



CRC for
Water Sensitive Cities



Australian Government
Department of Industry,
Innovation and Science

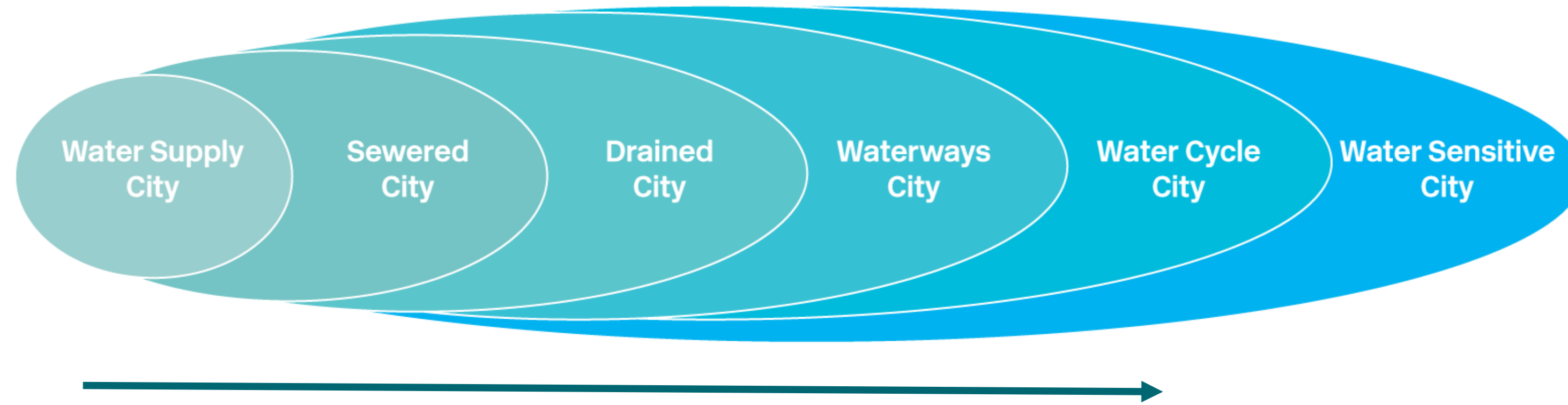
Business
Cooperative Research
Centres Programme

A vision for Future Urban Water Management

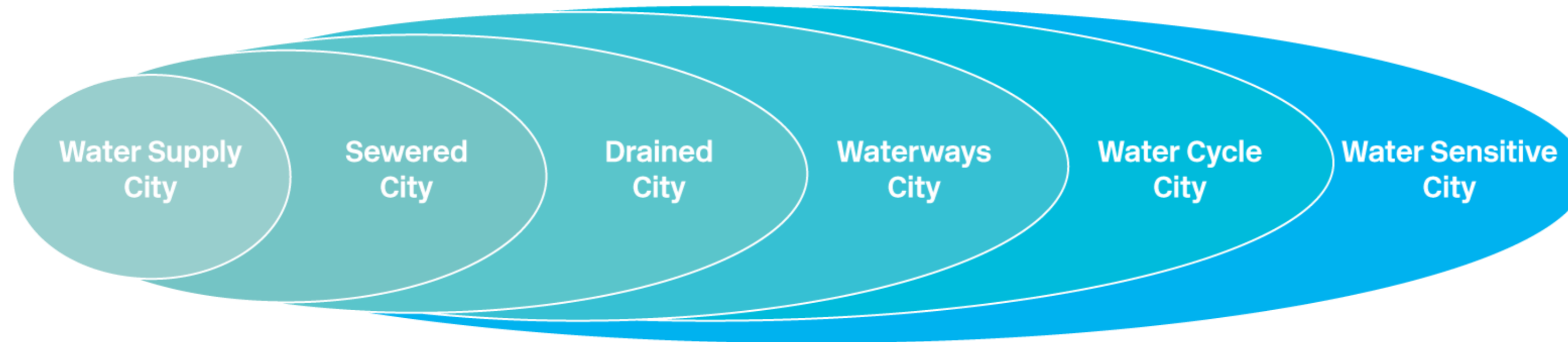
watersensitivecities.org.au



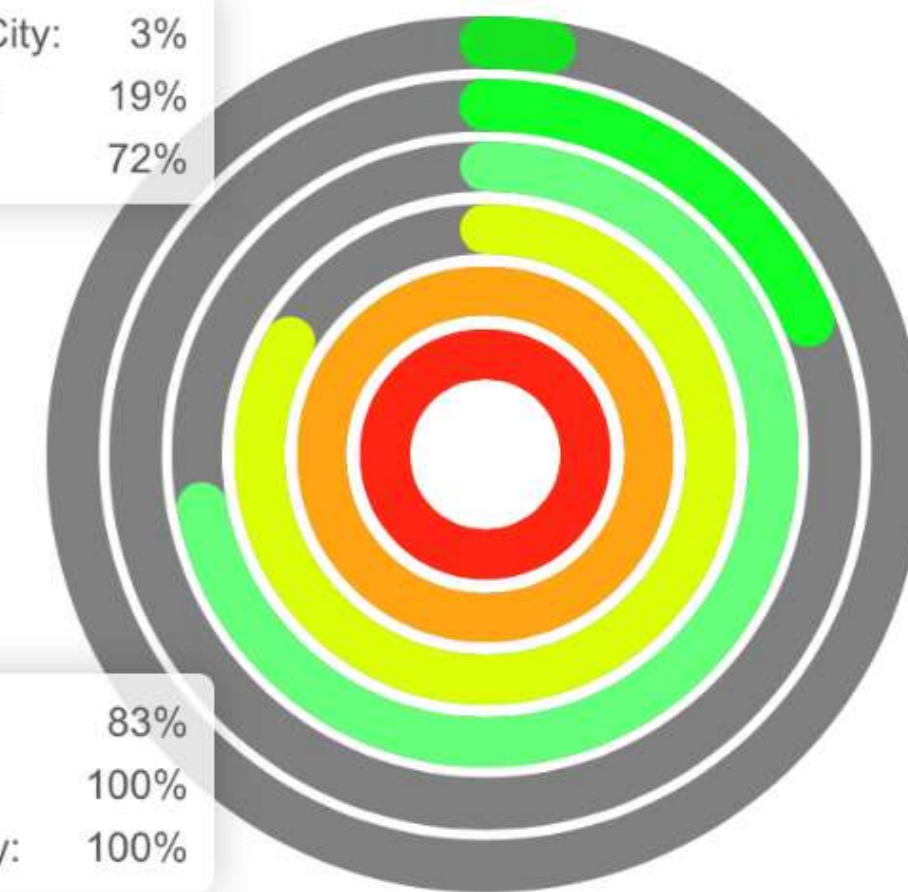
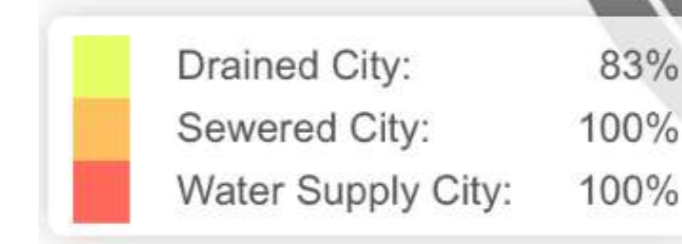
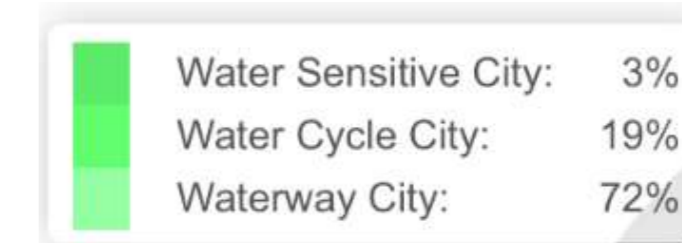
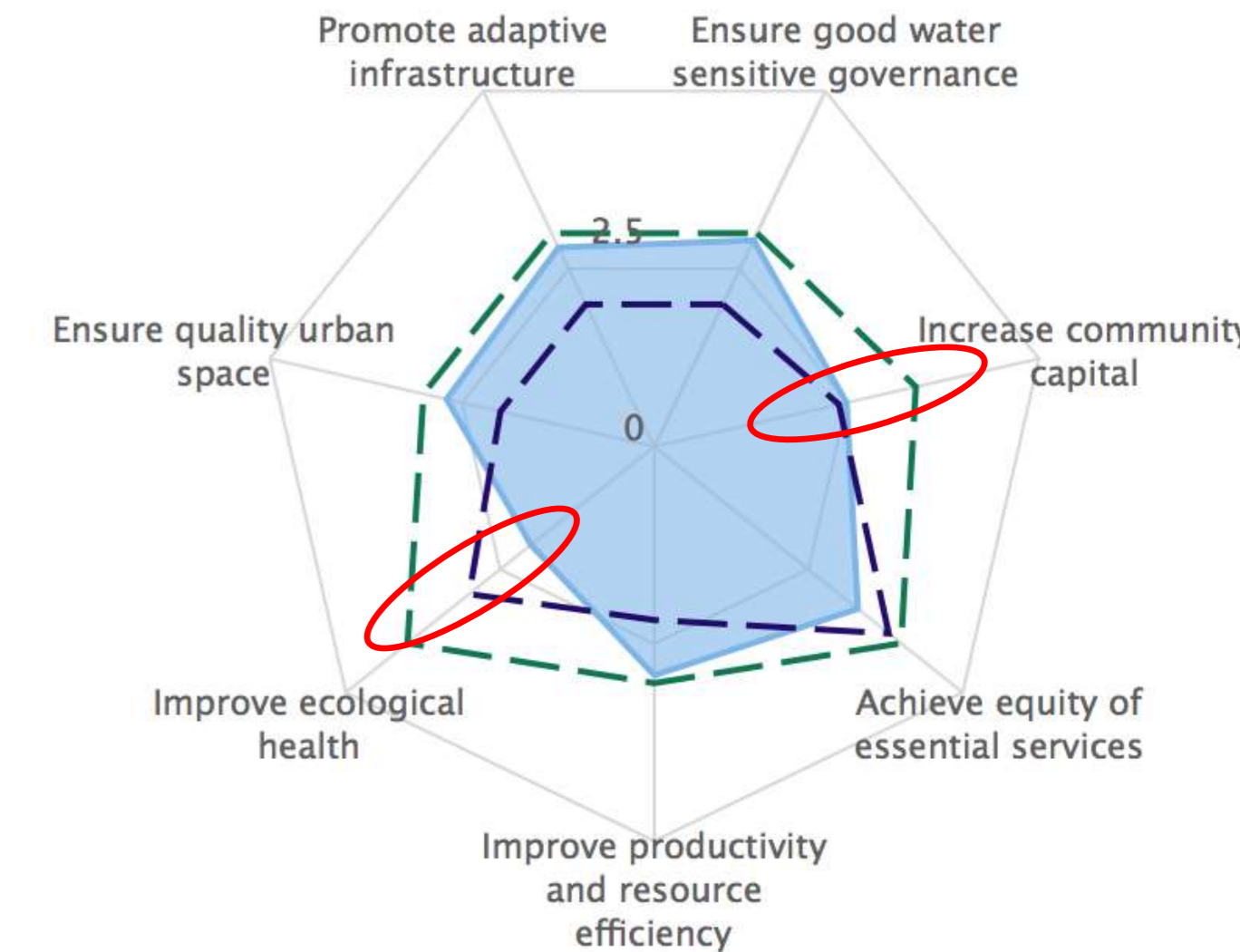
A new approach



