

February 2004



**Friends of
the Earth**

Briefing

Impacts of Climate Change in the North East

A short guide

How will climate change affect the UK?

- The UK climate has warmed by nearly 0.7°C over the last 300 years, with half of that occurring in the 20th century. By the 2080s average annual temperature across the UK is predicted to rise between 2°C and 3.5°C.
- Summer heatwaves have been more frequent and their frequency is predicted to increase further. By the end of the 21st century, two out of every three Augusts may be as hot as the unusually hot August of 1995. Very cold winters will be increasingly rare with fewer frosts and cold spells.

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- Winters have become wetter, with more of the rain falling in heavy downpours. In the future, in parts of the south east winter rain could further increase 15 – 20%. It is likely that winter rainfall will also be even more intense, further increasing the risk of flooding. In most parts of Scotland snowfall could decrease by 40 – 60% by the 2050s and by as much as 60 – 90% by the 2080s.
- Summers have become drier. It is predicted that in parts of the south and east of the UK, summer rainfall may decrease further by 30% by the 2050s. In summer, soil moisture could be reduced by 20% or more over large parts of England by the 2050s and by 40% or more by the 2080s.
- The sea level around our coastline has risen. Sea levels will continue to rise relative to most of the UK's shoreline particularly in south east England. Extreme high water levels, due to a combination of storm surges, high tides and increasing mean sea level, are predicted to become more frequent with a higher risk of coastal flooding and erosion.

Impacts of Climate Change in North East England

Temperature

It is predicted that by the 2080s, the average annual temperature in the region will increase up to 4°C, with average winter temperature increasing up to 3°C and average summer up to 4.5° C.

Rainfall and Snowfall

By the 2080s, average winter precipitation may increase up to 30% and average summer precipitation may reduce up to 50%. The trend towards wetter winters, as the proportion of annual rainfall that falls during the winter season, has increased, with a greater proportion of winter rainfall delivered by “intense” events.

Snowfall reduction by the 2080s is predicted to reach 100%.

Sea Level

Sea level is predicted to increase by up to 66cm. Between 1900 and 2000 the North Shields tide gauge recorded a sea level rise of approximately 20cm. Beaches such as Alnmouth, in Northumberland, are eroding rapidly. Predictions suggest that coastal property may be damaged.

Further predictions include that cliff and beach erosion may further increase, as will costs of maintaining sea defences.

Flooding

Flooding events may become more common. The erosion of river banks may increase. Already, flash flooding is becoming more common as a result of increasing precipitation intensity. In the July 2001 thunderstorm at Hexham, Northumberland, a gauging station that had been in place for 30 years was washed away. Recent river flooding events in the region include, 1995 (River Tyne and River Wear), June 2000 River Gaunless (1 in 100 year flood

event, 400 properties flooded at South Church & West Auckland), November 2000 River Pont (1 in 16 year flood event, 147 properties flooded at Ponteland), River Tees, River Gaunless and February 2001 River Tees, River Gaunless.

Other concerns include that sewers may not have the necessary capacity and overflow in the future.

The Natural Environment

Reports predict that changes in the average length of thermal growing season could be up to 100 days. The thermal growing season is getting longer as spring events happen earlier. Data collected since 1950 show that garden snowdrops in Northumberland are now flowering earlier in the year.

Predictions suggest that important habitats will be damaged, such as the relic alpine heath habitats in upper Teesdale. Coastal habitats will also be affected, and there will be a migration of new species into the North East. Some fauna, including fish populations, will be affected severely.

The Biodiversity Audit for the North East identifies priority habitats which are directly threatened by climate change as: lowland dry acid grassland, blanket bog, lowland raised bog (decreasing rainfall associated with climate change), purple moor-grass and rush pasture, reedbeds (sea level rise), coastal saltmarsh (sea level rise), coastal sand dunes (sea level rise), mudflats (sea level rise) and sea-grass beds (if there are warm sea temperatures and low levels of sunlight).

Climate change may also indirectly affect other habitats: flood prevention measures could prevent the development of new wet woodland.

Some species may become less common in the North East. These include: Flat Sedge (*Blasmus rufus*), Variegated Horsetail (*Equisetum variegatum*), Wood Cranesbill (*Geranium sylvaticum*), Bog Rosemary (*Andromeda polifolia*), Cloudbury (*Rubs chamaemorus*), Large Heath Butterfly (*Coenonympha tullia*), Twinflower (*Linnaea borealis*)

On the other hand, some species will become more common in the region. These include: Stemless Thistle (*Cirsium acaulon*), Yellow Wort (*Blackstonia perfoliata*), Globe Flower (*Trollius europaeus*), Great Burnet (*Sanguisorba officinalis*), White-Beaked Sedge (*Rhynchospora alba*).

Agriculture and Forestry

It is predicted that some crops and tree varieties may be less suitable to climate. Further, times of planting and harvesting may change as the growing season lengthens. Arable farming may become viable in some areas and increased irrigation/drainage may be required to deal with water shortages and water logged land. Soil erosion is predicted to increase and different pest species may appear. There is a further risk of forest fires.

New methods of livestock and crop management may need to be developed.

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Other Predicted Impacts

- Increase in insurance claims and cost of insurance due to weather events.
- Increase of condensation, damp and mould.
- Damage to building fabric.
- Increased subsidence.
- Street trees becoming water stressed.
- Effects on historic buildings.
- Increased demand for energy to cool temperatures and reduced demand for energy to warm temperatures.
- Disruption to transport networks through weather events and business through facilities, suppliers, employees and customers being affected by weather events.
- Increased injuries from gale force winds, flooding and other extreme weather events.
- Increase of skin cancer and cataracts.
- Increase of cases of food poisoning.
- Increase of respiratory problems associated with traffic pollution and sun.

References

This briefing draws heavily from the following organisations and their publications:

UK Climate Impacts Programme: Set up by the Government in 1997, the UKCIP is funded by the Department for Environment, Food & Rural Affairs (DEFRA) and based at the University of Oxford. UKCIP co-ordinates and integrates an assessment of the impacts of climate change at a regional and national level. It is part of a wider programme of research into climate change being undertaken by the DEFRA. <http://www.ukcip.org.uk>

Climate Change in the North East, November 2002: The report was commissioned by the North East Assembly on behalf of Sustainability North East (SustainE) with support from UKCIP and produced by the Centre for Sustainable Development