

# Climate Change Projections

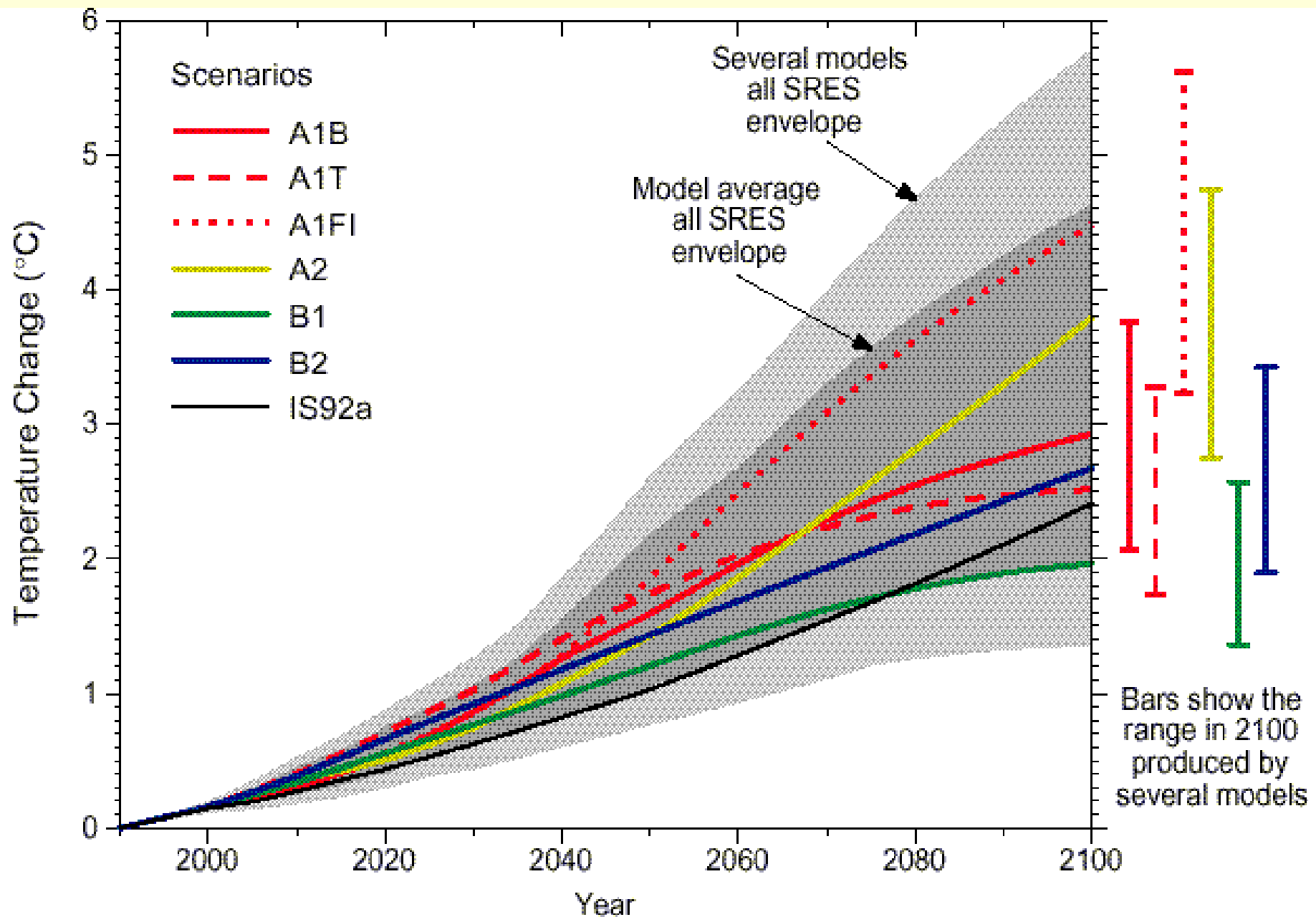
Tim Harrold  
Planning Engineer  
Wannon Water