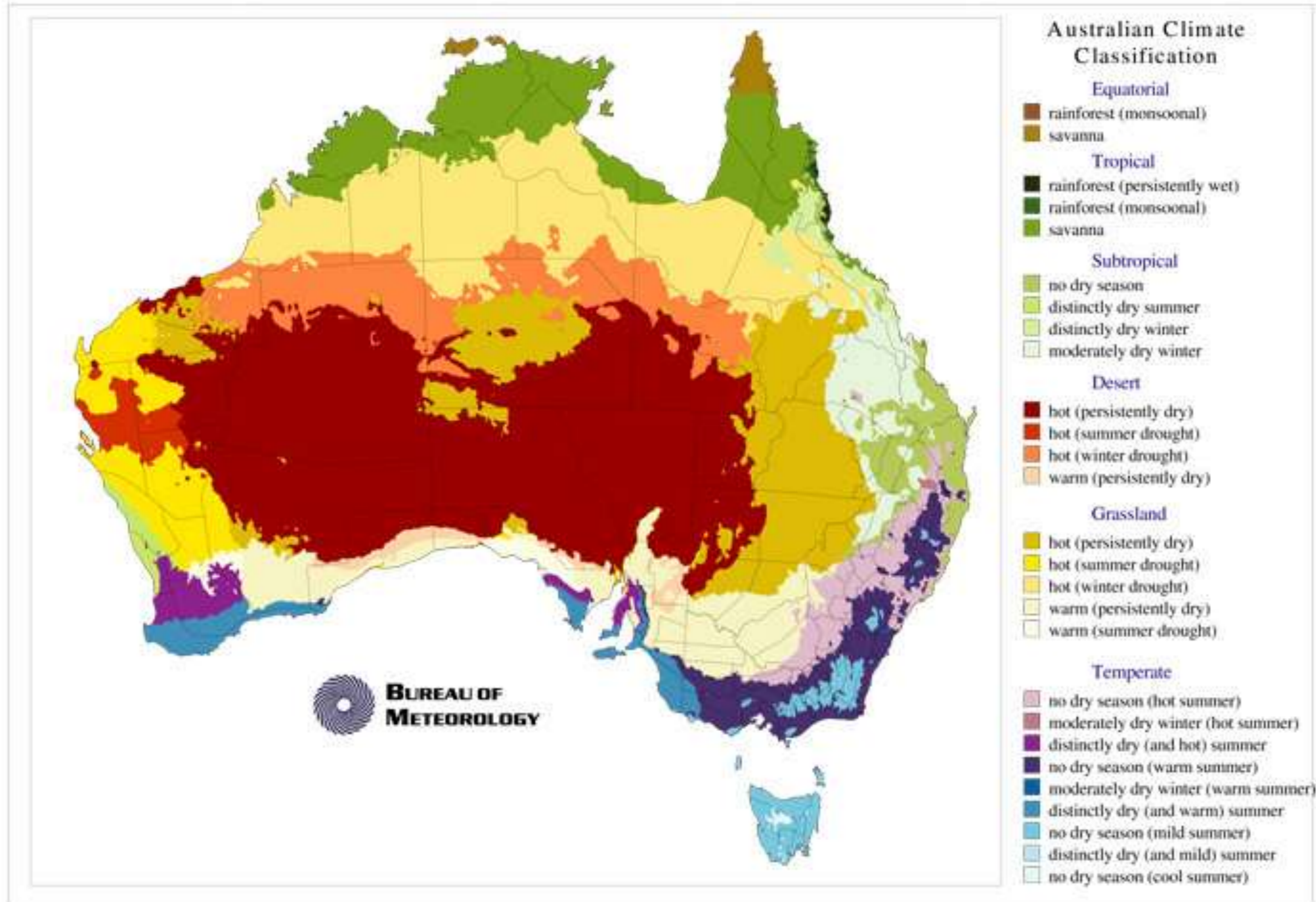
A new approach



- Closer integration water resource management and urban planning
- A stronger focus on fit for purpose use of all sources of water
- Better use of natural assets (ecosystem services)
- Early engagement to align vision, pool expertise and resources and sustain effort

