



The Australian Wine Research Institute

Earlier, shorter, hotter? Is it really happening?

Paul R. Petrie and Victor O. Sadras

Australian Wine Research Institute and
South Australian Research and Development Institute



Time-trends in phenology



Phenology is temperature driven

Warming trends should be reflected in altered phenological patterns

Effect of temperature is cumulative

Only small increases needed to change phenology



Winter

Spring

Summer

Autumn

Warming trends

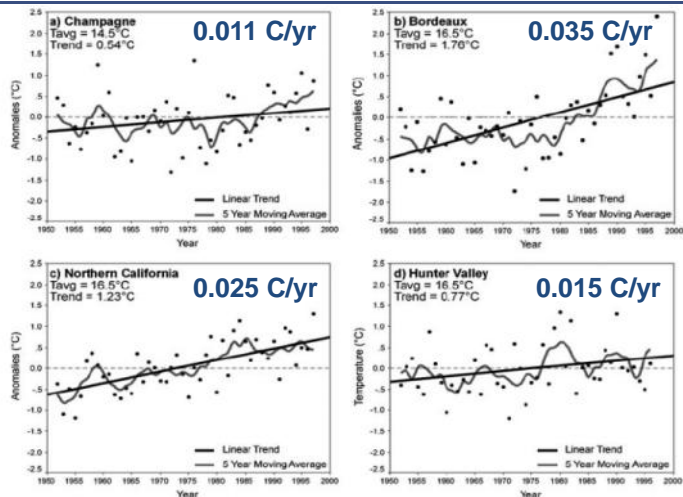


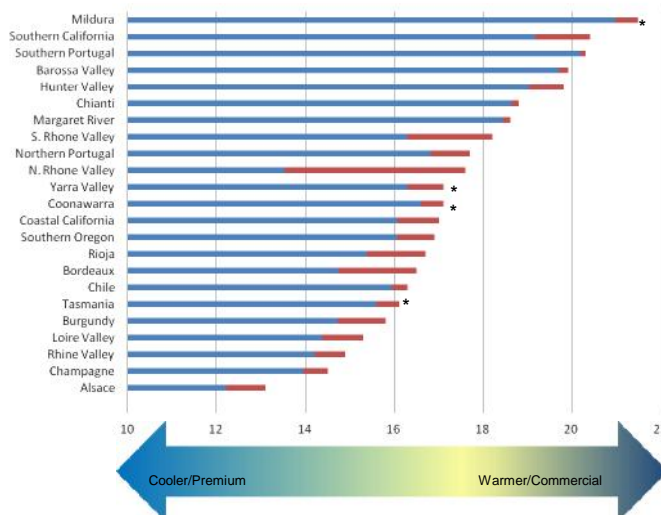
Figure 2. Observed (1950–1999) growing season average temperature anomalies for a) the Champagne region, b) Bordeaux, c) Northern California, and d) the Hunter Valley. Tavg is the average growing season temperature (Apr–Oct in the Northern Hemisphere and Oct–Apr in the Southern Hemisphere) and the Trend is over the 50-yr period.

Jones et al 2005

Global climate zones

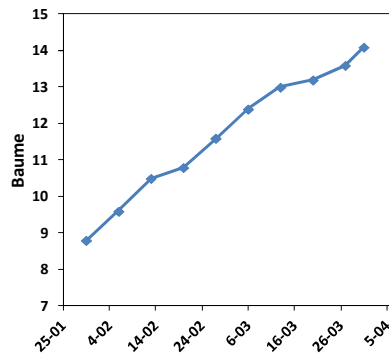
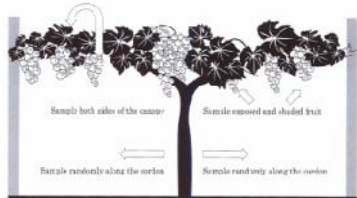


Changes to average growing season temperature (°C)

