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# Future opportunities to assist characterisation using the Wetland Insights Tool

Tuesday September 7 2021



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Digital Earth Australia Product Development  
Geoscience Australia

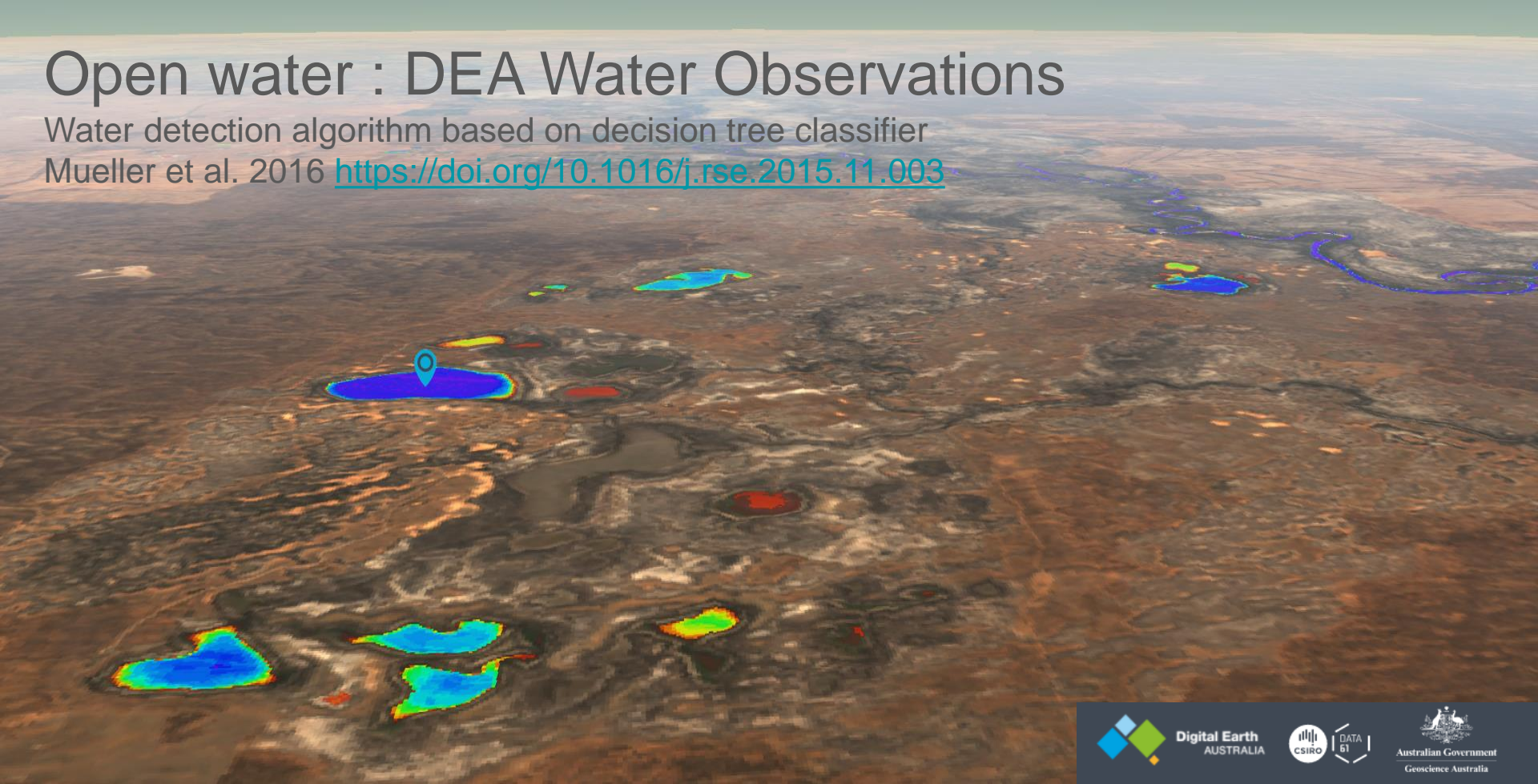




# Open water : DEA Water Observations

Water detection algorithm based on decision tree classifier

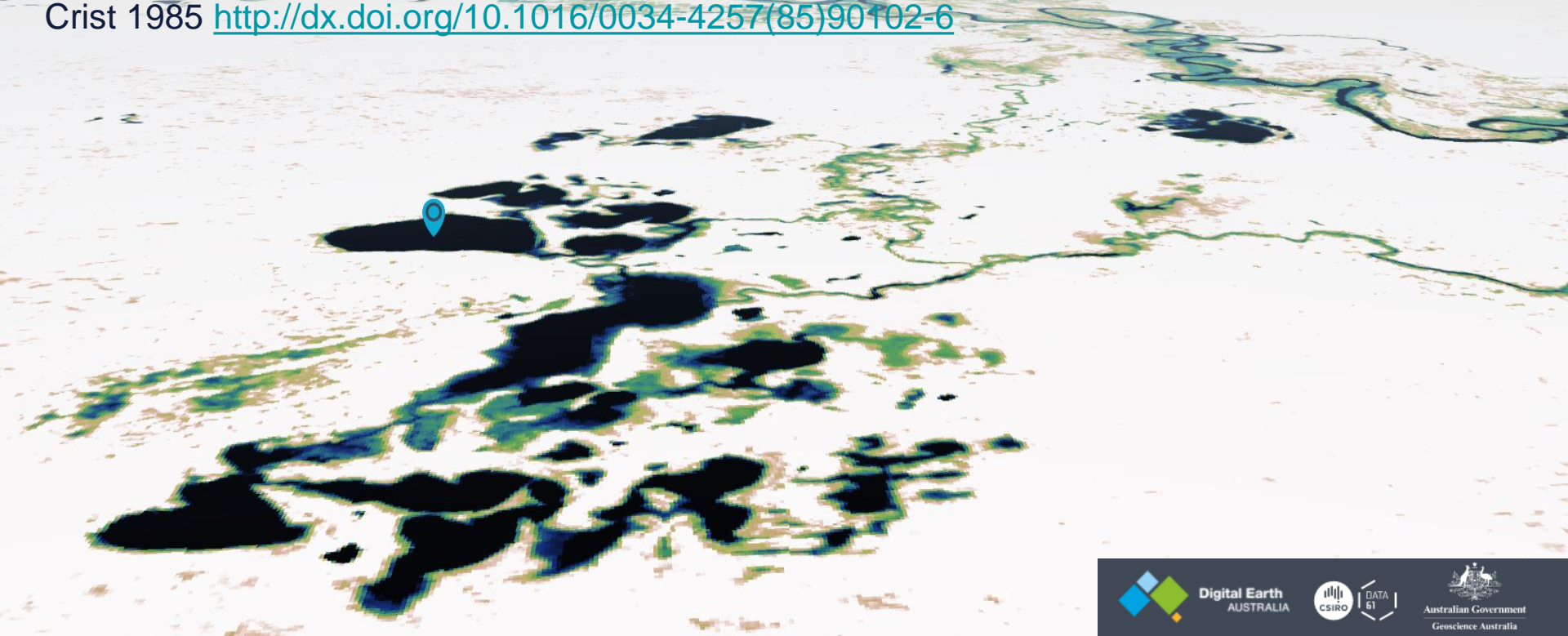
Mueller et al. 2016 <https://doi.org/10.1016/j.rse.2015.11.003>