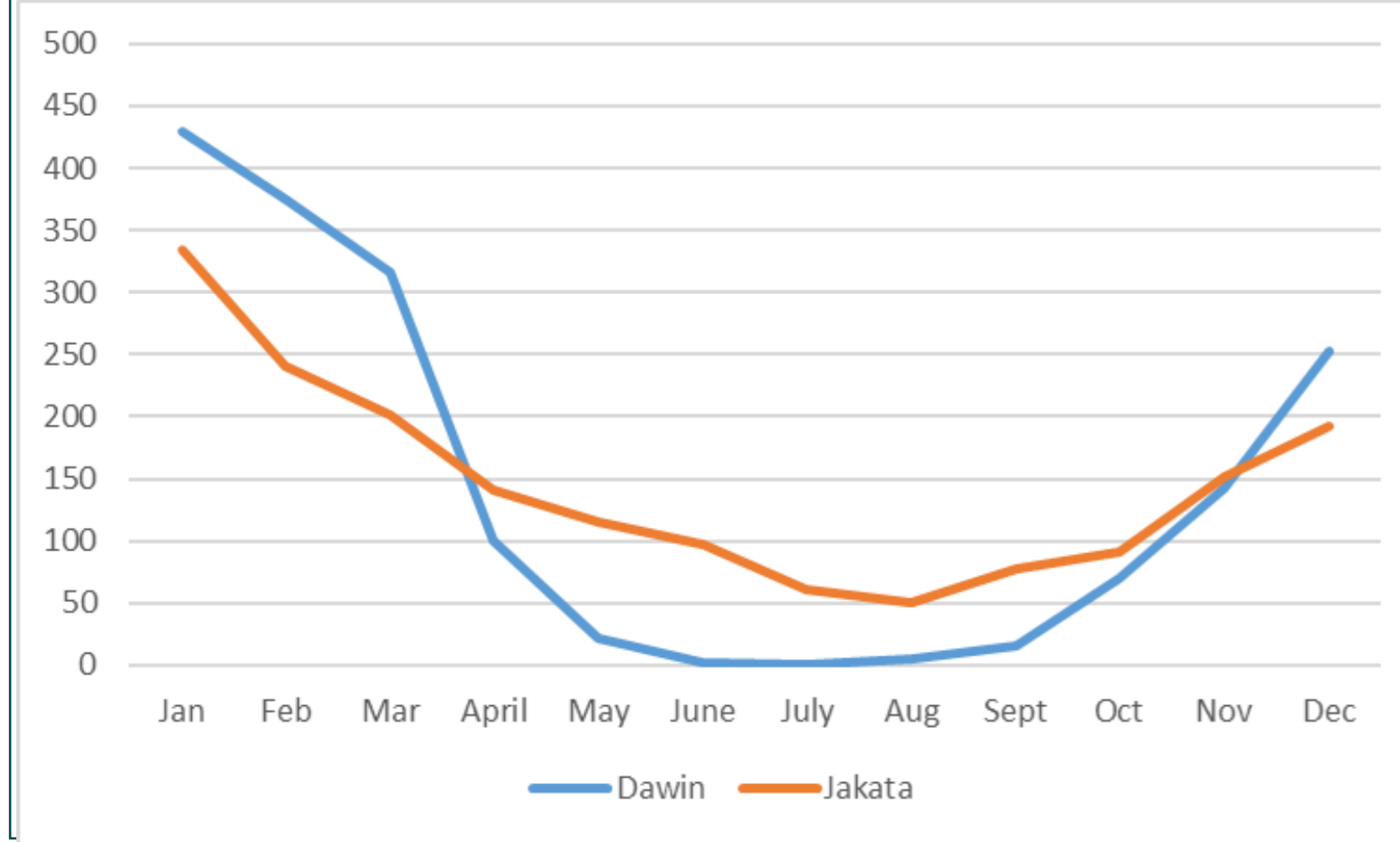


Australia has a wide range of climate zones

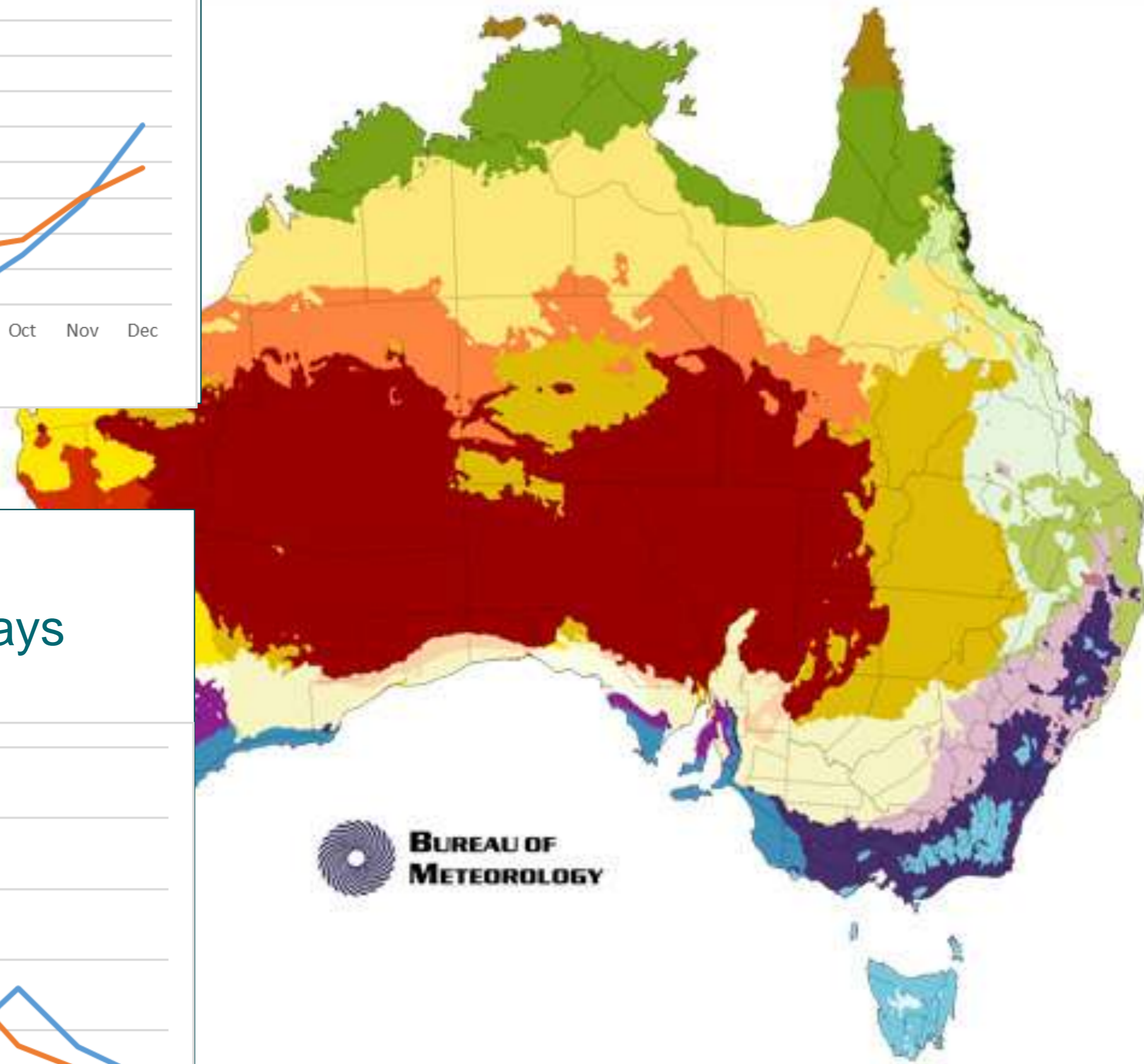


Tropical

Darwin 1729mm/yr, 96 Rain days
 Jakata: 1755mm/yr, 130 Rain days

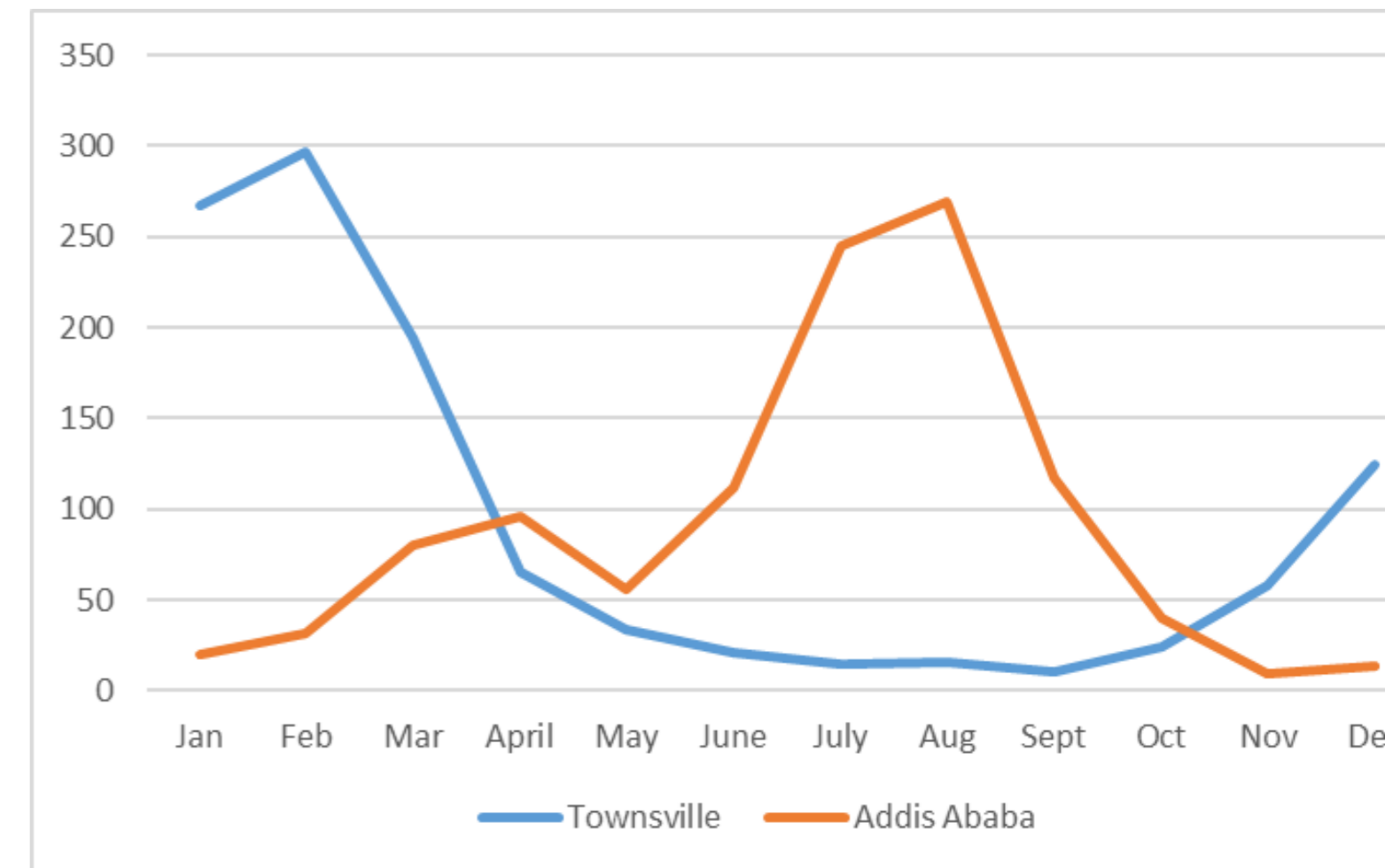


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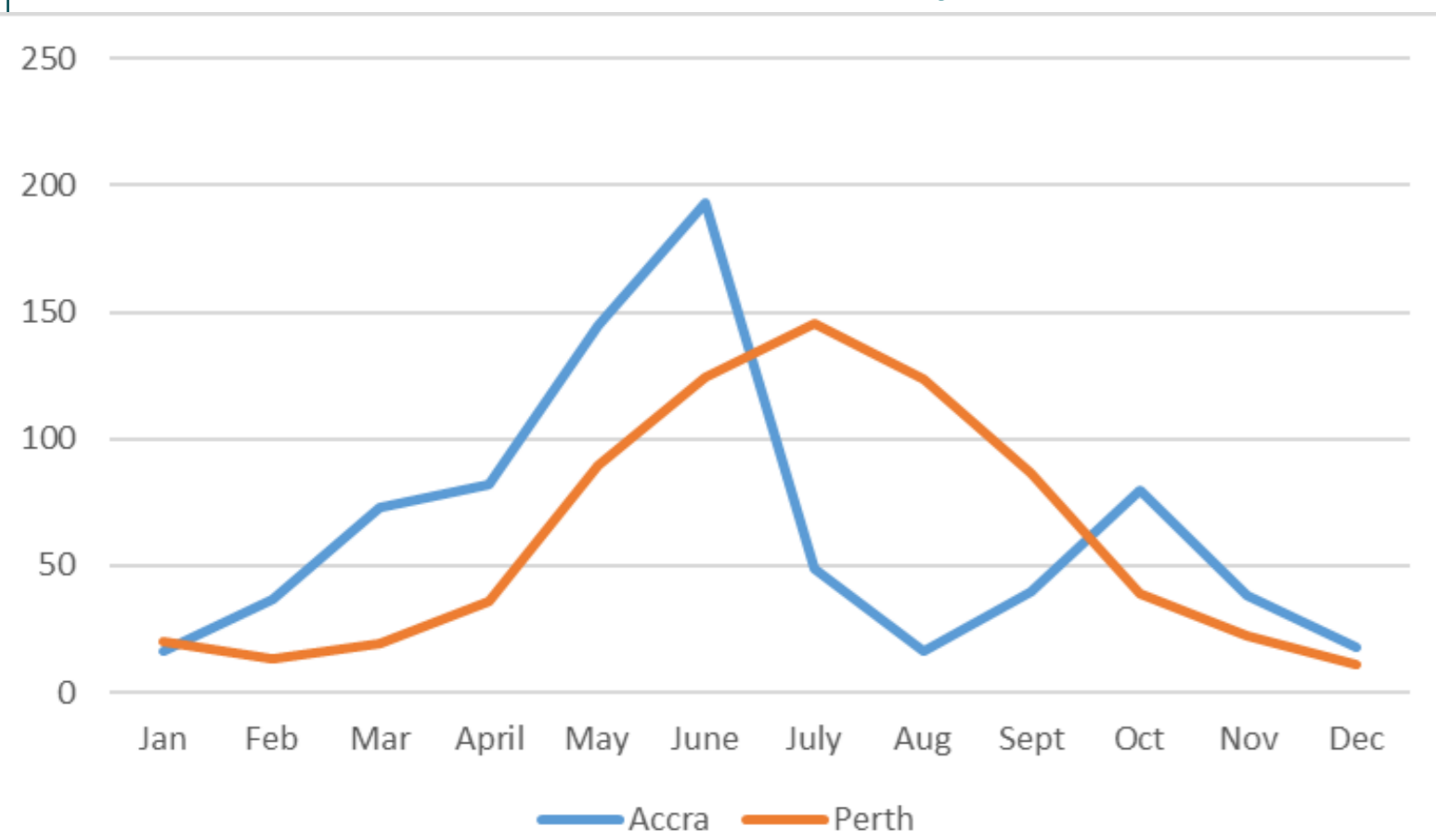
Tropical eg

Townsville 1128mm/yr, 60 Rain days
 Addis Abbaba 1089mm/yr 148Rain day



Subtropical eg

Perth 739mm/yr, 80 Rain days
 Accra: 787, 77 Rain days

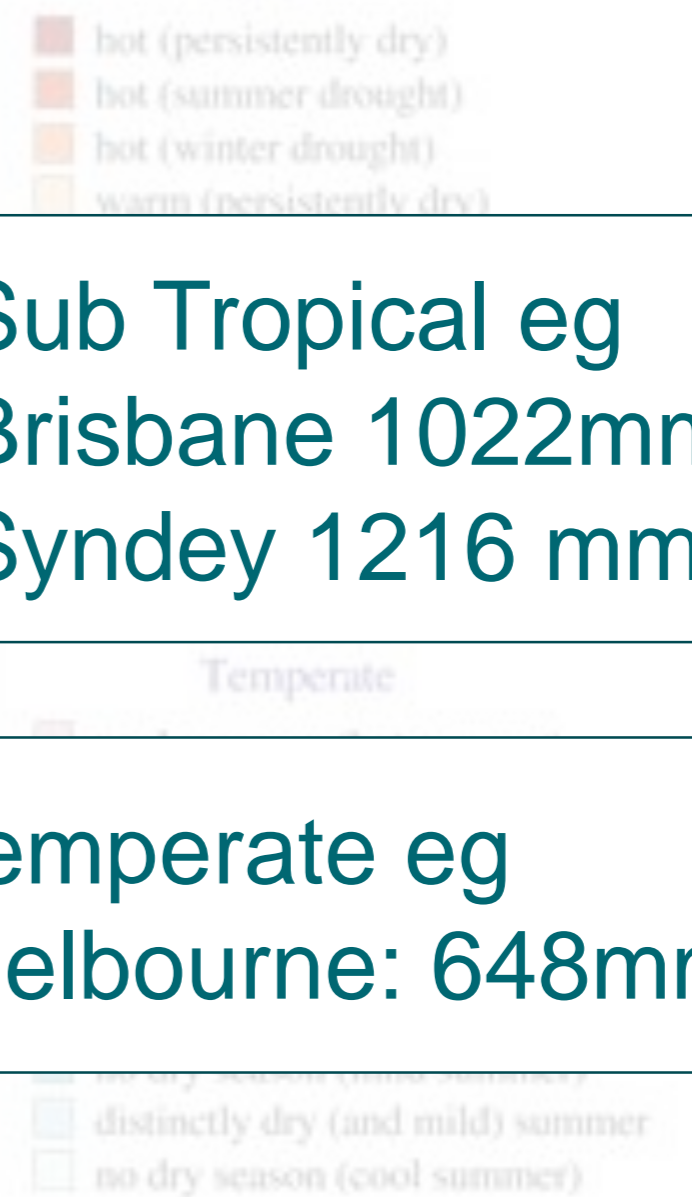


Sub Tropical eg

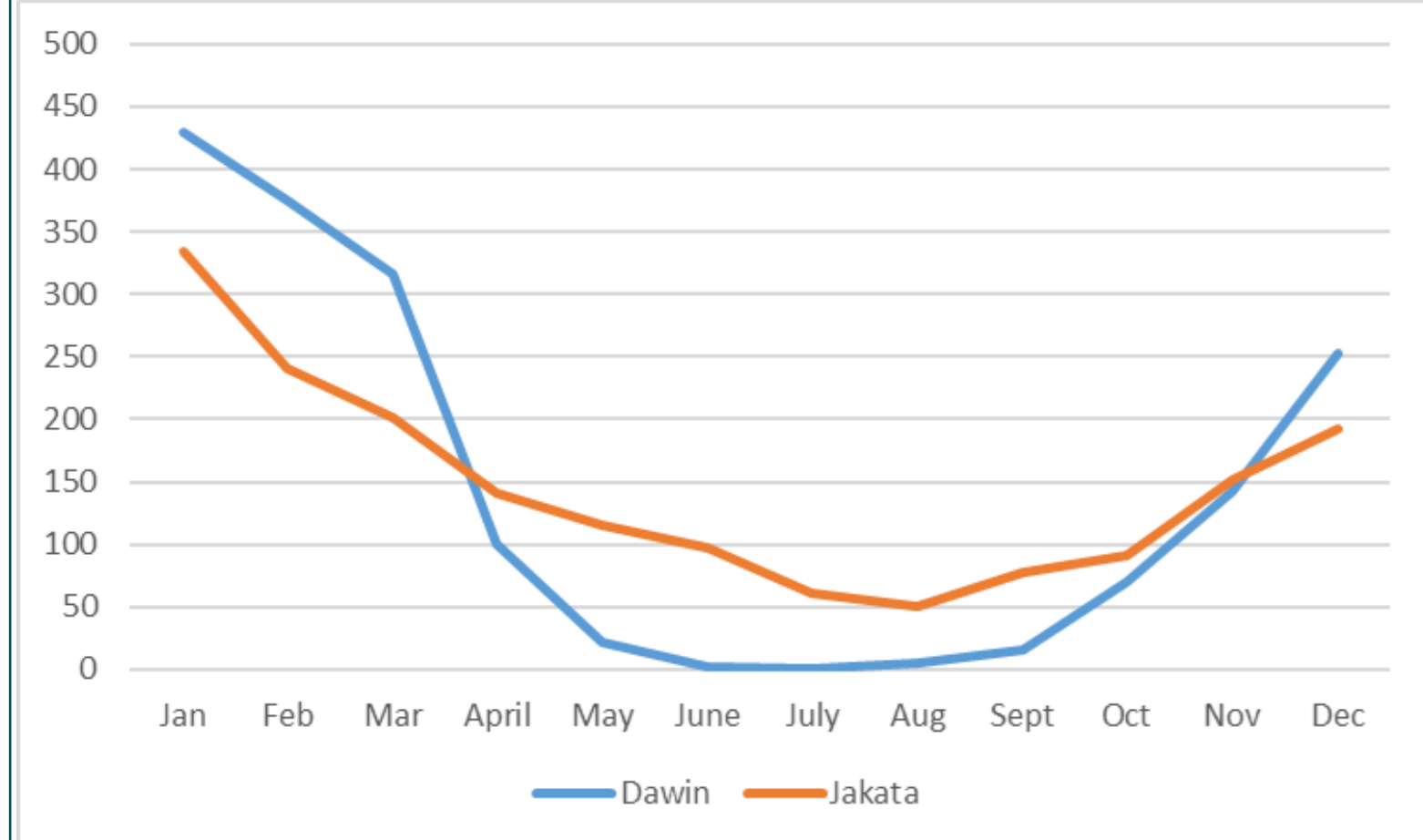
Brisbane 1022mm/yr, 81 Rain days
 Sydney 1216 mm/yr, 100 Rain days

