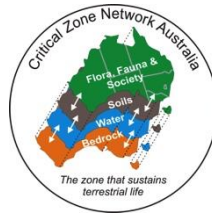




TERN
OzFlux
Land-Atmosphere Observatory



TERN
SuperSites
Ecosystem Change Observatory

Quarterly Newsletter

Issue 16, July 2017

SuperSites and OzFlux Update

Welcome to the 16th edition of the TERN SuperSites/OzFlux and CZO AU Newsletter.

With the release of the [2016 National Research Infrastructure Roadmap](#) the TERN Board, having received advice from the TERN Scientific Advisory Council and Executive Group have decided on a restructure strategy for TERN to meet the requirements of government into the future.

The Board considered how to meet the needs of Australia into the future and the goal of a National Integrated Environmental Prediction System within the available budget. TERN funding over the next 6 months will be allocated to plan and achieve four focal pillars for TERN:

- Data and data services
- Landscape assessment
- Ecosystem surveillance at plot scale
- Targeted site-specific ecosystem process data

All existing TERN facilities will change and be transitioned to a new integrated TERN shaped around these pillars. To achieve this transition within the funds available, TERN facilities will receive current levels of funding from July 1 to Dec 31 2017. This period will be used to discuss and facilitate the re-structuring of TERN.

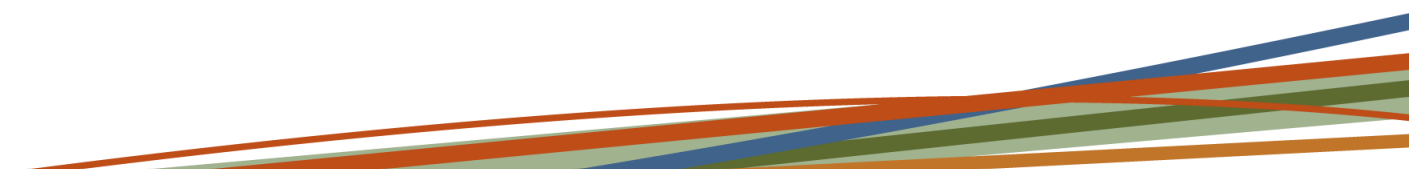
TERN's Coastal Facility will be decommissioned in line with the Roadmap's recommendations on IMOS and coasts. The Facilities (but not necessarily all activity represented by them) of eMAST and LTERN will not be funded from 1 January 2018 and TERN Central will work closely with these facilities, their host institutions and partners to develop appropriate plans for this decommissioning.

As an immediate priority, the Science Advisory Committee will work with TERN Central to undertake a comprehensive review of TERN's data systems to present a clear plan to transition TERN's existing systems towards a central coordinated capability, which will form the basis for the 'Data and data services' pillar. This review will take place in the next 2-3 months.

SuperSites and OzFlux will continue as usual over the next six months with some minor changes. The funding for the Whroo site will be transferred to Boyagin, WA to ensure that a dry eucalypt site remains visible in the network and Kwaratha's SuperSite funding will be transferred to Gingin, WA to ensure that all OzFlux sites are also SuperSites. Karawatha will be permanently marked out to allow re-census of plots and remote sensing work in the future.

The SuperSites' developed Sentinel Phenocams are in a late stage of development with prototypes sent to Cumberland Plain and Great Western Woodland SuperSites for field testing. Sony has confirmed that there is a firmware problem with 8 MP lenses that have been supplied to us. We will be trialling alternatives in the near future to ensure that we do not lose momentum while awaiting a response from the manufacturer.

NASA and the CEOS Working Group on Calibration and Validation have acknowledged the collaboration with TERN, NEON and ICOS to improve coverage of ground truthing data for satellite derived LAI products. SuperSites' biannual LAI assessments are a major contributor to this effort. In another of these Cal/Val activities, TERN and NASA have recently executed a new agreement to share OzFlux data (fluxes, meteorology and soil temperature/moisture) with the ECOSTRESS mission (land surface temperature, evapotranspiration, water use efficiency). As with the NASA SMAP mission, data sharing will be made available via the data portal for those who need it.



The Fluxnet2015 synthesis meeting was held in Berkeley, California last month (June 2017). TERN OzFlux was well represented at the meeting, with James Cleverly, Jason Beringer, Peter Isaac and Elise Pendall in attendance. James and Jason presented a plenary update on TERN OzFlux, and Peter represented our network in the panel discussion on cross-network collaboration. Please visit <http://fluxnet.fluxdata.org/community/fluxnet-workshop/> for further information and to view the presentations.

