TERN
Terrestrial Ecosystem Research Network

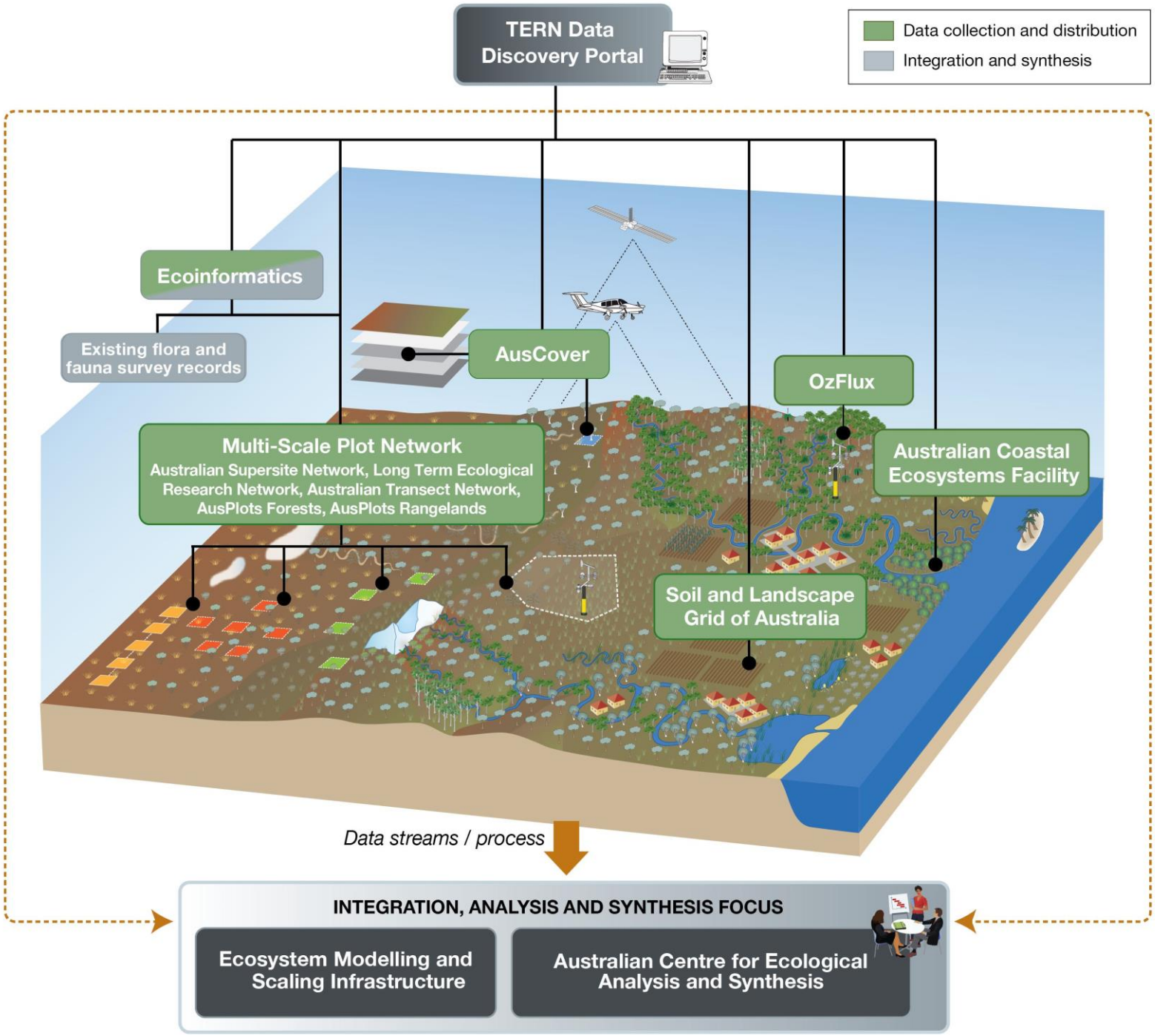
e-MAST
Ecosystem Modelling & Scaling Infrastructure

OzFlux & eMAST

Integrating of observations into models of Australia's ecosystems

Presentation by Brad Evans

TERN is supported by the Australian Government through the National Collaborative Research Infrastructure Strategy and the Super Science Initiative.



