

Department of PRIMARY INDUSTRY AND
RESOURCES

Climate considerations and adaptation in the pastoral industry

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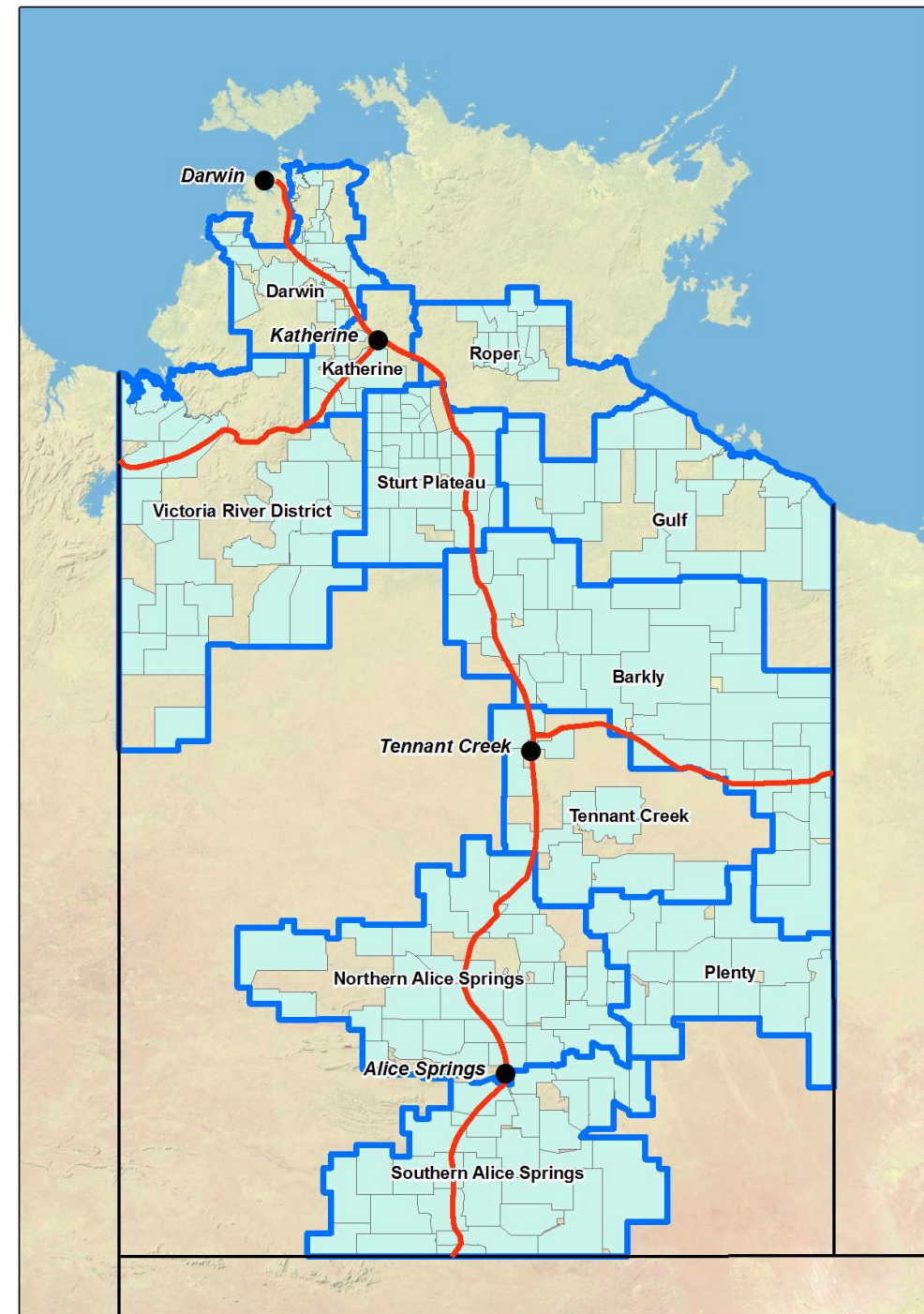
Topics

1. Livestock production in the NT
2. The production system
3. Weather and climate considerations for the NT pastoral industry
4. Strategies for managing climate variability



Livestock production

- NT land area is ~1.4 million km²
- About half is used for livestock production
- Beef cattle herd ~2.1 million head
- Buffalo herd est. 150,000+ head (mostly wild, non-domesticated)
- No “small stock” industry (sheep or goats)



