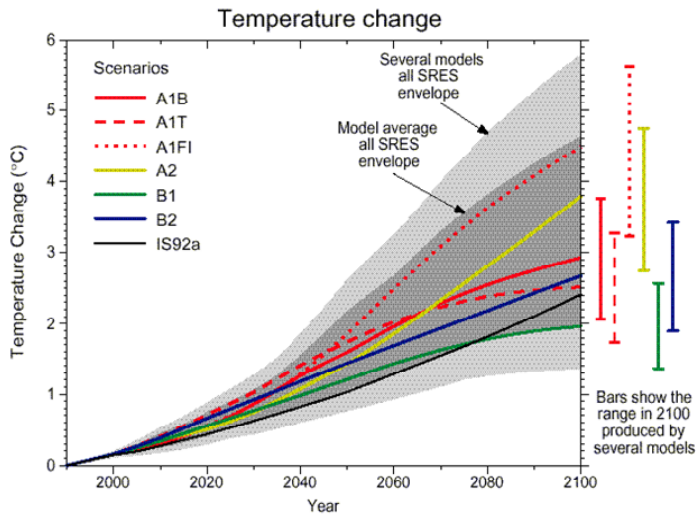


How do we model global climate??

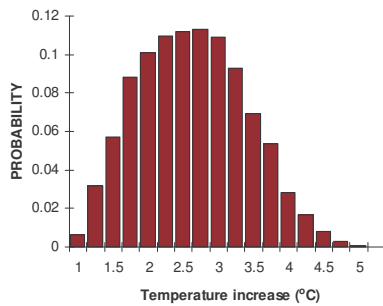
- IPCC uses as suite of different models



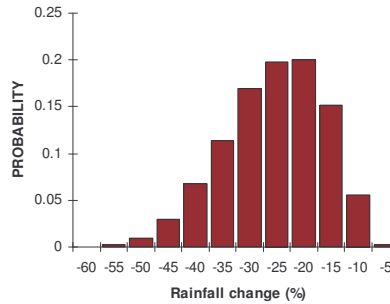
What are the projections?

Uncertainty abounds – example
Wongan Hills, WA

Temperature

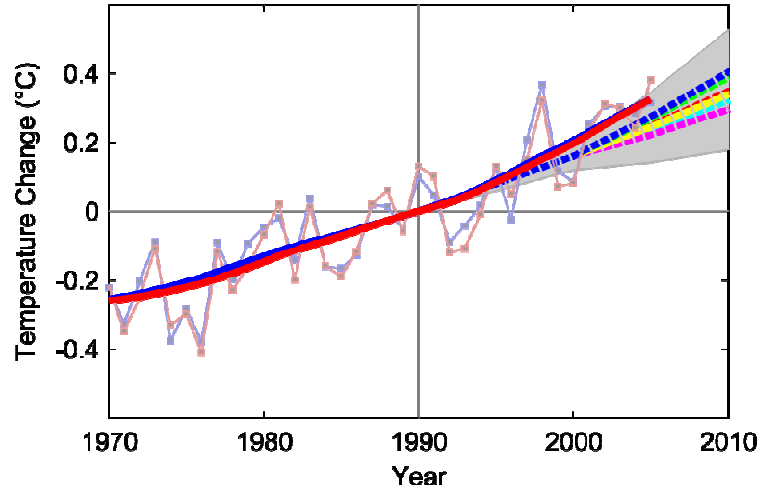


Rainfall



What are the projections?

How do trends line up against projected changes?



