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“Climate Change 2007: The Physical Science Basis” – an Australian perspective

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Bio Note

David Jones is the head of the Climate Analysis Section in the Bureau of Meteorology. In this role he is responsible for managing the Bureau's national climate monitoring activities which include the analysis of drought, climate variability, seasonal prediction, and observed climate change. He is on a number of domestic and international expert groups including under the World Meteorological Organization and UN International Strategy for Disaster Reduction.

David has a PhD in Earth Sciences (Meteorology) from the University of Melbourne, with extensive operational and research experience in climate. He has authored or co-authored numerous papers on climate variability, prediction and change.

Abstract

What does the SPM say about observed Climate Change?

The IPCC Working Group I, Summary for Policy makers (SPM) for the Fourth Assessment Report (AR4) reemphasises the marked increase in greenhouse gas concentrations that have occurred in the earth's atmosphere over the last 100 years or so – notably in carbon dioxide, methane and nitrous oxide. Concentrations in these greenhouse gases now far exceed any values that have occurred during the past 10,000 years.

The report concludes unequivocally that there has been significant warming of near surface temperatures over the past 50 years averaged over all continents except Antarctica – i.e. including over Australia. Temperatures have also generally increased over the oceans. Discrepancies that appeared evident between surface based measurements of temperatures and temperatures measured from satellites have been resolved. Associated with the observed changes in recorded temperatures there have been general decreases in the numbers of cold nights and frosts, along with increases in the numbers of hot days over most land masses. Records of such changes over Australia are generally consistent with the global trends.

The SPM also points to systematic changes in atmospheric circulation, including changes in storm tracks, winds and rainfall patterns in both hemispheres, and aspects of extreme weather. It notes that global sea level has continued to rise at the same time that so-called permanent snow and ice cover has been in retreat. There have been varying trends in rainfall, with some areas becoming markedly drier and other areas markedly wetter. Again Australia demonstrates evidence for both shifts having occurred over the past 50 years, with declines in rainfall over southern and eastern parts of the continent and increases in rainfall across the north, especially the northwest.

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