



ROYAL HASKONING

thinking in
all dimensions



Yorkshire and Humber Regional Adaptation Study



Dr Matthew Hunt
Climate risk and the city

ESRC Festival of Social Science, Leeds 18 March 2010

Royal Haskoning in the UK



- Environmental scientists and engineers
- 750+ UK-based staff
- 100+ environmental specialists

- Worldwide presence
- 4400 professionals
- 125+ years





- What the region has experienced (weather)
- What the region is going to experience (climate)

- What impacts will different sectors face
- What can be done

- Cross-sectoral impacts and actions

Current weather-related disruption



Yorkshire's National Newspaper
YORKSHIRE POST
YORKSHIRE Evening Post
The Northern Echo
Telegraph
Grimsby Telegraph



UKCIP02 + EARWIG (the 2050s)



Annual average	+1.8 to 1.9 °C
Summer average	+2.1 to 2.5 °C
Extreme hot	+2.8 to 3.2 °C



Annual precipitation	- ~6%
Winter	+12 to 17%
Summer	-22 to 26%



Plus wind, soil moisture and sea-level rise

Adaptation – sectors and impacts



- Flooding, ground/minewater, coastal change
- **Business and the economy** – buildings, agriculture, tourism, markets, R&D
- **Utilities and infrastructure** – design standards, network vulnerability, transport, process changes
- **Public services** – buildings, demand, process changes
- **Health and welfare** – changing needs and demands
- **Biodiversity** – habitat change, fragmentation, invasives
- **Cross-sectoral and second order**

Adaptation – common themes



- Assess vulnerability, monitor, and respond
 - Reactive vs proactive
 - Single vs staged
- Flexibility
- Guidance and dissemination
- Innovation
- Opportunities