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What has TERN achieved?

- **1494 data sets** ~ 100,000,000 data items
- **Metadata from all Facilities discoverable** and delivered through the TDDP
- 7 **international partnerships**
- **Long-term plan** for Ecosystem Science
- Over **400 peer reviewed publications**

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What has eMAST achieved?

1. **Climate and Bioclimate** datasets now available http://dap.nci.org.au and http://www.eMAST.org.au

2. **Data assimilation & ecosystem models** datasets available on : http://dap.nci.org.au and descriptions of the data on the eMAST website: http://www.eMAST.org.au including the CABLE-DART and CABLE-CESM models. ePiSaT 2.0 soon to be released.

3. **ePLANT (ecoPhysiological Land and biosphere dAta maNagement sysTem)** publishing and analysis of ecophysiological and allometric observations of plant species.

4. **Benchmarking, visualization, integration and** other refers to a combination of projects : http://pals.nci.org.au/ Further expansion of this work internationally : Prentice & Evans, Abramowitz

5. **Seven (7) peer reviewed publications**

6. **Co-investment** through Dept. of Environment, ARC DP, Linkages and eResearch (NCRIS) co-funding

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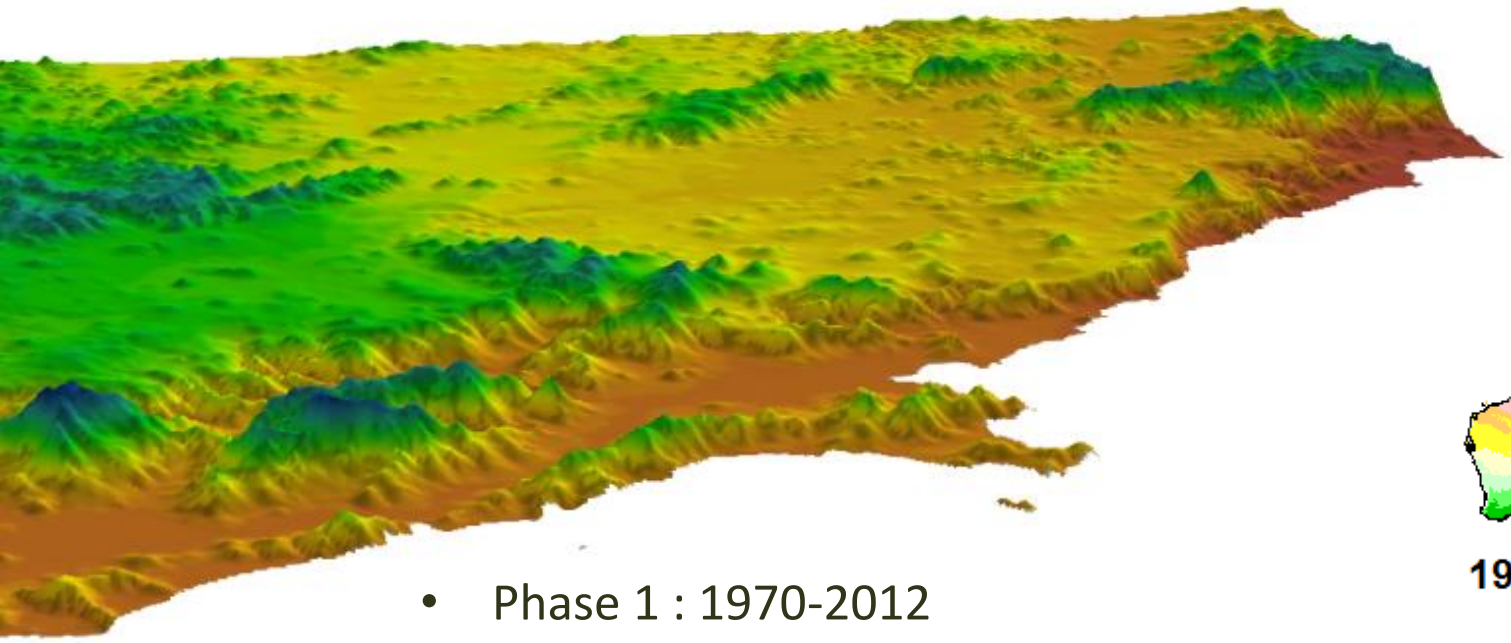
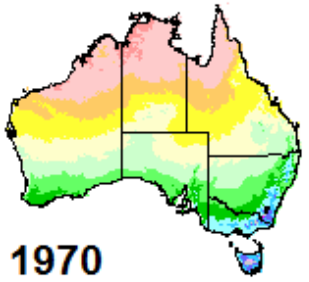
ANUClimate