AWA Conference Ballarat 13 October 2006

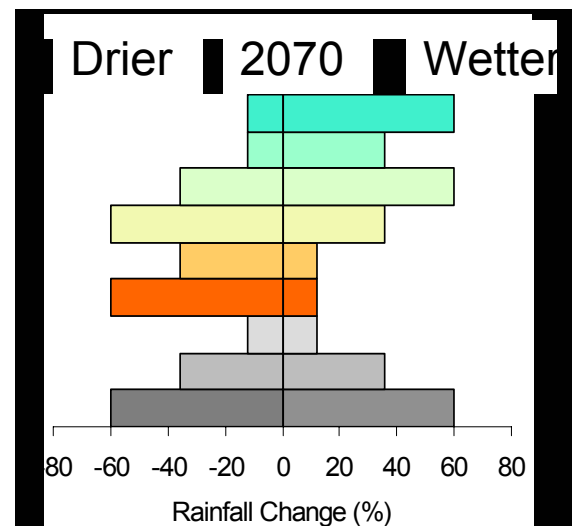
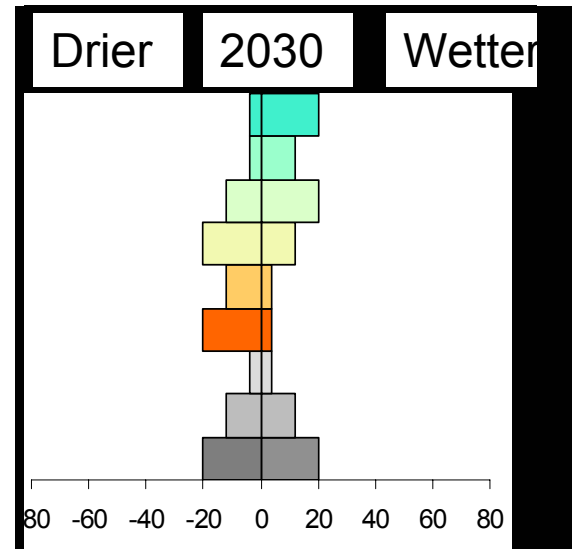
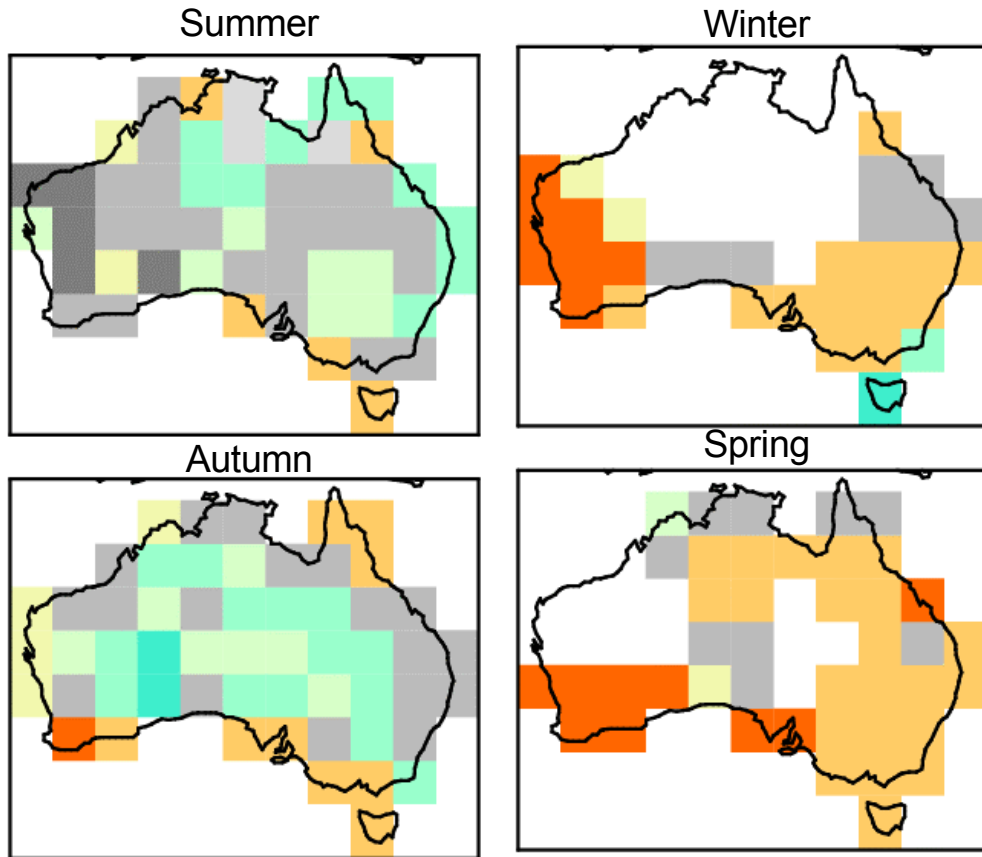
# Introduction

- Predictions of climate change impacts on surface water yield are essential to getting the supply-demand balance right.
- This presentation gives an overview of the science underlying the climate change projections of Jones and Durack (2005), which are being used by Victorian Urban Water Authorities in their long-term strategic planning.
- The talk includes brief discussion of:
  - climate models;
  - scenarios of global warming;
  - Australia-wide projections of changes in rainfall;
  - methodology for translating rainfall and evaporation change into changes in runoff; and
  - the projected changes in surface water yield.