On June 8 the TERN Scientific Advisory Council met in Cairns while the TERN board inspected the TERN FNQ Rainforest SuperSite at the JCU Daintree Rainforest Observatory and the Daintree Discovery Centre. The TERN board convened the following day and two members of the TERN SAC took the opportunity to visit the FNQ Rainforest SuperSite, Robson Ck to hear about the collocated SuperSite, OzFlux and LTERN infrastructure at Robson Ck and the nearby AusPlots Forests and LTERN (Connell) plots.

A

B



A) CSIRO's Andrew Ford and Matt Bradford show TERN SAC members Alex McBratney (UniSyd) and Ashley Sparrow (CSIRO) around the Robson Ck TERN LTERN Tropical Rainforest plot. (Photo M. Karan). B) Members of the TERN board at the Canopy Crane, JCU Daintree Rainforest Observatory, Cape Tribulation. (Photo C. Stubbs).

TERN has been working to more closely integrate with other NCRIS Facilities as part of the Roadmap process. In the course of this the Australian Plant Phenomics Facility (APPF) has commenced developing an MOU with TERN focussing on the sharing of technology between APPF and SuperSites (software, hardware developments) around phenocameras and with AusCover around point clouds. Additionally an API (Application Program Interface) that will work across NCRIS facilities, in particular sharing data between TERN and ALA is under discussion.

Software: for those SuperSites who do not have software to listen to their Wildlife Acoustics recordings in .WAC format Wildlife Acoustics have made their software SongScope available (this was their previous commercial product).

Windows Version: <http://www.wildlifeacoustics.com/downloads/SongScopeInstaller-4.1.5a.exe>

Mac Version: <http://www.wildlifeacoustics.com/downloads/songscope-4.1.5a.zip>

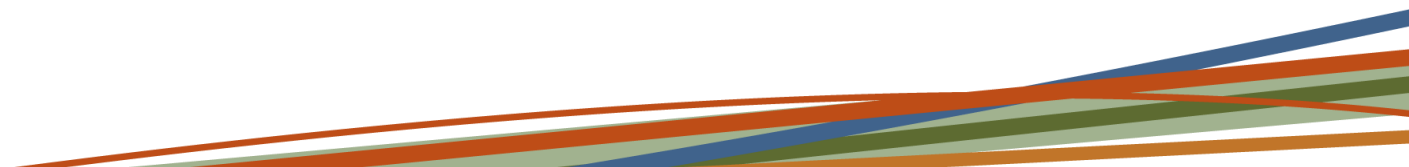
Reminder: TERN OzFlux-SuperSites workshop, conference and meeting

6-15 November, 2017

The OzFlux annual workshop and conference will be held at Western Sydney University 6–14 November, and the SuperSites PI meeting will follow on 15 November. See the website:

https://www.westernsydney.edu.au/hie/events/annual_ozflux_meeting_2017

or contact Elise Pendall for details on the OzFlux workshop/conference.



CZO Central Update

Main Range Critical Zone Observatory

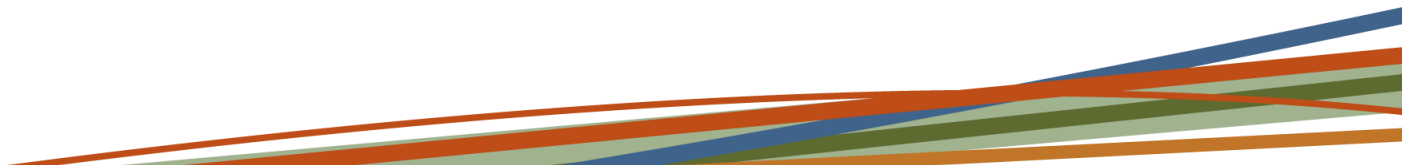
Continuing the international collaboration in disentangling the roles of biota and climate in driving weathering and nutrient cycles in shale-derived soils, Dr Talitha Santini (UQ) hosted a visiting research student, Sara Parcher, from Dr Ashlee Dere's group at the University of Nebraska-Omaha, for two weeks in March to complete field work and analyses at the Main Range CZO site. Sara's field work included collection of samples to characterise microbial community composition and function, root density and branching, and element concentrations in leaf litter. This field work builds on an August 2016 sampling campaign along the USA Critical Zone Observatory network's shale climosequence stretching from Pennsylvania to Puerto Rico.