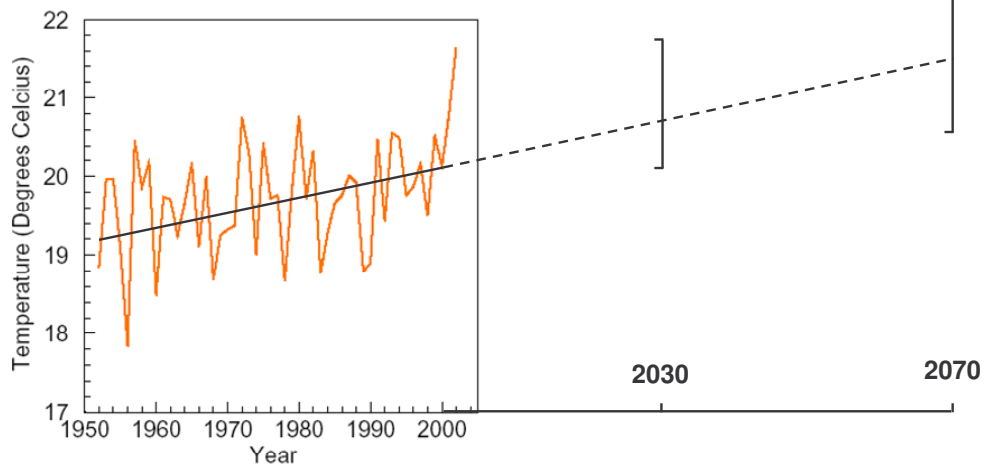
- Observed temperature changes are at the upper limited of projections made in 1990.



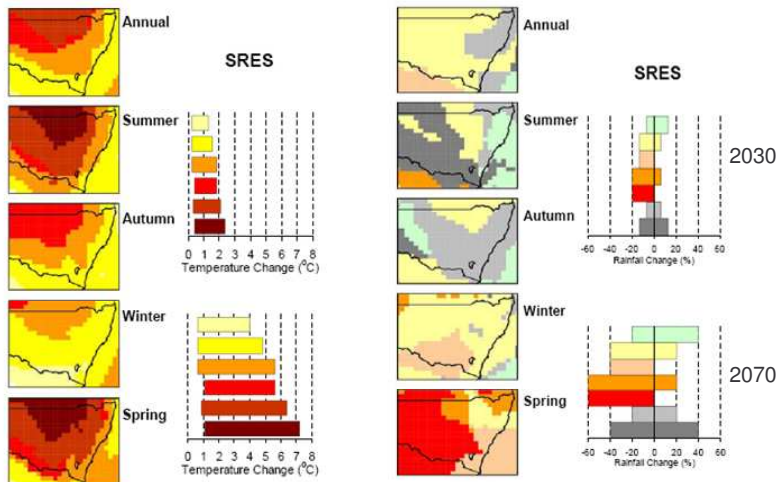
What are the projections?



Past trends, Future Changes ?
Murray Darling Basin



Projected changes in rainfall and temperature in NSW

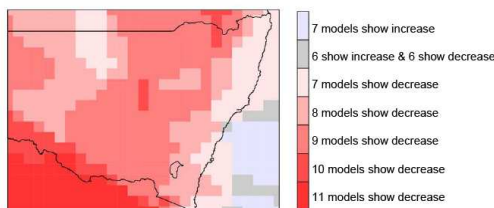


SRES – Special Report on Emissions Scenarios (IPCC)

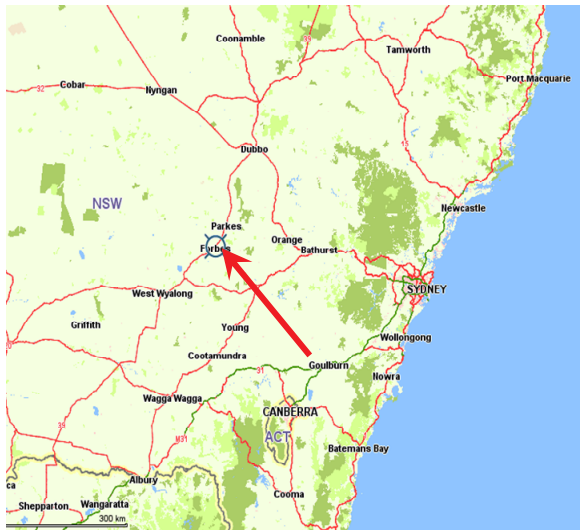


NSW – Likely to be warmer and drier

- NSW is likely to experience greatest warming west and north of the highlands, and least in southern and coastal areas.
- By the year 2030, annual-average warming of 0.2 to 1.6°C in coastal and southern regions, 0.2 to 1.8°C in the central-west, and 0.3 to 2.1°C in the north.
- The models indicate a general tendency for decreasing annual-average rainfall over NSW (9 of 12 models) mainly confined to winter and spring.



