

**NEW FOREST NATIONAL PARK AUTHORITY**

**AUTHORITY MEETING – 18 JANUARY 2007**

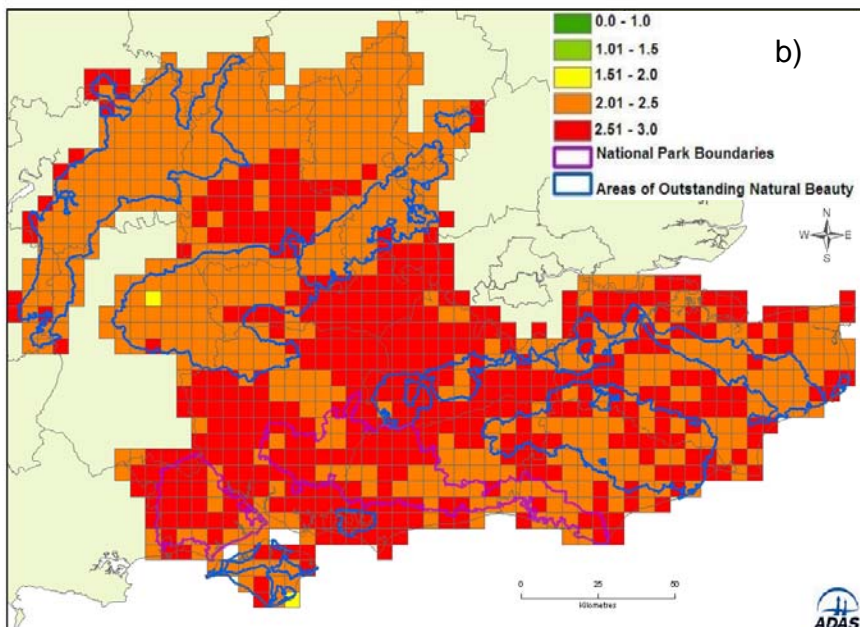
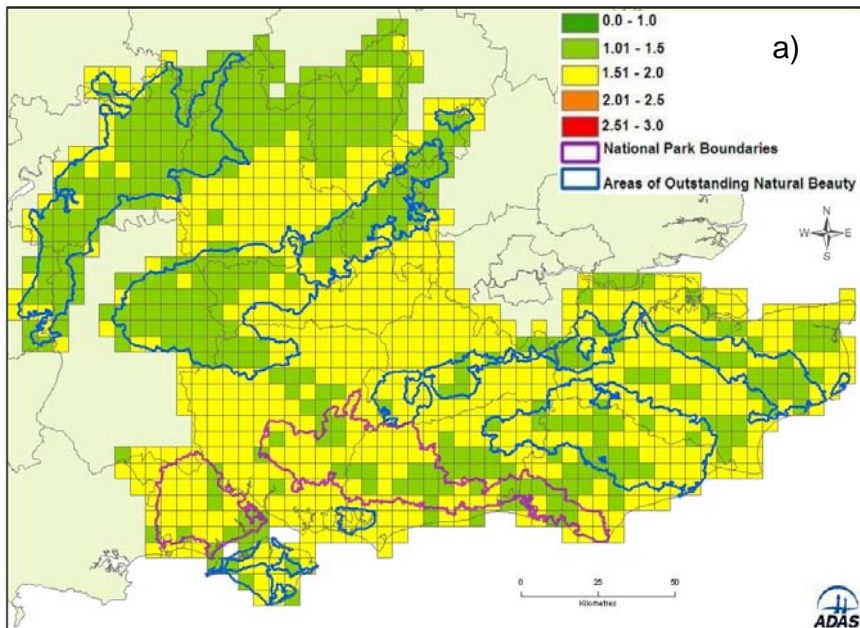
**CLIMATE CHANGE UPDATE**

**Climate change predictions for the South East of England**

Source: Hossell, J. and Rowe, K. 2006. *Headline Indicators on the Impact of Climate Change on South Eastern Protected Landscapes* ADAS Report to the South East Protected Landscapes Partnership

### 1) Scenarios of future climate change

The most detailed climate change scenarios currently available in the UK are the UKCIP02 scenarios. The ranges given in this report represent the values across four different greenhouse gas emission scenarios encompassed by the low and high emission scenarios and the geographical variation across the study area. Winter represents the average for December, January and February; summer represents the average for June, July and August. The climate changes projected to the 2020s are similar across all scenarios. This is due to the fact that inertia in the climate system means we are

