



We acknowledge the Traditional Owners of the lands in the Murray-Darling Basin and pay respect to their Elders, past, present and emerging.

Michael Stewardson  
One Basin – CEO

Rebecca Wells  
Mallee Regional Innovation  
Centre - CEO

LMW Conference 2022

*Productive, resilient, and  
sustainable irrigation regions*





Mallee Regional  
Innovation Centre

The University of Melbourne

La Trobe University

SuniTAFE





# Project profile.....



Victoria Drought and Innovation Hub



One Basin CRC (Cooperative Research Centre)



Mallee Hydrogen Technology Cluster



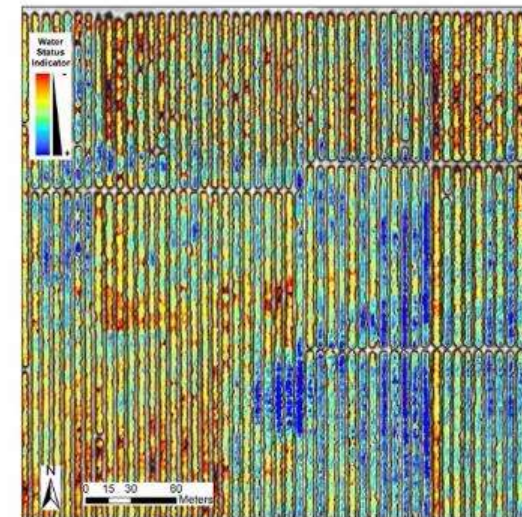
Growing smarter in the Mallee – regional summit



PhD's, Invergowrie program, early career researchers



Horticulture Innovation – dried vine pruning project, hyperspectral and thermal imaging



# One Basin CRC (Cooperative Research Centre)



- ✘ Mildura Regional Hub
- ✘ Genuine collaboration – industry lead
- ✘ Reach and access
- ✘ Researchers and PhD's in the region
- ✘ Impact on the ground
- ✘ Meaningful translation



# ONE BASIN CRC PARTNERSHIP



## END-USER ORGANISATIONS



## COMMERCIALISATION PARTNERS



## KNOWLEDGE AGENCIES





## REGIONAL HUBS



- Relevance
- Partnership
- Trust

*“There is a genuine desire across all levels of Government to secure a vibrant future for our regional communities. To date what is lacking is the collaboration and commitment to the innovation and investment needed to make it a reality.”*

- NFF (2022) Regional Development Precincts

# REGIONAL HUB ACTIVITY



# INDUSTRY CONVENORS



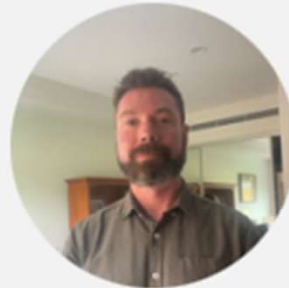
**Davi La Ferla**

TECHNOLOGY INTEGRATION  
INDUSTRY CONVENOR



**Karen Hutchinson**

IRRIGATED AGRICULTURE  
INDUSTRY CONVENOR



**Matt Coleman**

WATER PLANNING  
INDUSTRY CONVENOR



**Kathryn Young**

HORTICULTURE  
INDUSTRY CONVENOR



**Alex Sas**

WINE  
INDUSTRY CONVENOR



# ONE BASIN CRC BOARD



**Dr Wendy Craik**  
AM  
Chair

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**Leeanne Bond**  
Director

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**Alexandra Gartmann**  
Director

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**Peter Hayes AM**  
Director

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**Dr Rohan Henry**  
Director

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**Kate O'Callaghan**  
Director