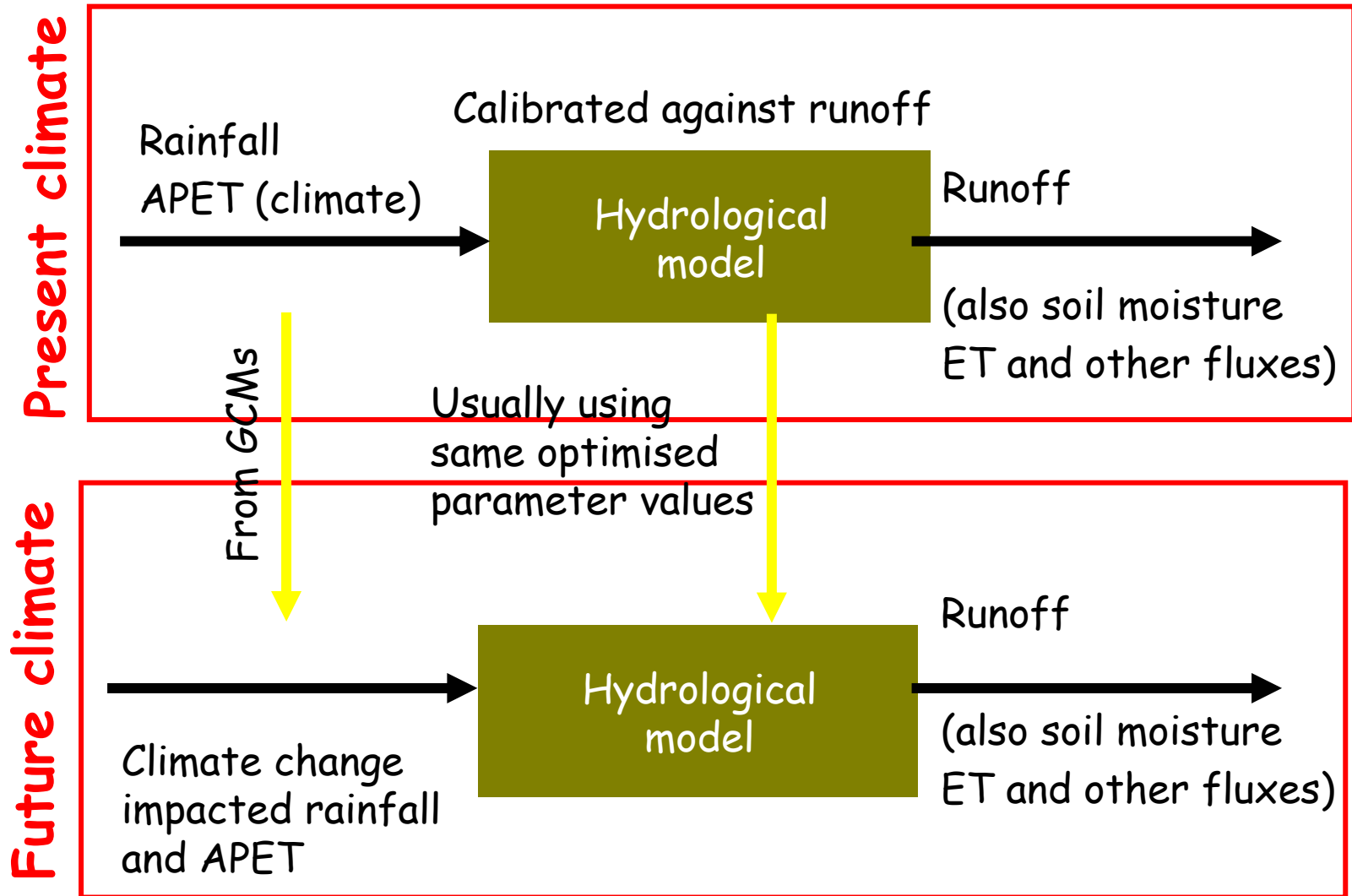
# Global Average Warming relative to 1990 (IPCC, 2001)