Cattle properties

- Average size is 3,000 km²
- Smallest herds are <100 head
- Largest herds are ~80,000 head
- Average herd size is 11,000 head



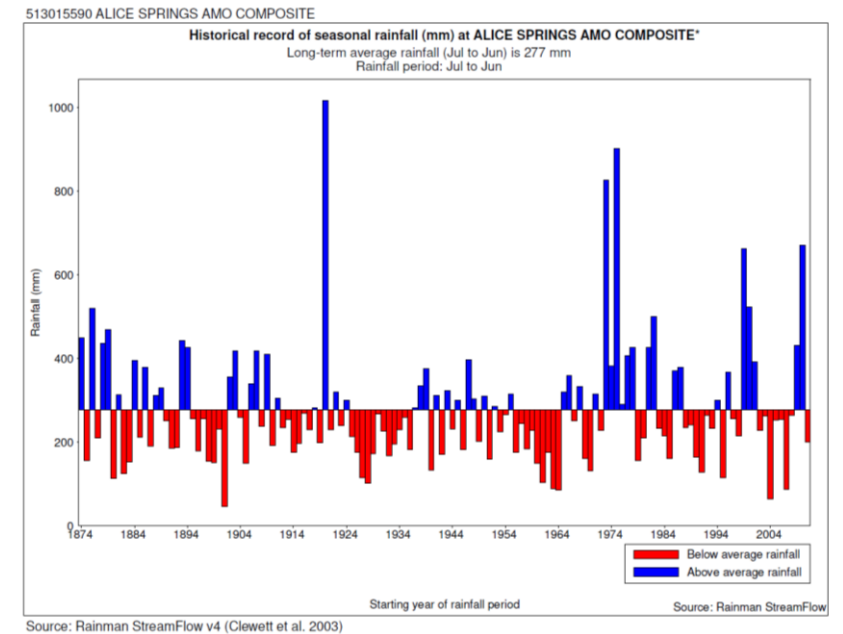
The production system

- Tropical and sub-tropical in the north
 - 600 – 1700 mm annual rainfall
 - Distinct “wet” and “dry” seasons
- Arid and semi-arid in the south
 - 250 – 500 mm annual rainfall
 - Summer-dominant but can occur anytime
- Most livestock production comes from native rain-fed pastures without any irrigation or fertiliser
- Relatively small areas of introduced pastures that are more productive