Two Honours students (Rhyenn Buckley and James Hardcastle) will be joining the CZO team in the next few months to support ongoing work in vegetation mapping and monitoring across the site, with special focus on soil-vegetation feedbacks across the rainforest-eucalypt forest ecotone, and the role of tree fall gaps in driving floristic change.

Talitha Santini, Ashlee Dere, and other collaborators from the US and European CZO sites (Grit Steinhofel, Pam Sullivan, Claude Hillaire-Marcel, Mark Baskaran) will be co-convening a session at the upcoming [Goldschmidt 2017](#) geochemistry conference, August 13-18 in Paris, France, on "Tracking Earth Surface Processes: Isotope Tracing of Particulate and Dissolved Fluxes".



The field team at Main Range CZO in Australia, March 2017. From left to right: Salome Nyangari, Sara Parcher and Talitha Santini.



News from around the SuperSite and OzFlux networks

Alice Mulga

The Alice Mulga SuperSite received a deluge in just over one month last summer. Over the period 20 December 2017 to 27 January 2017, the site received 544.4 mm of precipitation which seriously washed out the tracks near the Woodforde River. Precipitation was widespread across central Australia, causing flooding over the cracking clay of Sturt Plains to the North of the SuperSite (Hutley pers. comm.) with hailstorms in Alice Springs to the South. This exceptional round of storms stimulated noticeable increases in daytime NEP, which will be explored as data processing progresses.

SuperSite Infrastructure/Monitoring Status:

- AU-ASM ticking over, delivering data for processing to L6
- AU-TTE ticking over, delivering data for processing to L5
- Band dendrometers at AU-ASM serviced and catalogued
- Litterfall baskets collected
- Summer collection of SuperSite datasets (Acoustic recordings, phenocam images, canopy LAI, photopoints).

Data-sharing:

- NASA SMAP, updated through January 2017 for AU-TTE and AU-ASM
- 158 downloads from FLUXNET2015 since 18 November 2016 (as of 5 March 2017)
- Yuhan Rao, University of Maryland USA & NOAA; radiation study, request for 1-minute radiation data fulfilled via TERN OzFlux data portal
- Maria Anna Martin, Karlsruhe Institute of Technology Germany; ESA GlobTemperature, request for 1-minute radiation data fulfilled via TERN OzFlux data portal

Visitors to SuperSite:

Visitors to the SuperSite during the period 4-12 April 2017 included: James Cleverly, John Gallego (PhD student, UTS, on non-SuperSite groundwater-vegetation project in NSW) and Jennifer Peters (PhD student, WSU, collection of branch samples for hydraulic conductivity study)

Calperum Mallee

SuperSite Infrastructure/Monitoring Status:

- Canopy cover (LAI) images taken from Mallee site and Floodplain site in January.
- Phenocams and Song Meters serviced in December and January.

- Tower angle phenocam replaced with another site camera.
- Microphones on both sound meters need replacing.
- All recent data is in process of being uploaded.
- OzFlux tower working well and data processing is up to date.
- Termite experiment blocks will be deployed in next 2 weeks.

New Projects/Collaborations:

Earthwatch 2-week resident monitoring with two student challenge expeditions each with 17 students. Activities included pitfall trapping for small vertebrates and invertebrate predators, surveyed vegetation structure at pitfall sites, black box tree condition assessments with Adelaide Uni - part of which have been to establish ground truth sites for MDBA remote sensing project to assess tree condition across the whole River Murray.

Cumberland Plain

A draft access map for CBLP has been developed. Final version will be placed at the entry of the core 1 hectare and included in induction material before the site is accessed. In addition there is a plan to mark the core hectare and seedling plots with a UV-resistant tape (minimizing obstruction of the local kangaroos).

An inventory of the greater Cumberland Plains area (approx. 300 ha) was carried out in Sept/Oct to map canopy structure and composition. The aim is to create an empirical method to hind cast LAI.