# Wet: Tasseled cap wetness index

Thresholded wetness algorithm identifies wet areas other than open water

Crist 1985 [http://dx.doi.org/10.1016/0034-4257\(85\)90102-6](http://dx.doi.org/10.1016/0034-4257(85)90102-6)



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DATA  
51



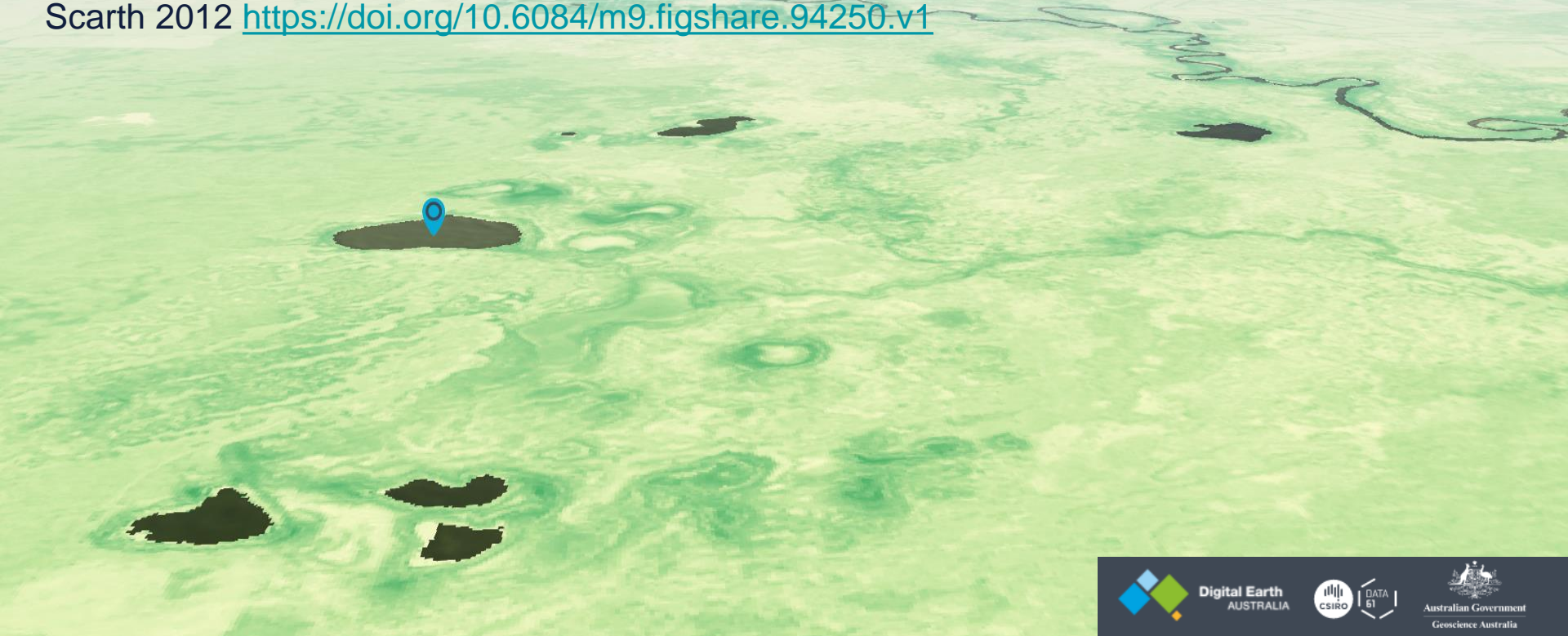
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# Green: Vegetation fractional cover

Photosynthetic vegetation identified by Joint Remote Sensing Research Project algorithm

Scarth 2012 <https://doi.org/10.6084/m9.figshare.94250.v1>



# Dry: Vegetation fractional cover

Non-photosynthetic vegetation identified by Joint Remote Sensing Research Project algorithm

Scarth 2012 <https://doi.org/10.6084/m9.figshare.94250.v1>



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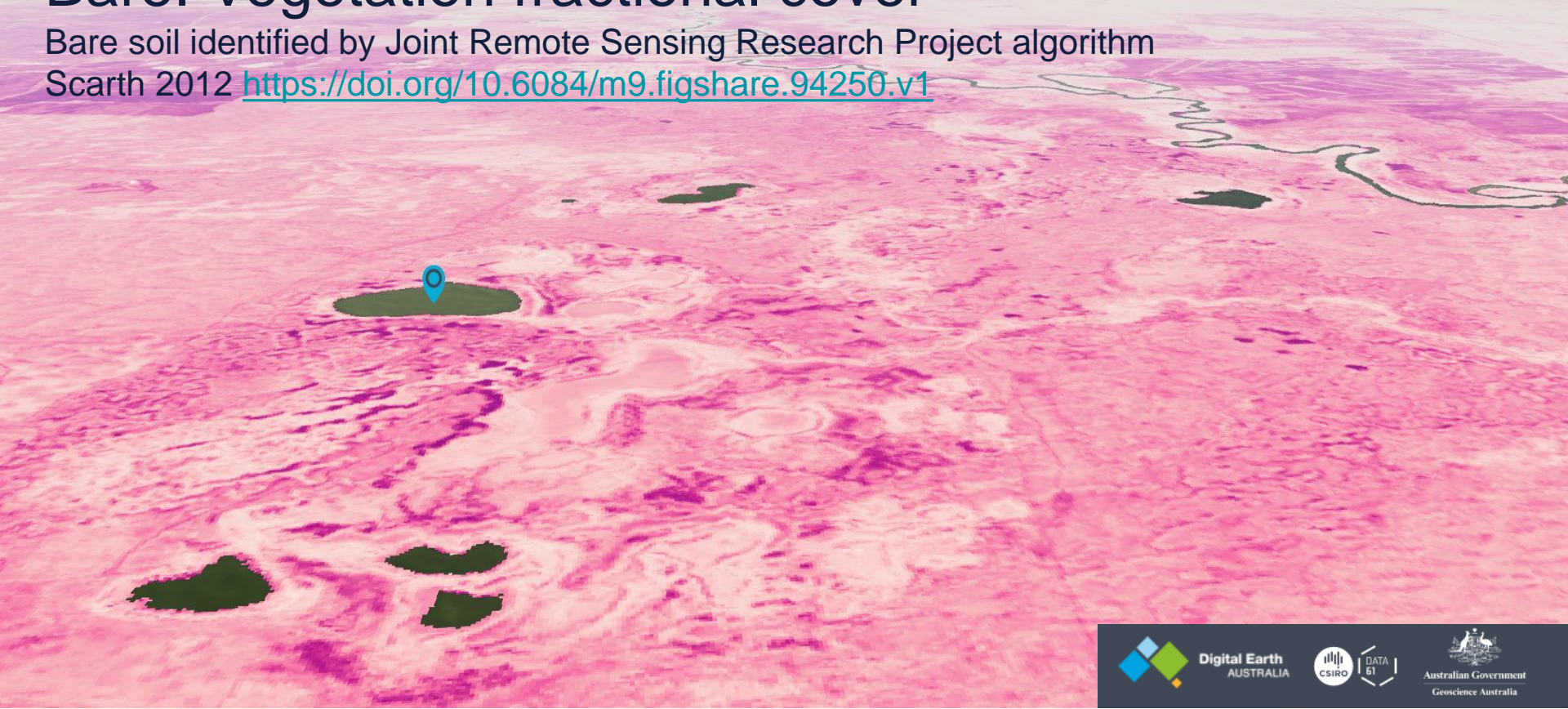
DATA  
61



