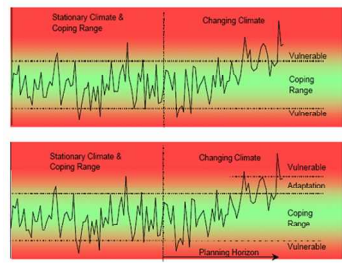


**THE EFFECTS OF CLIMATE CHANGE:**

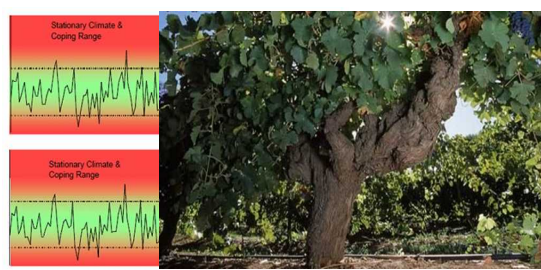
**INFORMING THE DECISION-MAKING PROCESS AT A REGIONAL LEVEL**

Peter Hayman SARDI Peter Leske, SAWIA  
Uday Nidumolu SARDI

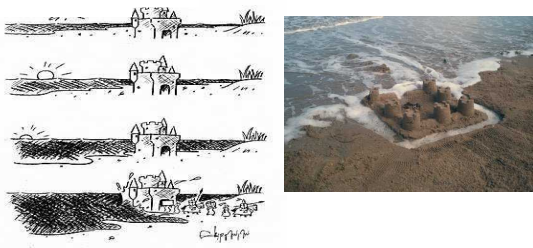
### Vulnerability/resilience of wine grape growing



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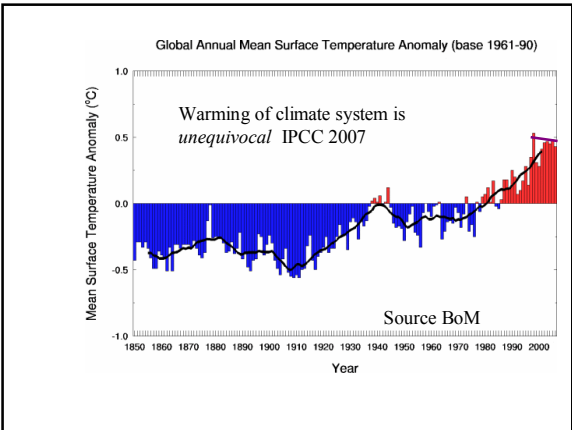
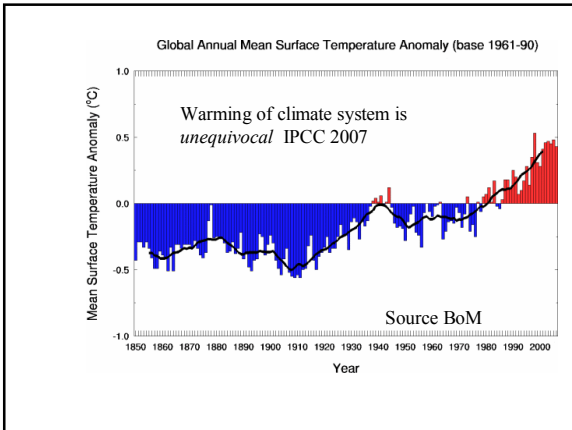