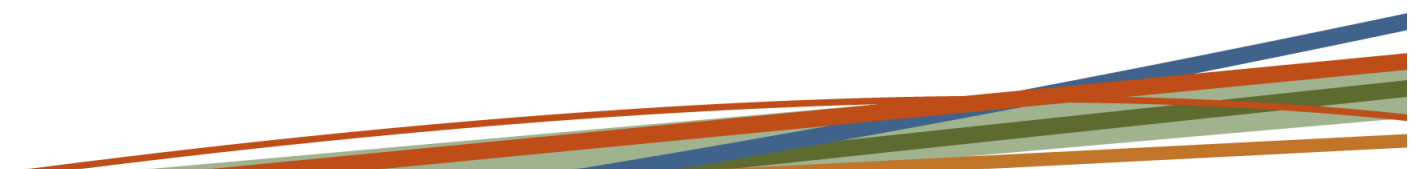
The OzFlux workshop and meeting will be held at Cumberland Plain SuperSite in Nov 2017 with the SuperSites Face-to-Face meeting held on the last day.

SuperSite Infrastructure/Monitoring Status:

- Next vegetation surveys (DBH, LAI, seed plots) were carried out in the first week of May (delayed due to recent flooding of site).
- All sensors working fine
- The mobile flux tower is deployed in a pure stand of *Melaleuca decorana* to compare with fluxes from predominant eucalypt areas.

New staff/students

- Dr. Anastasia Dalziell has been hired part-time for 6 months to analyse the acoustic data from our sensor array.
- Daniel Metzen continues as our part-time research assistant to assist with vegetation sampling and data analysis.



Standard Data collection

- Bird survey done, uploading of data pending.
- We are planning to tidy up the core hectare (e.g. replacing pegs, flagging tape and signs) in the near future.
- Acoustic sensors replaced (to SM4s) and operating fine.
- Flux tower operating normally, except we had to send the CSAT back for calibration (it has been operating for ~5 years).

New projects/collaborations planned or started

- We are working on an empirical model to predict LAI from Landsat imagery using a field data set collected across the woodland area surrounding the supersite and an airborne LiDAR data set (Nov 2015, courtesy UNSW School of Aviation). This will allow us to create a LAI image time series for the greater supersite area from the Landsat archive (possibly going back several decades).
- Anne Griebel has set up a sap flux project near the core hectare to quantify how mistletoe infestation affects the water relations of *Eucalyptus moluccana* and *E. fibrosa*. Sap flux from melaleuca trees are also being monitored nearby.
- The mobile flux tower was deployed in a pure stand of melaleuca in Jan. 2017, about 100 m from the existing flux tower to characterize differences in fluxes between Eucalypt- and Melaleuca-dominated areas.
- Under-canopy fluxes have been monitored at ~1.5 m height since January, immediately adjacent to the main tower. The CSAT on this under-canopy system was moved to the top of the tower in mid-March while the older CSAT is being calibrated and serviced.
- Tea bags were buried at the site from November 2016 to February 2017. Data will be sent to Mirko in the coming days/weeks.
- Termite baits were laid on the site in ~August 2016 by Jeff Powell. Retrieval will take place on schedule.

Visitors to SuperSite

- We ran a practical of our 3rd year Ecosystem Carbon Accounting unit near the site, in which students have measured and sampled trees, shrubs, grass, litter and soil to estimate the sizes of the associated carbon pools.

FNQ Rainforest

Robson Creek

SuperSite Infrastructure/Monitoring Status:

- SuperSites monitoring continuing, birds LAI etc.
- Robson Creek bridge was removed at the end of 2016 and the water sensors were removed. The council agreed to leave the protective pylon in place and the

YSI sonde will be redeployed at the old location at the start of August.

- One sensor (depth, T) in Robson Ck bore apparently failed but the factory (Odyssey) could not find the intermittent fault and so it has been redeployed.
- Acoustic sensor SM2 failed in the middle of the wet season and was replaced.
- Tea Bag Index tea bags have been deployed and collected.
- Termite baits for the Decomposition experiment have been deployed.
- Faunal survey campaign (Steve Williams' group) at Robson Creek has been delayed due to wet weather and may now be surveyed in Sept.
- School for Field Studies have carried out a Coarse Woody Debris survey.

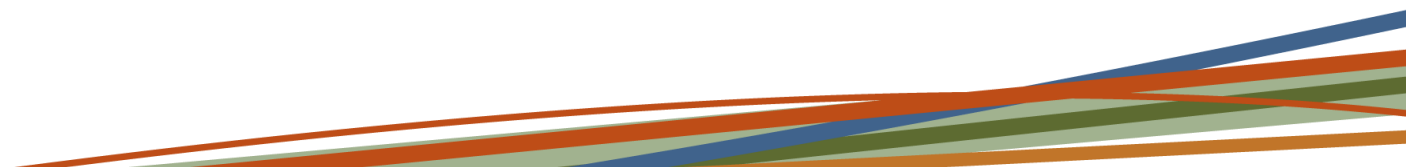
Visitors to SuperSite:

Recent visitors included: Geoff Monteith (Qld Museum) for dung beetle surveys (3 years data at Robson), 35 years data in FNQ, Andrew Millerd (QPWS) and the Australian Army (on exercises).