# Bare: Vegetation fractional cover

Bare soil identified by Joint Remote Sensing Research Project algorithm

Scarth 2012 <https://doi.org/10.6084/m9.figshare.94250.v1>



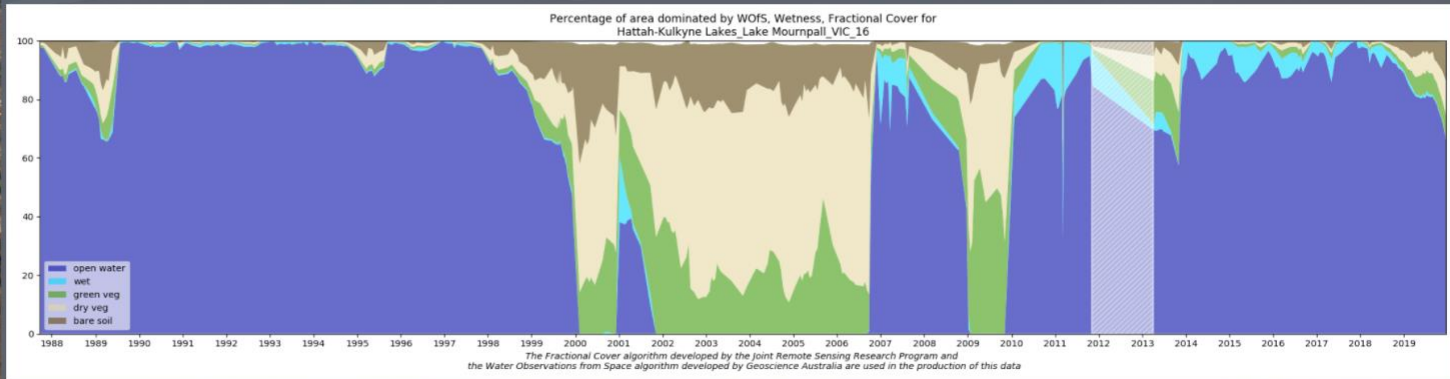


## Feature Information

DEA Ramsar Wetlands Insight Tool v3.0 - Site Data

Lake Mournpall in VIC, reference 16 in the Ramsar Wetlands of Australia catalogue as at 2020-03-19.

Show Raw Data



Change in water, wet vegetation, green vegetation, dry vegetation, and bare soil for Lake Mournpall. Ramsar listed 1982/12/15

Download: [chart image](#) | [timeseries CSV](#)