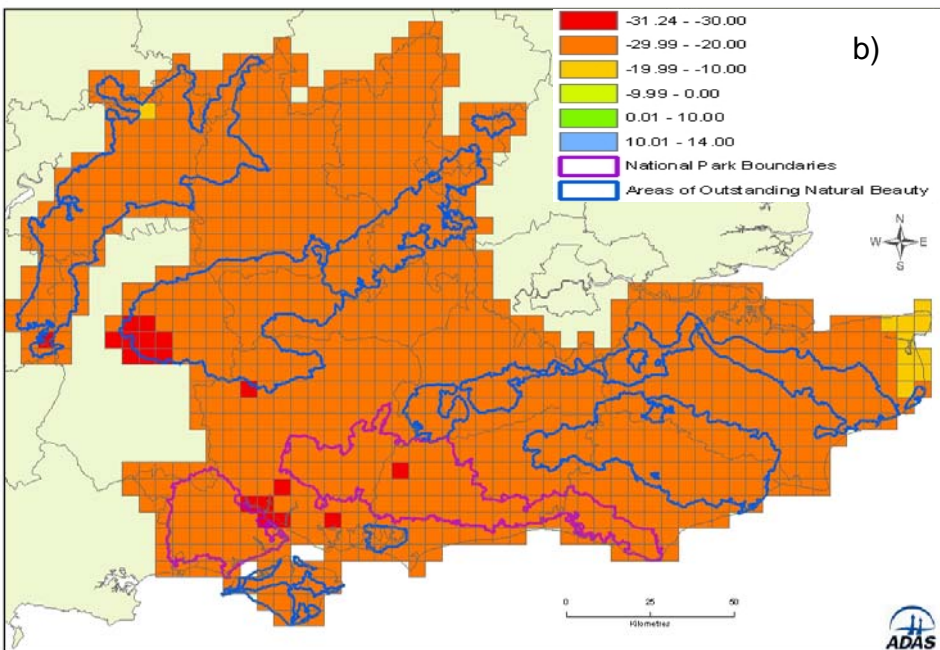
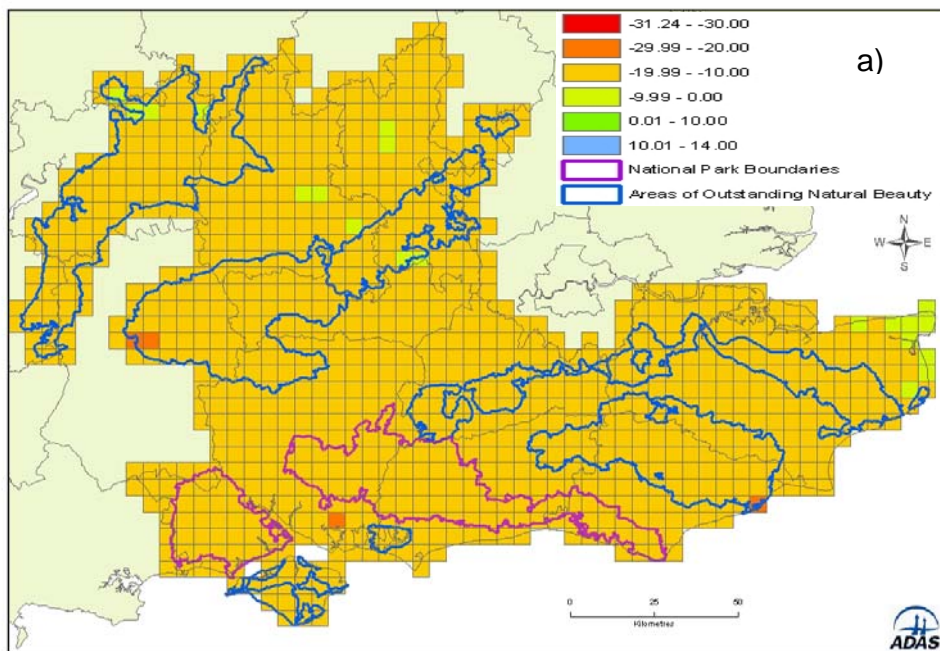


**Figure 1:** Annual average temperature change (°C) for the 2050s Low (a) and High (b) emission scenarios using UKCIP02 data<sup>2</sup>.