*A **NEW** approach to interpolating our national network*

0.01 degree climate surfaces



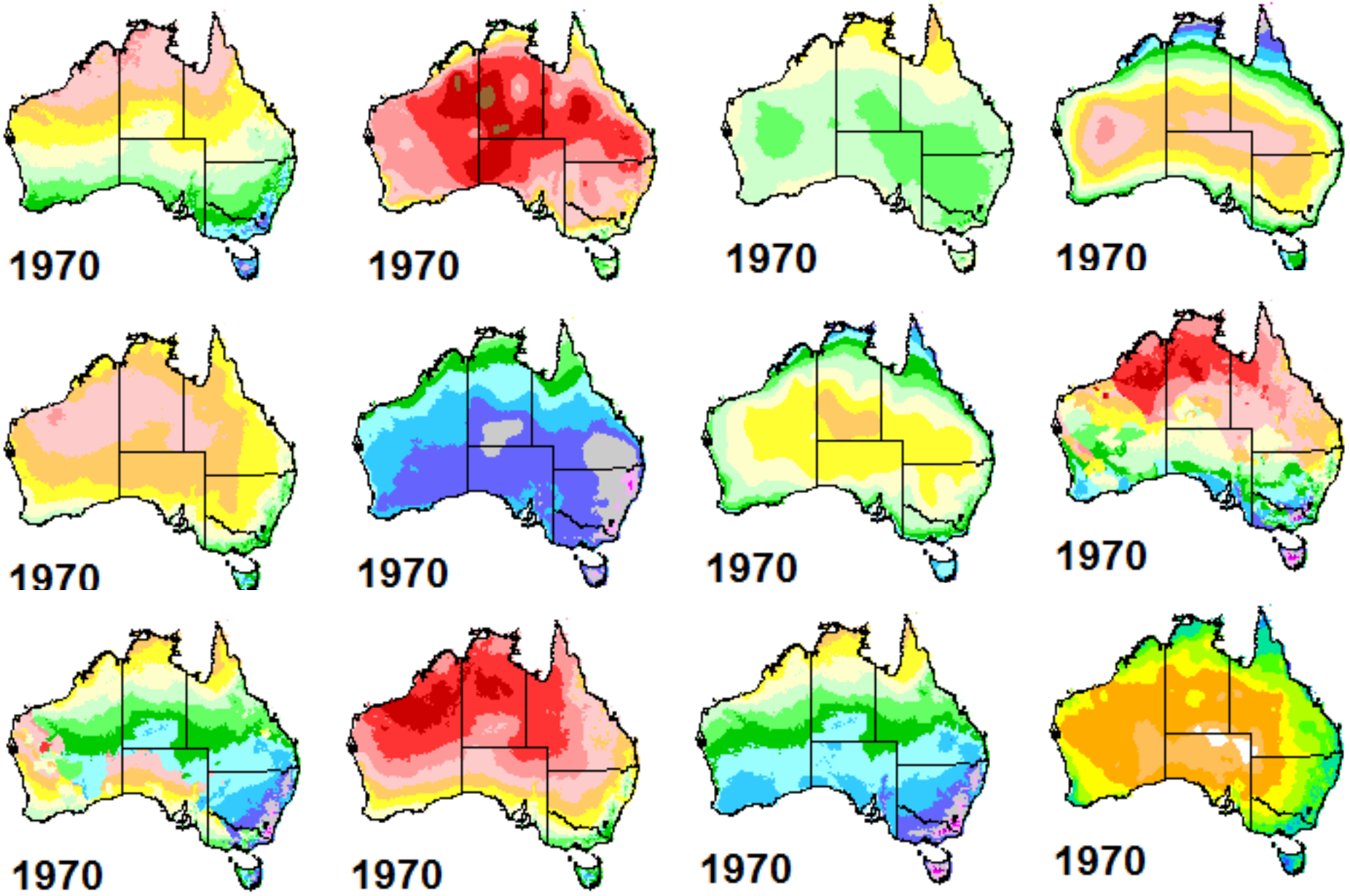


