Introduction
The importance of temperature influencing grape and wine composition has been recognised historically. However, current warming and uncertain rain patterns associated to climate change have brought new challenges for the wine industry. In this work we assessed for the first time interactions between temperature and water on grape and wine attributes in a field trial where these factors were directly manipulated.

Materials and methods
• 2² factorial experiment with two temperature (heated and ambient) and two water regimes (deficit and irrigated).
• Temperature was increased using open-top chambers in SARDI’s Nuriootpa vineyard (Figure 1).
• Composition of grape and wine was characterised during two seasons (2010/11 and 2011/12) using standard techniques[2,3].
• Wine sensory assessment was undertaken by a tasting panel of professional winemakers from TWE.

Results
• One year-old wines from vines exposed to both elevated temperature and water deficit had lower colour density, polymeric pigments and total tannins (Figure 2).
• In agreement with the reduced phenolic composition of grapes, wines from heated-deficit vines were chromatically and sensorially less intense; wines were lighter, less colourful and with less red tones (Figure 3).
• Wines were discriminated by panellists due to their low tannin structure and reduced berry flavours (Figure 2).

Conclusion
✓ The generalised perception that water deficit leads to colourful, flavoursome and phenolic rich wines may not hold under high temperature.
✓ These findings highlight the dominant effect of temperature driving grape and wine composition, and provide industry with indications of shifts in wine profiles that would require technological innovations in the vineyard and winery to maintain the identity of Barossa Shiraz, the flagship of the Australian wine industry.

REFERENCES