already committed to some climate change as a result of past GHG emissions. Climate changes beyond the next few decades depend on future emissions, but even the low emissions scenario represents an acceleration of climate change when compared to the 20th century **Error! Bookmark not defined.**

The main climate changes projected for the study region by the 2050s are an:

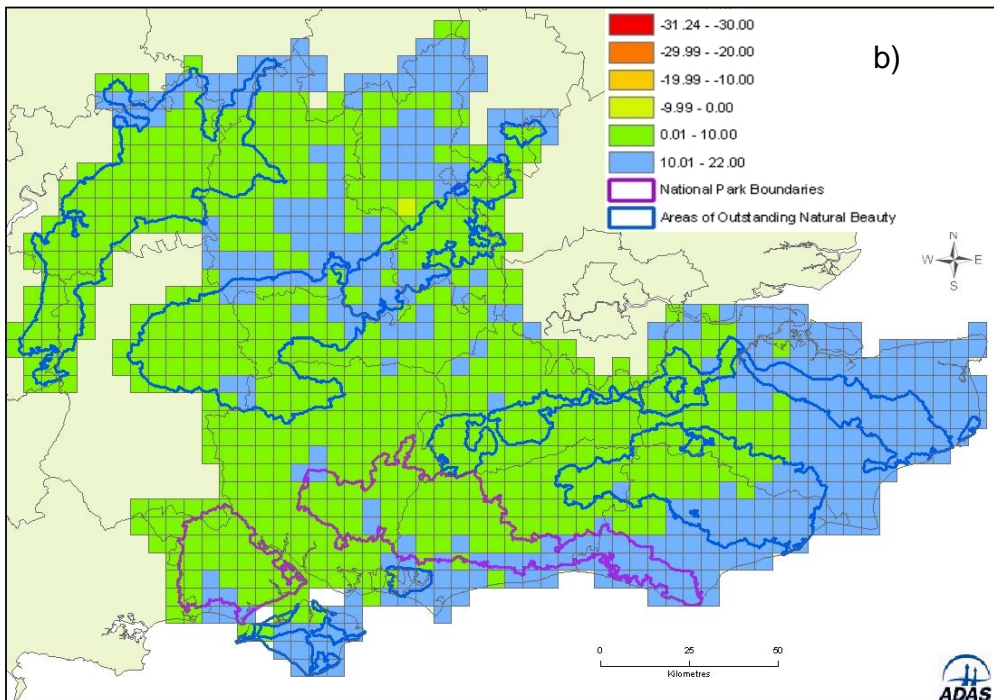
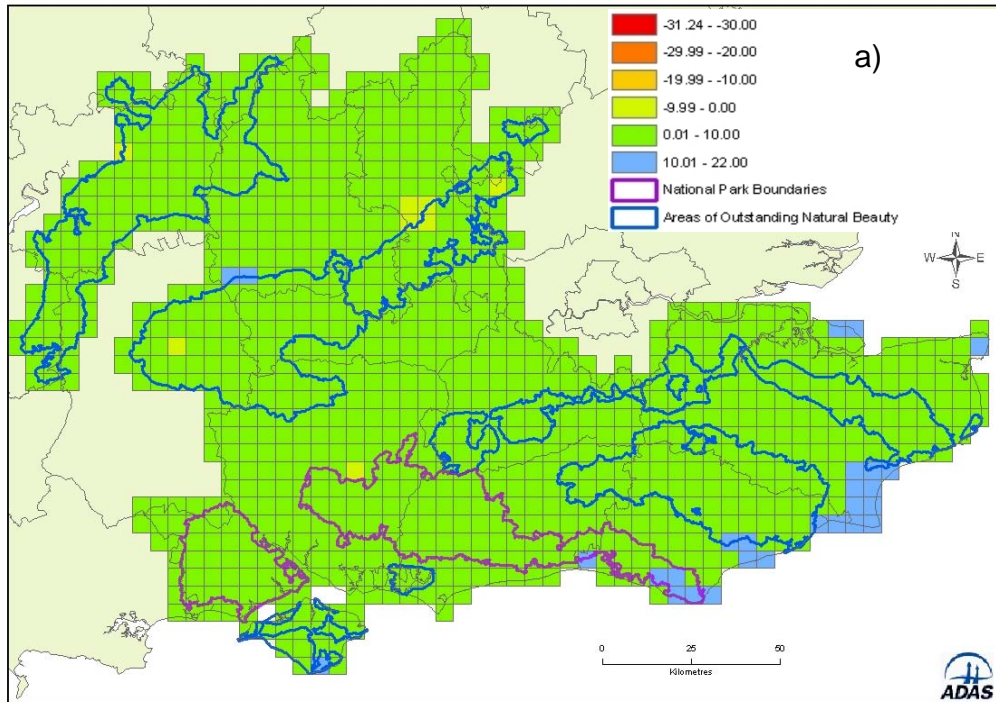
- Increase in annual temperatures of between 1 and 3°C. The warming would be greatest towards the south and west (New Forest, Chichester Harbour and South Downs) and least across the Cotswolds, North Wessex Downs and Chilterns (Figure 2)
- Summer precipitation could decrease almost uniformly across the area by 10 to 30%



