



Calibration and Validation Research at CSIRO Centre of Earth Observation

Pinnacles Updates, R&D on Coarse Pixel
Resolution Site & Proposal for SRIX4VegII

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Australia's Pre-eminent National Science Organization



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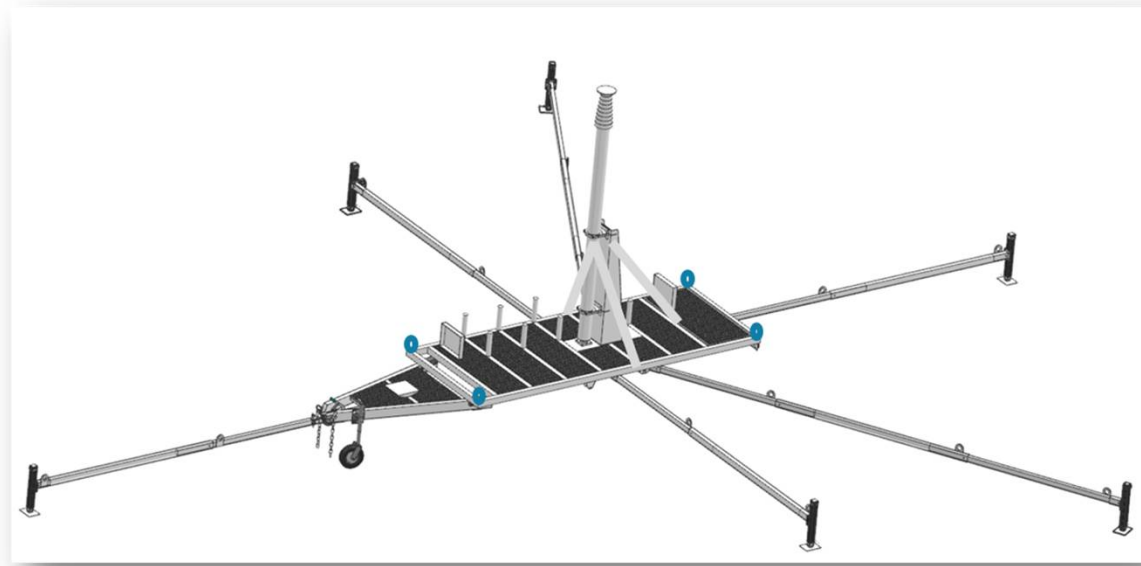
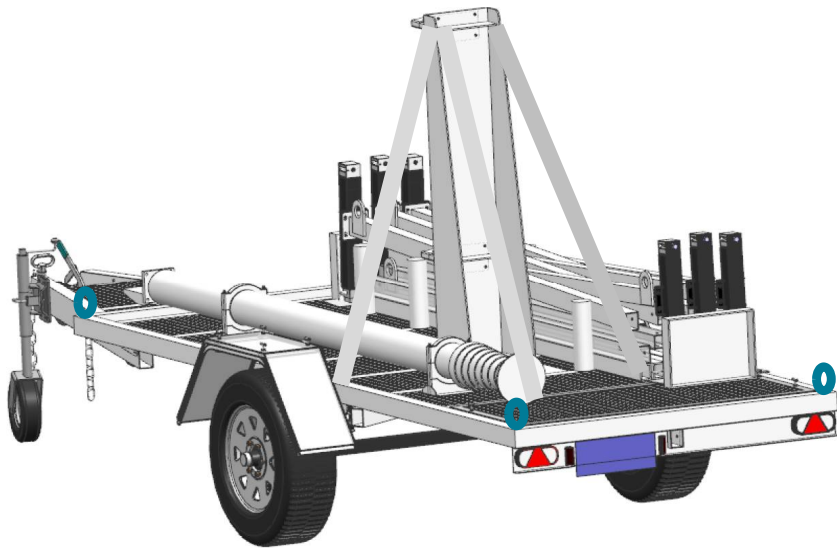
I would like to begin by acknowledging the traditional custodians of the Noongar lands and waters where I grew up, live and work, in particular the Yuat peoples, the custodians of the Pinnacles area who have so generously shared their knowledge and allowed us to conduct our research on their lands.