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**Fiona Simson**  
Director

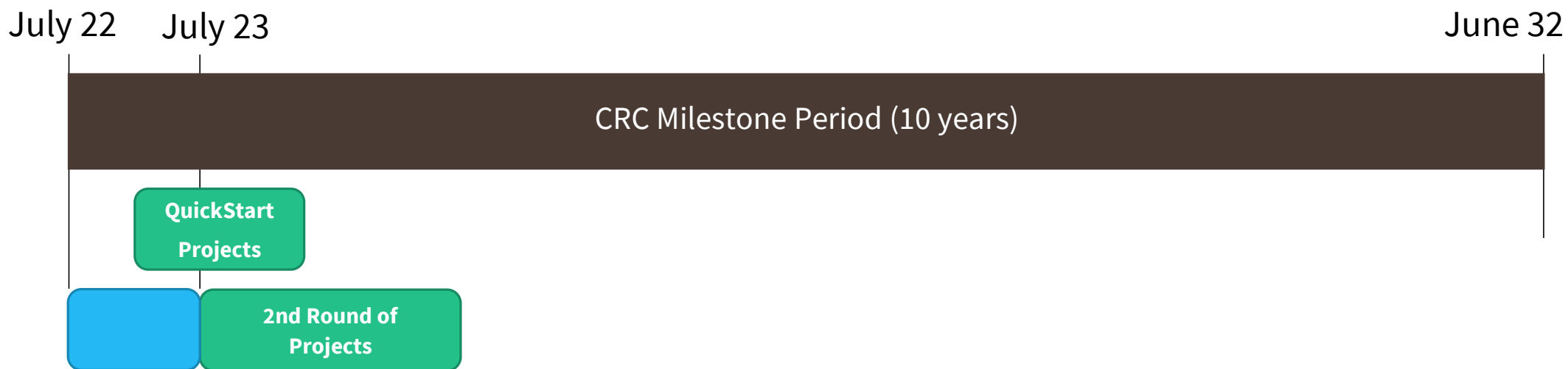
[Read Bio](#)