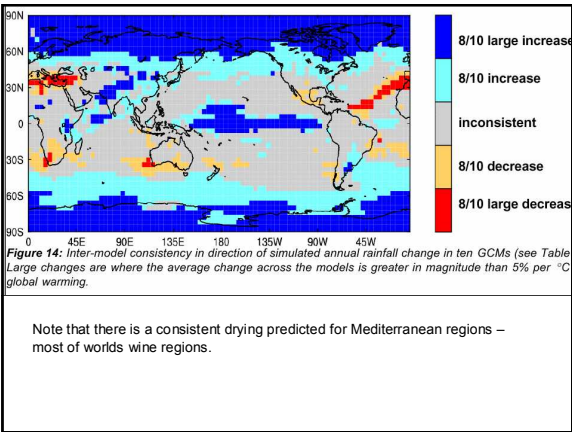
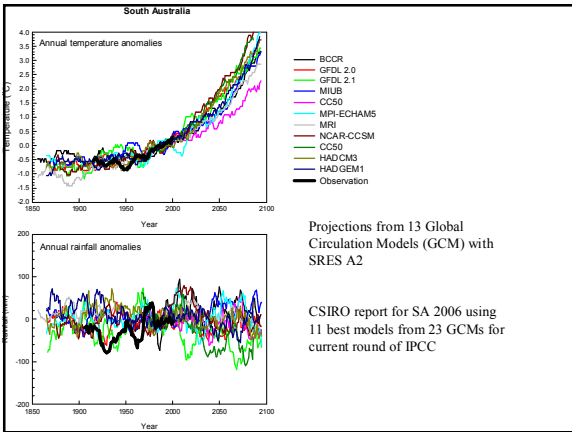
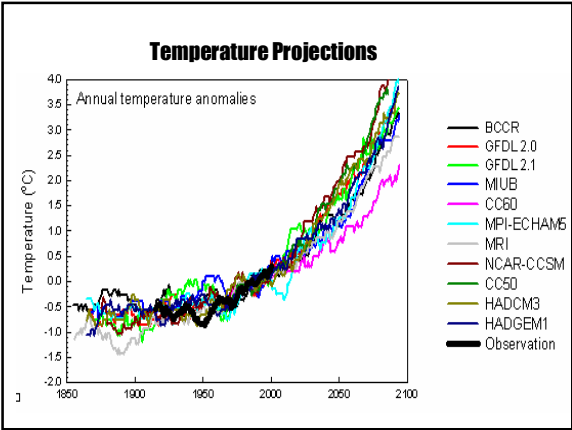
140 year old shiraz vines  
Photo: Wine and Brandy Corporation



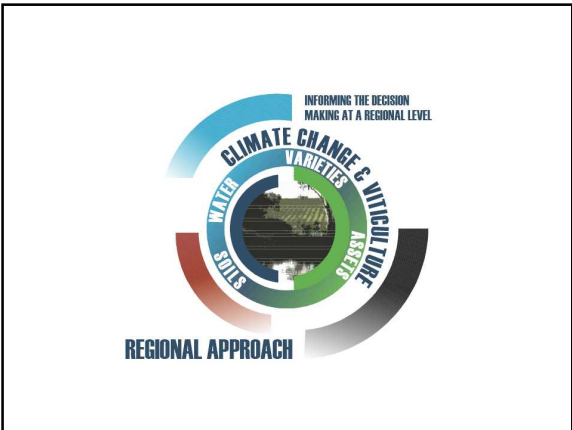
What destroyed the sand castle ?