**Figure 2:** Average summer precipitation change (%) for the 2050s Low (a) and High (b) emissions scenarios using UKCIP02 data<sup>2</sup>.

(Figure 3).

- Winter precipitation may increase by up to 10% for most areas under the low scenarios but up to 15% along the south eastern coastal fringes. Under the High emissions scenario the areas of 10 to 22% increase may extend further inland to Downs (Figure 4).



**Figure 3:** Average winter precipitation change (%) for the 2050s low and high emission scenarios using UKCIP02 data<sup>2</sup>.

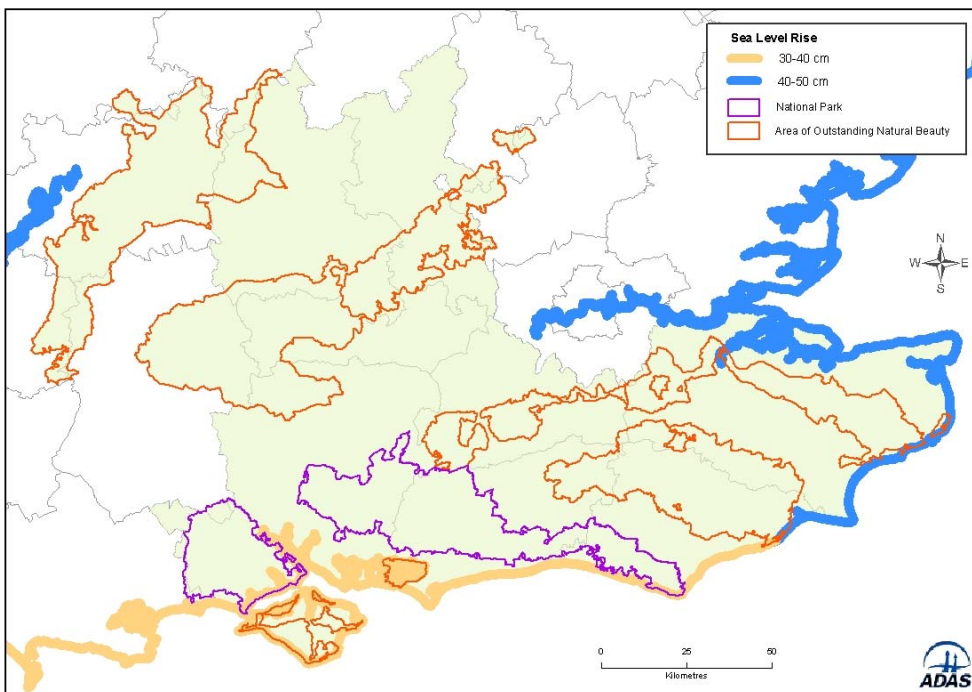
These changes in average conditions may also be accompanied by changes in extremes and greater variability in climate such that by the 2050s:

- A dry summer, similar to 1995, could occur on average one year in three
- A warm year, similar to 1999 (the joint warmest on record in the Central England Temperature series), may occur on average three years in four.
- The summer temperatures of 2003 may be average by 2040 and cooler than average by 2060.

Changes in other variables such as soil moisture, wind speeds, storminess, and cloudiness are also projected (See UKCIP02 report for more details **Error! Bookmark not defined.**).