Daintree

SuperSite Infrastructure/Monitoring Status:

- TERN data collected to end of 2015-16 contract and ongoing.
- Lost comms to Licor instrumentation on DRO Crane tower in late Dec due to broken fibre optics cable. Repaired. Comms still flakey due to poor satellite signal during bad weather.
- Hardware (HDD in netbooks) and O/S replaced at both Cow Bay and Robson Creek on the flux towers.
- Comms issues currently being solved at Cow Bay and Robson Creek that have resulted from the upgrades have caused problems with both live flux feeds and Stardot phenocam feeds.
- Cow Bay soil pit had a fault where the multiplexer failed, had to be replaced. **Spares are now non-existent for most hardware.**
- DRO new weir, auto water sampler and stream sensors have been installed. YSI sonde (Han she Lim JCU) apparently damaged by a proximity lightning strike on the crane was repaired and redeployed.
- Monthly water sampling (chemistry) continuing at the DRO.
- DRO Leaf litter collection continues.
- Camera traps (Reconyx) tested at DRO and Robson Creek.
- New Sentinel phenocams in testing phase at Cow Bay and Cape Tribulation.
- Bore at DRO is operating fine, weak wet season recharge.



- DRO Kieran Walker, Masters student from Imperial College London has completed his work on soil respiration.
- ARC Discovery Grant project looking at vulnerability to water stress of large trees compared to small using a number of sap flow meters at DRO and Robson, starting after June.
- Drought experiment indicating more wood borer damage under drought shelter. ARC Discovery proposal submitted to investigate further.
- Soil and sapflow data being analysed but required big data management, spread sheet with 3×10^6 lines.
- Drought experiment to continue unaltered, new panels purchased to replace damaged panels. Funding required for ongoing maintenance.
- Alice Farrelly, Masters student jointly supervised by Prof Michael Bird (JCU) and Prof Jon Lloyd (Imperial College London) is looking at DIC in creek to finish off the DRO fluvial C budget. Also looking at event based measures in detail. Prospect for a publication.
- 5 year vegetation resurvey due for Cow Bay about mid-year, perhaps with Earthwatch volunteers.
- New (local TOs) owners of Daintree Discovery Centre. 10 year agreement in place to keep monitoring on site. Termite baits for Decomposition experiment deployed at DRO and Robson Creek
- Tea Bag Index deployed at DRO and collected.

Visitors to SuperSite:

Recent visitors to the site included:

- Small World Journeys - NUS Singapore
- Drought experiment - Kaylene Bransgrove, Susan Nunske, Yoko Ishida, Susan Laurance, Lain Pardo, Andrew Gray-Spence, Mari Pasanen, Penelope King, Celia Colin, David Tng, Deborah Apgaua
- Claire Gely - Griffith University
- JCU undergraduate classes - BZ3745, EA3008/5090
- JCU staff - Han She Lim, Niels Munksgaard, Dave Sellars, Michael Bird, Jeremy Van Der Wal, Diane Rowe, Russell Joshua, Aditya Vaddiparthi,
- Gemma Horner - phenology
- David Rentz - Orthoptera
- Sydney Brannoch - Case Western Reserve University
- Indian University VIPs - JCU
- Heng Lin Yeap - CSIRO
- Angel Daivd Popa Baez - CSIRO
- Tim Karels - California State University
- Fritz Hertel - California State University
- Michal Polak - University of Cincinnati
- Jane Royer - Department of Agriculture and Fisheries
- Melissa Starkie - Queensland University of Technology

- ANU 2nd and 3rd year biology course – Adrienne Nicotra with assistance of JCU (Susan Laurance, Lucas Cernusak)
- Mossman State High School - Stacy Weber, Dan Kaggelis, Rob Callin
- Terri Mulqueen - Smithfield State High School
- Lucas Joppa - Microsoft
- Tara Bennett - Tourism Port Douglas
- Tourism Tropical North Queensland - Claudia McFadden, Mikala McDowall, Sam Sakamoto, Chris Johnson