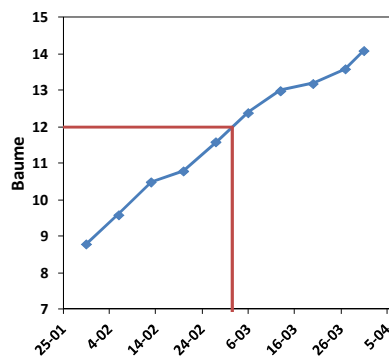
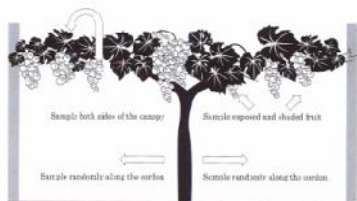


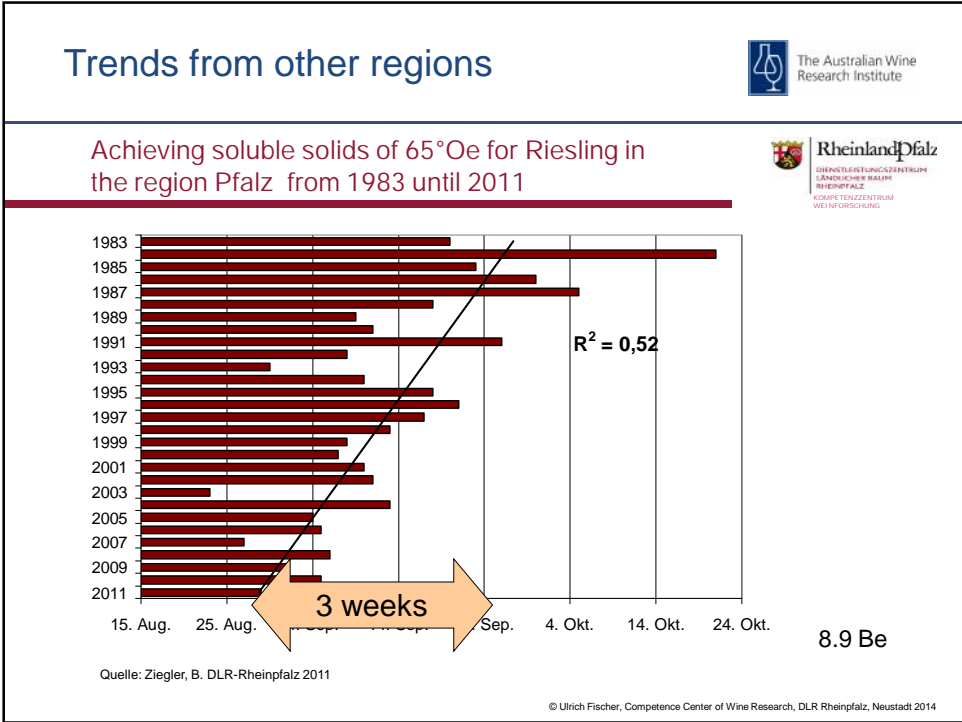
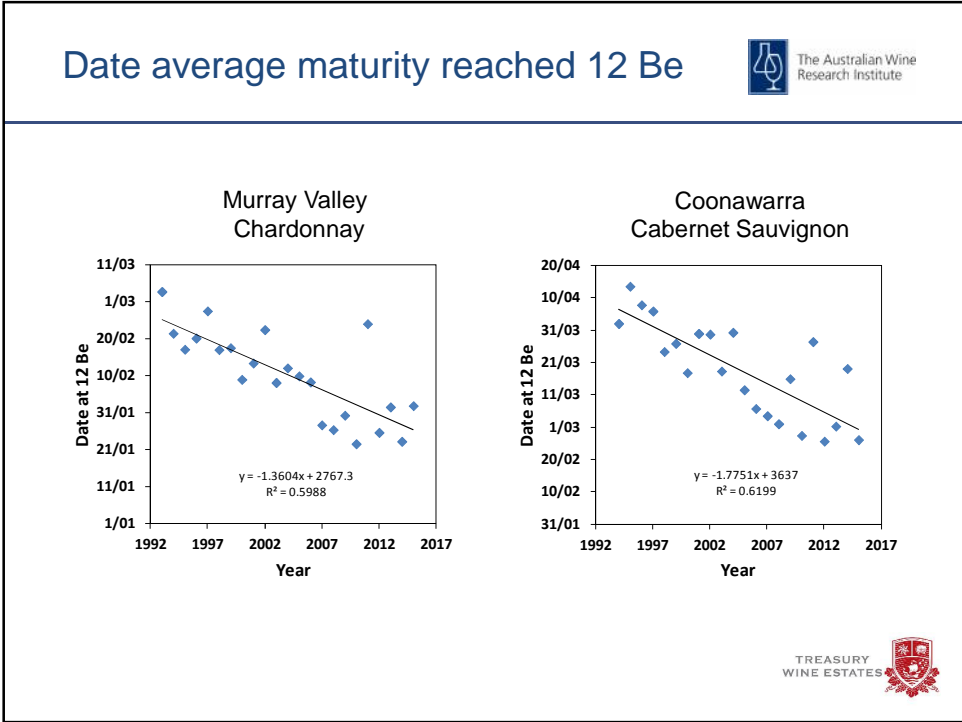
Source: Climate Change and Global Wine Quality, Jones, White, Cooper & Storchmann (2005)
 * Assumption based on State of the Climate 2012, CSIRO and Bureau of Meteorology