### **Sea level rise**

Thermal expansion of water will increase sea levels but the net effect of such changes will depend on the balance between rising sea levels and geological movements (isostatic response) of the land in response to the loss of ice following the last ice age. In the South East of England much of the coastline is sinking, such that net effect will be a 30 to 50cm rise in sea levels over the next 50 years. These values are based on an updated assessment of land movements<sup>i</sup> combined with the IPCC 2001<sup>ii</sup> estimates of global sea level rise<sup>iii</sup>. However uncertainty remains over calculation of regional net sea level change and best practice suggests the consideration of sea level rises +/- 50% of those indicated in Figure 5 (i.e. a range of 15-75cm). It should be noted that these figures are changes in average sea levels and that during high tides and storm surges the actual levels will be somewhat greater.



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<sup>i</sup> Shennan, I. and Horton, B. (2002) Holocene land- and sea-level changes in Great Britain. *Journal of Quaternary Science* 17: 511-526.

<sup>ii</sup> IPCC (2001). *Climate change 2001: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change*. In: McCarthy, J.J., Canziani, O.F., Leary, N.A., Dokken, D.J. and White, K.S. (eds.) Cambridge University Press, Cambridge. 1032pp.

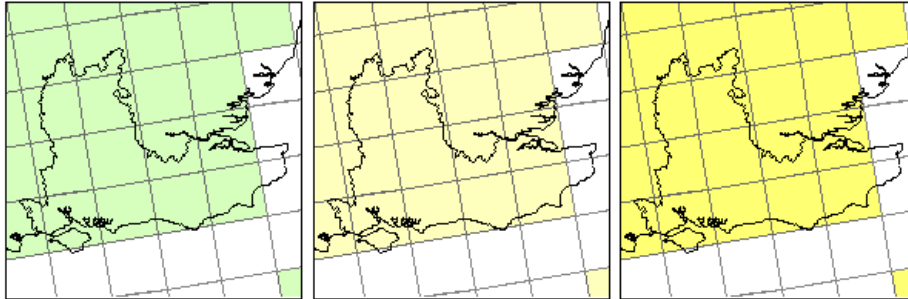
<sup>iii</sup> UKCIP (2005) Updates to regional net sea-level change estimates for Great Britain. [www.ukcip.org.uk/resources/publications](http://www.ukcip.org.uk/resources/publications).

# South East

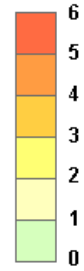
Source: UKCIP02 Climate Change Scenarios (funded by Defra, produced by Tyndall and Hadley Centres for UKCIP)