- Phase 1 : 1970-2012
- Phase 2 : 1900-present
- Phase 3 : CMIP scaling

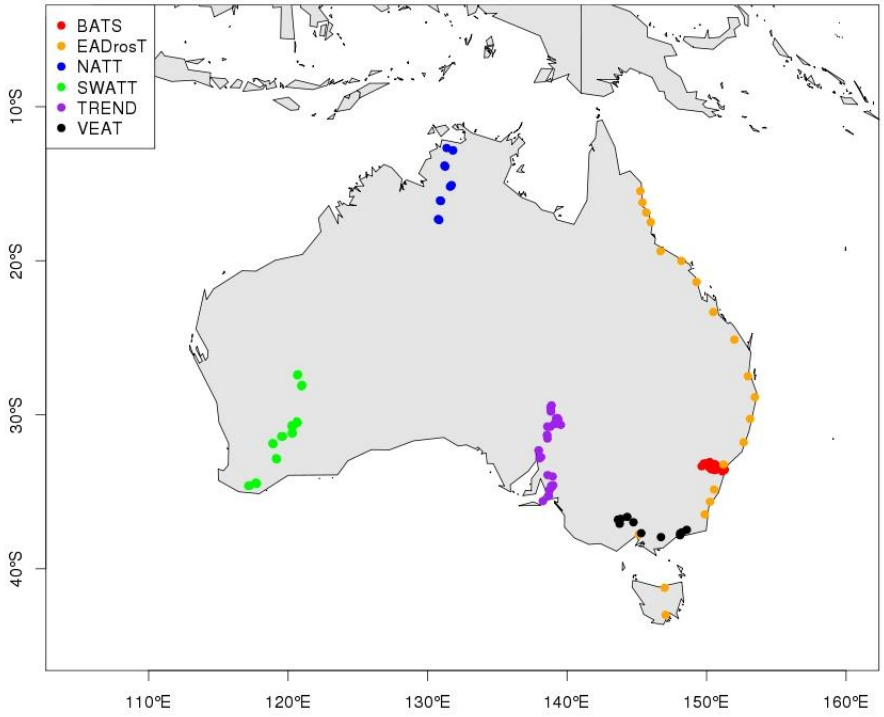
Professor Mike Hutchinson (ANU)