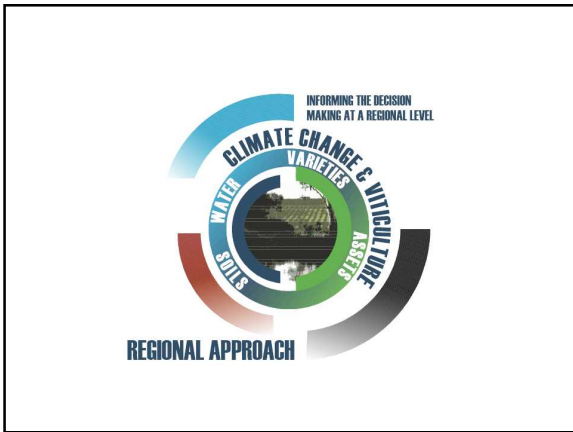
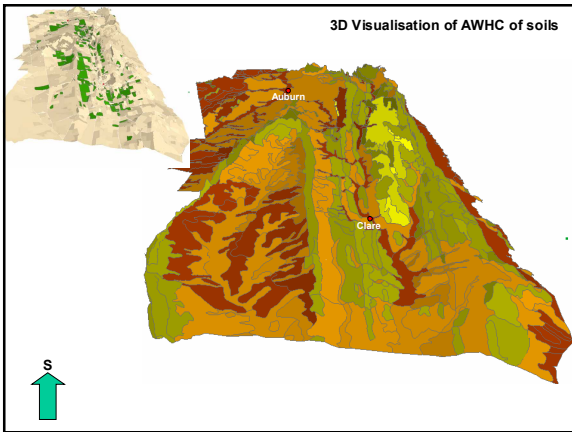
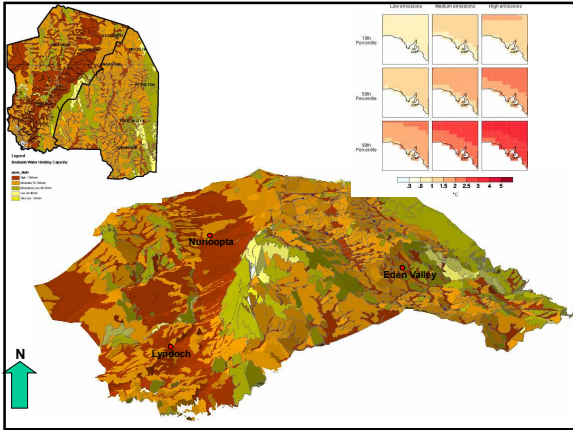
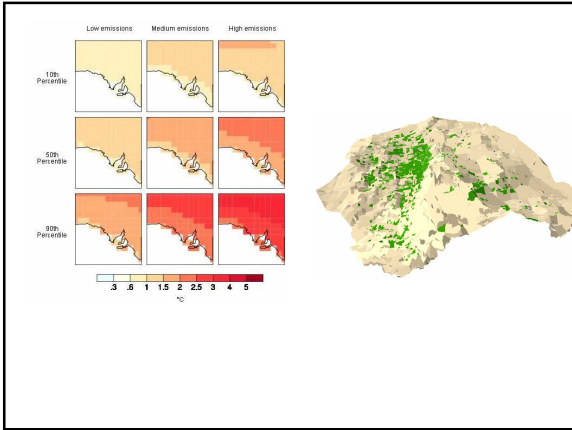
In a variable and changing climate it will always be hard to distinguish between extreme events (wave) and trends (tide)





- ### Six impacts of climate change on viticulture
1. Change in mean temperature: faster crop development, higher water use & changed pest and disease risk.
  2. Changes to extreme max temperatures – heatwaves
  3. Changes to frost risk
  4. Changes to amount and timing of rainfall influencing soil water (and disease...)
  5. Changes to quality and quantity of water available for irrigation
  6. Change to carbon dioxide in the atmosphere