Great Western Woodlands

SuperSite Infrastructure/Monitoring Status:

- Malfunctioning of equipment is becoming problematic with estimated total cost \$5000 including travel to replace. We don't have these funds remaining in the budget this year.
- Salmon gum plot LAI photos and five-point photos collected.
- Acoustic bird monitors downloaded (microphones need replacement soon).
- Groundwater depth sampler broken.
- Overstorey-oblique and understorey-oblique phenocams are working but understorey-oblique has a date-time problem and overstorey-oblique appears slightly blurred. Overstorey-nadir is non-operational – we have a new model from SuperSites for replacing it in September.
- Solar panels and lead-acid batteries stolen from Gimlet Sapflow plot – can be replaced with spares. Proposed (to DPaW) lockable gate on access through fence to plots.
- Salmon gum sapflow plot had a problem with the low voltage cut-out - needs new solar regulator.
- Batteries in all dendrometers have been changed and the S/S band has been adjusted on some trees.
- Litter traps have been emptied. Litter traps need replacing due to aged flywire.

DroughtNet:

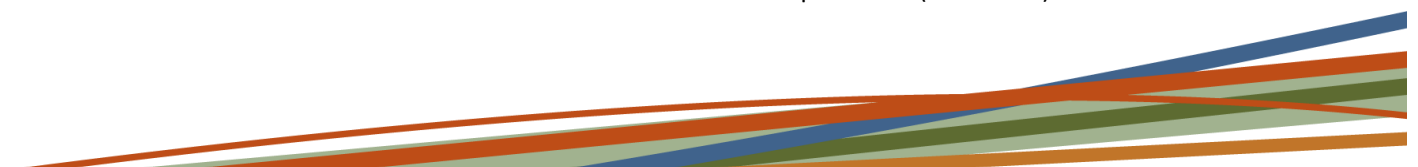
- All plot photos collected at DroughtNet sites.
- Plot J18 has lost one roof panel off the rain-out shelter. Spare roofing being sought.

Honours project:

- Honours student Renae Boyd completed her honours project looking at differences in soil, light and temperature environments and plant physiology beneath trees, in gaps and in patches surrounding recently-fallen trees.

Sandplain plots:

- SWATT beta analysis paper led by Neil Gibson *et al* published (see below)



GWW in the news:

- Rain no quick fix for woods. The West Australian and The Kalgoorlie Miner, 21 Feb 2017
<https://thewest.com.au/news/regional/rain-no-quick-fix-for-woods-ng-b88388329z>
- TERN Newsletter article: Conserving blink-and-you'll-miss-it biodiversity. March 2017
<http://www.tern.org.au/Conserving-blink-and-you-ll-miss-it-biodiversity-bgp4185.html>
- Radio interview with Nathan Morris 23rd February 2017 on Goldfields-Esperance WA ABC Regional.

Litchfield Savanna

SuperSite Infrastructure/Monitoring status:

- One month data gap due to a lightning strike in November.
- Termite baits deployed, fire mitigation required to protect them.
- National Parks will be spraying for Gamba grass in the wider Litchfield Park. Gamba grass incursions into SuperSite 5 km x 5 km to be controlled by CDU with spray campaigns in May.

Visitors:

- Dry season arboreal mammal survey carried out (study comparing prevalence with fire history)
- Jennifer Peters (PhD student, WSU, collection of branch samples for hydraulic conductivity study)

SEQ Peri-urban

Samford

SuperSite Infrastructure/Monitoring status:

- Acoustic data updated
- Bird survey data, 2016
- Summer (2017) LAI images
- Seedling transects remeasured
- Coarse woody debris remeasured
- Species and functional traits list updated
- Teabag decomposition experiment finished and material collected and measured (decomposition and soil data) for 2 sites
- SuperSite
- Forest CO₂ automated chambers site
- Installation of termite experiment within the SEQP SuperSite
- Continued consolidation of all Samford Ecological Research Facility data, including SuperSite datasets and other data collected within the SuperSite boundaries (soil moisture, CO₂), into central database
- Ant samples collected March/April 2017
- Trial Reconyx camera traps have been received.
- Annual community information evening held at SERF

- Weed management activities in 30 ha forest, mainly lantana.