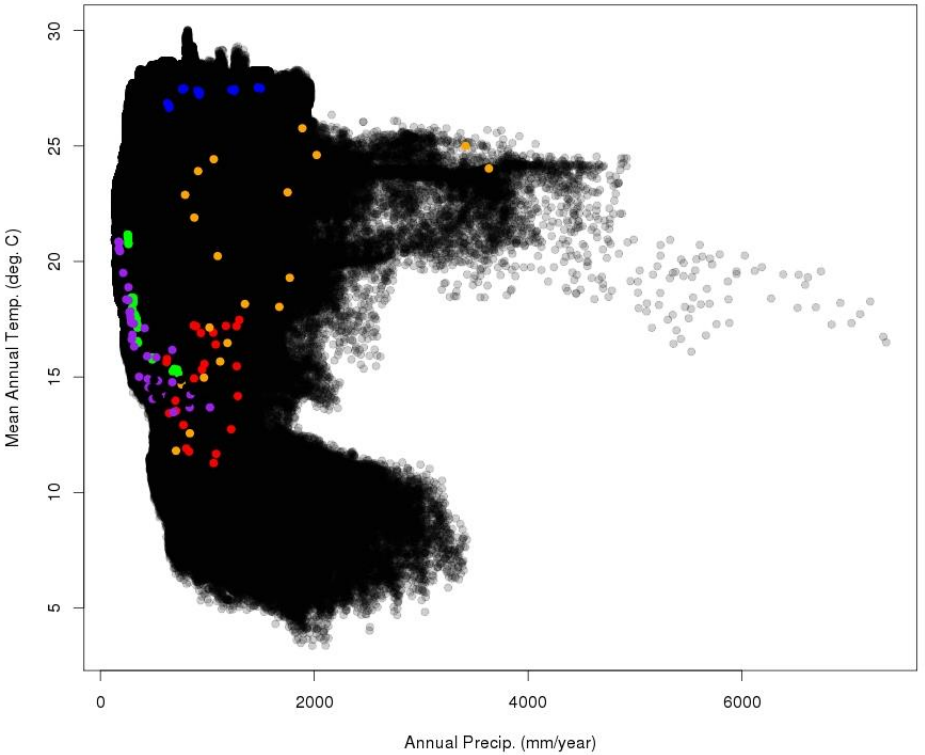
Climate and Bioclimate data

Res. 0.01 degrees (nominally 1km) T, P, R + and 50 + indices



Integration with TERN facilities





What do you need?

1. Do you need access to the continental scale grids for running your own models?

2. Do you need data extracted from your sites for gap filling and other analysis?

3. Do you need the tools to test and adapt them to your site specific studies?

TELL US PLEASE

bradley.evans@mq.edu.au

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ePLANT

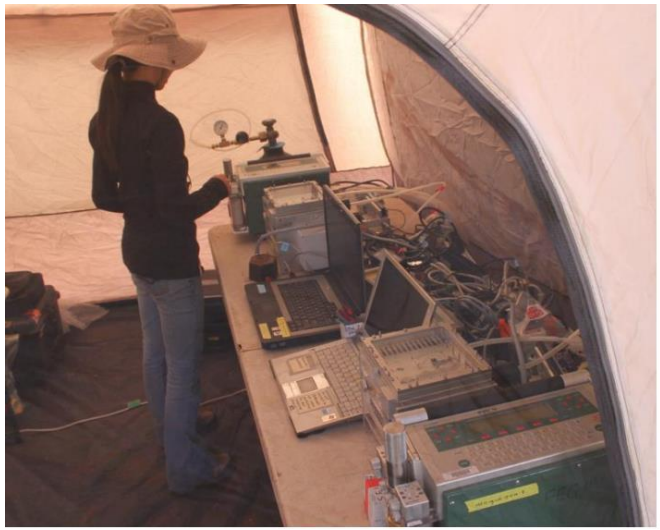
eMAST ecosystem Modelling and Scaling Infrastructure

