Fact Sheet One: Climate Change in the Sydney Region




As part of the Australian Government Department of Climate Change (DCC) National Climate Change Adaptation Program, the Sydney Coastal Councils Group (SCCG) have partnered with CSIRO Climate Adaptation Flagship working in collaboration with the University of the Sunshine Coast to undertake research on regional approaches to managing climate vulnerability in the Sydney region.

Within the past several decades, it has become clear that the progressive growth of the human influence on the planet is now affecting the climate system itself. In 2007, the Intergovernmental Panel on Climate Change (IPCC), the world's leading scientific assessment body on climate change, published its *Fourth Assessment Report* that concluded,

"Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations. . . .Discernible human influences now extend to other aspects of climate, including ocean warming, continental-average temperatures, temperature extremes and wind patterns."(IPCC 2007)

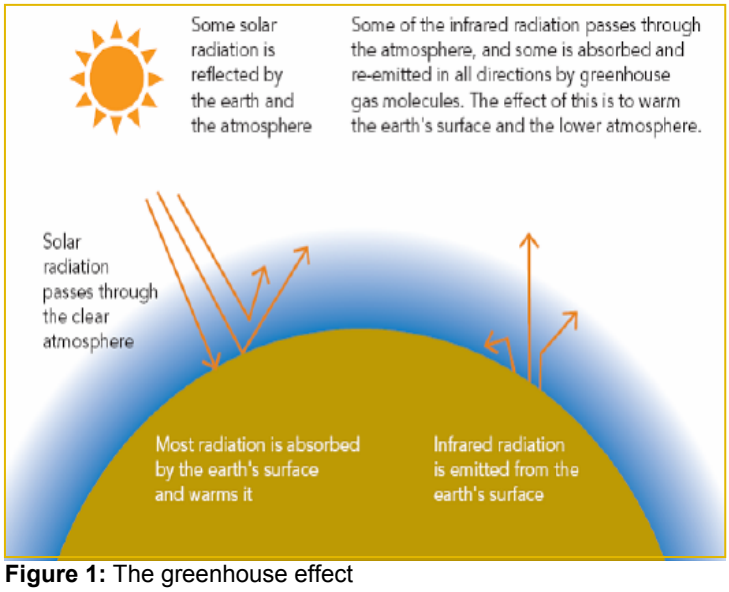

Figure 1: The greenhouse effect

Climate Change in the SCCG Region

In New South Wales (NSW) over the past several decades there has been a trend in warming. Since 1950, the State has warmed by approximately 0.9°C, with more hot days/nights and fewer cold days/nights. Annual total rainfall has declined. Projections of future climate change indicate that the State as a whole will continue to warm and there will be a continued reduction in annual rainfall in the decades ahead. Such regional changes in climate will manifest in the (SCCG) region as well, with both warmer and drier conditions expected. Projections of future climate conditions indicate temperatures in the SCCG region may warm by 0.6 to 1.3°C by 2030 and 1.1 to 4.3°C by 2070 (see Figure 1 and Table 1).

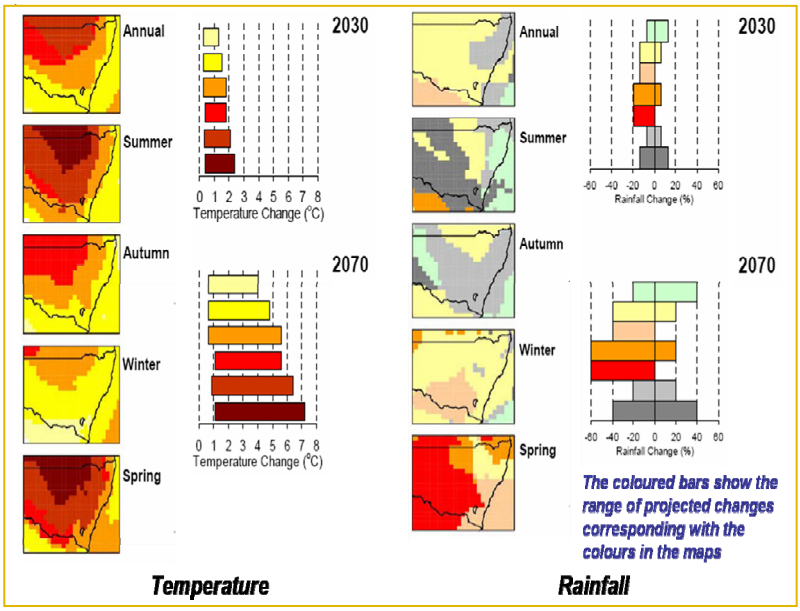

Figure 2. Regional climate change projections for NSW.

Climate change is projected to affect rainfall patterns in the SCCG region, with changes of -3 to +9% by 2030 and -25 to +10% by 2070. Despite the broad range of projects outcomes, the majority of climate models indicate total rainfall is likely to decline in the regions (Preston 2007). Despite this trend towards drier conditions the possibility of increases in extreme rainfall events remains. Similarly, other climate extremes are likely to manifest more frequently or with greater intensity in the future including drought events, extreme winds, and fire weather. The coastal zone of the SCCG region also will be increasingly affected by sea-level rise and its interactions with natural tidal and storm-surge variability. Further details about these changes are described in Table 1.

These climatic changes will have important implications for the SCCG region. However, given the wide diversity of land uses, environmental conditions, and population and development densities found throughout the region, different areas are likely to be affected by different hazards in different ways. As a result, Local Governments are likely to experience unique management challenges that arise from the local context. One tool for exploring such variable climate risk is through the analysis of climate change vulnerability across the SCCG region and each of the 15 member councils of the SCCG.

Table 1. Projected Climate Change in the SCCG Region		
	Projected Change	
	2030	2070
Temperature[1]		
Annual Average	+0.6– +1.3°C	+1.1 – +4.3°C
Annual # Days below 0°C	+0	+0
Annual # Days above 35°C	+1 – +2	+0 – +8
Rainfall		
Annual Average[1]	-3 – +9%	-25 – +10%
Annual Extreme Rainfall[2]	1 day: +7% 3 day: +10%	1 day: +5% 3 day: +3%
Sea-Level Rise[3]	+3 – +16 cm	+7 – +50 cm
Potential Evaporation[1]	+2 – +5%	+3 – +15%
# Droughts per decade[4]	-1 – +2	-2 – +6
Wind Speed[1]	-5 – +4%	-15 – +12%
Relative Humidity (%)[1]	-1 – +1%	-4 – +1%
Solar Radiation (%)[1]	-1 – +2%	-3 – +6%
# Fire Days[5]	+0 – +2	+1 – +6
See Preston et al. (2008) for details and assumptions for climate projections.		

Refer to fact sheets two and three for details and results from the vulnerability assessment undertaken for the Member Councils of the SCCG region.

Reference: The content of this fact sheet has been taken from:

Preston, B.L., Smith, T., Brooke, C., Gorddard, R., Measham, T., Withycombe, G., McInnes, K., Abbs, D., Beveridge, B., and Morrison, C. (2008) *Mapping Climate Change Vulnerability in the Sydney Coastal Councils Group*. Prepared for the Sydney Coastal Councils Group and the Australian Government Department of Climate Change by the CSIRO Climate Adaptation Flagship, Canberra.

Preston, B.L. (2007) *Climate Change in the Sydney Metropolitan Catchments*. Prepared by CSIRO Marine and Atmospheric Research for the New South Wales Greenhouse Office, Sydney, NSW, Australia.

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