I offer my respect to their elders past, present and emerging as we work together towards a just, equitable and reconciled Australia, and one where we recognise and build our shared knowledge and experiences. I hope that together, we will achieve outputs that allow us to manage the lands into the future sustainably.



Platform

- Customised trailer designed to minimise land disturbance and ease transportation of the mast



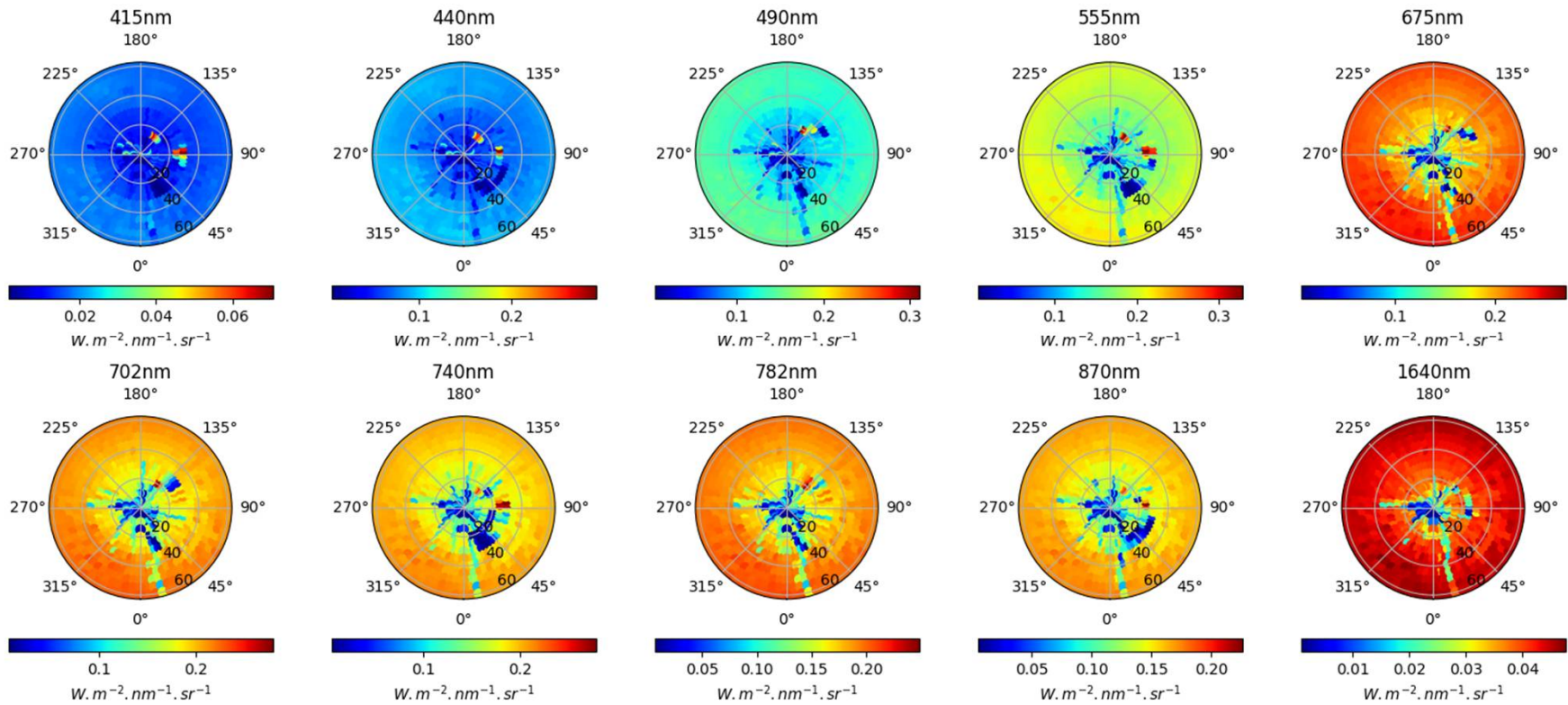
Deployment 21st March 2022

- New robot replaced initial robot (service after 3 years intermittent use)
- Local traditional land owners and Park Rangers assisted
- Cable entanglement after initial deployment
- Pyranometer Earthing cable issues



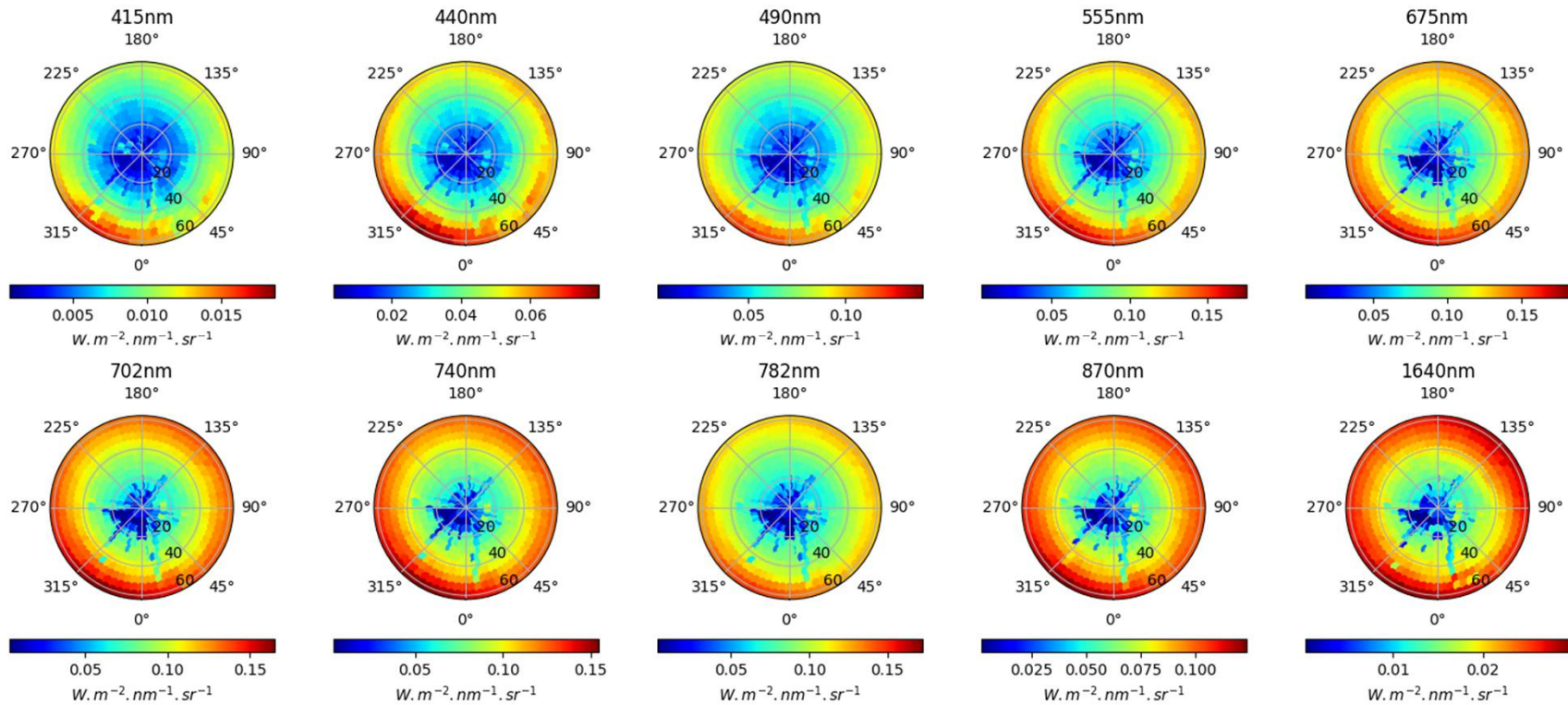
March 24th 2022 Pinnacles surface radiance 3:52 UTC