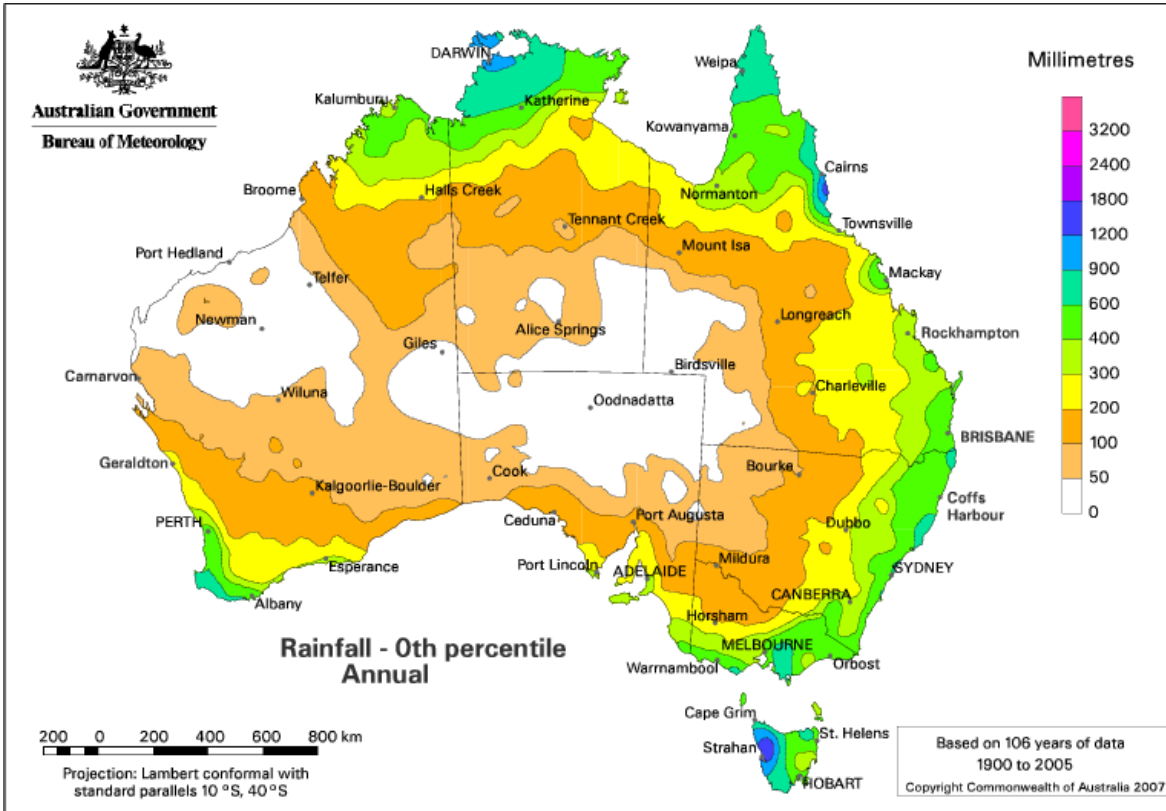


Weather and climate

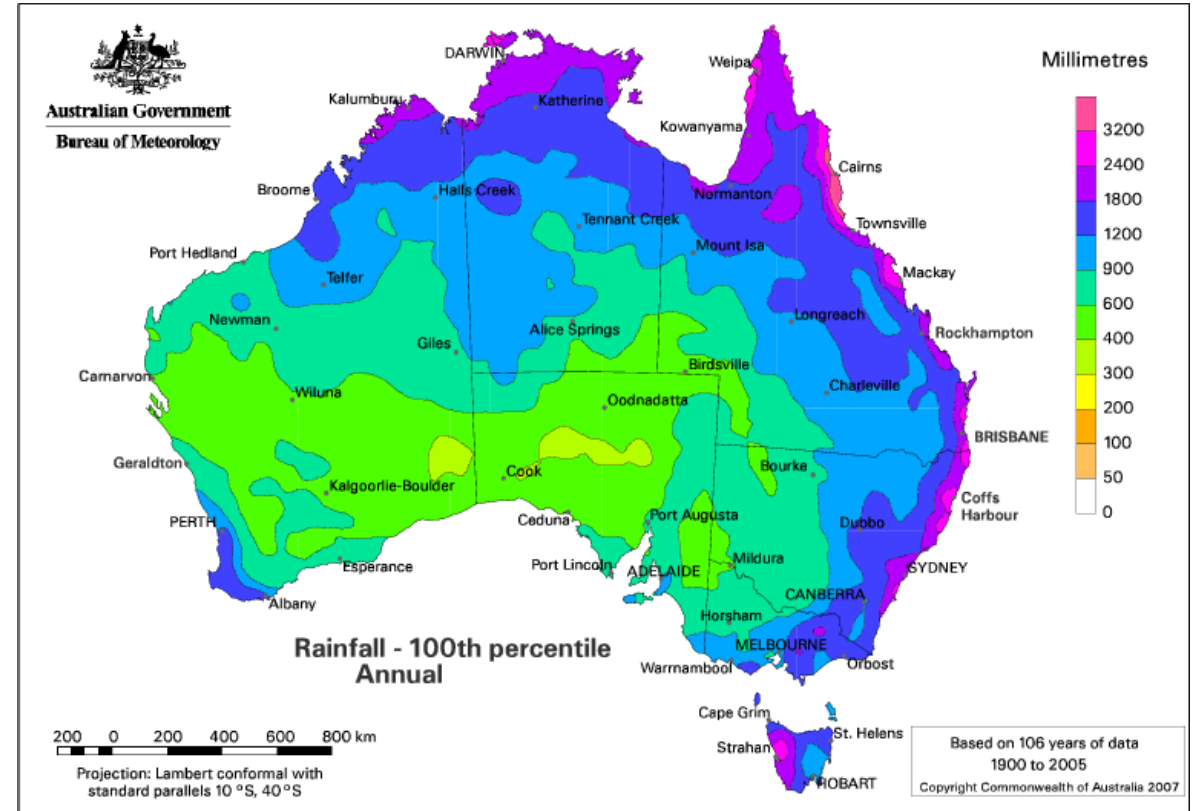
- NT cattle producers operate in some of the most variable natural systems on the planet
 - Landscape heterogeneity – soils and vegetation
 - Rainfall
 - Temperature
 - Forage supply – quantity and quality
- Within-years, between years, decadal cycles
- Pastoral land managers thus have a high degree of adaptability and lived experience