Lat / Lon

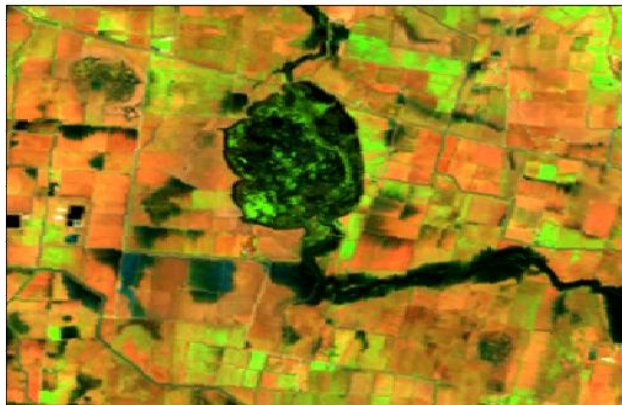
34.70882°S, 142.34768°E

Give Feedback



# Hird Swamp - Wet

time = 2011-01-20T00:05:20.500000



Open water - Wet vegetation dominated

# Hird Swamp - Dry

time = 2009-04-04T00:02:23.500000



Green/dry veg - Bare soil dominated

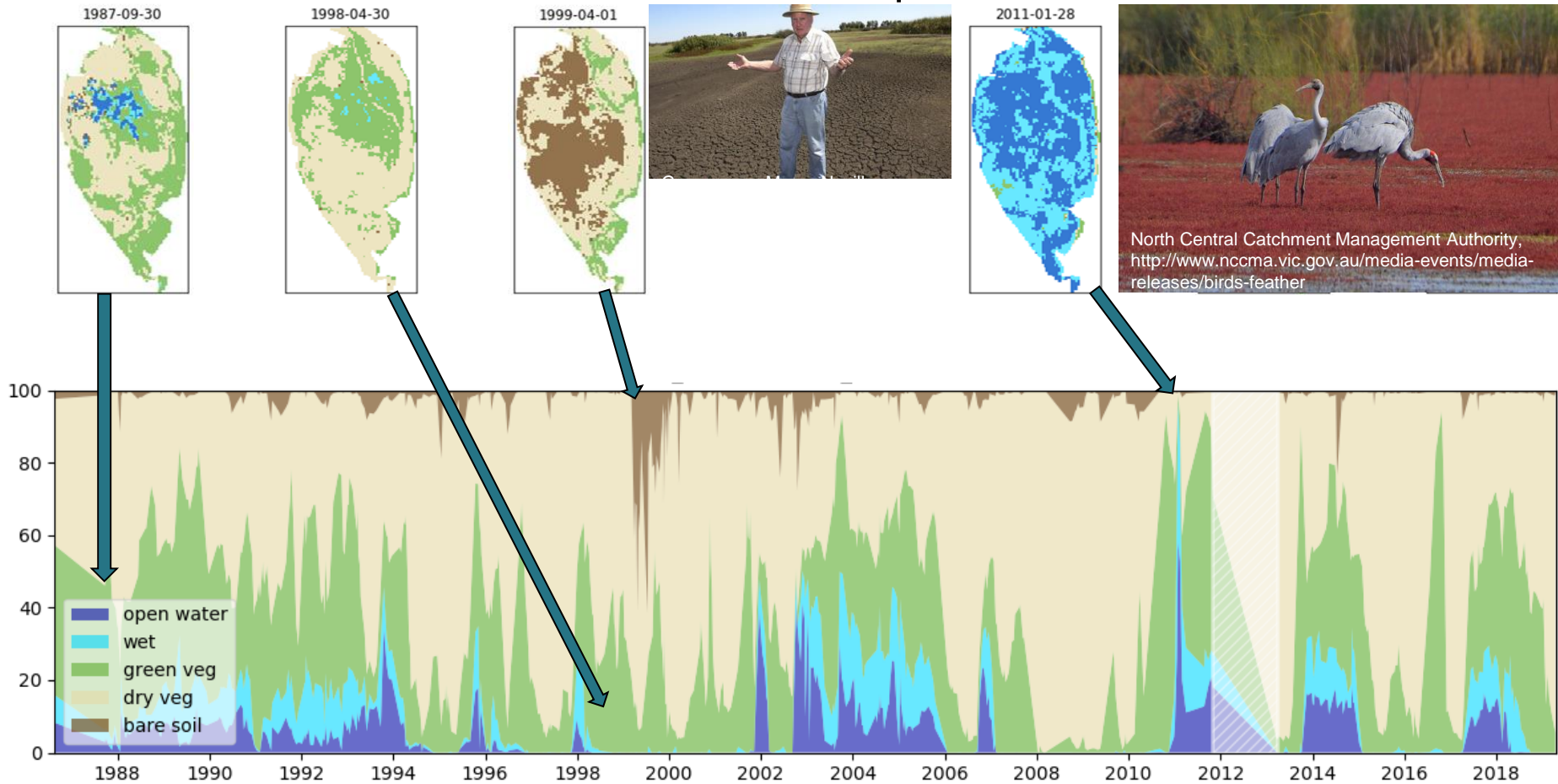


North Central Catchment Management Authority,  
<http://www.nccma.vic.gov.au/media-events/media-releases/birds-feather>



Gannawarra Mayor Neville Goulding at Hird Swamp. Greg Scullin,  
The Weekly Times, [weeklytimesnow.com.au](http://www.weeklytimesnow.com.au)

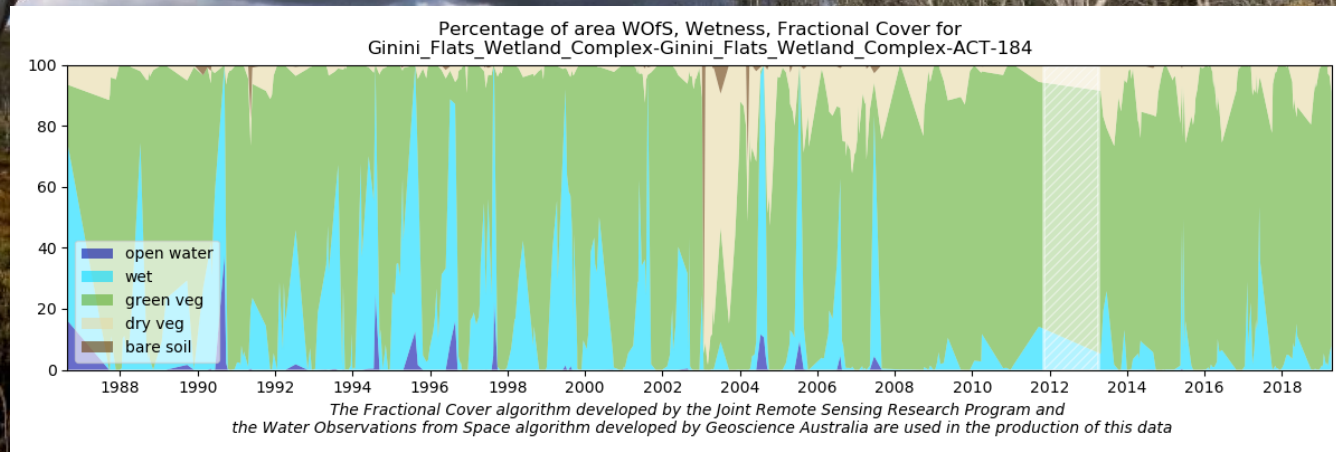
# Hird Swamp



*The Fractional Cover algorithm developed by the Joint Remote Sensing Research Program and the Water Observations from Space algorithm developed by Geoscience Australia are used in the production of this data*

North Central Catchment Management Authority,  
<http://www.nccma.vic.gov.au/media-events/media-releases/birds-feather>

# Palustrine - Ginini Wetlands



DATA SETS (2)  
 DEA MDBA Wetlands Insight Tool v1.0

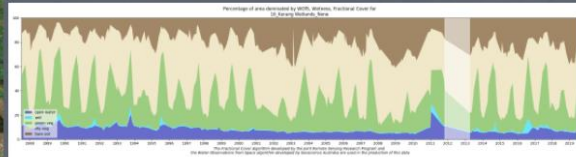
  
 DEA Ramsar Wetlands Insight Tool v1.0

Feature Information ▾

DEA MDBA Wetlands Insight Tool v1.0 - Site Data

in Kerang Wetlands, feature 98 in the MDBA wetlands catalogue.

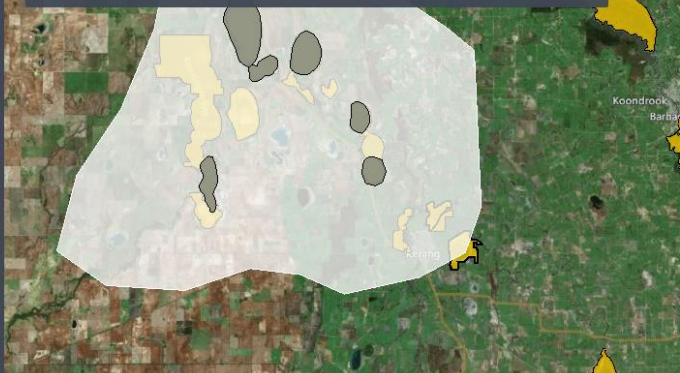


Change in water, wet vegetation, green vegetation, dry vegetation, and bare soil for Kerang Wetlands.

 Download: [chart image](#) | [timeseries CSV](#)

 Lat / Lon 35.59067°S, 143.85678°E

1.





DATA SETS (2)  
 DEA MDBA Wetlands Insight Tool v1.0

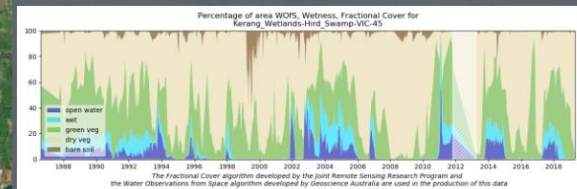
  
 DEA Ramsar Wetlands Insight Tool v1.0

Feature Information ▾

DEA Ramsar Wetlands Insight Tool v1.0 - Site Data

Hird\_Swamp in VIC, feature 45 in the Ramsar wetlands catalogue.