Australian SuperSiteNetwork

ausplots

ecoPhysiological Land and biosphere dAta maNagement sysTem

WARRA – CALPERUM – GWW – FNQ – CUMBERLAND - ALICE



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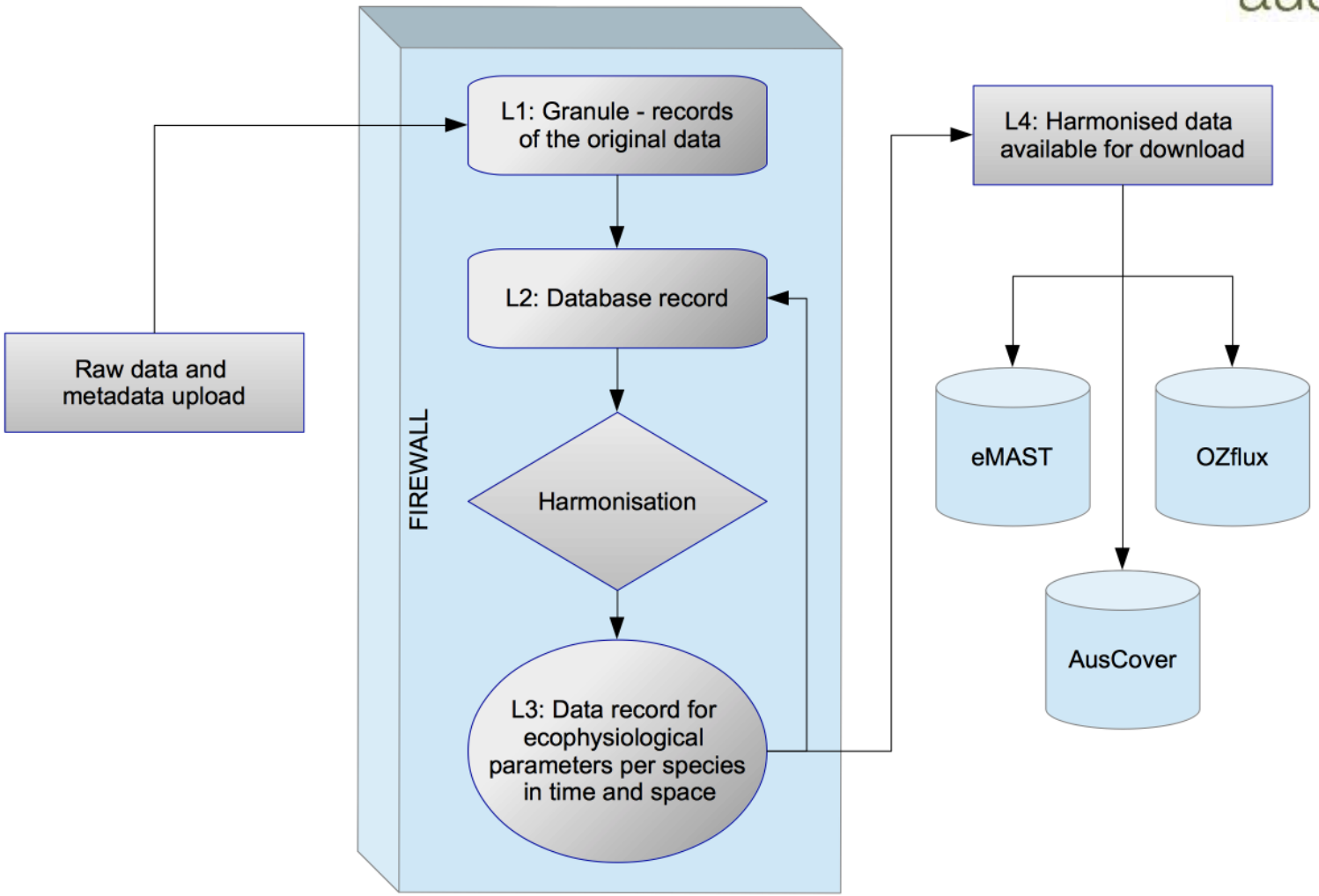
ePLANT


L1: Granule - records of the original data
L2: Database record
Harmonisation
L3: Data record for ecophysiological parameters per species in time and space
FIREWALL
Raw data and metadata upload
L4: Harmonised data available for download
eMAST
OZflux
AusCover

Lots of data! Lots of people!

Colin Prentice, Owen Atkin , Keith Bloomfield , Lingling Zhu, Brad Evans, Henrique Togashi, Tim Wardlaw, Ben Sparrow, Wayne Myer, Peter Cale, Suzanne Prober, Craig McPharlane, Mike Liddell , Mirko Karan, Matt Bradford, Lucus Cernusac, David Ellsworth , Matthias Boer, Derrick Eamus, James Cleverly, Ian Wright, Belinda Medlyn, Brendan Choat, Gab Abramowitz, Henrique Furstenau Togashi, Rhys Whitley, Yan Shih-Lin, Sean Gleason, Rachael Gallagher, Linda Prior, Erik Veneklaas and Adrienne Nicotra