Global phenomenon, regional implications, local adaptation

Cross-sectoral priorities

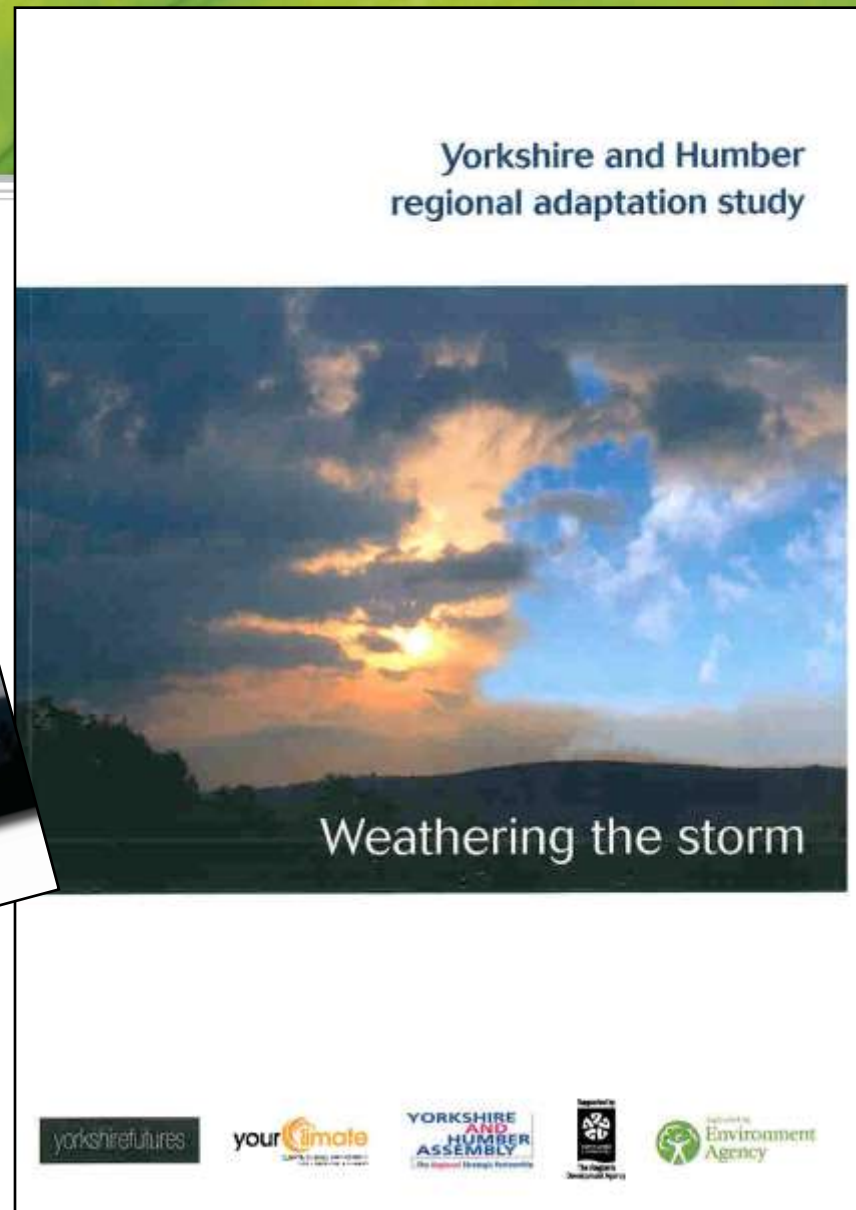
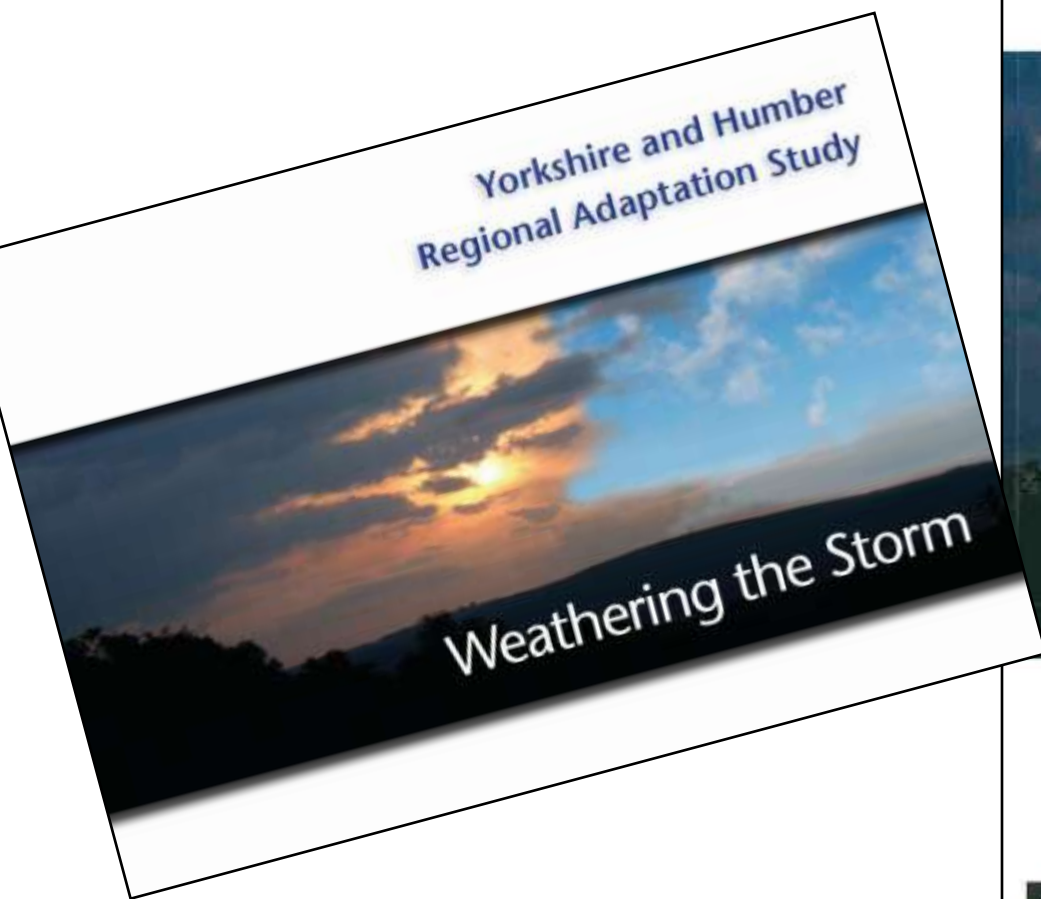


- ‘Big wins’
 - Green infrastructure
 - Longer term water cycle management
 - Assess new crops and land management

- Blockages
 - Political and private sector will and engagement
 - Lack of coordination and communication
 - Lack of incentivisation, and of regulation

- Actions and commitments (enablers)
 - Centralised and prioritised coordination and delivery
 - Wider education, engagement, and advocacy
 - Improved evidence base
 - Pilot schemes to trial innovation


Final reports



Reporting at different levels

YORKSHIRE AND HUMBER STUDY CLIMATE CHANGE ADAPTATION REPORT LOCAL AREA REPORT EAST RIDING OF YORKSHIRE DISTRICT

Location



Description of District

A rural district, traditionally dominated by agriculture and including a long length of coastline along the north shore of the Humber Estuary.


Future Climate Projections

- Annual average daily temperature is expected to rise by 1.9°C.
- Summer rainfall will, on average, rise more (by 2.5°C).
- Winter rainfall will, on average, fall (by 2.5°C).
- Extreme cold temperatures are expected to increase.
- Extreme hot temperatures are expected to decrease.
- The number of days with extreme temperatures is expected to increase.

These figures relate to the nearest modelled cell, which was Hull, Scarborough.