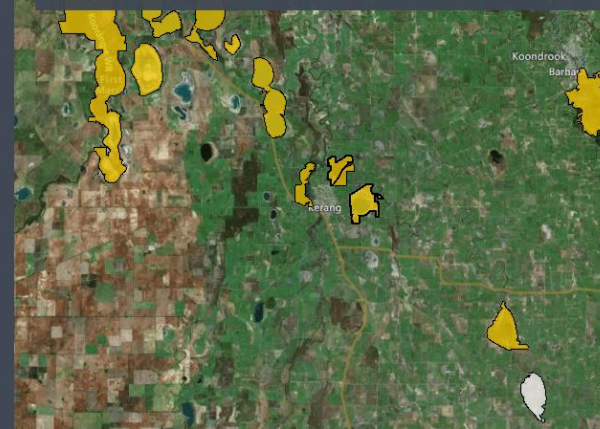
Change in water, wet vegetation, green vegetation, dry vegetation, and bare soil for Hird\_Swamp. Ramsar listed 1982/12/15

 Download: [chart image](#) | [timeseries CSV](#)

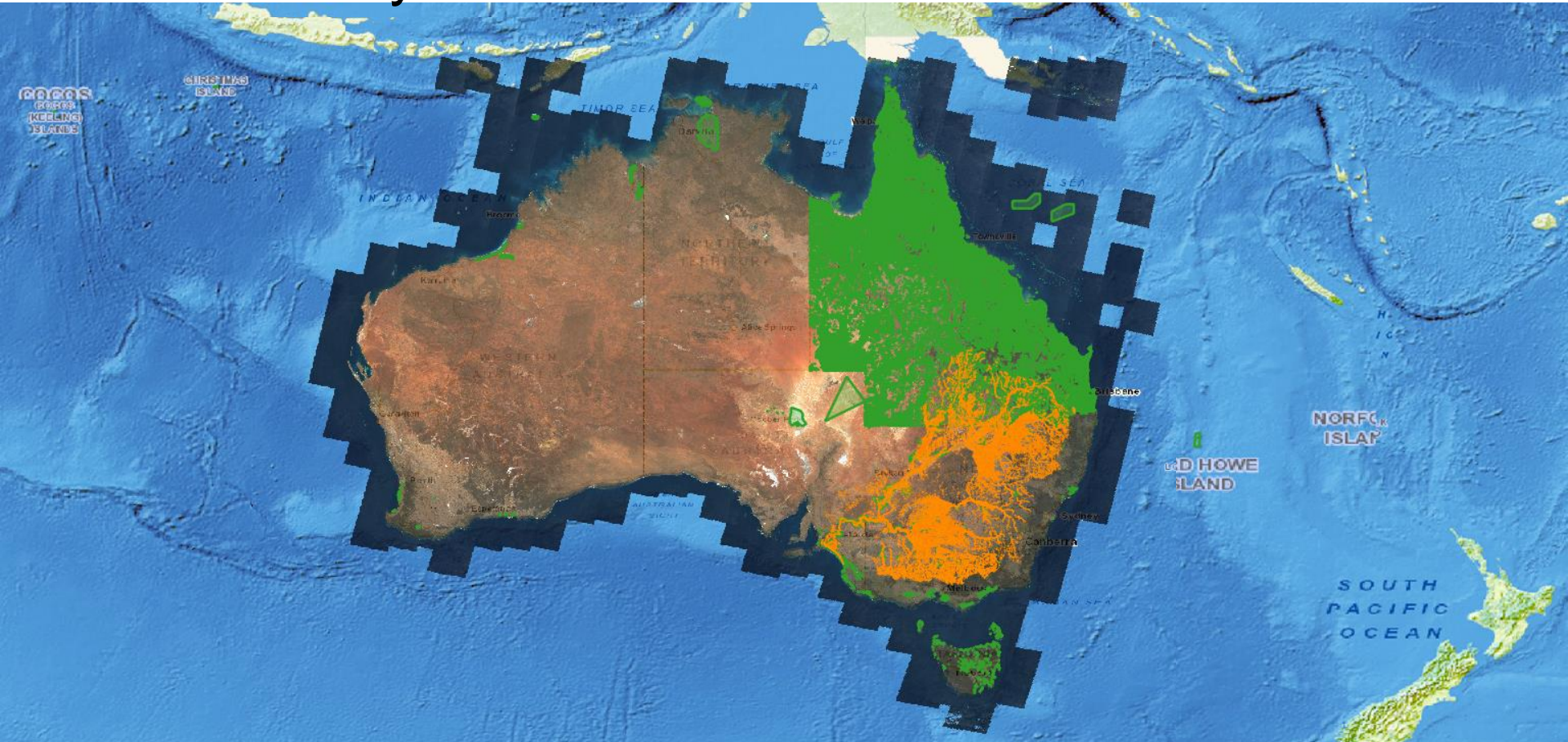
DEA Ramsar Wetlands Insight Tool v1.0 - Site Data

 Lat / Lon 35.85588°S, 144.09048°E

2.