The eMAST@MQ support team

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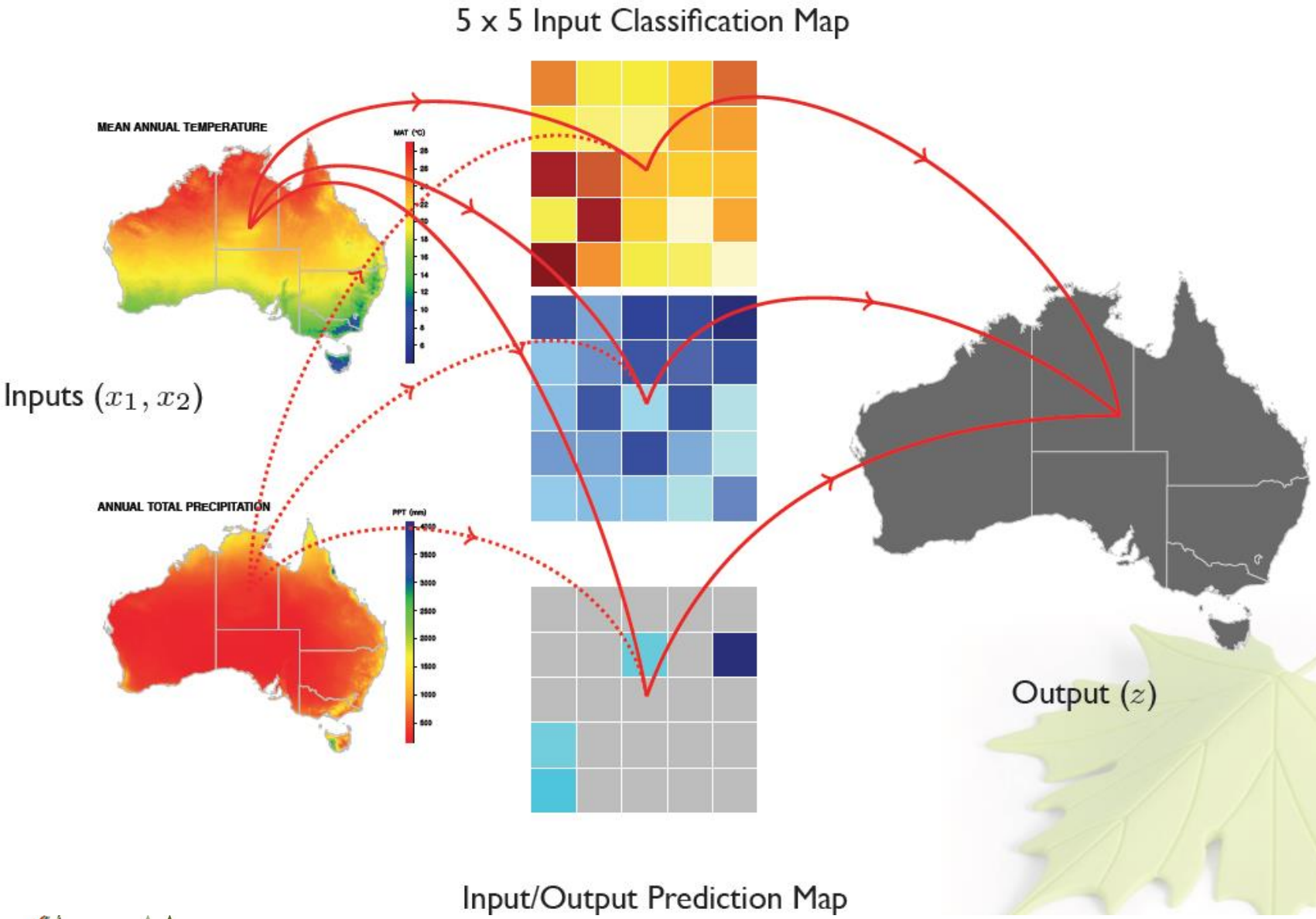
ePLANT : V1 : Plant trait surfaces



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How you can contribute?

- Submit your data to ePLANT
- Request to use ePLANT
- Join us in co-funding opportunities to continue this research
- Tell your colleagues about our work AND that they are welcome to contribute and use ePLANT
- Tell your organisation