Rainfall variation



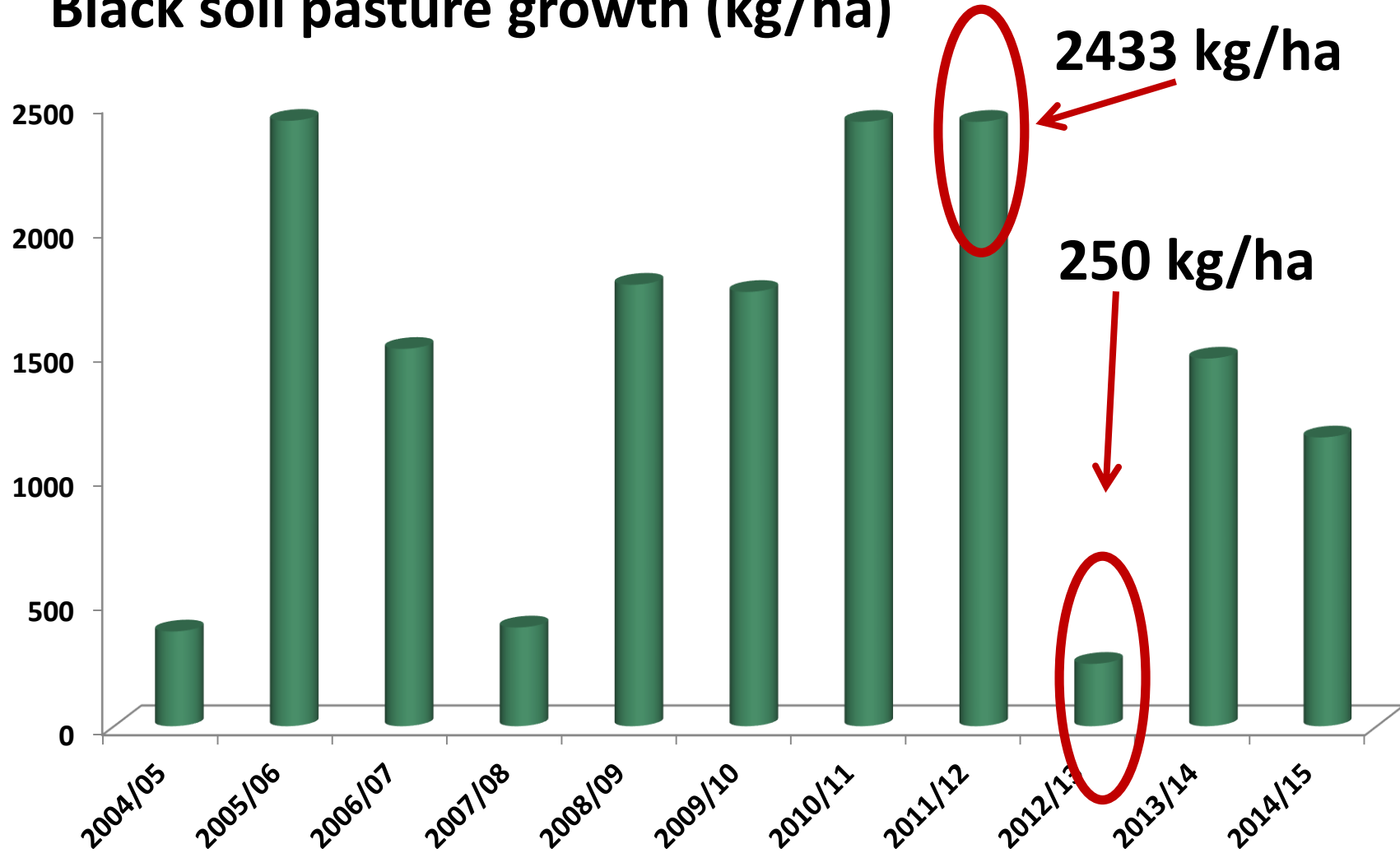
Lowest on Record



Highest on Record

Pasture growth

Black soil pasture growth (kg/ha)