If you have wetland boundaries, you can use satellite data to infer hydrometrics



# Summarising 100,000s of stacked line plots behaviour through time

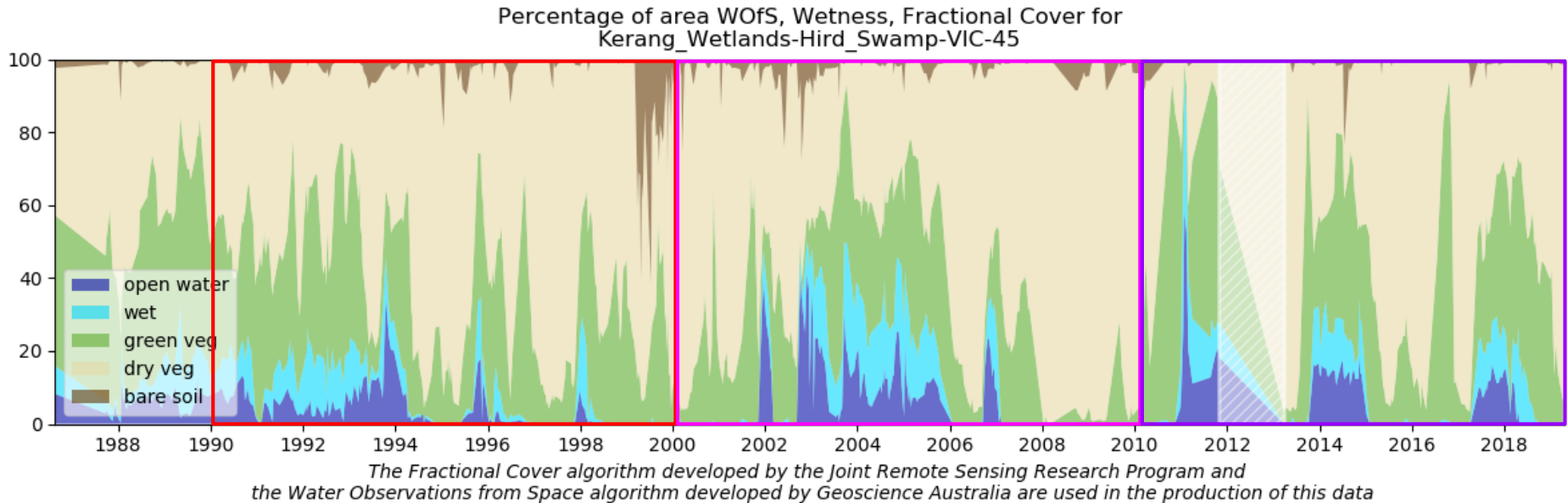
## Per decade statistics

- Percent of time wet
- Number of years wet

## Annual statistics

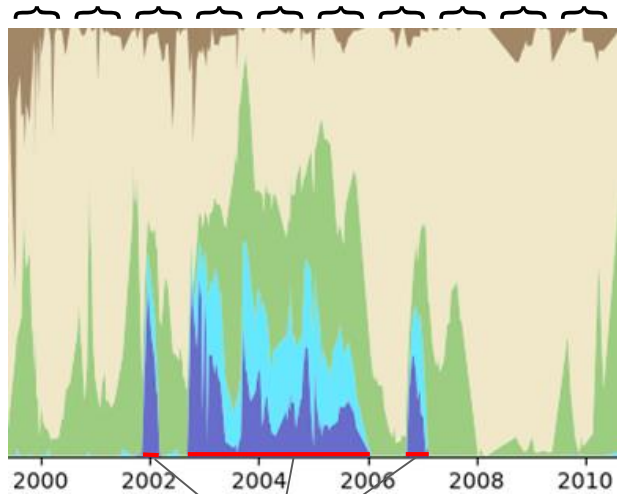
- Max, mean and min % of:
  - Open water
  - Open water + wet vegetation
  - Green vegetation fraction