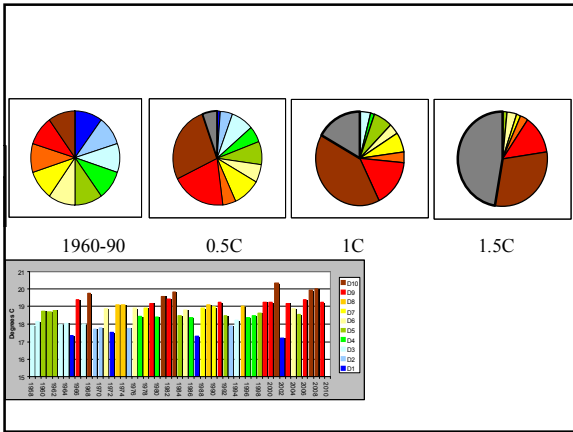
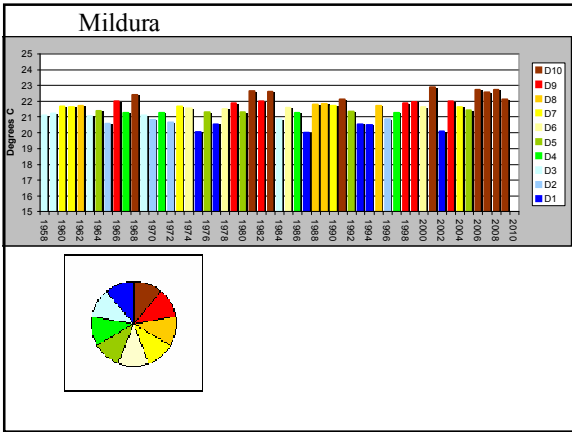
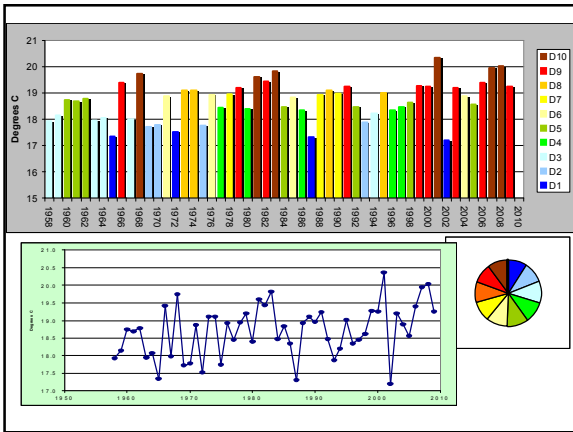
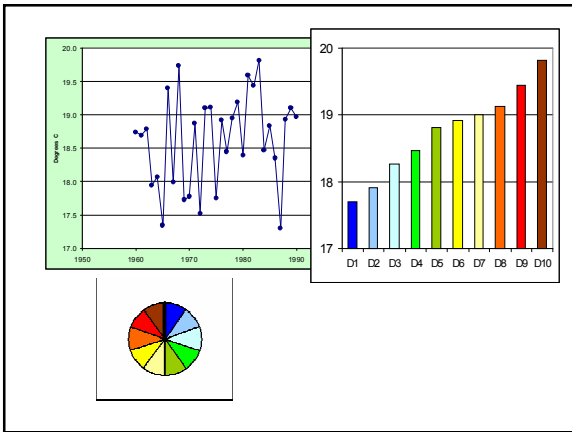
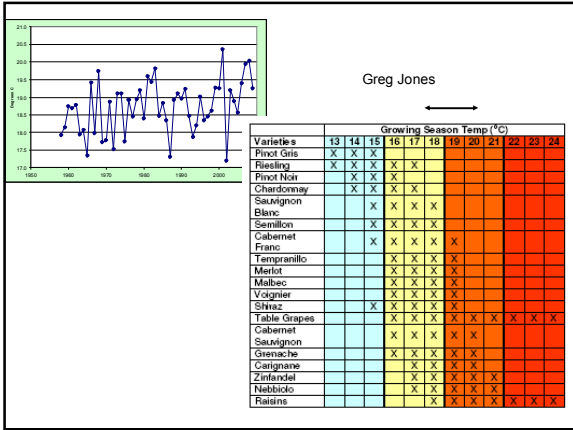
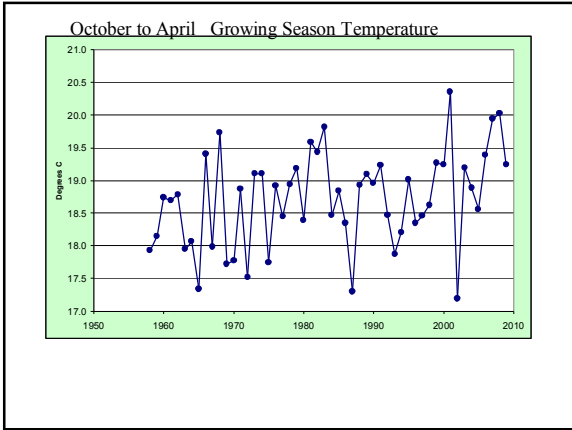