YORKSHIRE AND HUMBER STUDY CLIMATE CHANGE ADAPTATION REPORT LOCAL AREA REPORT CITY OF YORK

Location



Description of District

The City of York is in the middle of the study area. It is an urban area with a rural surrounding.

Future Climate Projections

The results of the modelling carried out for the Yorkshire and Humber Climate Change Adaptation Study suggest that the following changes are likely by 2050:

- Summer daily mean temperatures show the greatest seasonal temperature increase of 2.2°C;
- The average annual maximum temperature rise is projected to be 3°C;
- There will be an increase in the number of hot days during the summer (where the temperature exceeds 28°C), with an average of 3 more days per year;
- Winter average winds could increase by 1%; and
- The City will experience the greatest reduction in annual average rainfall across the study area, at 36mm, although winter rainfall is expected to increase.

These figures relate to the nearest modelled cell, which was York.



- Key part of climate change evidence for the Yorkshire & Humber Strategy (IRS)
- Used to build the Appraisal Framework for SA/SEA/HIA of IRS
- Used in baseline data and current research into establishing Environmental Limits
- Outputs used in Regional Flood Risk Assessment
- To help deliver SOGE targets for Yorkshire Forward properties
- Adaptation responses being fed into recently started Sub-Regional Water Cycle Study
- Sub-regional and local vulnerability assessments / LCLIPs and NI188

With thanks to ...



This major piece of work will be invaluable in enabling the region to prepare for the inevitable challenges to be faced as a consequence of climate change.



Thank you

www.adaptyh.co.uk

www.yorkshirefutures.com/news/weathering-storm-yorkshire-and-humber-regional-adaptation-study

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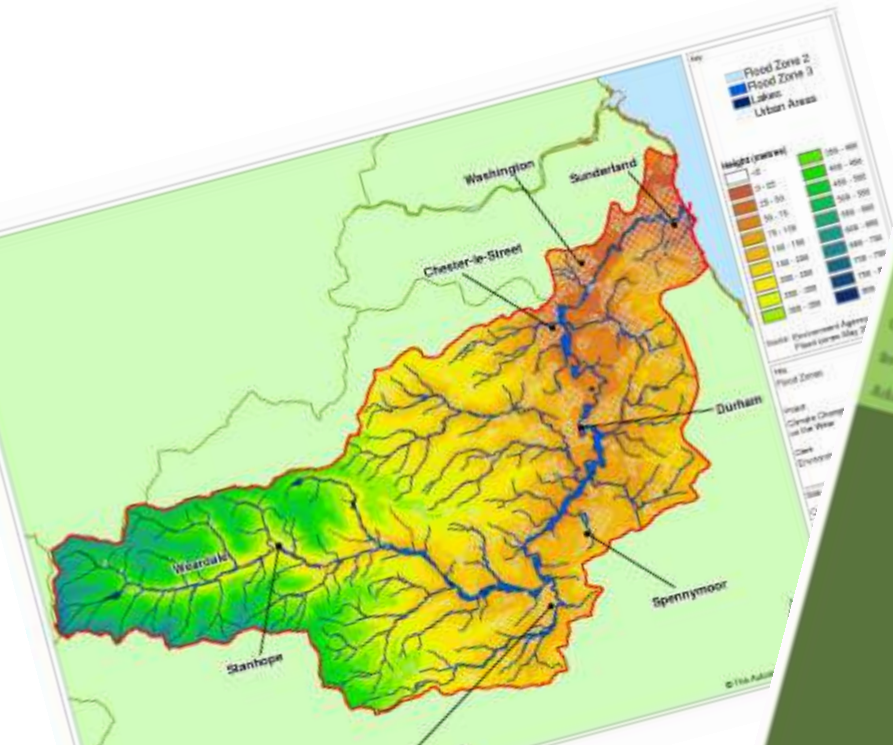
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The North-east studies



A useful study and a timely warning, Nick Brown, Minister for the North East



north east climate change adaptation
...it matters to all...
ROYAL HASKONING
UK Climate Resilience Programme

Summary Pamphlet (2.06 MB)

HOME

Welcome to the homepage of the North East Climate Change Adaptation study.

This study is the first of its kind. It is unique because it...

- covers an entire UK government region;
- makes projections of climate change at a new and improved resolution compared to previous projections;
- combines cutting-edge research, nationally-recognised practical expertise and organisations;
- considers impacts;
- provides practical...

Climate change is a really important for the North East over time and we all need management approaches to...

This study is intended to provide information...

described in regional press as "credible and lacking the hysteria that's accompanied so much of the debate about what's happening to our world"

The first of its kind, this study is an outstanding example of the civil engineer's modern role in serving our community in a sustainable way and draws on specialist input to lead the profession in tackling our greatest current challenge."