Karawatha

SuperSite Infrastructure/Monitoring status:

- PBio Plot Maintenance: currently preparing to purchase replacement star pickets for maintenance and replace mid-line markers on 32 LTER plots between now and end of June.
- Tea Bag Index decomposition project: tea bags set up in February with recovery of tea bags from 32 plots in April.

New Staff/Students:

Charlie Townsin will take over the running of the sound recorders, photos and data management from Greg Lollback.

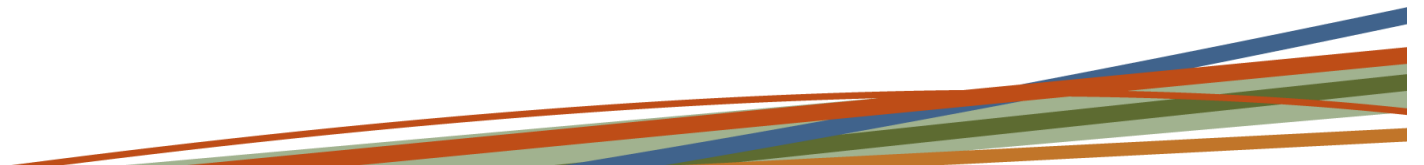
New Projects/Collaborations:

Submitted a Citizen Science Grant \$500k application for Climatewatch style indigenous STEM project at Karawatha SuperSite in early March 2017. This is a joint application with Pullenvale Environmental Education Centre and Youth+ Australia, with support from the Brisbane City Council.

Tumbarumba Wet Eucalypt

SuperSite Infrastructure/Monitoring status:

- 2 fieldtrips to the site just prior to Christmas and in February.
- 5 point photopoint images were taken in December and the LAI images taken on the February trip. On both occasions there were opportunistic plant survey and plant herbarium collection of the ground and shrub layer summer flowering and seeding species and have significantly increased the plant species list but need to confirm identifications so data will be uploaded once this is done.
- Tea bags were installed in December as part of the effects of temperature on decomposition experiment and will be extracted on the next trip on 11th April.
- We have purchased 4 more 128GB SD cards for the Song Meters so we can swap cards at site visit rather than having to do file transfer; this is much quicker and transfer speeds weren't always as fast as they should be. The data is all up to date and recently uploaded to 'data.bioacoustics.supersites.net.au'
- Phenocam data uploaded to 'data.bioimages.supersites.net.au'
- The new NAS system for Hyperspectral data seems still to be working well, with the data final storage progressed further and checking systems still being bedded down.
- Comparison of acoustic data since 2012 to 2016 has revealed some degradation of the recordings over that time (some interference, loss of higher frequency



and more muted bird calls) so are in the process of ordering and replacing microphones. Currently investigating a non-automated investigation of acoustic data to inform the bird species presence and potentially some of the TERN related questions around 1. What are the current patterns and dynamics of terrestrial (and aquatic) fauna? 2. Are there general patterns in changing abundance and/or biodiversity across the network? 3. Can we determine the drivers of faunistic change?

- Request put to NSW Forestry not to log across whole coupe over next decade, preferably set aside 900 ha, or to harvest in such a way that flux tower measures will still be useful. May be able to negotiate a deferral to accommodate NASA data delivery.

Victorian Dry Eucalypt

Wombat

SuperSite Infrastructure/Monitoring status:

The flux tower equipment at the Wombat Flux tower has been down for the last few months. Repairs have commenced and the CO₂ flux monitoring system is back online but other sensors are yet to be deployed. The sensors had to be re-positioned higher up on the tower due to tree growth and we required re-engineering of the instrument mounts. A break-in at the site that resulted in the climbing gear being stolen did not help. Many thanks to Ian McHugh and Cecilia Ewenz who were a great help in getting the tower back.

New projects:

A new ARC Discovery project to investigate the "Temperature sensitivity of soil respiration and its components" is a collaboration between WSU and UoM and includes a number of Supersites will commence shortly. Advertisements for a postdoc to be based at WSU are out and interviews will commence shortly.

New Staff/Students:

Alison Bennett (PhD student) started in March.

Dr Philipp Nauer will take up a research fellow position for 18 months working on the mechanisms of methane uptake in forest soils. He will work at Wombat Flux to measure in detail soil methane profiles under drought. We will install rainfall exclusion plots on site and monitor the impact of soil drying on methane uptake dynamics across the soil profile

Whroo

Feasibility of maintaining OzFlux activities on site are being investigated.

Boyagin

Funding is available to build a new tower. WA Biodiversity Science Institute will become involved with the site.