### Key Questions

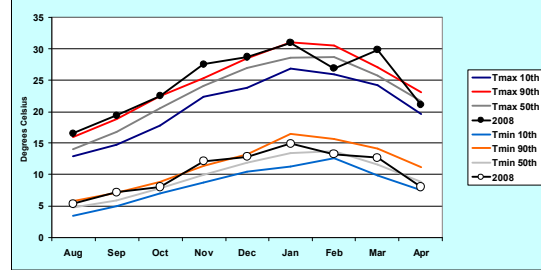
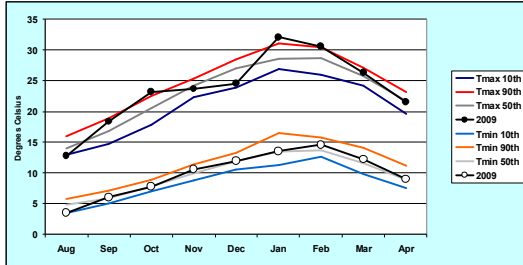
- What has been the impact of recent *warmer years* on wine grapegrowing in your region?
- What has been the impact of *drier years*?
- How confident are you about your assessment of the impact of warmer and drier years? What information is missing? How can we use local knowledge and access R&D from outside of the region?

### Key Questions

- How is climate likely to change in your region in coming decades, by 2030, 2050 and 2070?
- What are the most important impacts of these changes in climate on wine grapegrowing in your region?
- How confident are you about your assessment on the climate change projections for your region. What information is missing? Are there more recent sources of information?

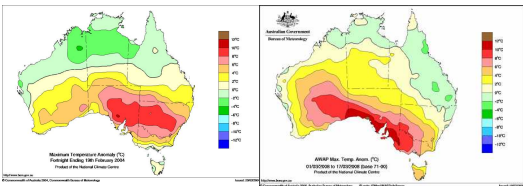


# Monthly Temperature

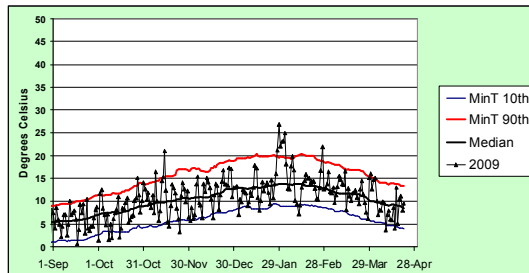
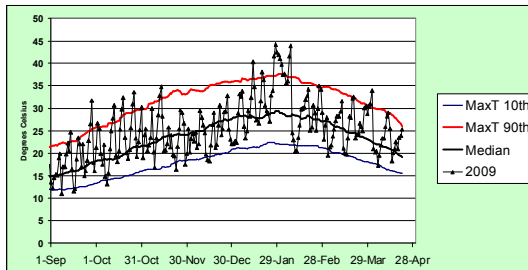
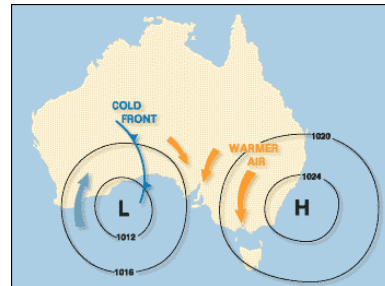
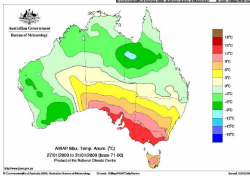