Temperate eg

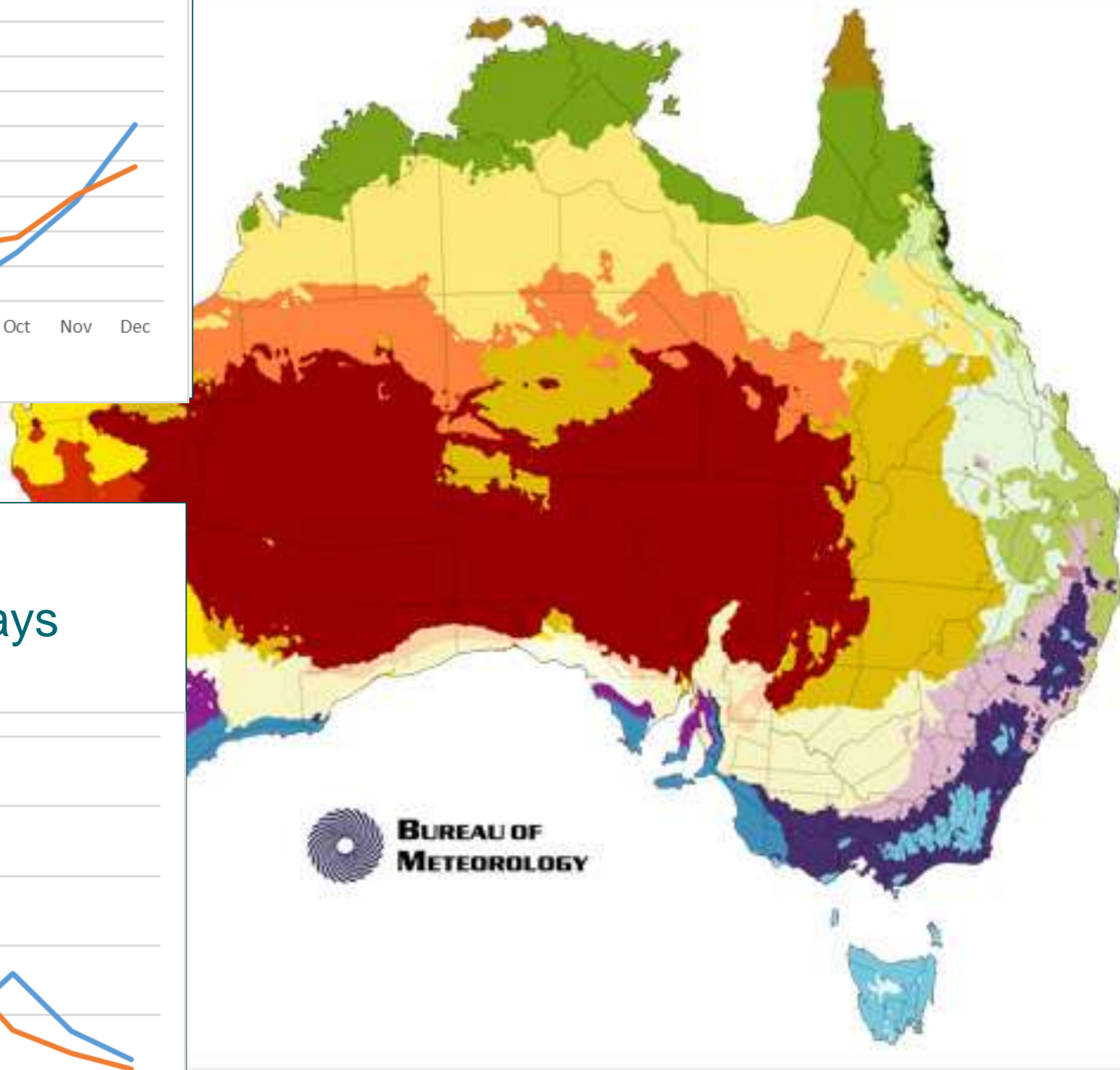
Melbourne: 648mm/yr, 140 Rain days



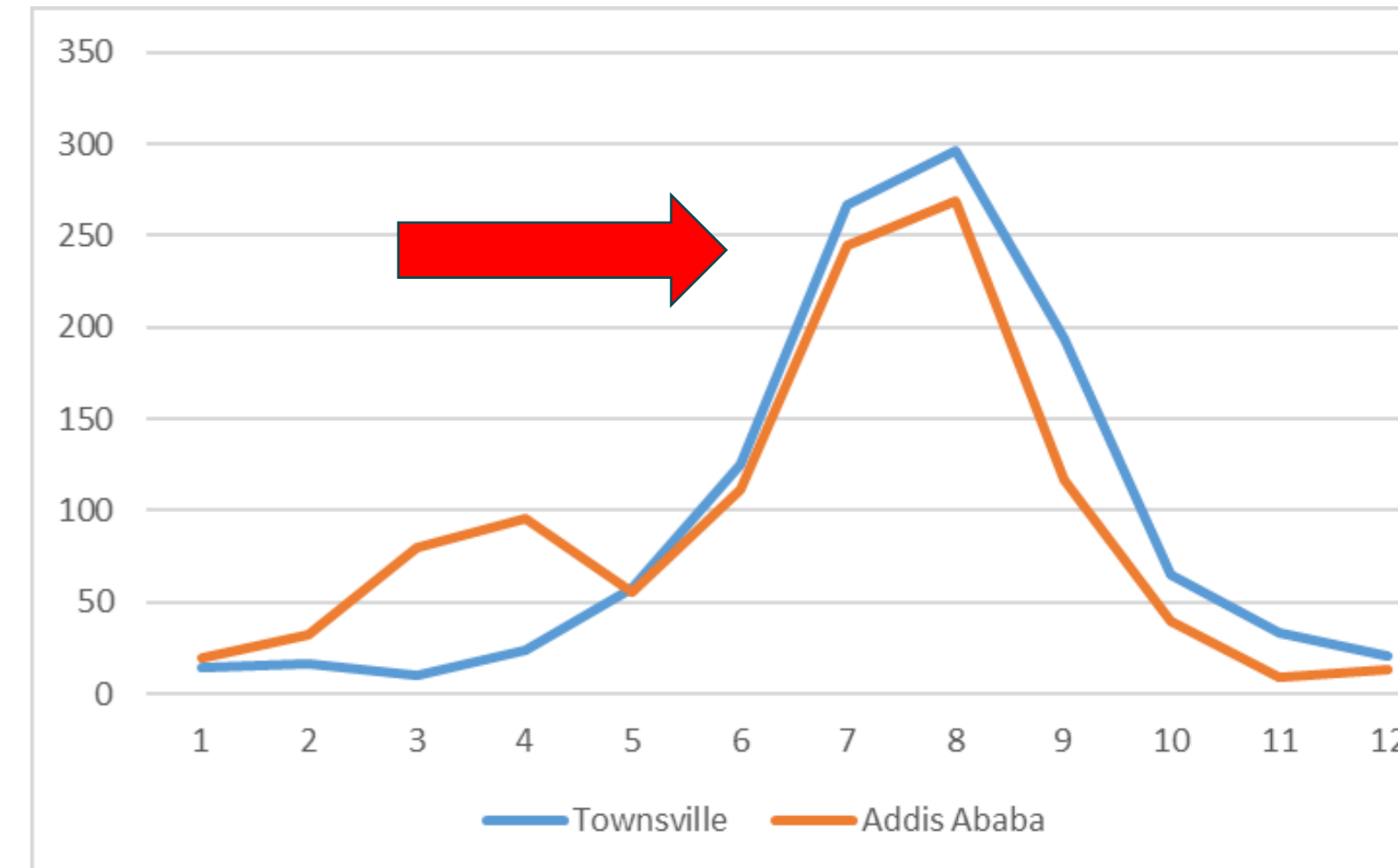
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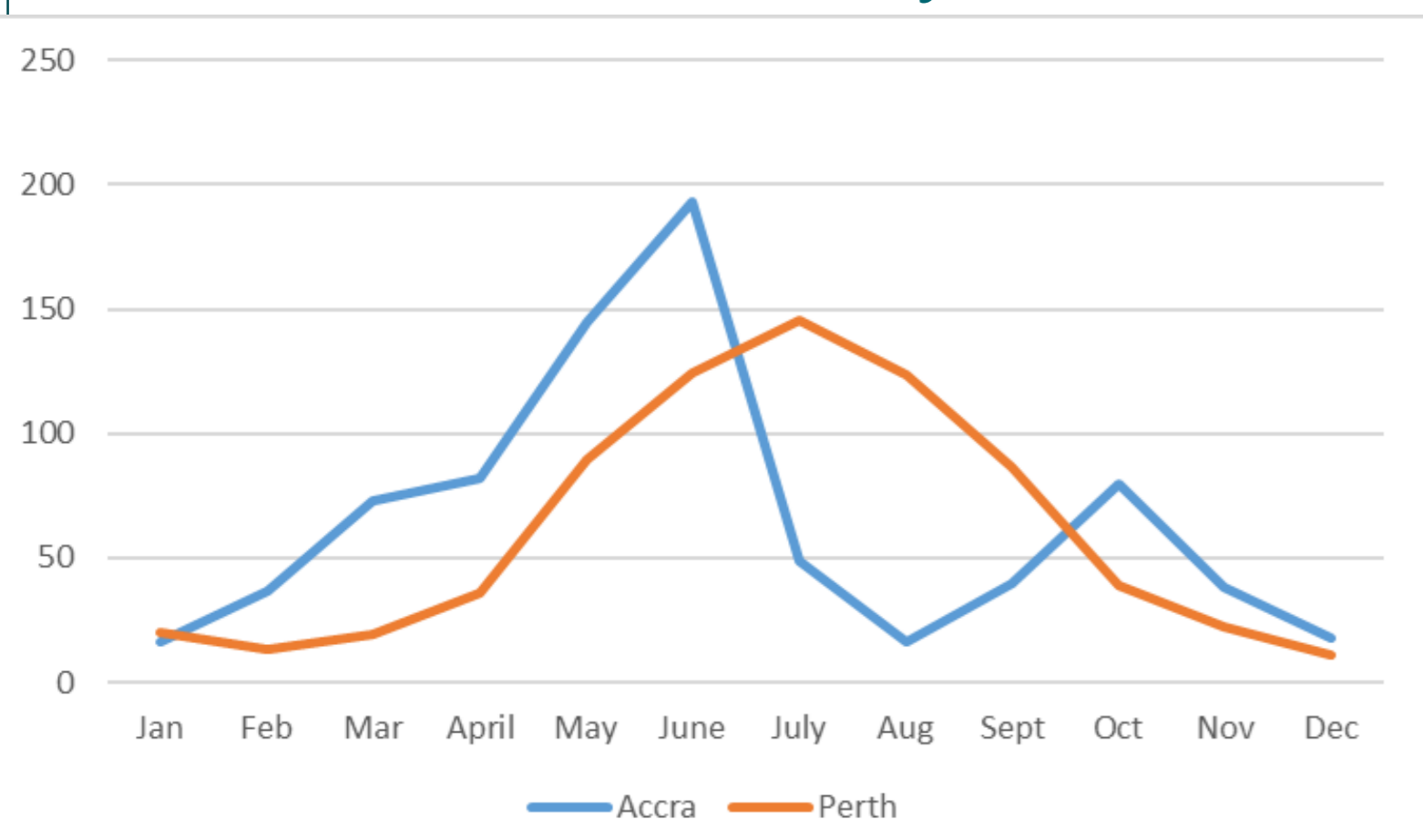
Australia has a wide range of climate zones



