Planning for intense rainfall:
A perspective from the Environment Agency

CONVEX intense rainfall and flash flooding workshop
14th January 2015

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Overview

- Impacts of intense rainfall
- Research into action
- Opportunities/challenges

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Planning for a changing climate....

..... and helping others plan too

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Why do changing patterns of rainfall matter?

FLOODING

- Planning
- Construction
- Infrastructure
- Business
- Householders
- Insurance

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Why do changing patterns of rainfall matter?

WATER

- Water use and treatment
- Agriculture
- Ecology

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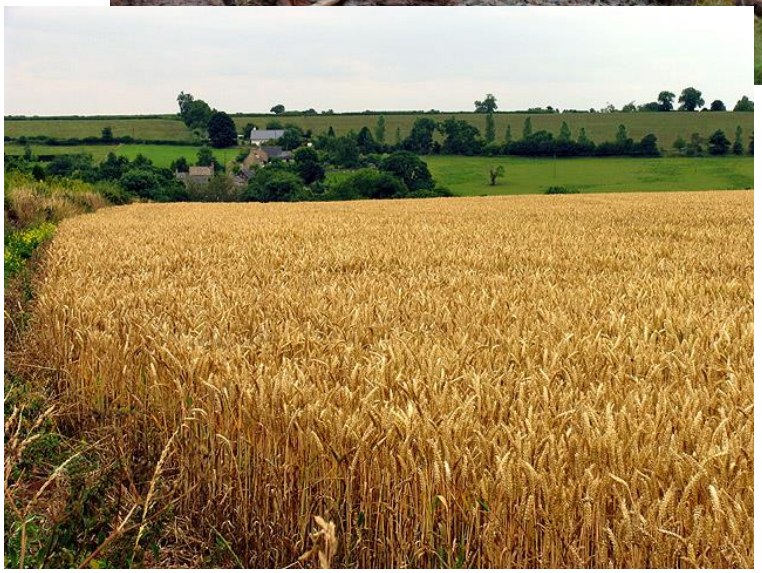
Why do changing patterns of rainfall matter?



SOILS & LAND-USE

- Agriculture & forestry
- Transport
- Ecology

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Research into action

Decision-making	• Appropriate methodologies • Capacity
The right information	• Impacts and consequences • Where, when & how much
Communication	• Appropriate levels of complexity • Uncertainty

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Engaging and supporting customers

UK CLIMATE PROJECTIONS

Living With Environmental Change

Water
Climate Change Impacts

Report Card 2012 -13

This report card is for anyone who works with or has an interest in water in the UK. It looks at the effect of climate change on fresh water – including rainfall, floods and droughts. The report card is intended to help people understand the scale of possible change and to help inform decisions about the way that water is managed.

Water is an essential and familiar part of everyday life, at home, at work and at leisure. Water is at the heart of some of the most serious natural hazards faced in the UK – floods and droughts. Climate change may have many impacts on water: while some may be beneficial or easily managed, others require careful planning to avoid unacceptable consequences.

This report card concentrates on fresh water, from source to sea. It complements two other report cards – the Marine Climate Change Impacts Partnership (MCCIP) marine report card and the Living With Environmental Change (LWEC) Terrestrial Biodiversity Climate Change Impacts report card. Together, these start to build up a picture of historical and future changes as a result of climate change. In time, we expect these report cards to be joined by others that complete the picture of how climate change is affecting and may further affect the UK.

The report card covers the following topics:

- Temperature
- Rainfall
- Evapotranspiration – water that evaporates or is transpired by trees and other plants
- River flows, floods and droughts
- Groundwater recharge and levels
- River water temperature
- River water quality and ecology
- Groundwater temperature and quality
- Water use

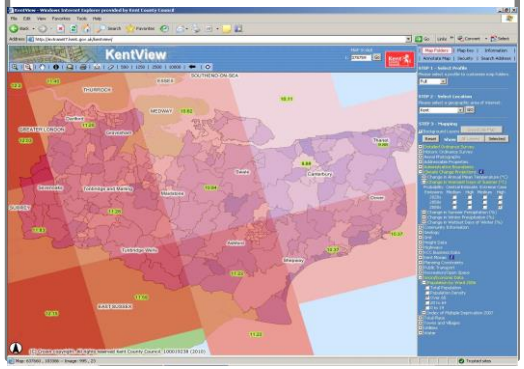
CLIMATE READY

Assessing and managing climate change risks in supply chains

A support service led by the Environment Agency

How UKCP09 has been used

KENT VIEW PLATFORM



SOUTH WEST TOURISM STRATEGY

CIBSE FUTURE WEATHER FILES

UKCP09 user experience

Built environment & infrastructure	Natural Environment	Health	Local Govt
• Driven by regulation & standards	•Maturer sector •Impacts studies	•Less mature sector •Awareness	•Mixed maturity •Lack of capacity
✓Authoritative ✓Free to access, tiered products: simple to complex ? Challenges in interpreting and using probabilistic presentation ✓ X More guidance on application/use X Better information on extremes			
• Finer spatial and temporal resolution • Weather files	•Spatial coherence •Scenario approaches for planning	• High-level messages • Impacts on health and NHS service provision	• Local information • Maps of current & future impacts

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Intermediaries

Built environment and infrastructure	Natural environment	Health	Local authorities
•DCLG •Planning authorities •Industry standard orgs. •Consultancies	• Defra • ALBs • Local authorities • Water Companies •Consultancies	•DoH •Health England	•DCLG •LGA •ALBs

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Flood risk guidance: climate change allowances

Standing advice for planners

Table 1: Recommended contingency allowances for net sea level rises (Net sea level rise (mm per year) relative to 1990)

	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
East of England, east midlands, London, south-east England (south of Flamborough Head)	4.0	8.5	12.0	15.0
South-west England	3.5	8.0	11.5	14.5
North-west England, north-east England (north of Flamborough Head)	2.5	7.0	10.0	13.0

Parameter	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
Peak rainfall intensity	+5%	+10%	+20%	+30%
Peak river flow	+10%	+20%		
Offshore wind speed	+5%		+10%	
Extreme wave height	+5%		+10%	

Advice for FCER Management authorities

Table 1 Potential changes in peak river flow for Northumbria River Basin District

	Total potential change anticipated for the 2020s	Total potential change anticipated for the 2060s	Total potential change anticipated for the 2080s
Northumbria			
Upper end estimate	25%	30%	50%
Change factor	10%	15%	20%
Lower end estimate	0%	0%	5%
Northumbria H++	35%	45%	75%

Table 4 Change to extreme rainfall intensity compared to a 1961-90 baseline

Applies across all of England	Total potential change anticipated for 2020s	Total potential change anticipated for 2060s	Total potential change anticipated for 2080s
Upper end estimate	10%	20%	40%
Change factor	5%	10%	20%
Lower end estimate	0	5%	10%

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Looking forwards

- CONVEX promises a better understanding of intense rainfall, but need to get to national picture
- Understanding the affected decisions and working with key intermediaries for translation
- Improving users access climate and climate impacts information

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