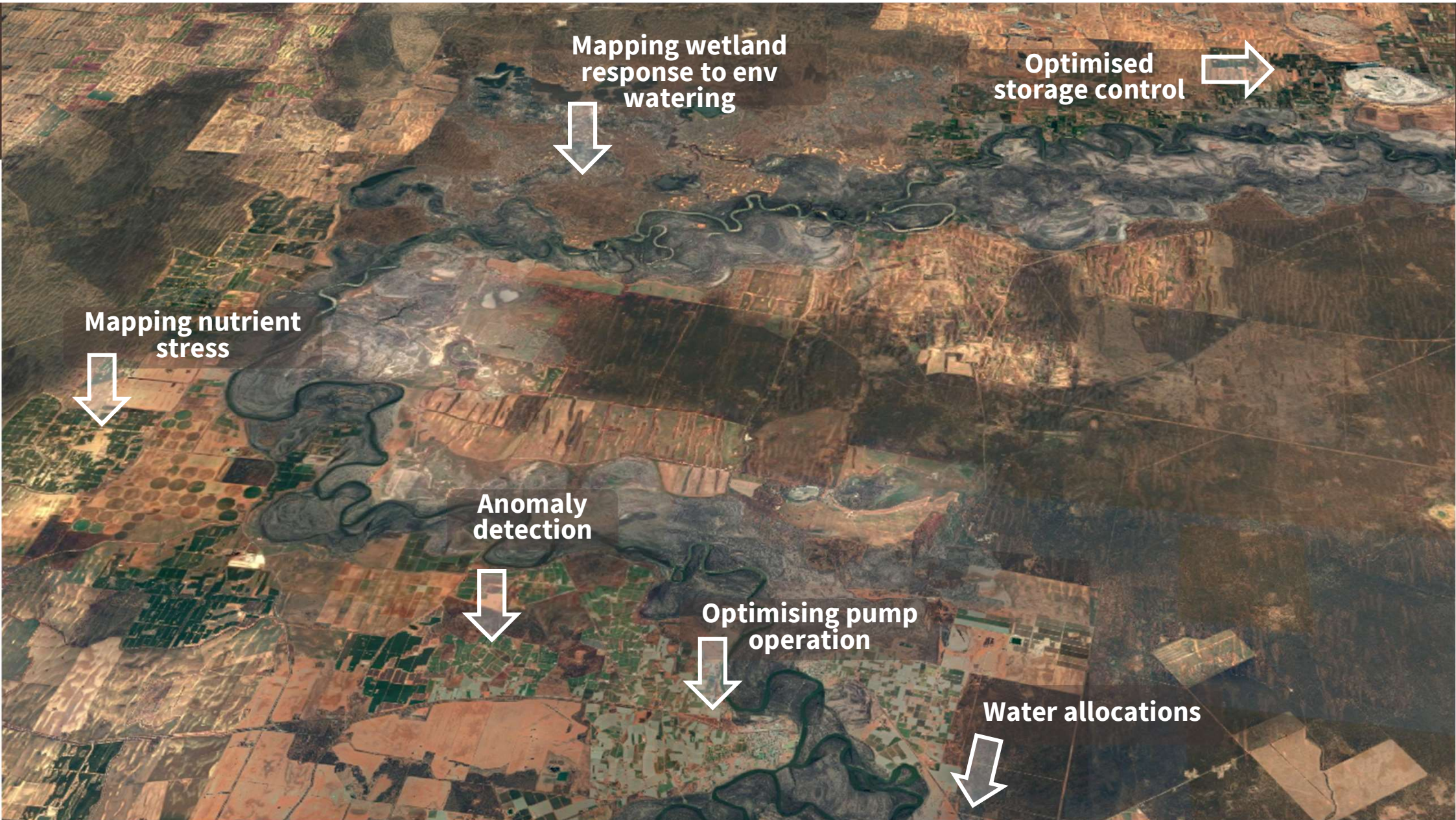
**Dr Raelene Ward**  
Director

[Read Bio](#)

# TIMELINE







Mapping wetland  
response to env  
watering



Optimised  
storage control



Mapping nutrient  
stress



Anomaly  
detection



Optimising pump  
operation



Water allocations





# USING SEASONAL STREAMFLOW FORECASTS TO IMPROVE WATER ALLOCATION OUTLOOKS



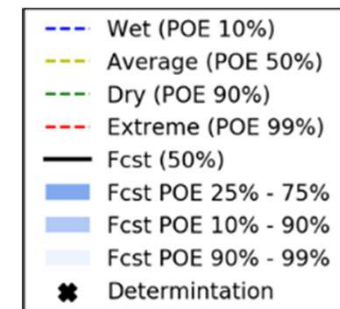
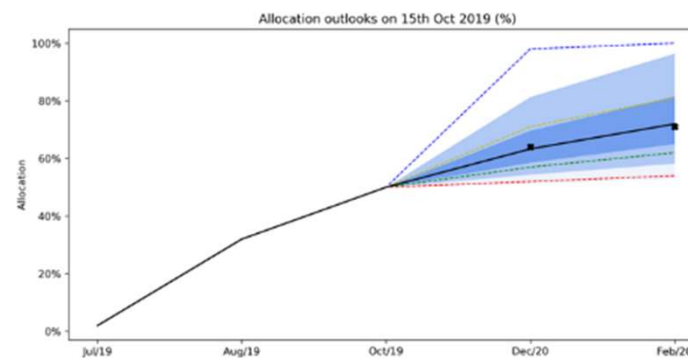
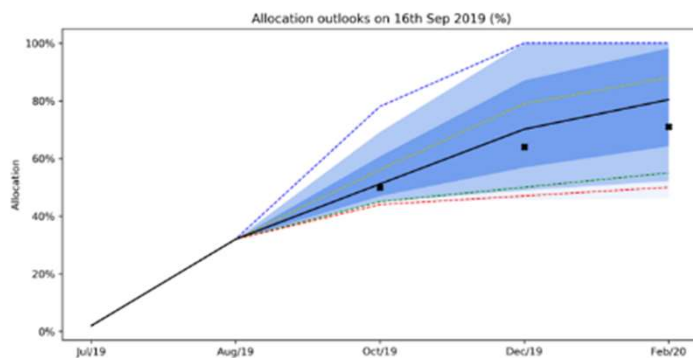
QJ Wang

- **Current outlooks based on climate scenarios – large uncertainty**

**Goulburn and Loddon System Outlook for Seasonal Determination of High-Reliability Water Shares**

Inflow Conditions	Similar inflow season	15 October 2021	15 December 2021	15 February 2022
Wet	2010/11	100%	100%	100%
Average	2003/04	100%	100%	100%
Dry	2008/09	82%	92%	98%
Extreme Dry	2006/07	68%	72%	75%

- **Improved outlooks by using BoM seasonal streamflow forecasts – more accurate, less uncertain**