2022-03-24(01:54:26) - 2022-03-24(03:52:32)



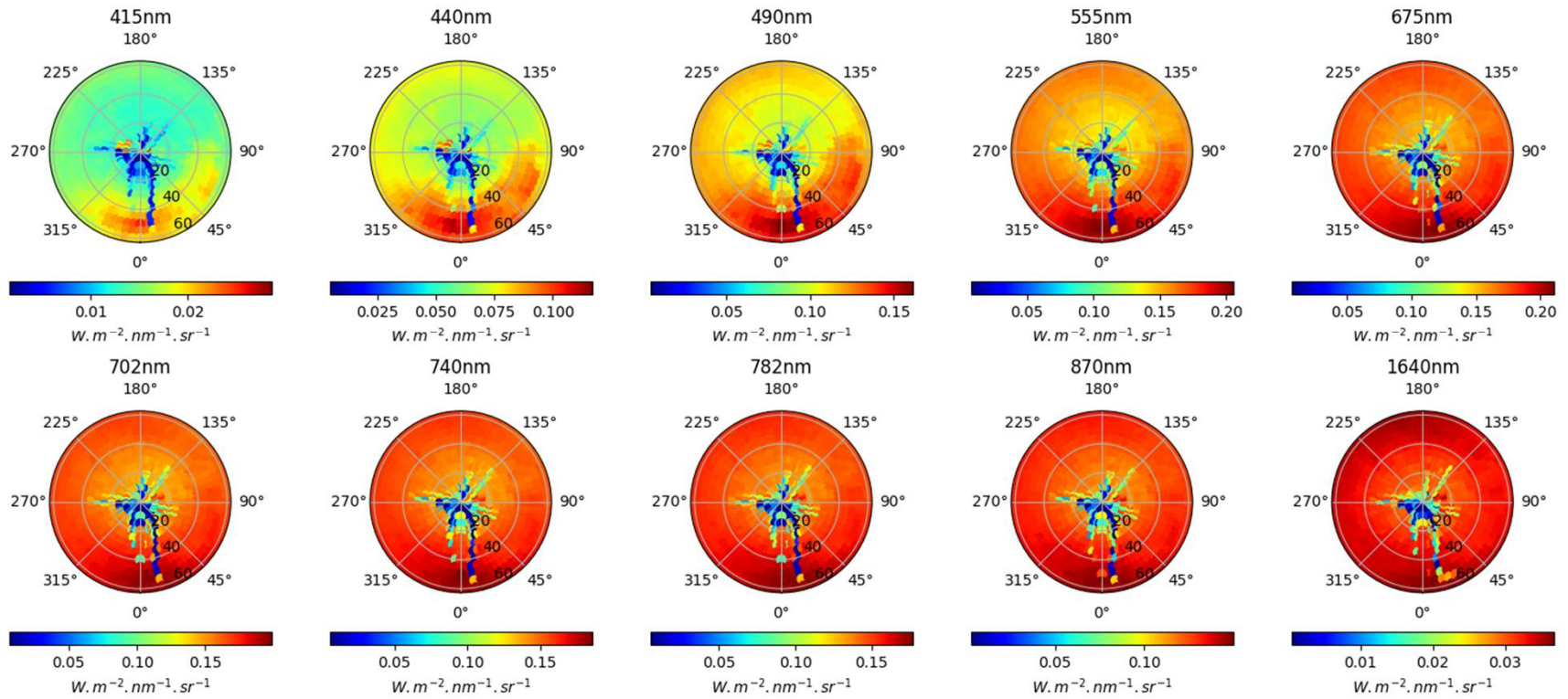
July 27th 2022 Pinnacles surface radiance 2:18 UTC