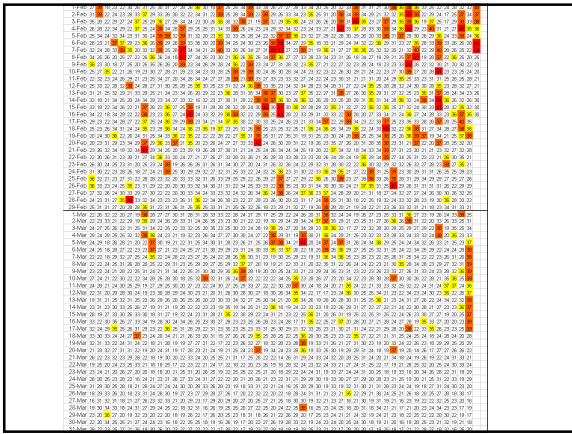
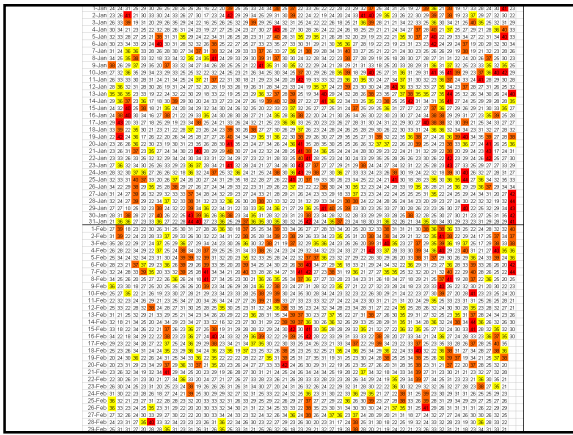
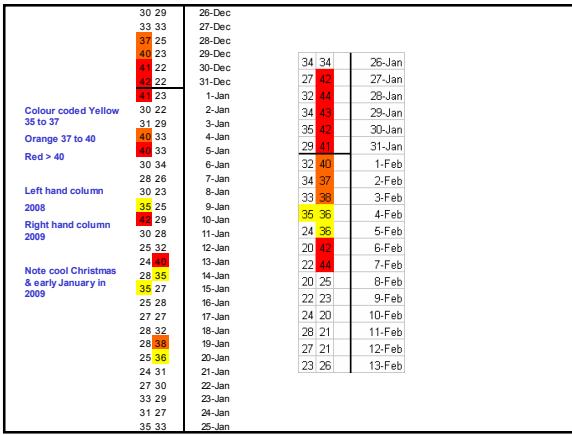
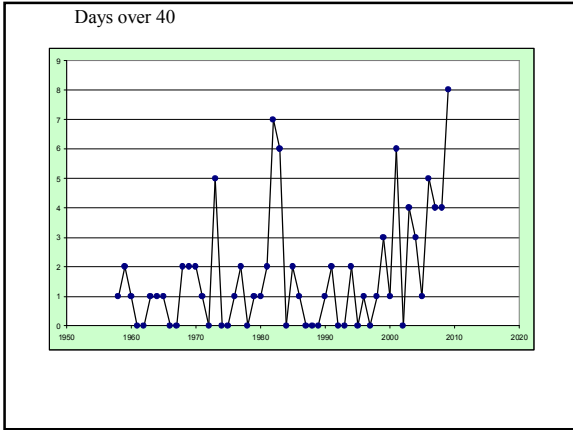
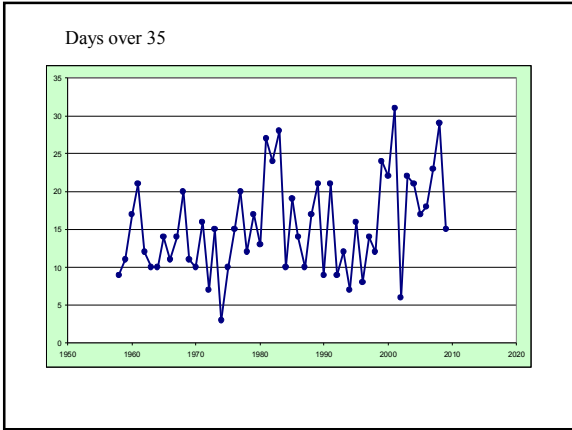
Feb 2004

March 2008



Jan Feb 2009





### Water availability

Four sources of water for a Clare vineyard:

- Water stored in soil from winter/spring rain
- Irrigation from local dams
- Irrigation from groundwater
- Irrigation from River Murray water
- Recycled water

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**RF DECREASE MAY LEAD TO DEC.RUNOFF BY 2-3X**