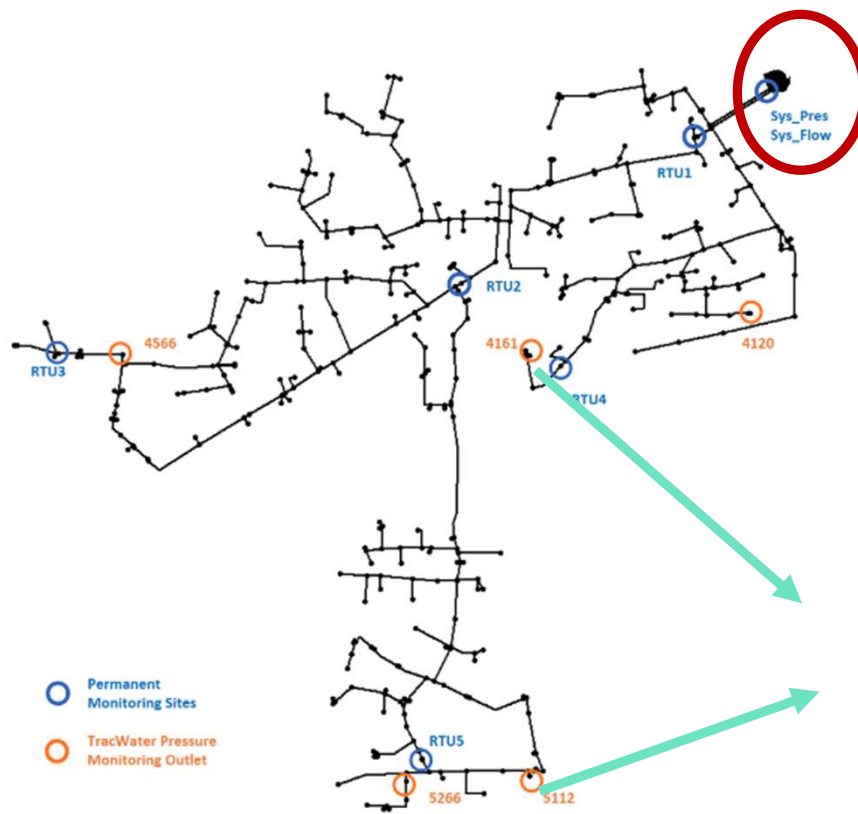




# LEVERAGING MODERNISED SENSING TO IMPROVE PUMP OPERATION



Wenyan Wu



# DIGITAL TWINNING OF IRRIGATION SYSTEMS FOR ASSET AND SYSTEM PERFORMANCE



Joseph Guillaume



[https://rubiconwater.com/wp-content/uploads/2020/03/100216\\_Rubicon\\_Shepparton-0377-1.jpg](https://rubiconwater.com/wp-content/uploads/2020/03/100216_Rubicon_Shepparton-0377-1.jpg)

- Capitalising on new data to better track evolution of the system and improve performance
- Building a knowledge system that ensures that knowledge is updated over time and available when a decision needs to be made