2022-07-27(00:21:40) - 2022-07-27(02:18:39)



July 27th 2022 Pinnacles surface radiance 4:42 UTC

2022-07-27(02:44:55) - 2022-07-27(04:42:33)



Site improvement and cable management

- 12th April 2022
- New cable routing (cable tied to vertical portion of the robot) deployed.
- Sand erosion abatement (jute matting under trailer)



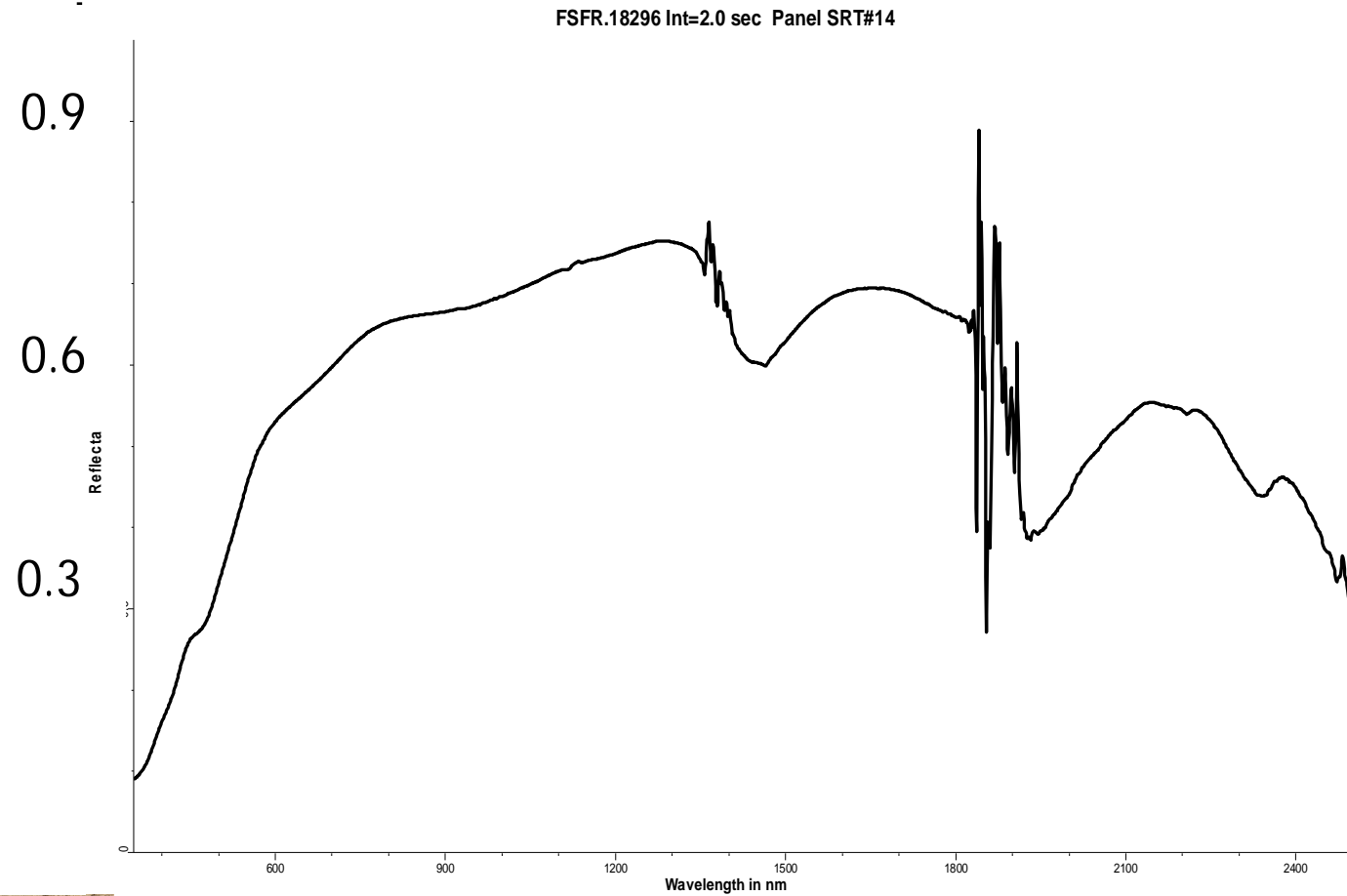
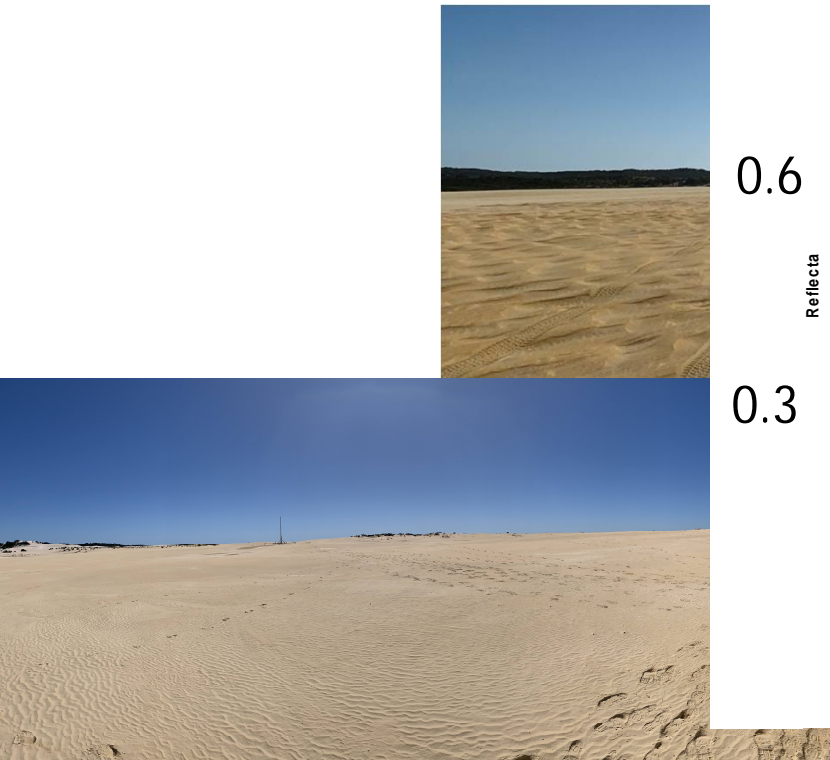
Cable entanglement ceased