Tropical eg
 Townsville 1128mm/yr, 60 Rain days
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Subtropical eg
 Perth 739mm/yr, 80 Rain days
 Accra: 787, 77 Rain days



- hot (persistently dry)
- hot (summer drought)
- hot (winter drought)
- warm (persistently dry)
- Grassland
- hot (persistently dry)
- hot (summer drought)
- hot (winter drought)
- warm (persistently dry)
- warm (summer drought)
- Temperate
- no dry season (hot summer)
- moderately dry winter (hot summer)
- distinctly dry (and hot) summer
- no dry season (warm summer)
- moderately dry winter (warm summer)
- distinctly dry (and warm) summer
- no dry season (mild summer)
- distinctly dry (and mild) summer
- no dry season (cool summer)



Surface Water Inflows into Perth Storages

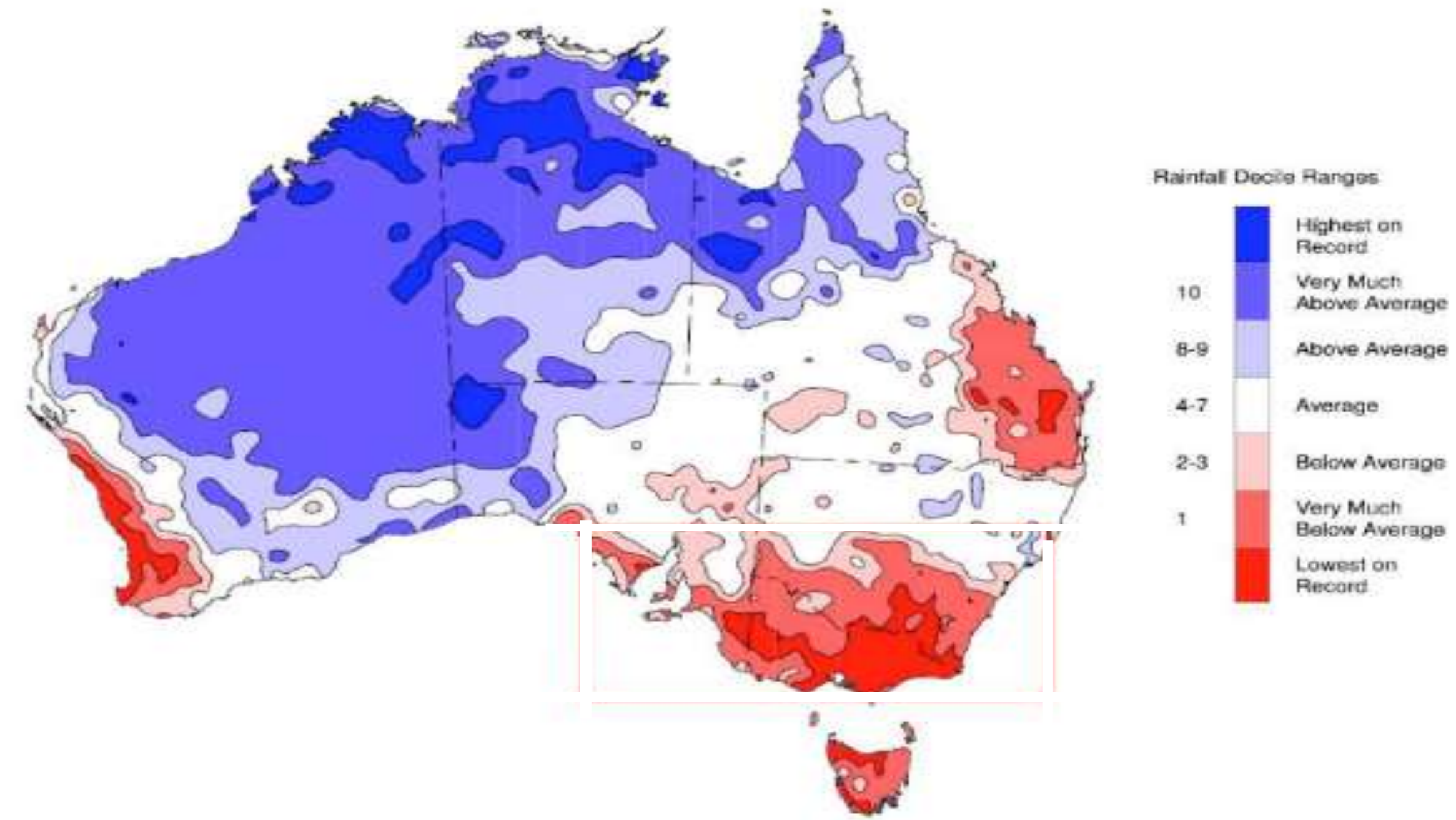
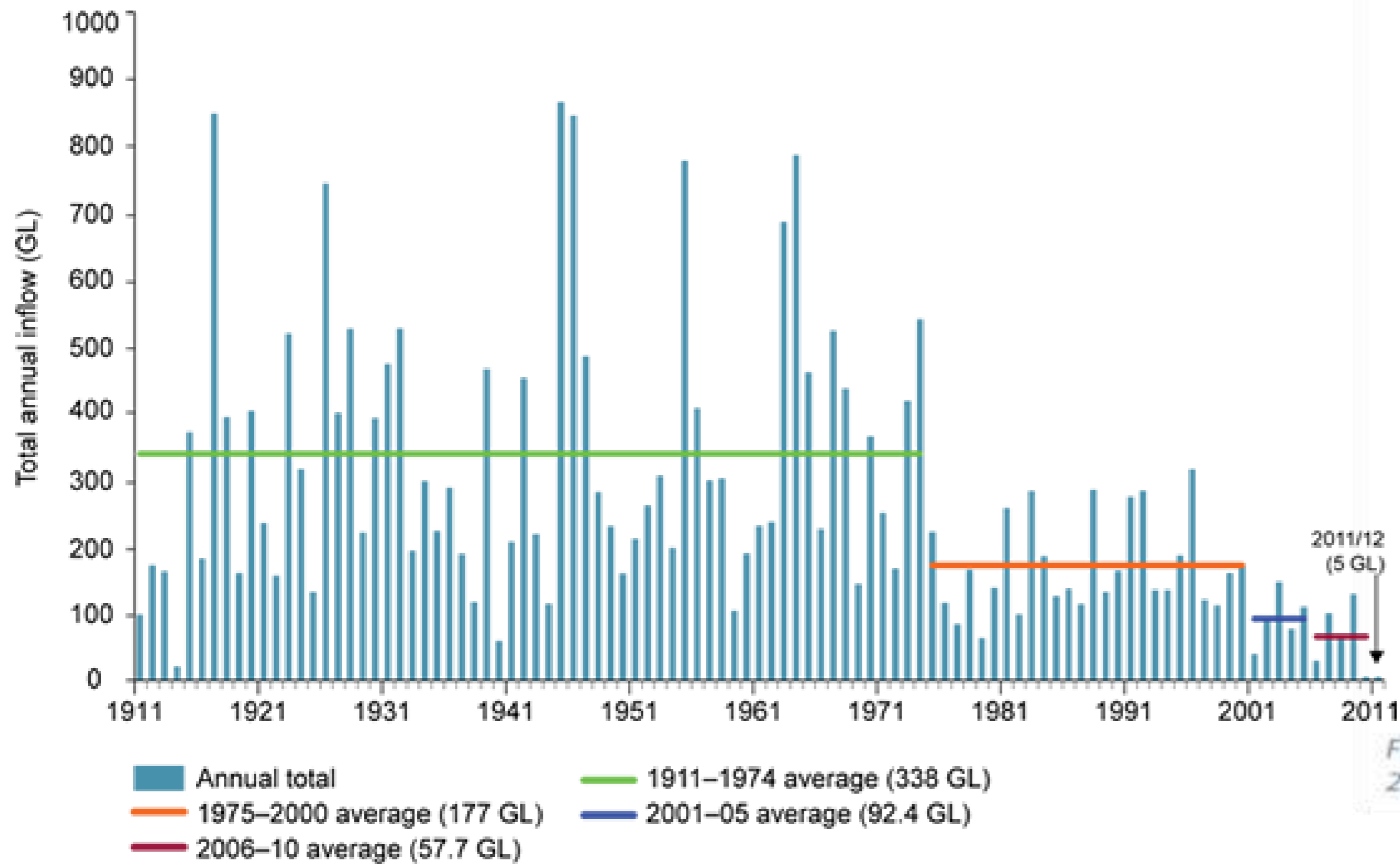
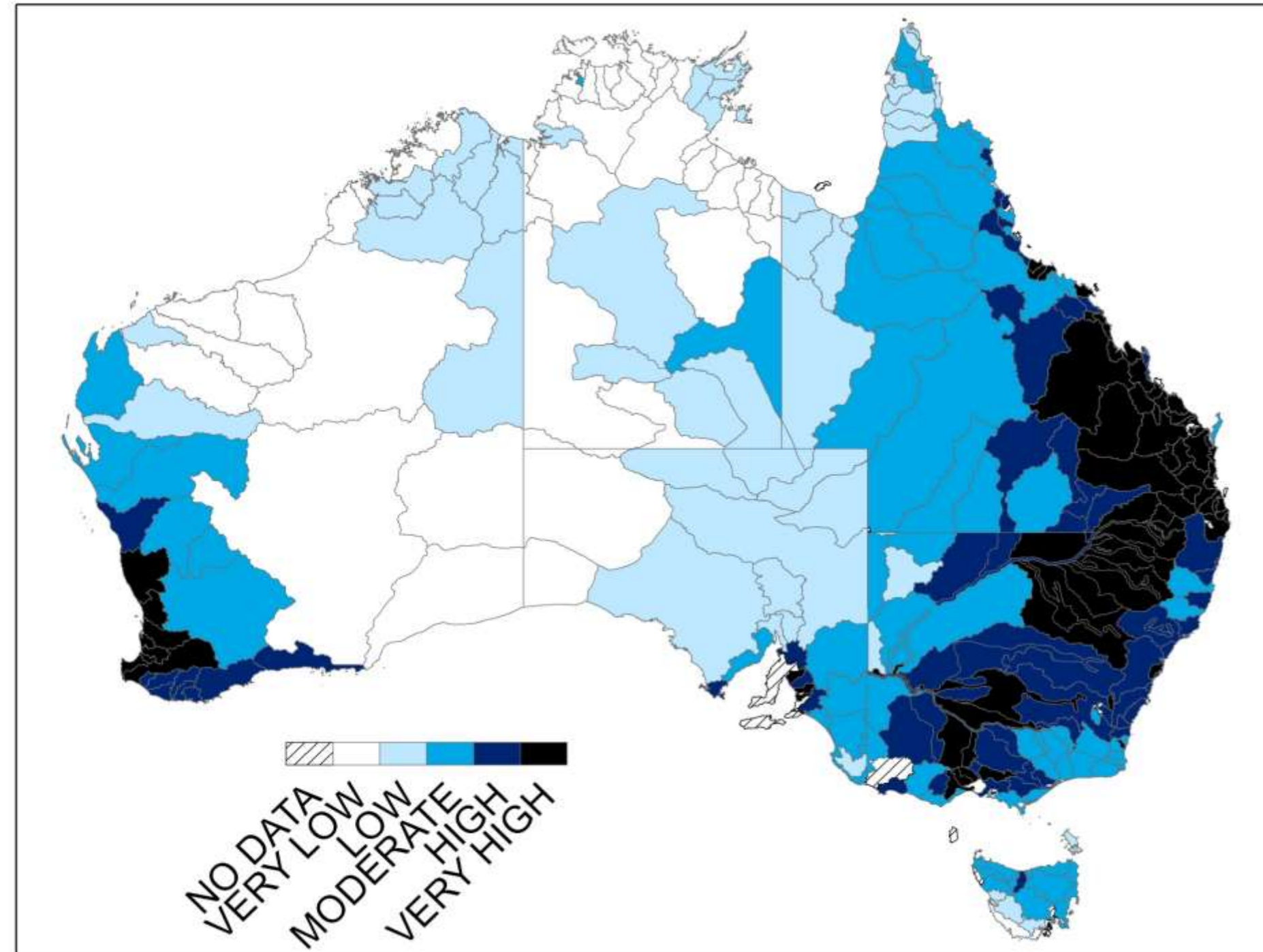


Figure 1. Rainfall deciles across Australia for 1 January 1997 to 31 December 2009; deciles based on climatology from 1951 to 2009 (Bureau of Meteorology).