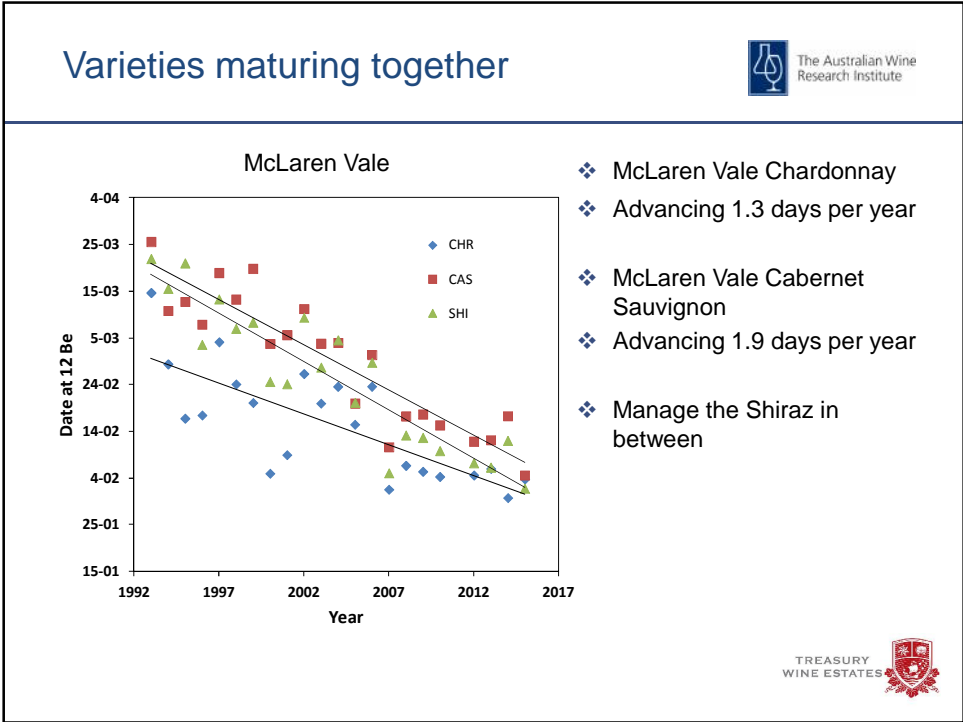
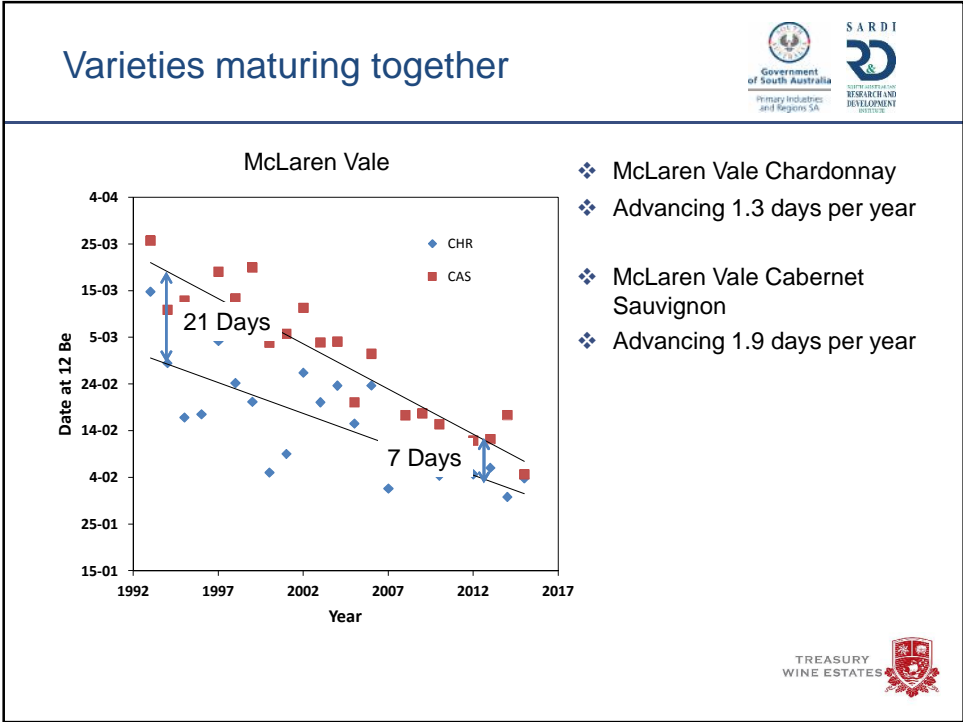
Sugar accumulation

