

## **Key Climate Projections for Scotland**

Please see the following Key Climate Projections for Scotland, (source: '**Business Risks of Climate Change to Public Sector Organisations in Scotland, SNIFFER 2005 (AEA Technology)**') which are based on the UKCIP02 Scenarios (for the conservative medium-low emissions scenario with atmospheric CO<sub>2</sub> concentrations at 422 ppm in the 2020s, 489 ppm in the 2050s and 562 ppm in the 2080s). Links to the full report and executive summary are also available on the SCCIP website.

**Average temperature** – As in the rest of the UK, Scotland will experience mean annual temperatures of between 0.5 and 1.0 Celsius warmer than present. In the 2050s the increase in average annual temperature for Scotland (1.0-1.5 C) will be less than that for most of England and Wales (1.5-2.0 C). However, these figures hide seasonal variations: in the 2050s most of Scotland will be warmer by 1.5-2.0 C in autumn and central and east Scotland will be warmer by 1.5-2.0 C in summer.

**Average precipitation** – Annual precipitation in the 2020s and in the 2050s will be similar to present, although there may be a decline of up to 10% along the Scottish east coast. Again, these figures hide more significant seasonal variations for Scotland. In the 2020s, winters along the east and Argyll and Ayrshire coasts will be up to 10% wetter than present, whereas summers in Scotland will be up to 10% dryer than present, with a 10-20% decrease in precipitation over central parts and the Borders. By the 2080s, there will be 40-60% less winter snowfall over the Cairngorms, with up to 80% less along parts of the Scottish east coast.

**Inter-annual temperature variability** – Inter-annual temperature variability is an indication of variability of climate from year to year. Winter and spring temperatures over the whole of the UK will become less variable, with north-west Scotland seeing a reduction in inter-annual variability of up to 20%. Summer and autumn temperatures will become more variable over the whole of Scotland, increasing by 20% or more in most of south and west by 2050. The average annual diurnal temperature range will also show an upward trend in Scotland over summer, though this will be more noticeable in south England.

**Heat wave and rain storm frequency** – By 2080 rainfall events will, on average, be unaffected in north-west Scotland, 25-75% more intense in east Scotland, up to 100% more intense in west Scotland and more than 150% more intense in parts of south-west Scotland. Unlike changes in average temperature and rainfall, changes in rainfall intensity will be more dramatic in Scotland and England, increasing the likelihood of flash flooding of Scottish rivers. The hottest (defined as those exceeding the 90<sup>th</sup> percentile) days will also get hotter in Scotland, by up to 4 C in the summer and autumn in the south. The situation will more dramatic in England, with the hottest days getting hotter by up to 6 C. Changes will be less pronounced in winter, with the hottest days getting hotter by 1.5 C over most of Scotland.

**Average wind speed** – By 2080, the wind speed with a recurrence interval of 2 years (i.e. a typical wind speed) is set to increase in south west Scotland by 2-4% in winter and decrease across most of south and central Scotland by up to 2-6% in summer. The changes are of similar magnitude to those predicted for parts of England and Wales.

**Sea level rise** – The UKCIP02 scenarios suggest a net sea-level rise for Scotland of between 15-28cm (accounting for changes in post-glacial vertical land movement) by the 2080s, an increase in peak surges and a modest annual average increase in tidal surges and waves due to an increasing frequency of severe winter gales.