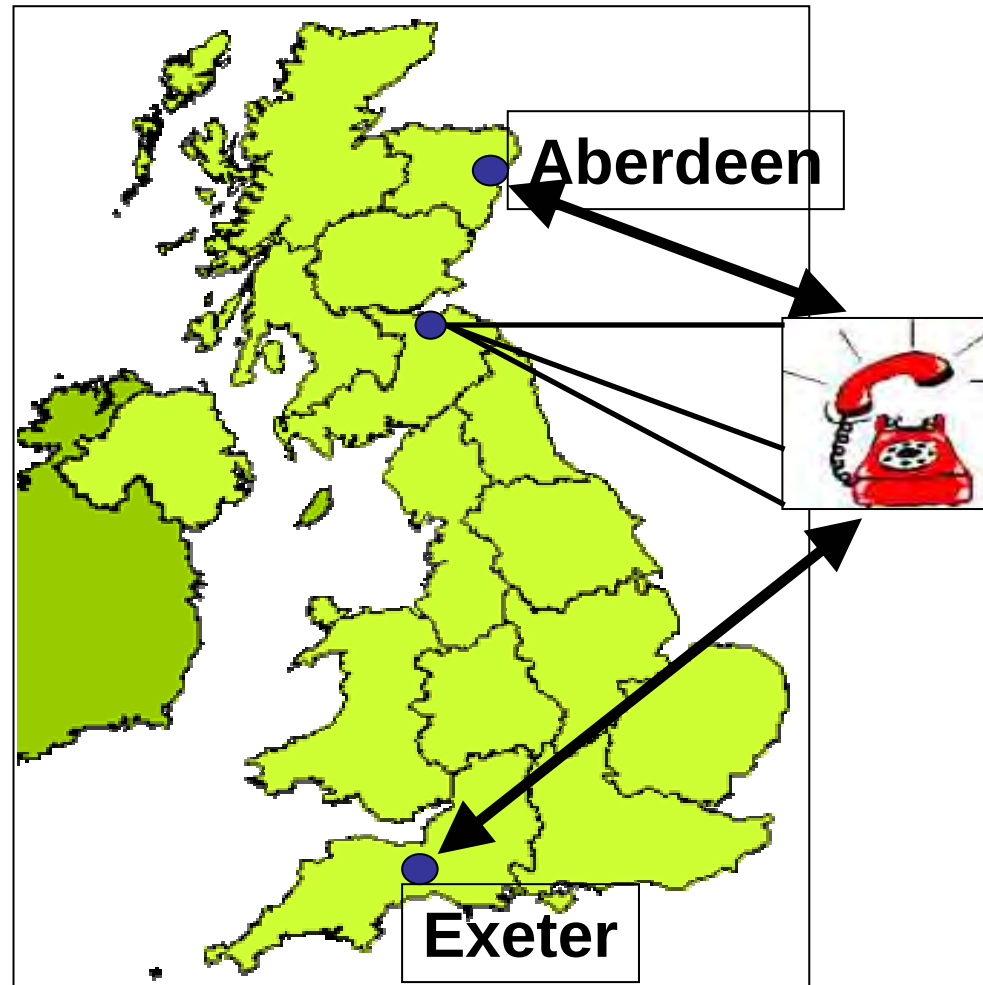
NSWWS

- Primarily for public use
- No user defined criteria
- Not geographically specific
- Short lead times
- Responders need more detail





PWS Advisors



Jim



Ross



Flood Forecasting Centre

Pitt Review

34. Met Office & EA Joint Warnings
and impact for responders and the
public

65. Met Office & EA increased
personalisation of public warnings



Flood Forecasting Centre

- April 2009
- Based In London
- Meteorologists and Hydrologists working together
- Covering England & Wales
- £7M



Flood Forecasting Centre

- Integration of meteorology and hydrology
- Hydro-meteorological computer modelling
- Consistent messaging from 1 centre
- SCHAPI



Forecast Improvements

- Higher resolution models
- Improved Ocean/atmosphere interaction
- Improving observations
- Extreme Rainfall Alerts



Aims for the Future

- More effective linking of hydrology & meteorology
- Improved flood warning for all sources of flooding
- Improved inputs to flood risk management
- Delivering

Improved Flood Resilience



Looking Ahead

The past is a foreign country
they do things differently
there.