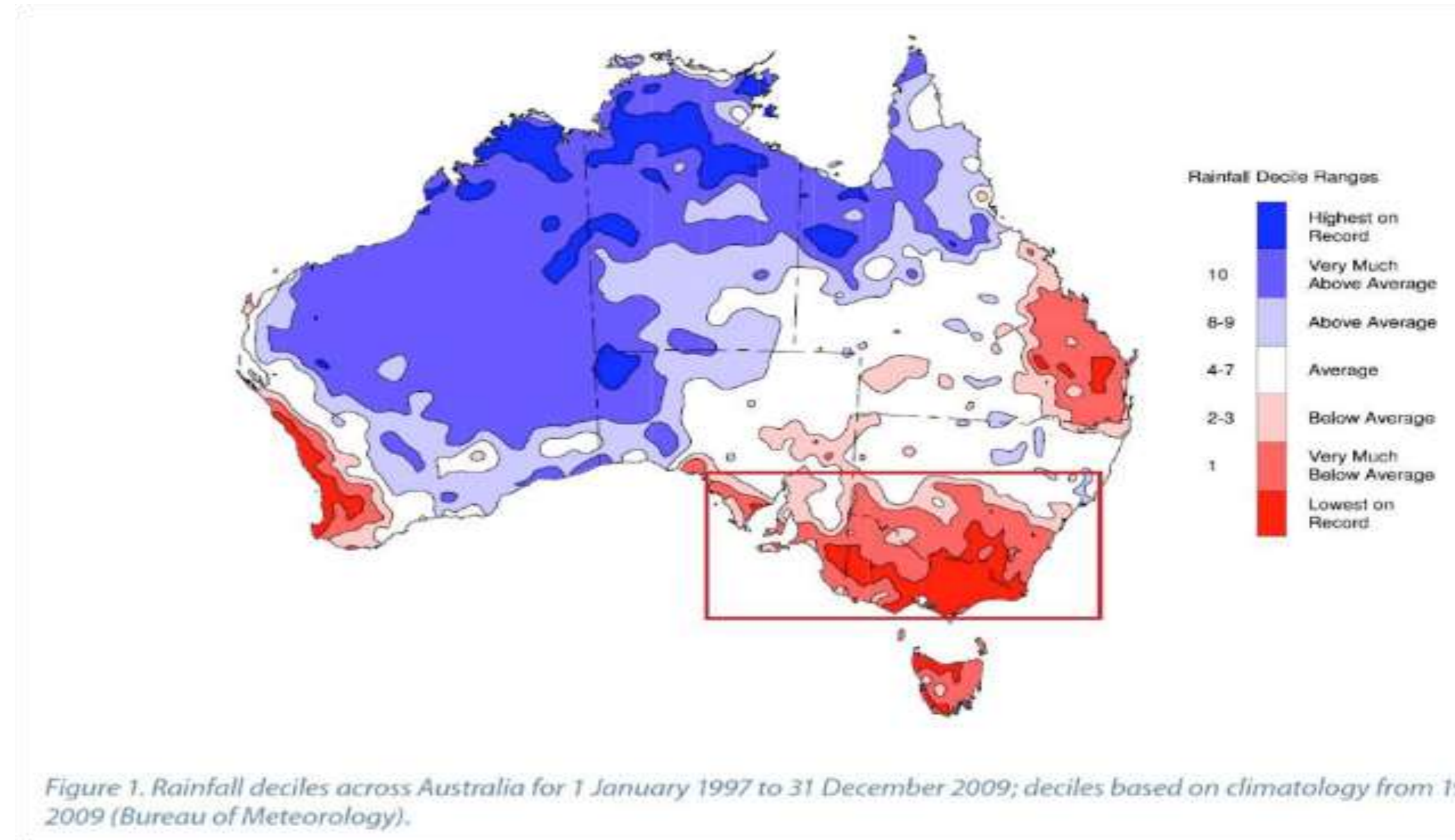
Forecast Vulnerability of Water Supply from Catchment Runoff

Source: CSIRO (2006)



Millennium Drought rainfall

Source: BOM



At the same time



Millennium Drought rainfall

Source: BOM

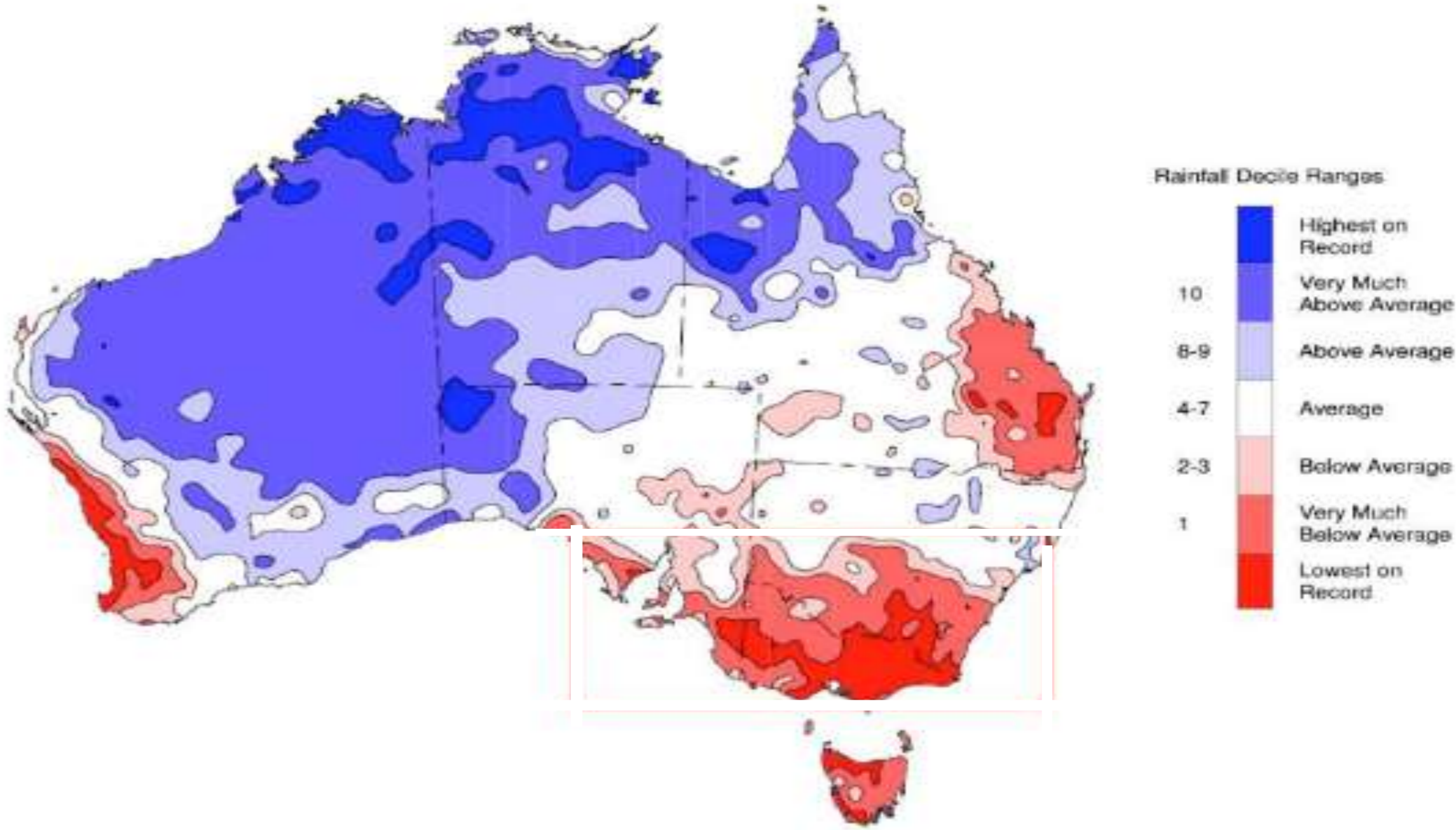


Figure 1. Rainfall deciles across Australia for 1 January 1997 to 31 December 2009; deciles based on climatology from 1951 to 2009 (Bureau of Meteorology).

expanding definition of urban water services.....

LIVEABLE CITIES

+ Regional planning + Urban planning + City liveability + Water-sensitive urban design

URBAN WATER CYCLE MANAGEMENT

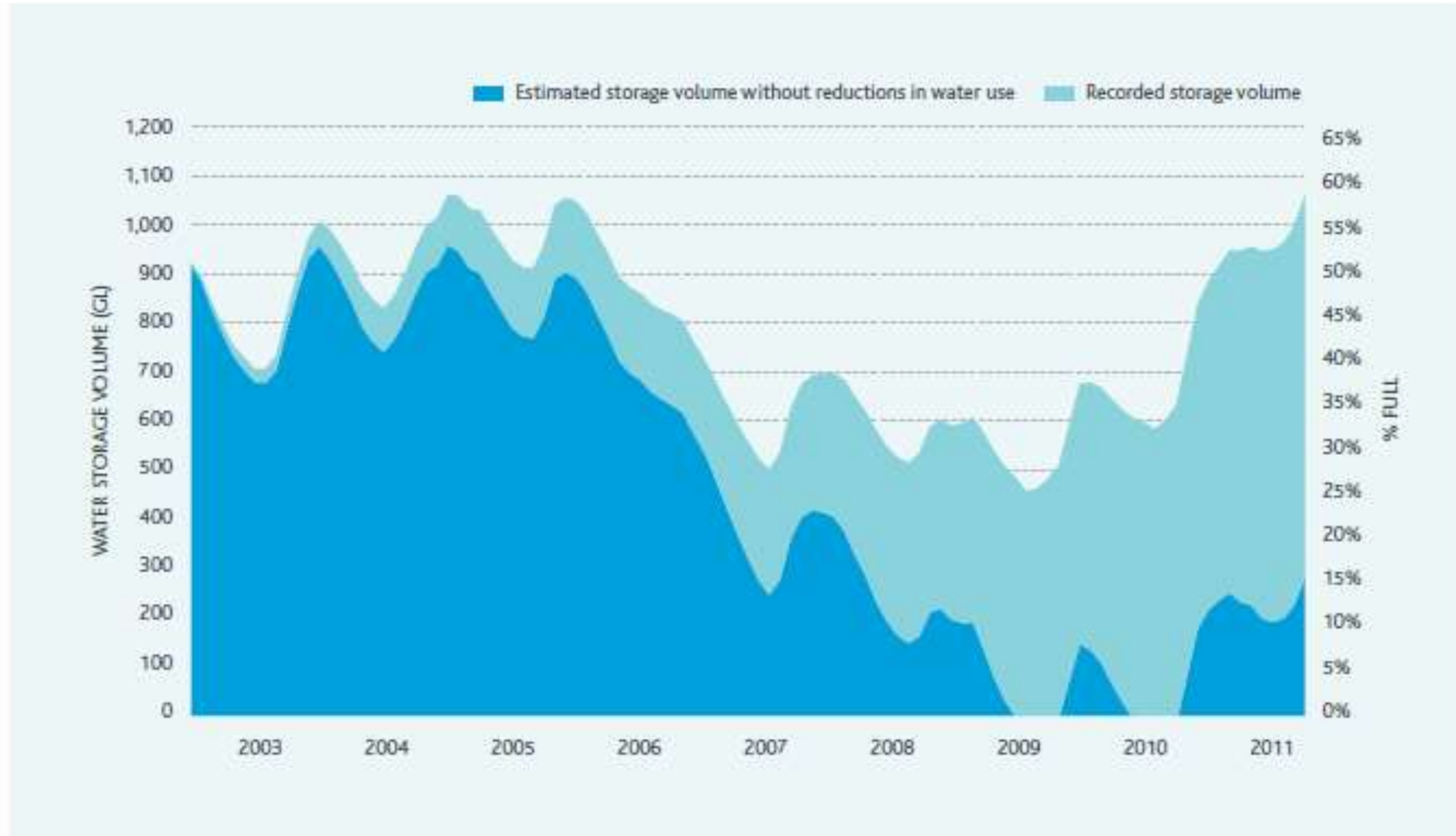
+ Water harvesting + Surface water storage + Stormwater collection
+ Flood mitigation + Catchment management + Waterway health

TRADITIONAL WATER AND WASTEWATER SERVICE PROVISION AND MANAGEMENT

+ Bulk water supply + Water manufacturing + Water treatment
+ Water distribution + Retail services + Wastewater collection
+ Wastewater treatment + Wastewater recycling + Effluent discharge

National Water Commission (2011), Urban Water in Australia: future directions,
ISBN 978-1-921853-06-7, April 2011, 68pp.