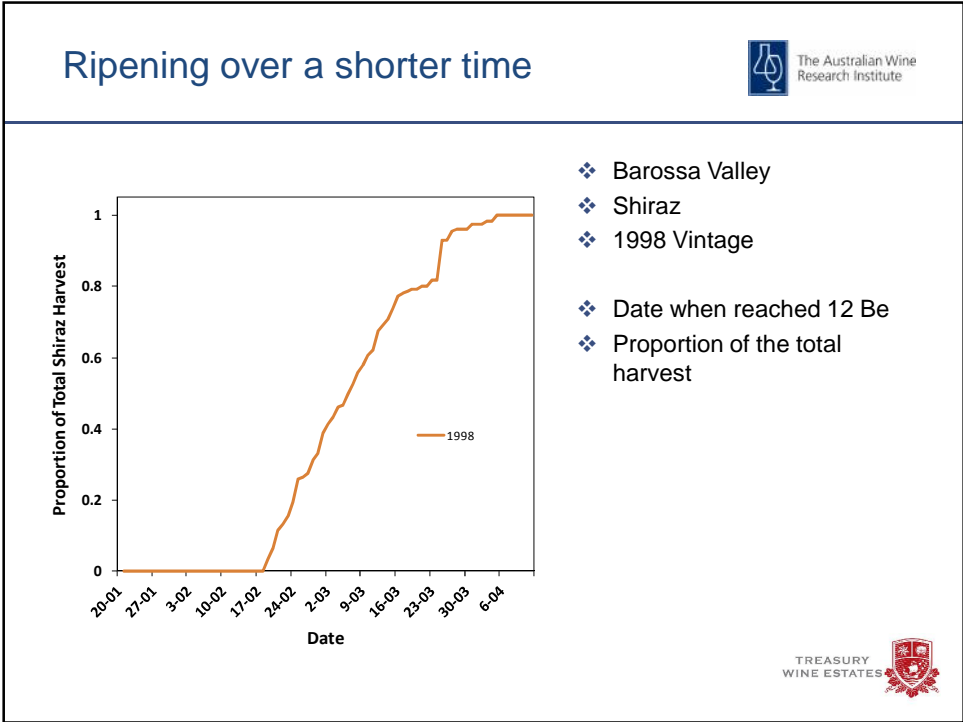
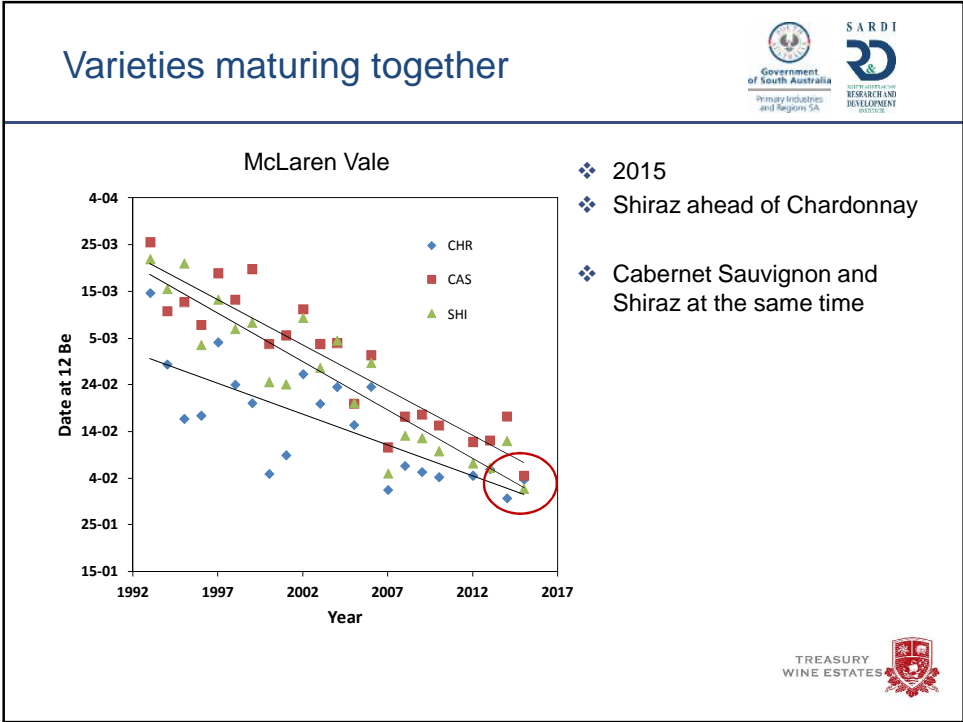