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Climate Change Impacts

“The effect of climate change is a bit like crystal ball gazing with some widespread and varying predictions for the future”.
ACPOS



1st August Kilbirnie





Climate Change Impact

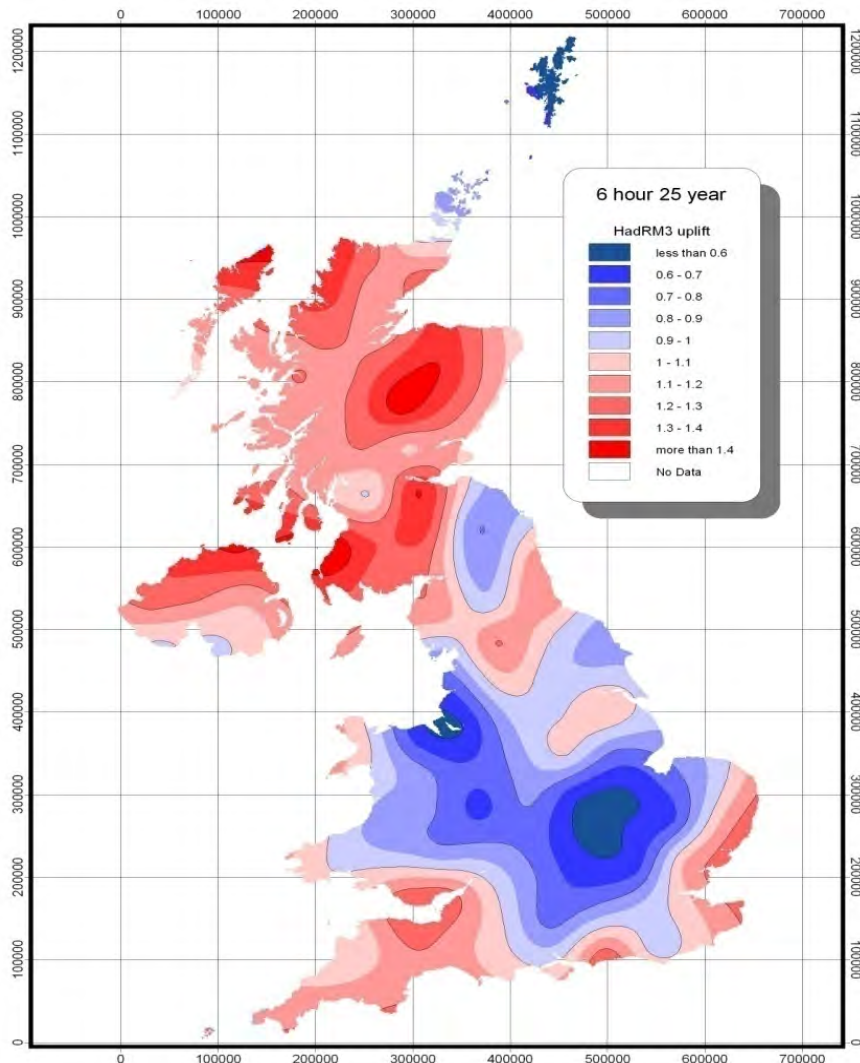
IMPACT

CONFIDENCE

Average & Extreme Temps	High
Wetter Winters	High
Winter Extremes	High
Rare Summer Extremes	Medium
Small Scale Summer Extremes	Uncertain/Low conf
Extreme Storm Surge	Low/medium
Location	Low Confidence



Precipitation Extremes



$$\text{Ratio} = \frac{\text{RPA (future climate)}}{\text{RPA (current climate)}}$$

RPA= Return Period Amount (mm)

Calculate for a specific duration (e.g. 6hrs) and a specific return period (e.g. 25 years)

Scotland: higher RPAs in the 2080s

Central England= reduced RPAs

We are redoing this work with the latest regional model



Scotland's Coasts

Future flooding

- global mean sea level rise
- regional uplift or depression of the land surface
- tidal changes (reflecting local changes in mean sea level)
- changes in wave heights
- changes in frequency and severity of storm surges.

Global mean sea-level rise

- IPCC estimate of current global sea level rise $1.8 \pm 0.5 \text{ mm yr}^{-1}$ (1961 to 2003).
- Satellite altimetry (1992-2007) accelerated to $3.1 \pm 0.7 \text{ mm yr}^{-1}$
- Global sea-level rise by 2090 (under the IPCC SRES A1B scenario –fast per capita growth, population peak in 2050 and balanced energy resources) projected at 4 mm yr^{-1}



Looking Ahead

The past is a foreign country
they do things differently there.

- SO MUST WE -

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