Australian  
National  
University

INSTITUTE FOR WATER FUTURES



With the support of the  
Erasmus+ Programme  
of the European Union





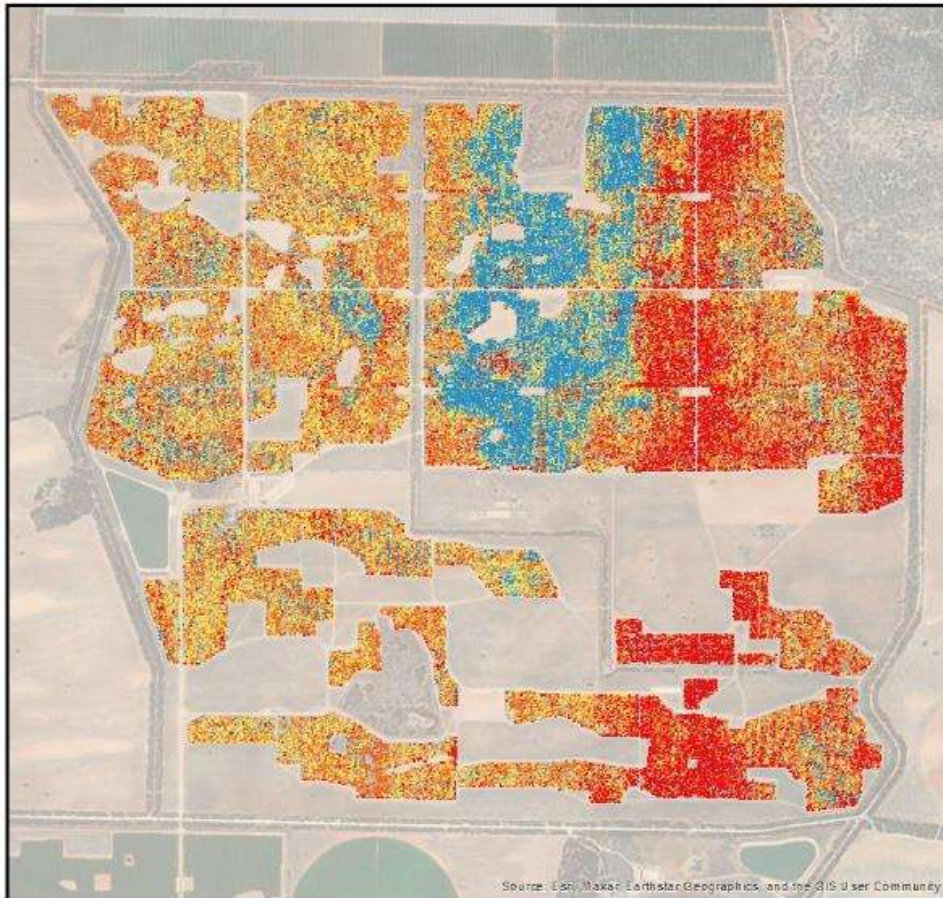
# MAPPING NUTRIENT STRESS



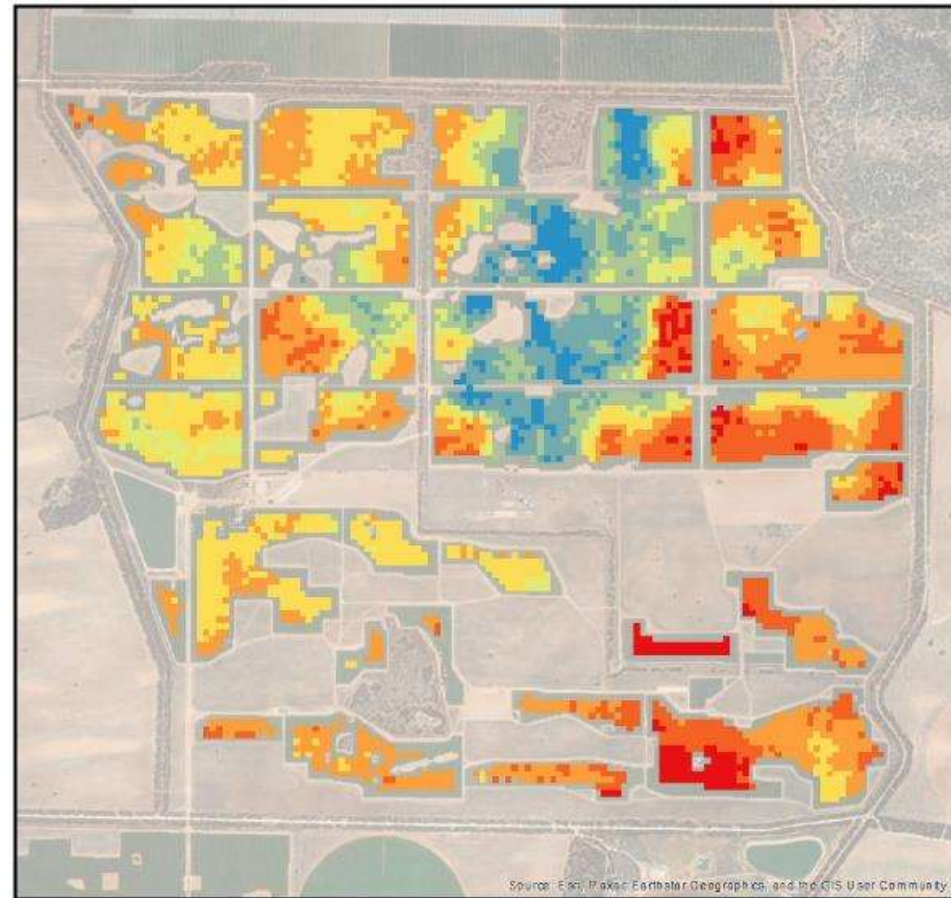
Anne Wang



## N map from airborne based on tree crowns



## N map from spaceborne hyperspectral

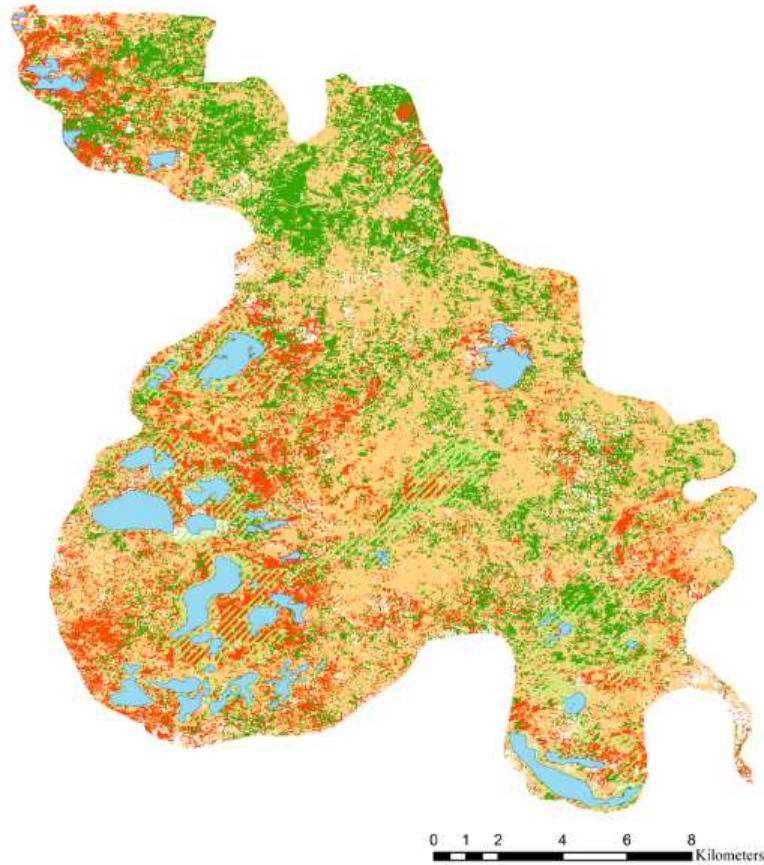


# USING SATELLITES TO MAP FLOODPLAIN VEGETATION RESPONSE TO ENVIRONMENTAL WATER



Chunying Wu

## Hattah Lakes



### Lag in vegetation response



Immediate improvement

1-3 month lag in improvement

4-12 month lag in improvement



# DIGITAL PLATFORM FOR DATA-DRIVEN FARM DECISION MAKING



Davi La Ferla



# NOT JUST NEW TECHNOLOGY



**PRACTITIONERS ARE PART  
OF THE DESIGN TEAM**



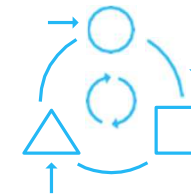
**Technology and  
Opportunity  
Program**



**BUILDING CONFIDENCE  
TO INVEST**



**Foresight and  
Decisions  
Program**



**COLLABORATION AND  
NETWORKS**



**Capability and  
Commercialisation  
Program**

- » Internships
- » PhD's
- » Leadership
- » Skills training



## Outcomes from the ONE Basin CRC

- Increased agricultural production
- Growth of the irrigation technology sector
- More effective government spending
- Reduced energy consumption and emissions
- Enhanced social and economic wellbeing of First Nations
- Improved health and resilience of freshwater ecosystems
- Increased resilience of regional economies





ONE  
BASIN  
CRC

Productive, resilient and  
sustainable irrigation regions

"It's the right partners at the right time for us as we move from a 100 year old "rule of thumb" network to a modern, automated data lead one" - *Murrumbidgee Irrigation*

"This CRC presents a compelling means to redesign high-value and profitable farming systems with scope to double the value/MI of water input. Attaining this on a broad scale across diverse landscapes and communities requires the bold initiative and capacities of this CRC." – *Peter Hayes, Chair, Almond Board Australia*

"We see this CRC as critical to the Basin's sustainability and a future based on best-practice research and learning, which will help grow our region from an economic and population perspective." - *Lawrence Springborg, Mayor, Goondiwindi Council*

"Most important is having local input into the research from people here who have had a great many years of experience in the water industry or in the horticultural industry or the environmental sector" - *Anne Mansell, CEO, Dried Fruits Australia*