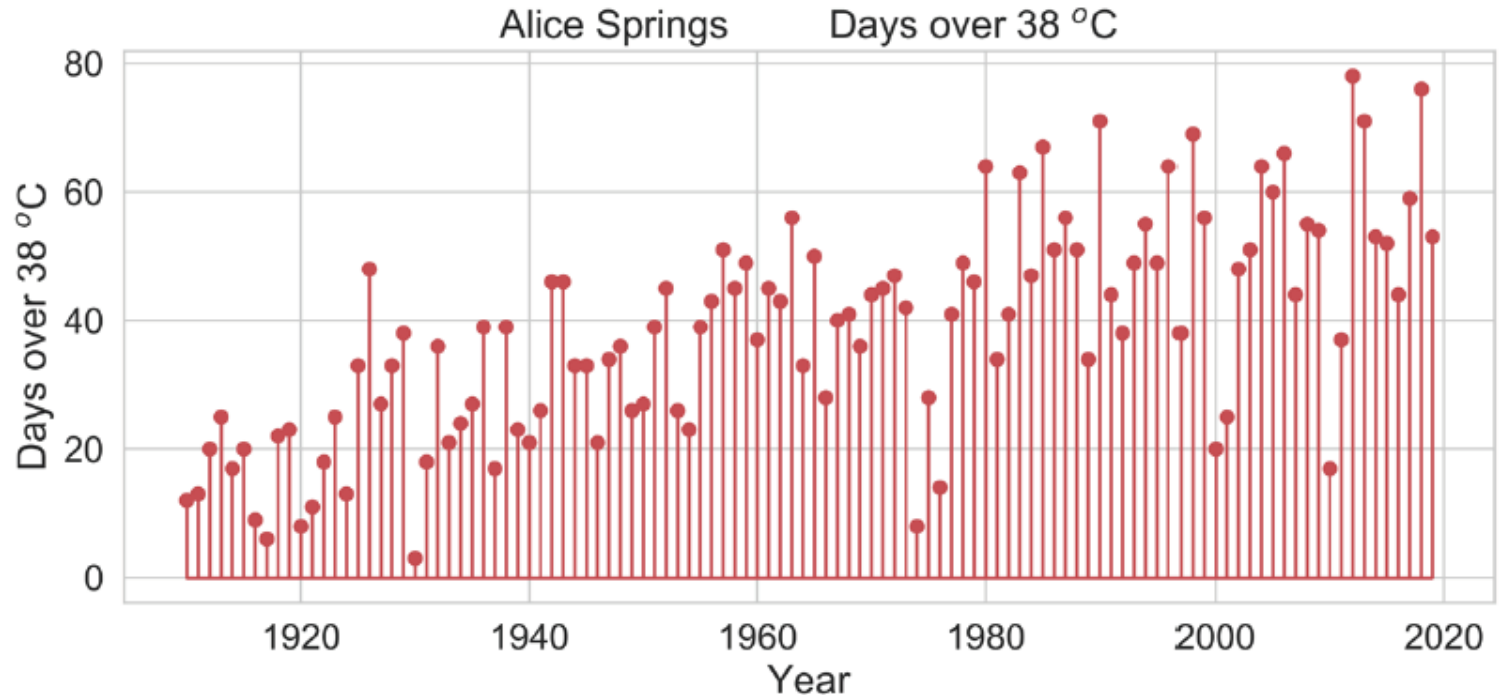
High variability “masks” longer term trends

Days with temps above 44°C:

- Before 1989 – 4 times
- Since 1989 – 24 times

Nine or more consecutive days above 42°C:

- Before 1989 – never
- Since 1989 – 3 times



Data from the Regional Weather and Climate Guide for Alice Springs Region. BOM, CSIRO & FarmLink

What does the BOM say might be in store?

All NT pastoral regions:

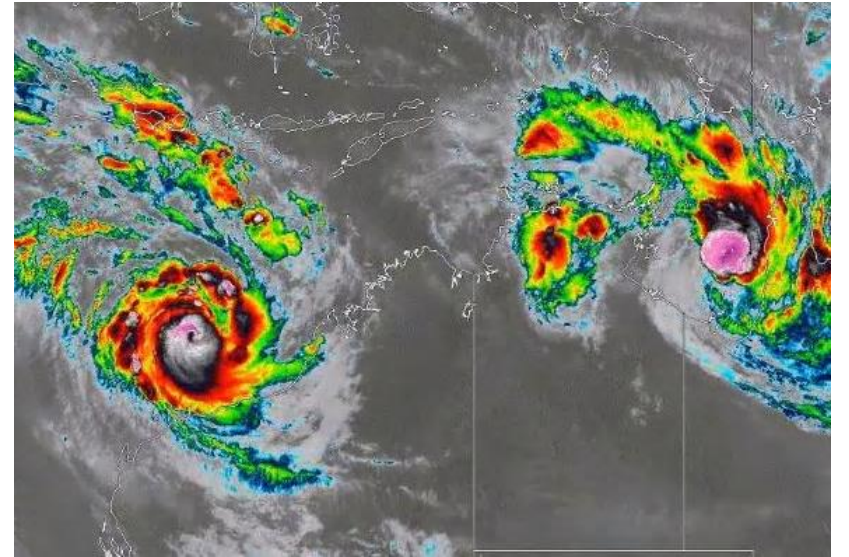
- Annual and decadal variation will mask/amplify underlying trends
- Average temps to increase in all seasons
- More hot days and long warm spells
- Changes in rainfall totals are unclear
- Increased number of extreme rainfall events



Plus.....

For coastal areas:

- Higher sea levels, more storm surges and king tide events
- Maybe fewer cyclones, but more intense ones



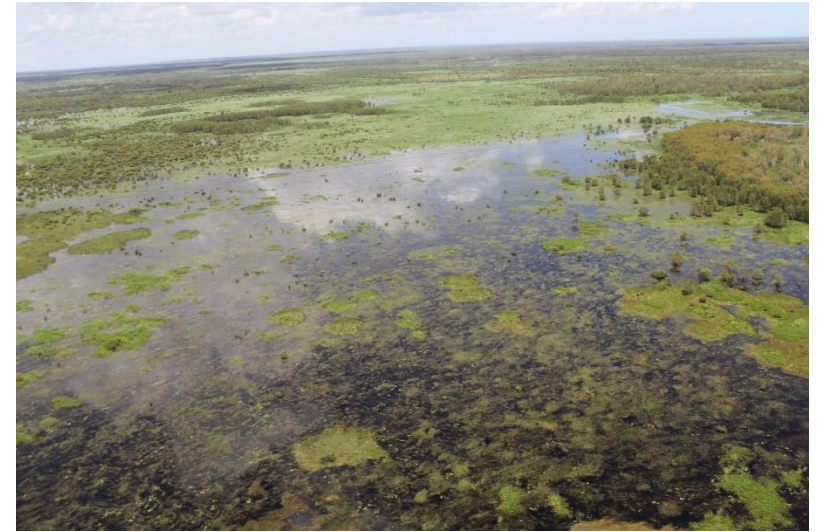
For central Australia:

- Fewer frosts
- Higher evapo-transpiration rates
- Time spent in drought expected to increase



What are the implications?

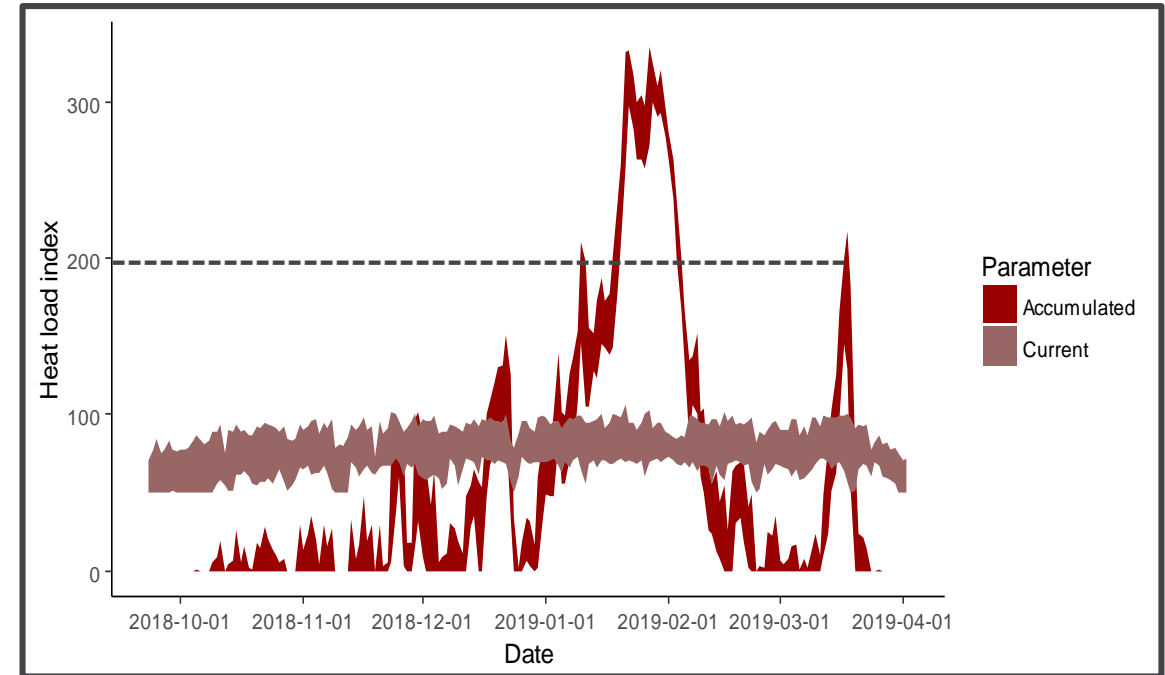
- Changes to floodplain inundation patterns, salt water intrusion
- Changes in the distributions of pests, diseases and weeds
- Rainfall changes would have different implications in different regions
- Pasture bulk and quality – regional variation
- Accumulated heat load
- Workforce – heat management