- Cable entanglement ceased to be an issue after 1st of May 2022.



EnMap Overpass 20th August 2022

- Campaign measurement
- Moist sand



Next steps

Working towards admission into CEOS WGCV RadCalNet for automated infrastructure

- Documentation preparation;
- 6 months data acquisition, collaborating with CNES on data processing;
- Final document submission;
- Addition of GMX-600 weather station;
 - rainfall, wind speed and direction, temperature, relative humidity, barometric pressure, absolute humidity, air density and wet bulb temperature readings
- Fully operational towards 1st quarter 2023?
- Parallel key activities in the next 6 months
 - Campaign-based ground surface reflectance measurements in contribution of EnMAP commission phase L1 validation;
 - Opportunities for cross calibration with DESIS, PRISMA, S-2, Landsat
- Future instruments planned
 - Upgrade to CIMEL hyperspectral or equivalent;
 - Skyview camera testing prototype in collaboration with AIST (http://pen.envr.tsukuba.ac.jp/index_e.html);
 - Deployment of extended range HyperNet



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Coarse spatial resolution optical site

- 1) Hyperspectral and SAR data analysis;
 - a. Using results from Landsat analysis performed by Caccetta & Ong and new analysis using data from the last 10 years, identify target areas for further analysis of contemporary IS data;
 - b. Source temporal PRISMA, DESIS including potential new data from EnMAP;
 - c. Identify opportunities for NovaSAR acquisition and/or availability of S-1 data to provide additional information that may be useful for discrimination/characterisation;
 - d. Determine 1-2 priority/key areas (and 3-4 backup) for further field investigations;
- 2) Design experiments and develop plan for field investigation of key target areas;
 - a. Access and permissions;
 - b. Equipment requirements;
 - c. Travel logistics;

Workshop on validation of surface reflectance across vegetation

22 August 2022

Aim to develop an Australian community approach/guideline for the collection of validation data using UAS and other platforms for the validation of satellite-derived surface reflectance products over vegetated areas

Underlying goal:

- 1. Gather the Australian EO community together;*
- 2. To develop a EO community project & find mechanisms for funding it;*
- 3. To showcase Australian EO capabilities & infrastructure (sites, facilities, labs);*



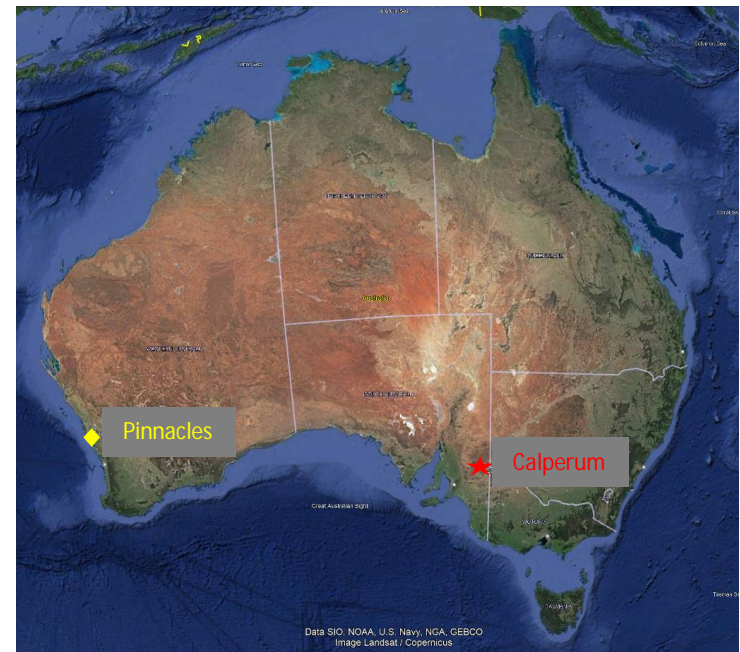
Image credit:
https://www.nicepng.com/downloadpng/u2e6r5r5o0u2a9i1_handprint-tree-tree-with-hand-prints/

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31 registered participants
7 organising team
4-6 fly-ins 😊

SRIX4Veg-II Proposal

- Proposal for extension of SRIX4Veg
 - Bringing SRIX4Veg to Australia
- Considerations
 - More complex heterogenous cover types;
 - Inclusion of profilers, assessments of complexities & associated uncertainties?
 - Permanent automated systems on towers?
 - Extension beyond VNIR?
- Site
 - TERN/LPV supersite Calperum (<https://www.tern.org.au/tern-observatory/tern-ecosystem-processes/calperum-mallee-supersite/>, <https://www.tern.org.au/site-of-the-month-calperum-mallee-supersite/>)
 - Mallee semi-arid ecosystem, fringing the River Murray floodplains on Calperum Station, South Australia;
 - Comprises undulating mallee woodlands and riverine vegetation alongside the river
- Timing
 - week of 27th March 2023
- Logistics
 - Strong in-kind support from TERN
- Numbers
 - Currently 6 local teams





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