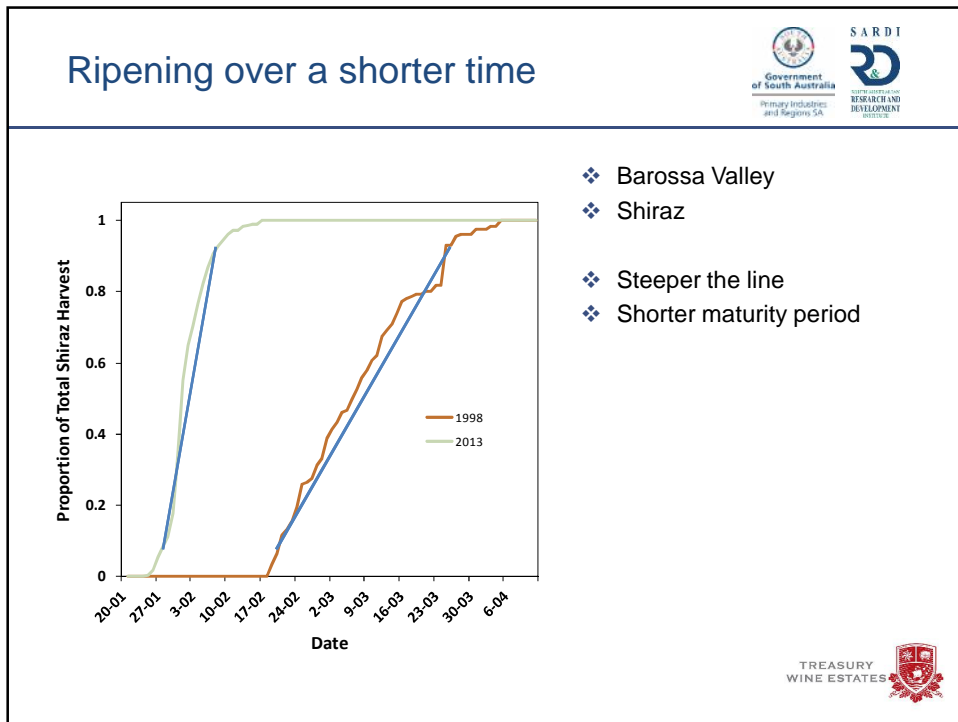
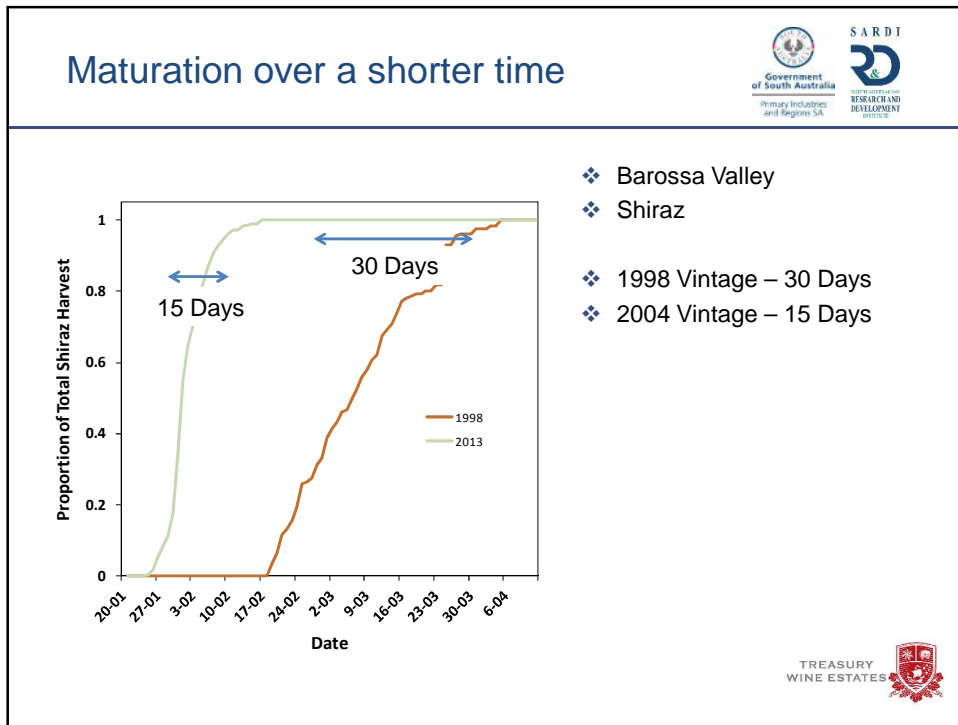
Sugar accumulation



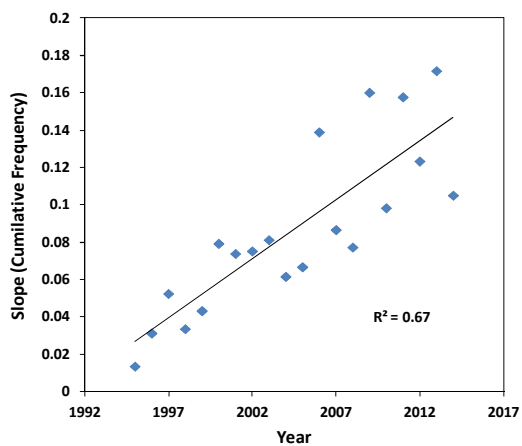








Ripening over a shorter time



- ❖ Barossa Valley
- ❖ Shiraz
- ❖ Steeper the line
- ❖ Shorter maturity period
- ❖ Change over time



Conclusions



- ❖ Phenology is advancing
 - In Australia and world wide
- ❖ Vintages are becoming more compressed
- ❖ Different varieties are maturing at a similar time
- ❖ Individual varieties are maturing over a shorter time

Questions



- ❖ Paul.Petrie@awri.com.au
- ❖ (08) 8313 8277