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ePLANT

Benchmarking: Model data evaluation

PALS: Protocol for the Analysis of Land Surface models

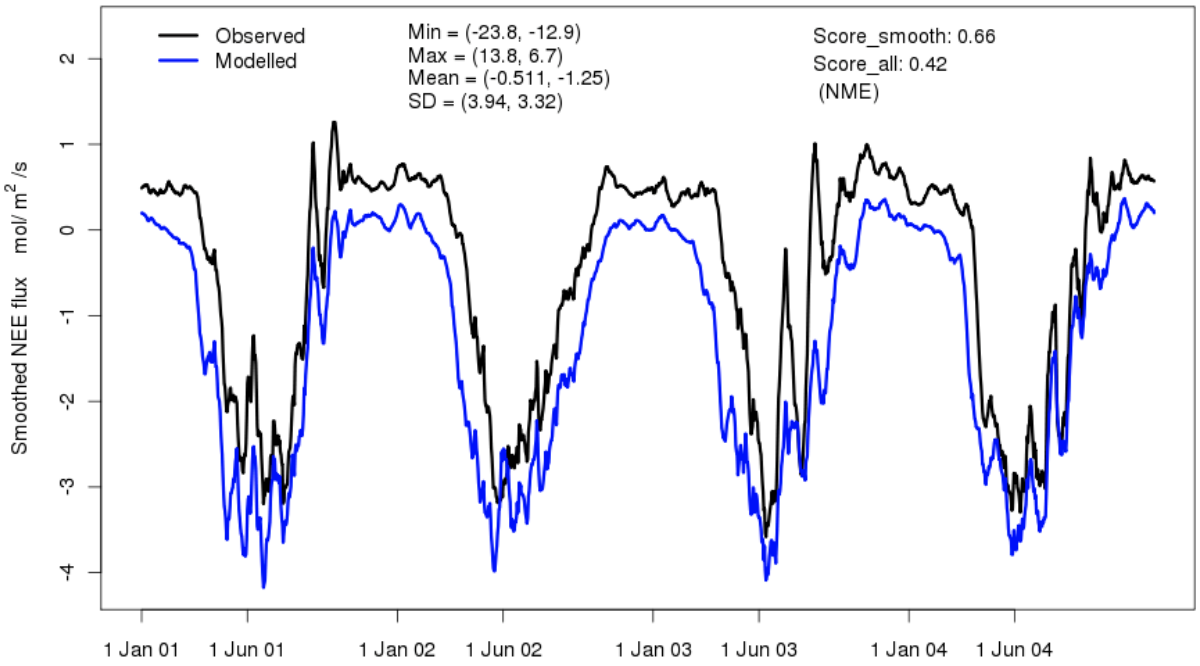
Welcome gab [Log out] [PALS Home] [Help]

Currently showing all public data. Alternatively enter a PALS workspace.

Data Sets | **Models** | **Model Outputs** | **Analysis**

Data Set --DataSet-- Model CABLE.1.4b HyytiaCABLE1.4b Variable NEE Analysis Type Timeseries

Smoothed NEE: 14-day running mean. Obs - HyytialaFluxnet.1.3 Model - HyytiaCABLE1.4b



Timeseries

This simply shows a smoothed time series of a variables (14-day running mean by default) across the entire data set.

Interpretation: gives an indication a model's temporal divergence from observations. Good, for example, for looking at dry-down after rainfall events (by looking at latent heat, Qle) or temporal variation in carbon uptake.

Requirements: any variable which varies at each model time step

Spatial Requirements: single site.

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from Gab Abramowitz (UNSW)

What's up with PALS?

1. **Undergoing a major rebuilt, ported to the NCI and soon to be re-released as**

2. **Do you need data extracted from your sites for gap filling and other analysis?**

3. **Do you need the tools to test and adapt them to your site specific studies?**

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Pulling it all together…

- ANUClimate & Dept. of Environment co-funding
- ePLANT : ARC DP : Next Generation of Ecosystem Models (Prentice, Wright et al)
- ARC DP : Australian Tropical Savannas: Past, Present & Future (Beringer, Hutley, Yu et al.)
- ePLANT: ARC DP : Ecophysiology (Atkin et al.) – co-funded with TERN synthesis project
- ARC Linkage : Drought in NSW (NSW OEH) with MQ & UWS (Medlyn, Tissue et al.)
- Data assimilation : Co-funded projects with BoM (Renzullo et al.,) and with CSIRO, NCAR, NEON (CABLE-DART etc).
- ePLANT : PhD Projects : Togashi, Dong, etc. under Prentice
- ePiSaT 1.0 : ANDS funded project with CSIRO, UTS, MQ

YOUR PROJECT HERE?!

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FOUNDATIONS
FOR THE FUTURE
A long-term plan for
Australian ecosystem science
Ecosystem Science
Long-Term Plan