A practical example - heat load in cattle

- Animals accumulate body heat during the day
- When temp and humidity remain high at night, animals can't dissipate their heat load effectively
- Hot and humid weather conditions often coincide with the calving period
- High risk of heat stress and/or mortality in new-born calves when $HLI > 200$

Data from a Barkly paddock last summer



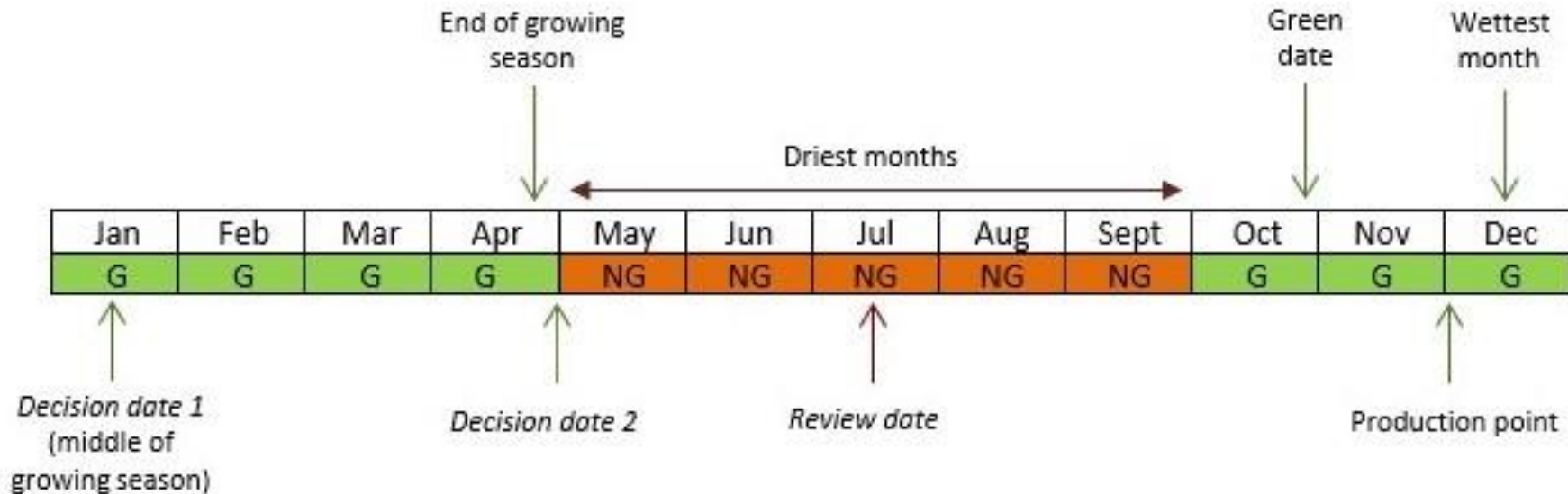
HLI is calculated using a mathematical equation incorporating black globe temperature, relative humidity and wind speed

6 strategies for managing climate variability

1. Understand the climate in your region – identify key decision dates

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Example 1: Katherine seasonal calendar



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The DPIR can help with all these things – get in touch!



For more information,
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