Demand management was also critical

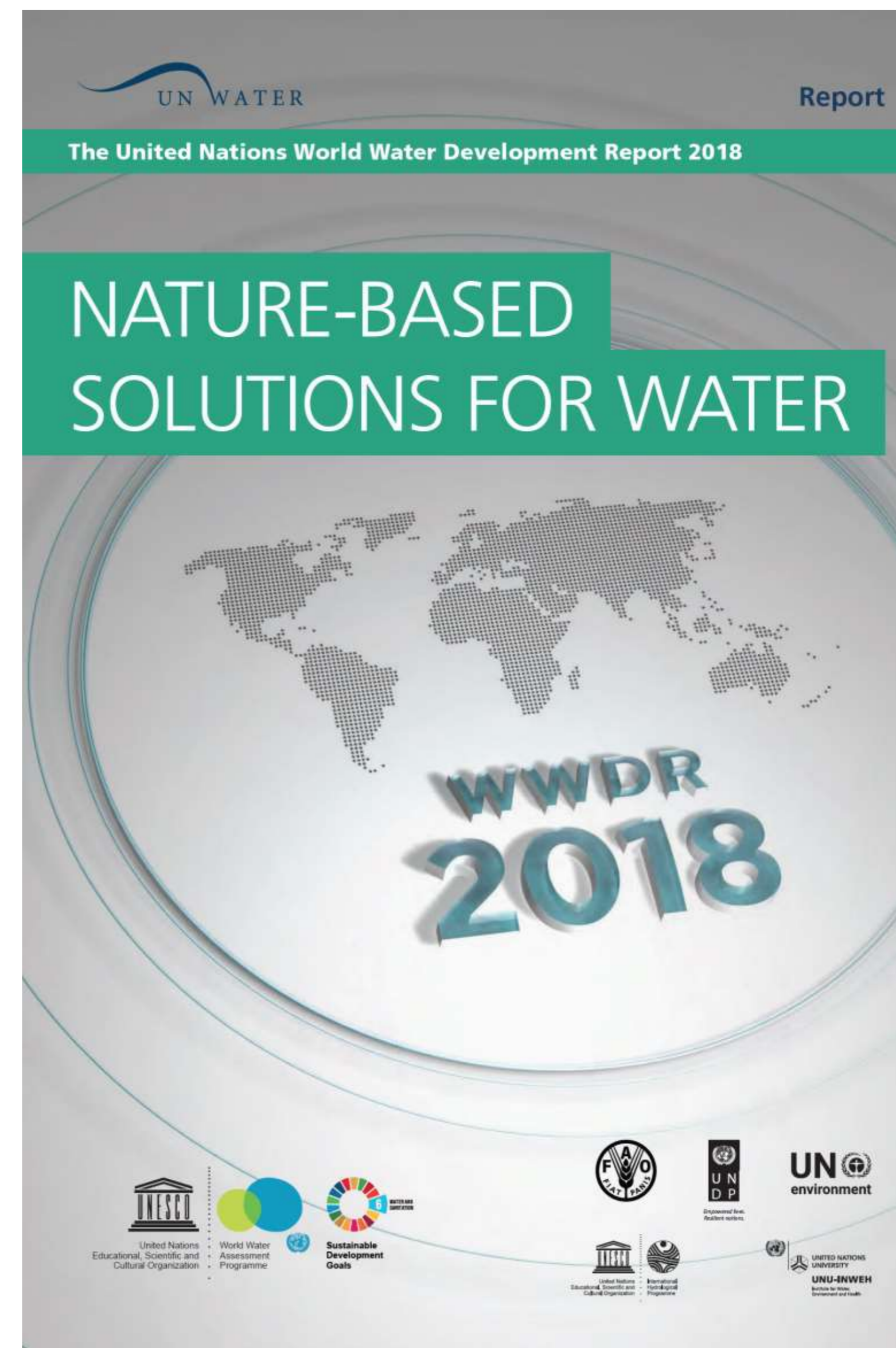


Nature-based Solutions for Water

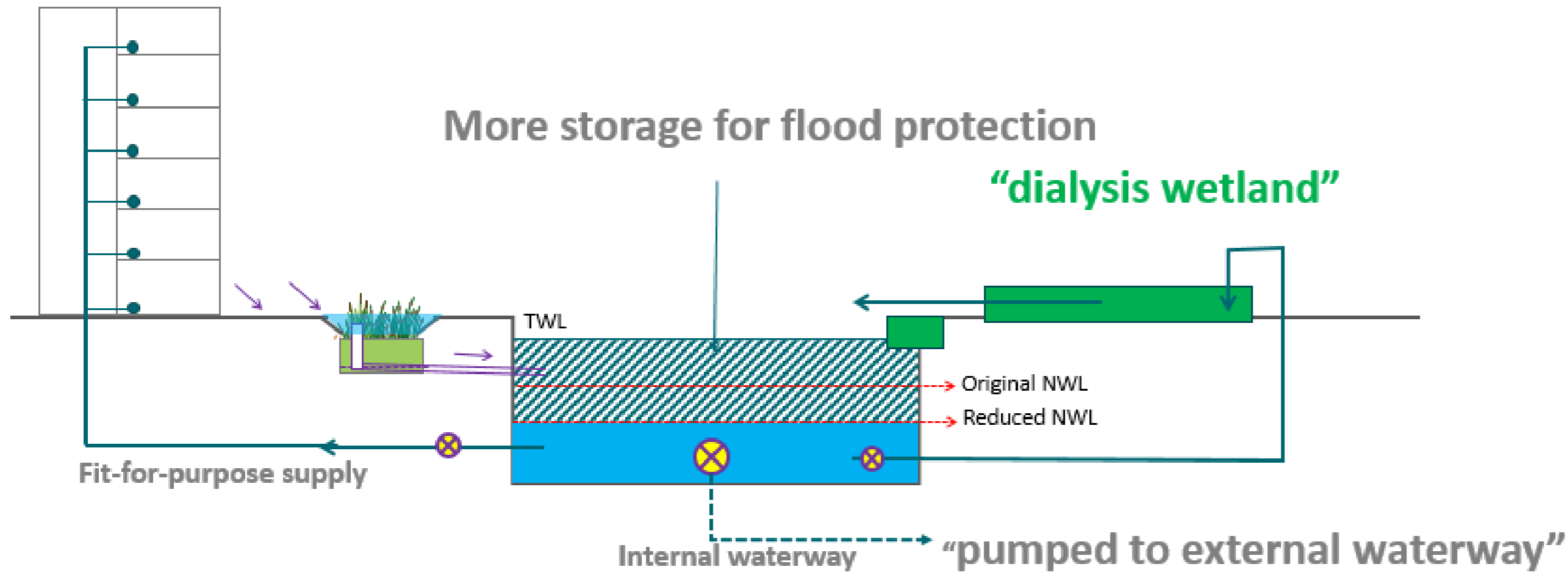
“For too long, the world has turned first to human-built, or “grey”, infrastructure to improve water management.....

Three years into the 2030 Agenda for Sustainable Development, it is time for us to re-examine nature-based solutions (NBS) to help achieve water management objectives.”

Gilbert Houngbo, Chair of UN-Water

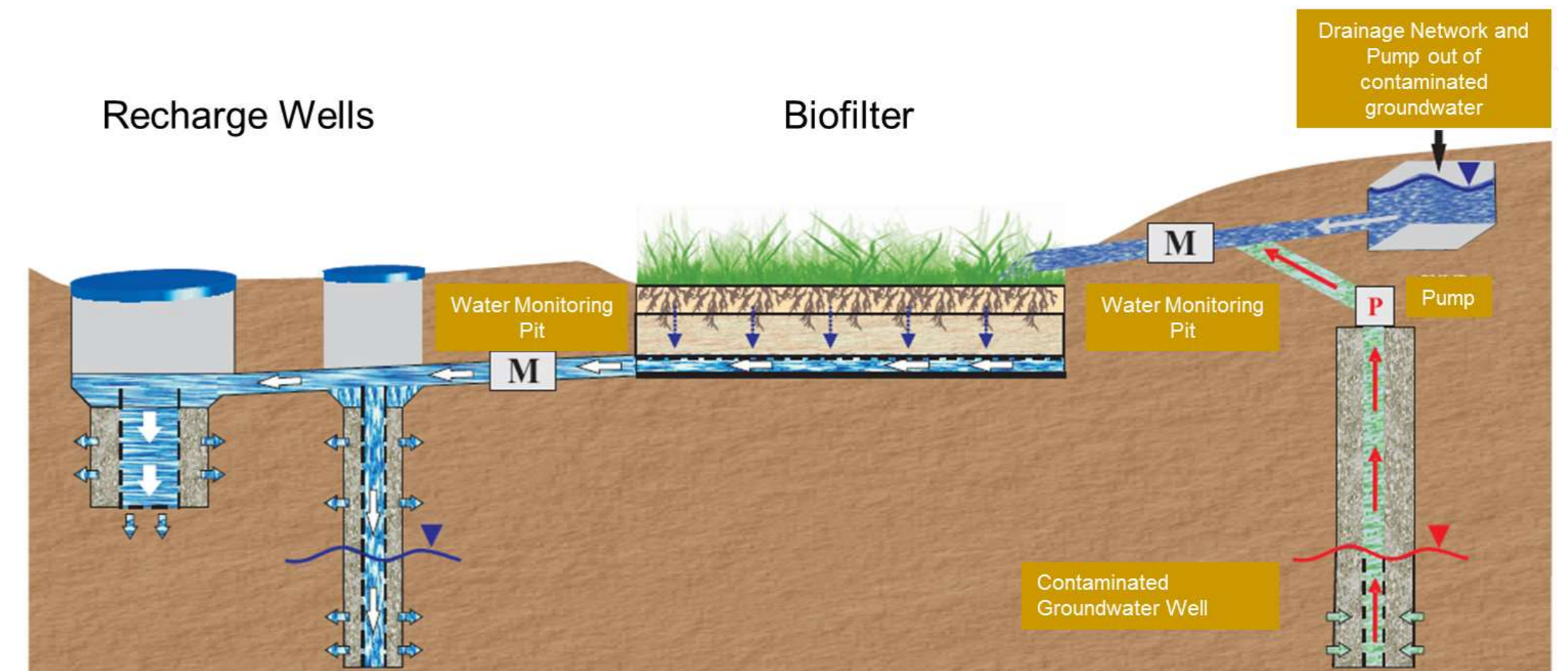


For example



- “Dialysis wetland” as kidney for water cleansing
- internal river for toilet flushing to reduce potable water demand and support future population growth
- More storage in internal waterway for flood protection
- parks for water cleansing and extreme flood events

