Of droughts and flooding rains – cyanobacterial presence in NSW over the past 5 summers

BGA in NSW – Lee Bowling – EEP Branch – 23rd August 2012
Introduction

- Past 5 summers with extremes in weather conditions
  - Initial 3 years of drought
  - Past 2 summers of high rainfall and flooding in various parts of the state
- Looked at number and persistence of cyanobacterial blooms across these 5 years to assess whether climatic conditions impacted on bloom occurrence
Method

- Recreational alert level data (Red, Amber and Green alerts) accumulated by NSW Office of Water over the time period were assessed.
- Data from Office of Water, other NSW government agencies, local government and utilities.
- Noisy data due to variation in annual sampling effort and reporting by some data suppliers.
- Provide general overview of cyanobacteria in NSW.
- Assessed as
  - Number of locations reporting alerts
  - Cumulative weeks on alert (persistence)
State-wide
Regional variation
North-west tablelands and slopes - Barwon

Total Monthly Precipitation - Moree

Gwydir River at Pallamallawa

Barwon - Locations

Barwon - Cumulative weeks
Southern NSW - Murray

Total Monthly Precipitation - Albury

Murray River at Corowa

Murray - Locations

Murray - Cumulative weeks

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Office of Water
Far West

Total Monthly Precipitation - Bourke

Darling River at Bourke

Far West - Locations

Far West - Cumulative weeks

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Comparisons – 2008/09 and 2011/12
Conclusions – Coastal NSW

- Cyanobacterial presence showed only minor variation over the 5 years, or increased presence in wet years.
- Blooms in coastal areas usually associated with small reservoirs and urban water bodies, especially in Sydney and Newcastle.
- Rivers are short, fast flowing, so blooms in them are uncommon.
- Higher rainfall may actually support more blooms, as more water available, nutrient rich stormwater inflows.
Conclusions - Tablelands and western slopes of Great Dividing Range

- Little difference between drought and wet years
- Most water bodies are large reservoirs – have water, are nutrient enriched and experience blooms whether wet or dry years.
- Rivers with steeper gradients, fast flow – not good environments to support blooms
Conclusions – Western NSW lowland areas

- Reduction in cyanobacterial presence after drought broke
- Few standing water bodies in this part of NSW, most surface waters are rivers
- Cyanobacterial blooms in dry years associated with rivers as low flow
- Wet years mean high flows and conditions unsuited to riverine blooms.
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