# CSIRO Atmospheric Research rainfall projections for 2030 and 2070 (relative to 1990)



# Simulation of climate change impact on hydrology



# Jones and Durack (2005)

Catchment

**Otway Coast**

Baseline year

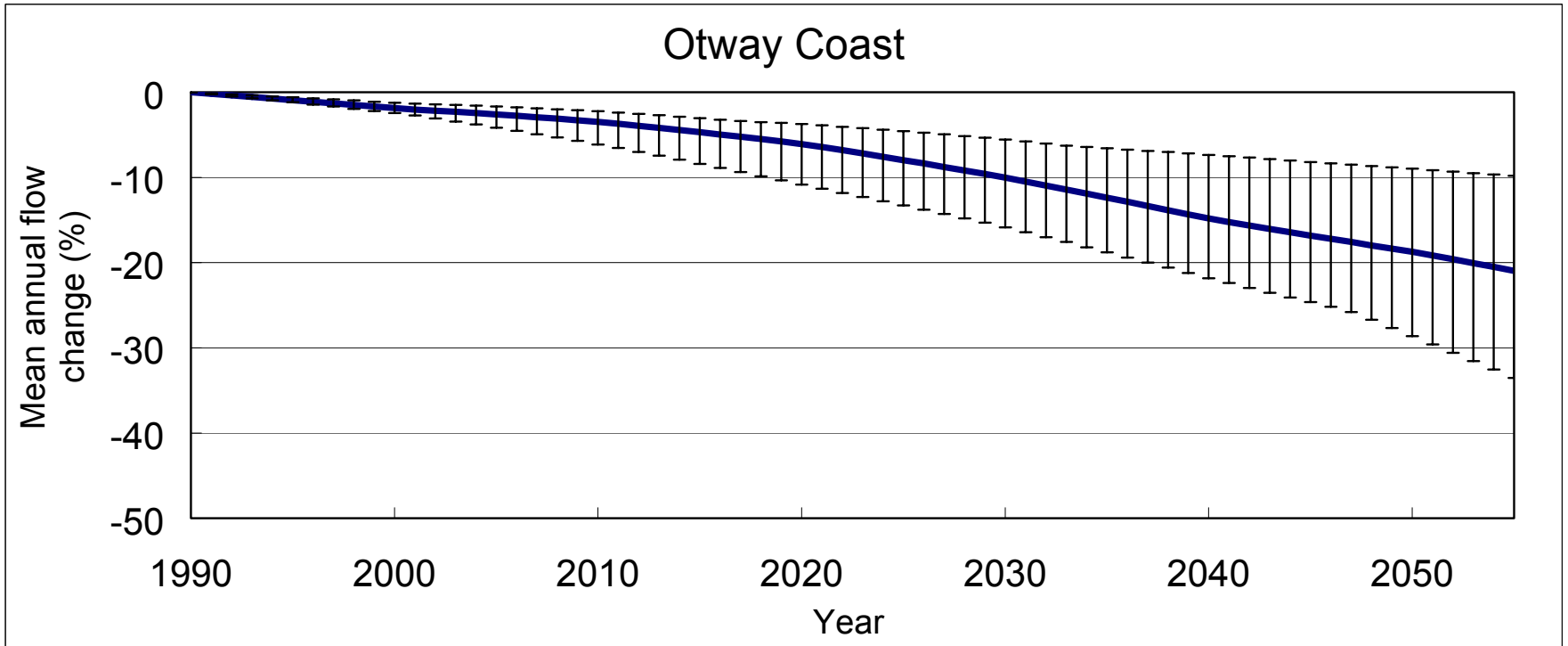
**1990**

Target Year

**2055**

Change in Mean Annual Flow

Lower	Median	Upper
<b>-10%</b>	<b>-21%</b>	<b>-34%</b>



Change in

Lower	Median	Upper
<b>-3%</b>	<b>-6%</b>	<b>-10%</b>
<b>3%</b>	<b>6%</b>	<b>9%</b>

Rainfall

Potential Evaporation

Model "consensus" changes in rainfall and potential evaporation for the above changes in mean annual flow.



South Eastern Australian  
**Climate Program**

**\$7m over 2006-2008**

**Theme 1: Characterisation of Current Climate**

**Theme 2: High resolution Climate Projections and Impacts**

**Theme 3: Seasonal Forecasts**

## NOTES

Global warming is happening.

- observed warming of 0.7°C since 1900.
- predicted warming of 1-6°C by 2100.

This will have major impacts on rainfall and climate, with increases in the frequency and magnitude of extreme events including drought.

Jones and Durack 2005

This is a highly simplified approach – landscape features below the resolution of the models, annual timestep, changes in rainfall extremes and in the frequency of wet days are not considered.

I think this approach is fantastic – a standardised and practical approach as a first-cut assessment of climate change.

Any work more complicated than this is not a consultancy – it is research.

South Eastern Australian Climate Program (SEAC)

Intergovernmental Panel on Climate Change (IPCC) new report in 2007 – new GCM outputs available now