# Decadal Statistics



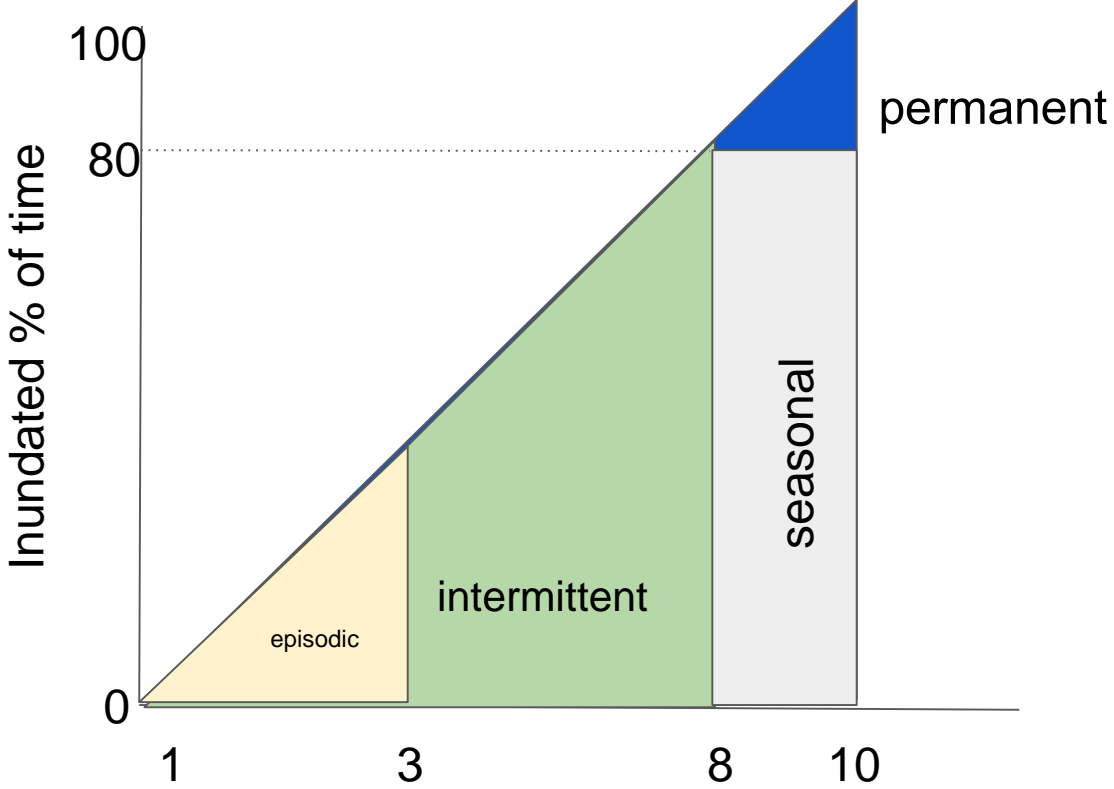
# Decadal Statistics

Number of years in which wet = true



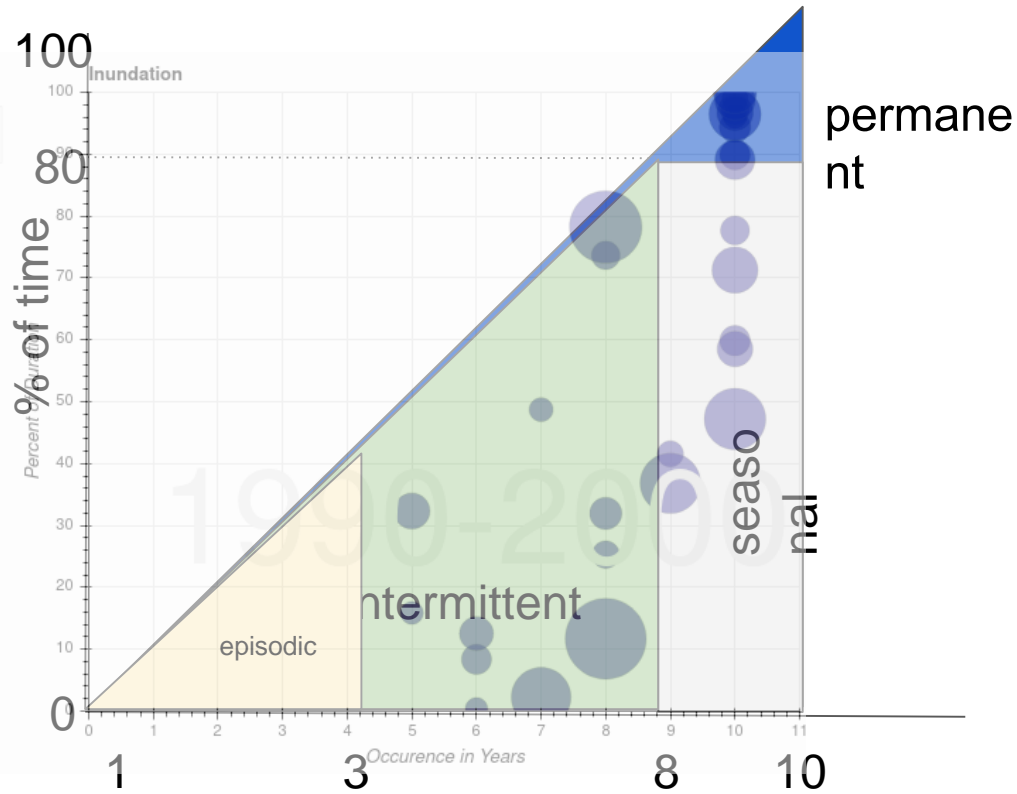
Percent of decade where

# Frequency and duration of inundation



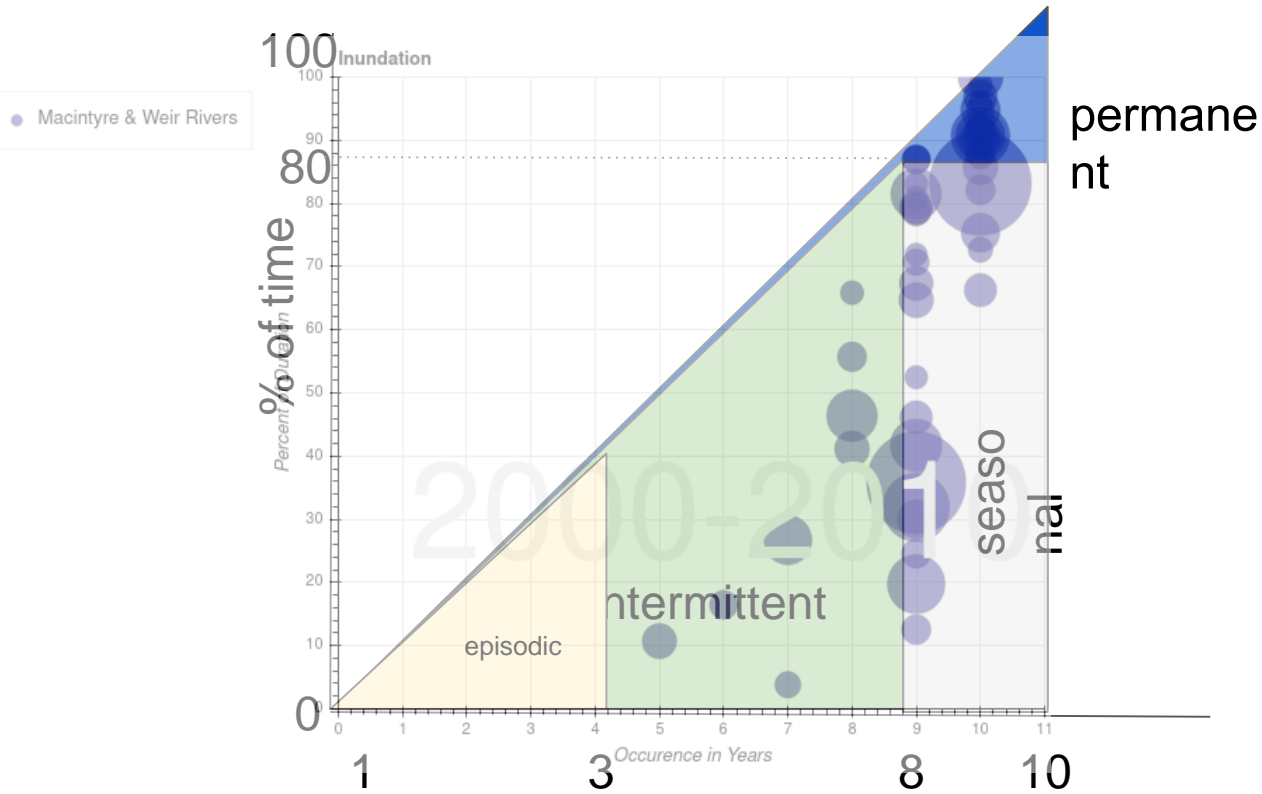
Number of years per decade inundated

# Frequency and duration of inundation 1990-2000



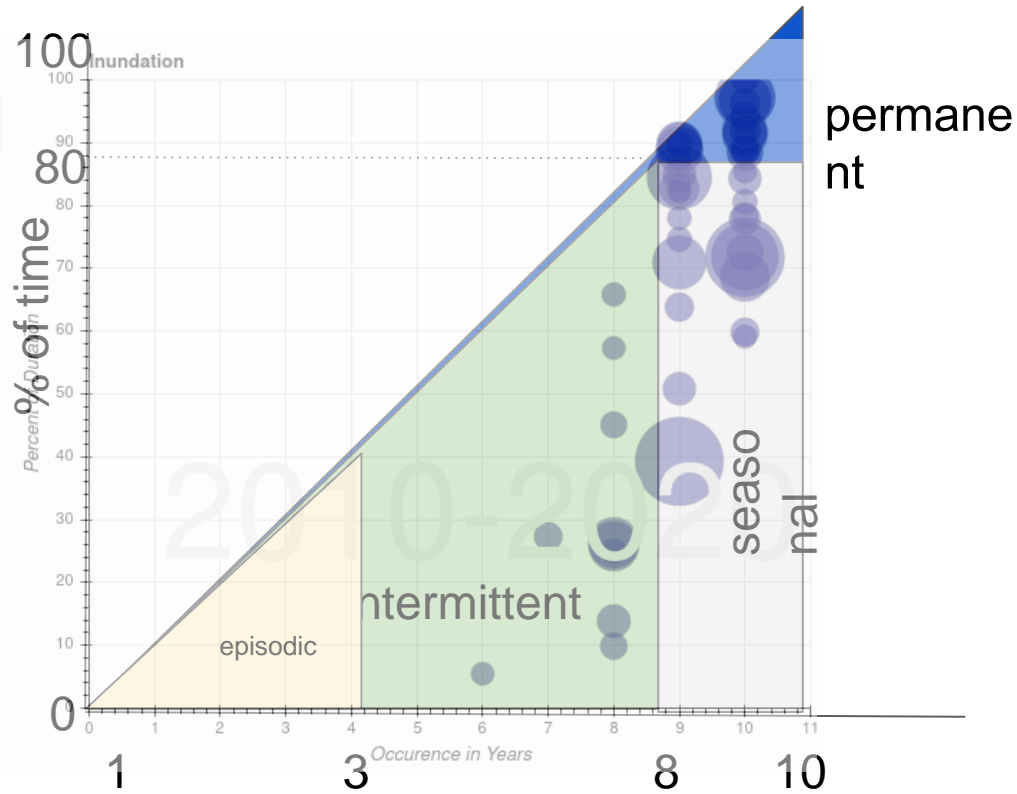
Number of years per decade

# Frequency and duration of inundation 2000-2010



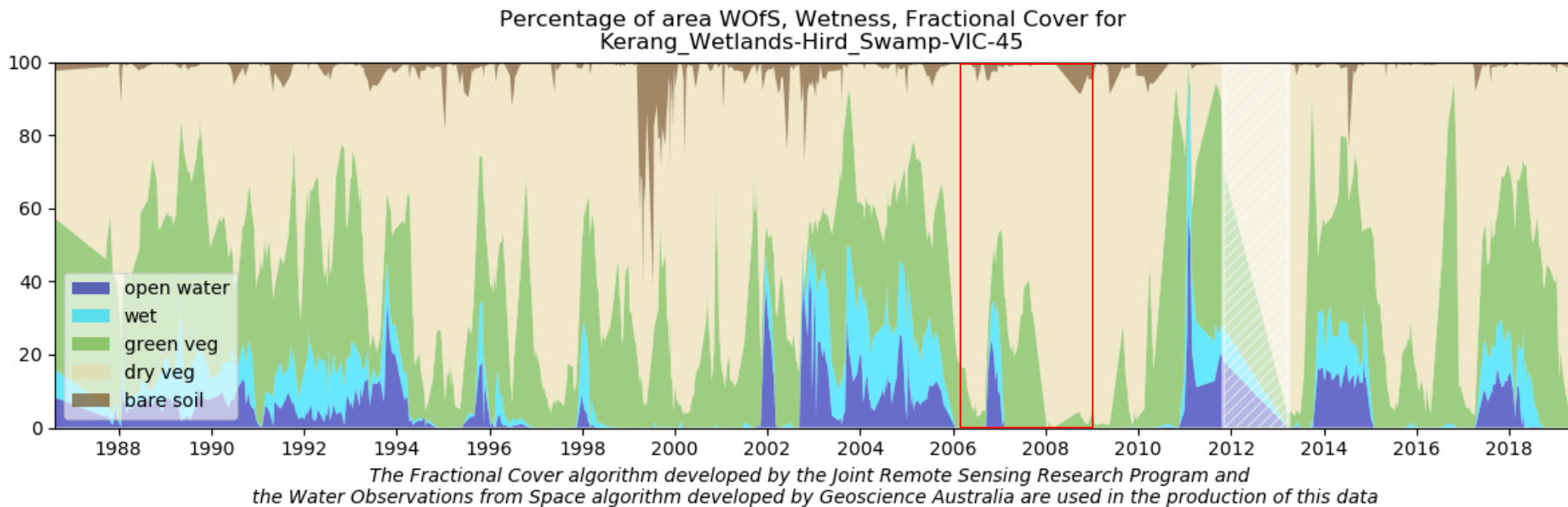
Number of years per decade

# Frequency and duration of inundation 2010-2020

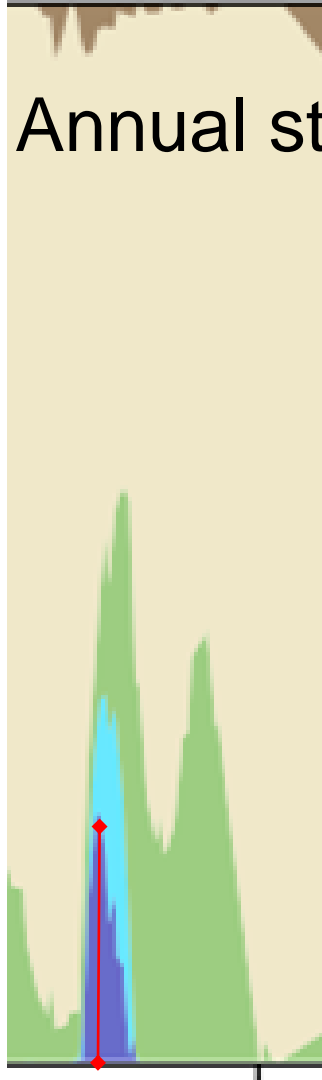


Number of years per decade

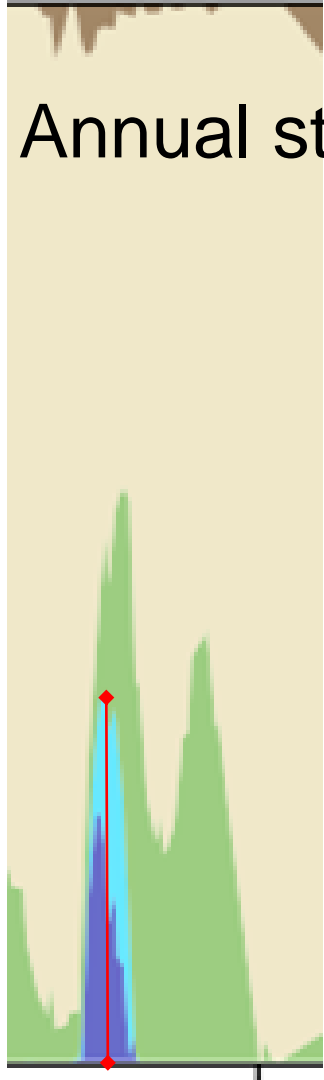
# Annual statistics



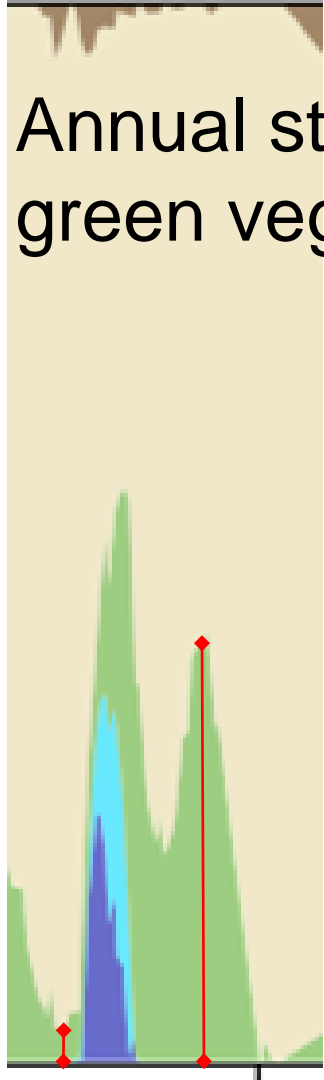
# Annual statistics - Maximum % of water



# Annual statistics - Maximum % of wet



# Annual statistics - Maximum and Minimum % of green vegetation



# How to get from here to a National Wetlands Inventory

- Use the best available linework (wetland vector coverage) from each State/Territory
- Conform to the Australian National Aquatic Ecosystems (ANAE) classification scheme
- Use Landsat multitemporal analysis derived linework where *no other linework exists*
- Use metrics from the stacked line plots to provide additional attributes based on ANAE class logic



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# Thank you

**Email:** [bex.dunn@ga.gov.au](mailto:bex.dunn@ga.gov.au)

### Further Information

**Web:** [www.ga.gov.au/dea](http://www.ga.gov.au/dea)

**Email:** [DEA@ga.gov.au](mailto:DEA@ga.gov.au)

**Address:** Cnr Jerrabomberra Avenue and  
Hindmarsh Drive, Symonston ACT 2609