## Change in annual average daily temperature

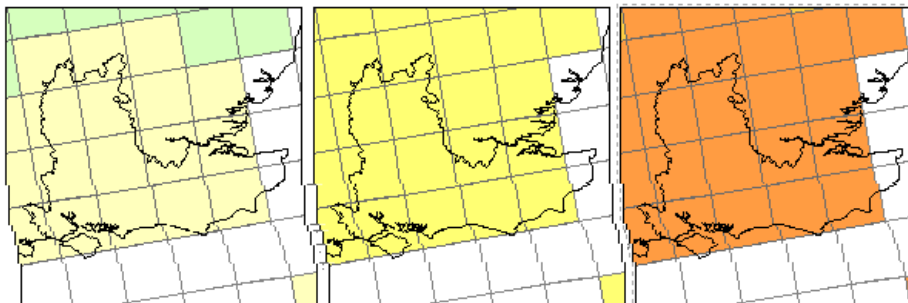
Low Emissions scenario



change in deg C



High Emissions scenario



2020s

2050s

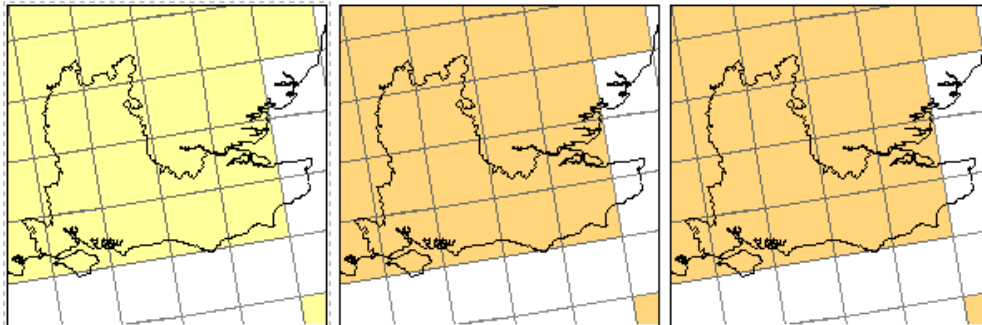
2080s

# South East England

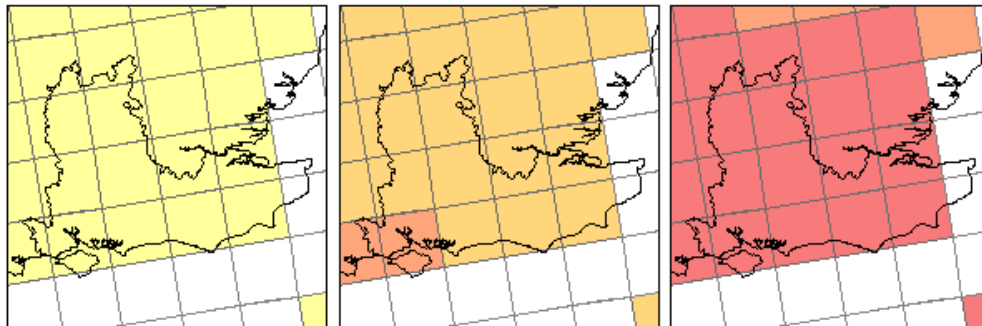
Source: UKCIP02 Climate Change Scenarios (funded by Defra, produced by Tyndall and Hadley Centres for UKCIP)

## Percentage change in summer precipitation

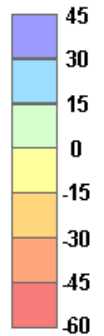
Low Emissions scenario



High Emissions scenario



per cent change



2020s

2050s

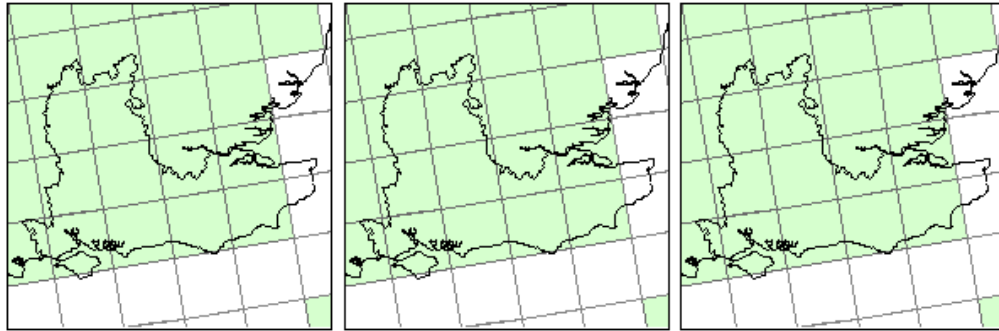
2080s

# South East England

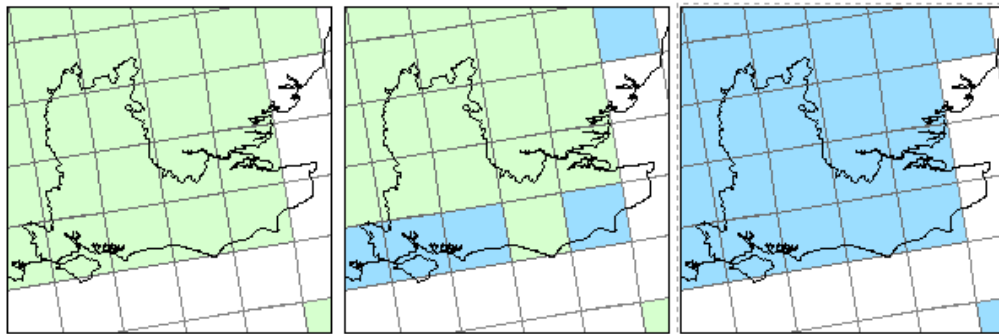
Source: UKCIP02 Climate Change Scenarios (funded by Defra, produced by Tyndall and Hadley Centres for UKCIP)

## Percentage change in winter precipitation

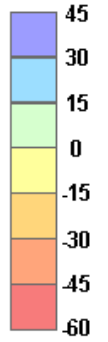
Low Emissions scenario



High Emissions scenario



per cent change



2020s

2050s

2080s