Internal waterway





Linking ecological landscapes



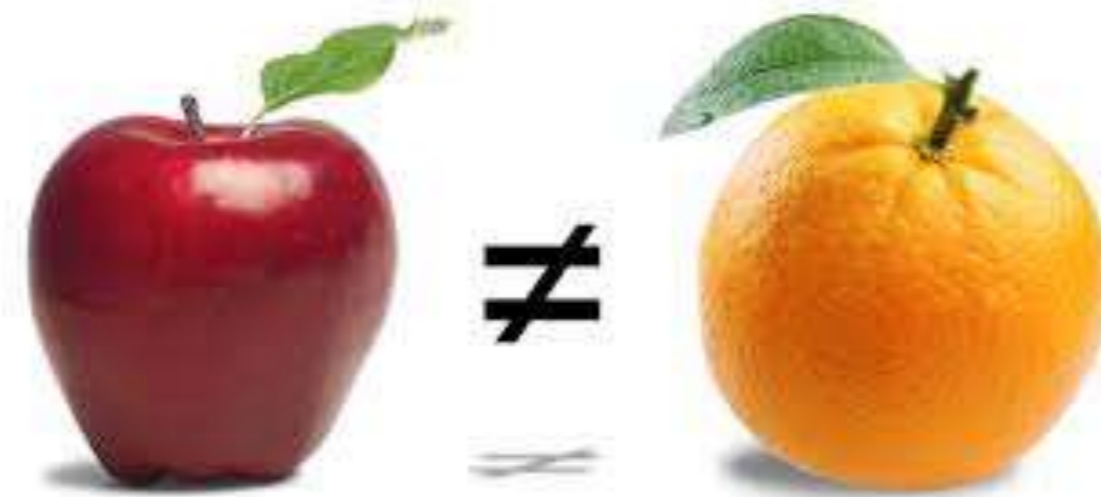
Centralised investments



Decentralised investments



Centralised investments



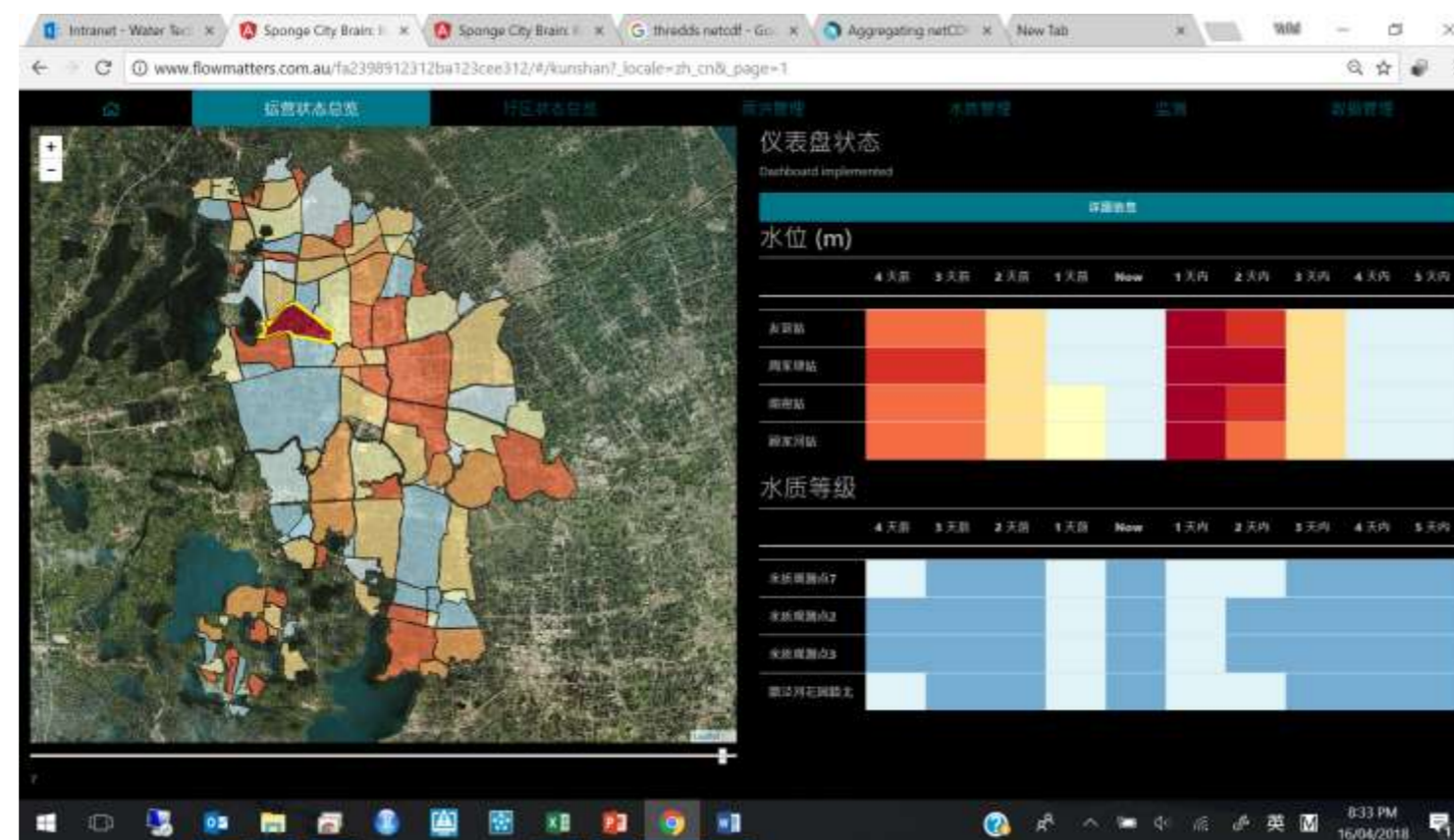
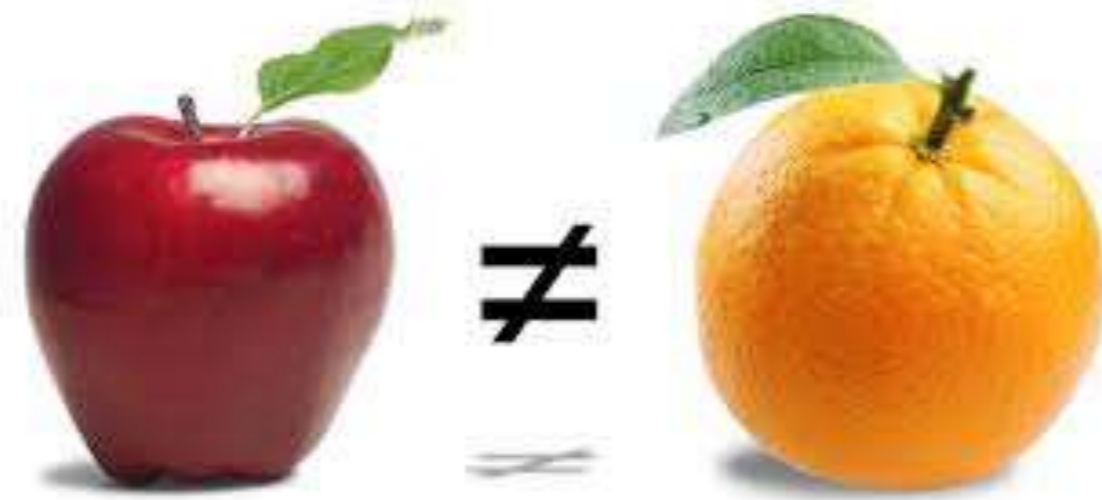
Decentralised investments



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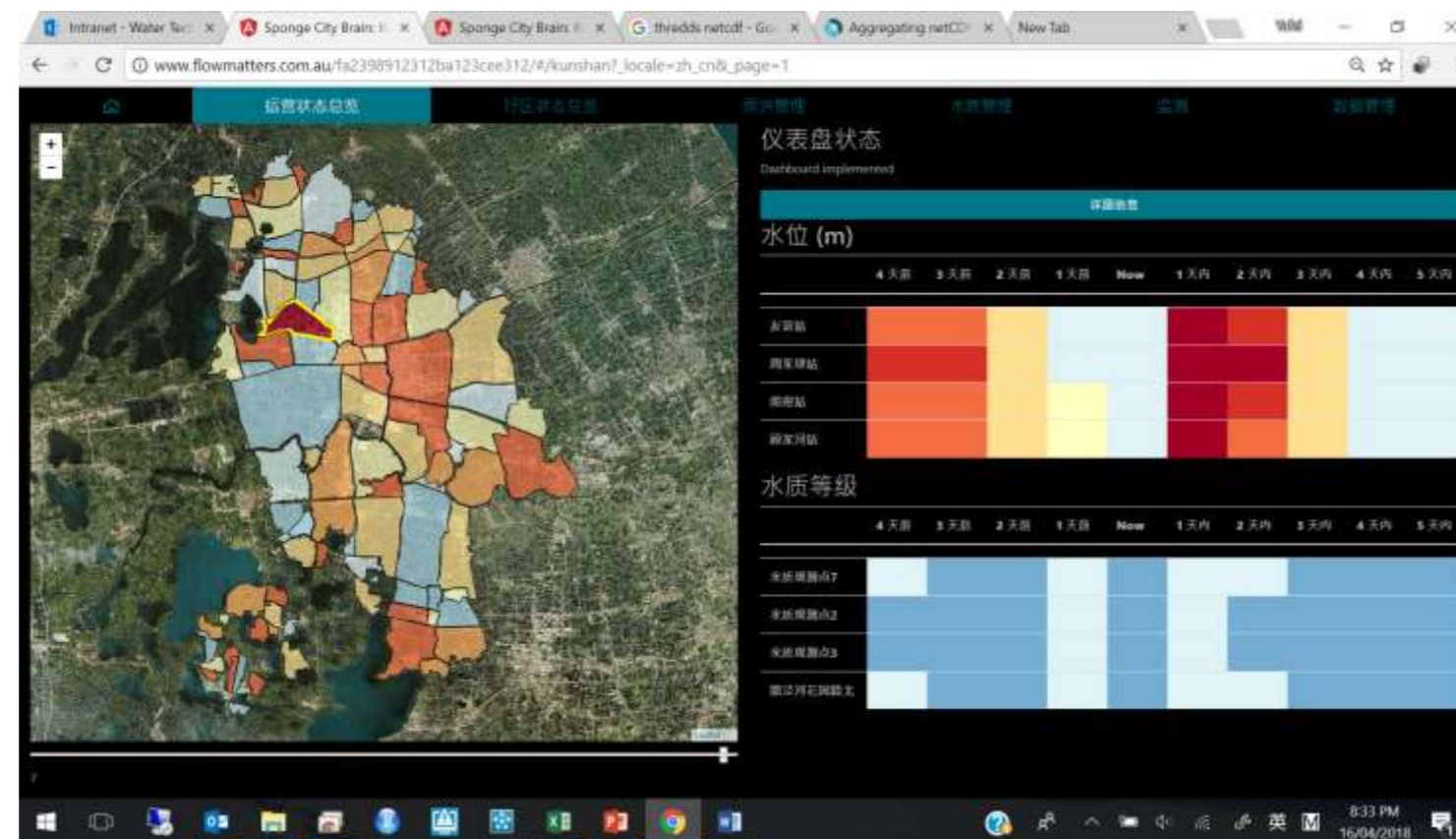
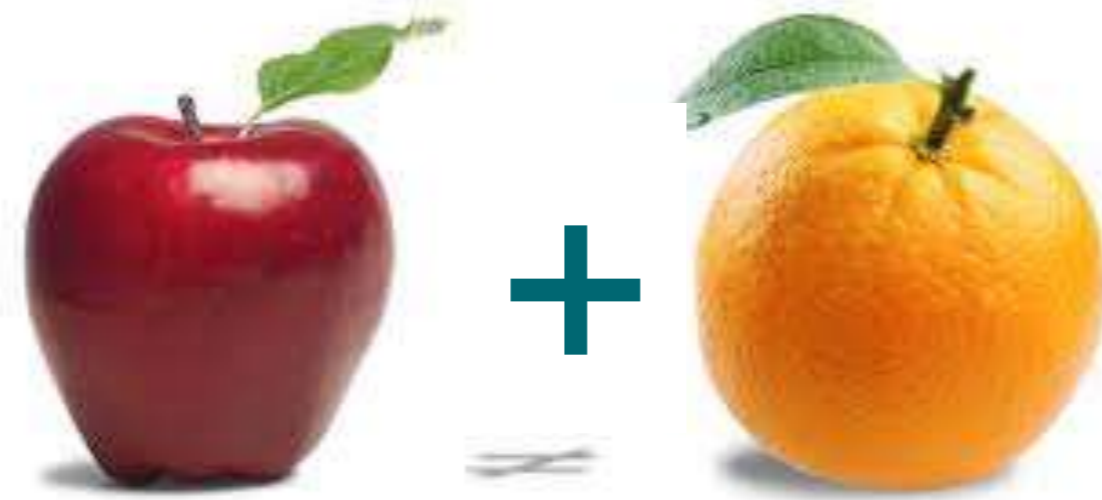
Decentralised investments



Centralised investments



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Thank you.