Changes in context

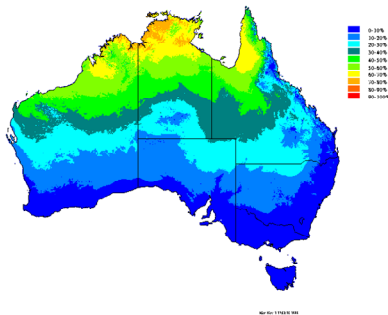


A warming of 1.5°C and an 8% decrease in rainfall (a moderate scenario for 2030) would make the climate of Goulburn similar to the current climate of Parkes.

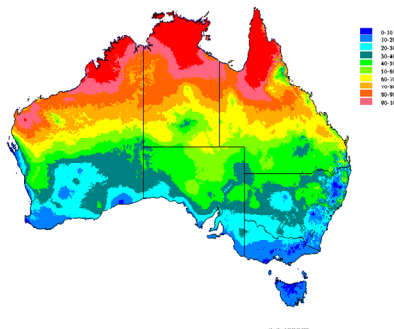


Heat Stress Frequency

Current heat stress



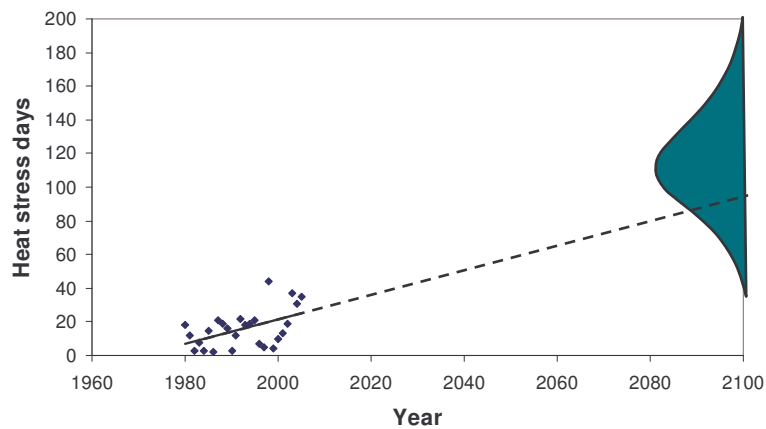
Heat stress 2.7°C warmer



Frequency of days when THI
(temperature-humidity index) > 82



Heat stress trends extrapolated



Conclusions – local trends & projections.....

Current Trends

- Increasing maximum and minimum temperatures
- Static frost window for winter crops
- Reducing rainfall trend on-farm, dominated by reductions in Autumn rainfall.
- Increasing evaporative demands in all seasons
- Allocations have been decreasing (due to a number of causes)



Conclusions – local trends & projections.....

Projections

- Increasing maximum and minimum temperatures to continue
- Increasing danger of high temperature damage in rice during flowering
- Reduced risk of low temperature damage in rice during flowering.
- No clear message regarding frost risk in winter crops
- Further on-farm rainfall reductions
- Increasing evaporative demands in all seasons
- Allocations...?



Conclusions

- Our climate is changing (natural cycles, human effect...)
- Increasing evidence of a 'human fingerprint' in these changes
- Further (and possibly large) changes seem likely
- These will be significant for NRM and agriculture relate to almost all aspects of Landcare
- There appear to be implications for land managers, policy-makers, institutional design and learning strategies
- Business will need to plan for adaptation....



What are the projections?



Past trends, Future Changes ?
Murray Darling Basin