Warra Tall Eucalypt

SuperSite Infrastructure/Monitoring status:

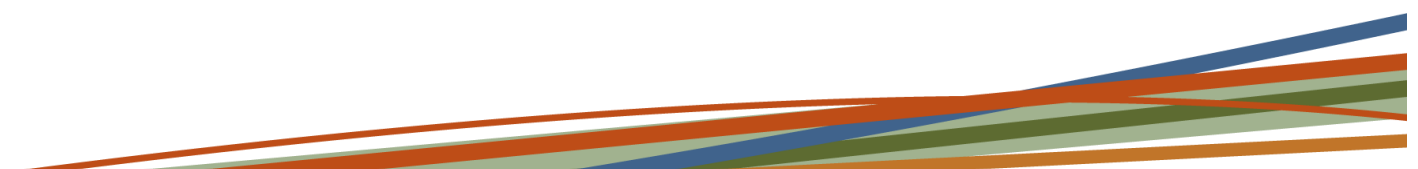
- Flux tower – Met, micro-met and profile instruments on tower are all working well and have provided a near-continuous 30-minute data stream over the December–March period. Four soil moisture sensors are misbehaving and cause is being investigated.
- 3-G modem installed on the top of the flux tower was found to be insufficiently reliable to use for data transmission. Will now proceed with radio link to microwave tower (Blue Hill) to transmit flux data (include in 2017-18 OzFlux budget)
- Obtained summer 2017 LAI photographs (DHP) and photo-point photos. DHP photos still to be processed.
- Acoustic recorder operated continuously over period – replaced microphones (one channel has been dodgy for some time).
- Annual survey of birds along the Bird Track route completed.
- Instruments installed in Warra Hydrology gauged stream are all operating. Work has commenced in harvesting roadline into Warra 4A (in catchment of King and Swanson Cks) in preparation for summer 2017-18 harvest.
- Retrieved and processed the first 12-month sample of the deployed wood samples from the Warra site in global study on climate drivers of wood decomposition by invertebrates (Sebastian Siebold, Munich University of Technology).
- Installed SuperSites wood decomposition treatments at Warra in December 2016.
- Completed Warra Tea Bag Index study (deployed Dec 2016 – retrieved late March 2017).
- Rebuilding of Warra web page is in progress.

New Staff/Students:

Richard White (University of Tasmania – School of Biological Sciences) commenced a Honours study examining the potential of high resolution LiDAR (using AusCover 5 x 5 field site at Warra) to differentiate wet sclerophyll and rainforest understoreys in wet *E. obliqua* forests.

Visitors:

- December 2016 – hosted a tour of Warra for all supervisors and students involved in ARC Linkage – 'New approaches to sustainable forest management'.
- March 2017 – hosted a tour of Warra with 25 staff from Tasmania Parks Service, Department of Primary Industries and Tasmanian Healthy Landscapes group.
- March 2017 – hosted a visit to Warra by Tasmania's Minister for Forests.
- March 2017 – hosted a visit to Warra by Andrew Hughes and Yoav Bar-ness to progress a Bookend Trust Educational project – "Treehouse Challenge" to



be held in August 2017. One of three tree canopy classrooms being used in the project will be at the Warra Hydrology Site (in a tall, mature *E. obliqua*).

- March 2017 – Jennifer Peters (Western Sydney University) conducted a second summer field campaign at Warra collecting data for her PhD study on drought vulnerability in Australian forests.
- March 2017 – Jamey Furlaug (UTas) visited 1-ha plots in Warra to collect fuel accumulation samples being used in his PhD study examining fuel accumulation rates in wet eucalypt forests at different times after disturbance.
- March 2017 – Richard White and Liu Minxing visited Warra to commence planning for upcoming field campaigns.

Recent Publications

Baker, SC, Grove, SJ, Wardlaw, TJ, McElwee, DJ, Neyland, MG, Scott, RE & Read, SM (2017) Monitoring the implementation of variable retention silviculture in wet eucalypt forest: A key element of successful adaptive management. *Forest Ecology & Management*, Accepted 28th Mar 2017.

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Fest, BJ, Hinko-Najera, N, Wardlaw, T, Griffith, DWT, Livesley, SJ & Arndt, SK (2017) Soil methane oxidation in both dry and wet temperate eucalypt forests shows a near-identical relationship with soil air-filled porosity. *Biogeosciences* 14: 467–479.

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Upcoming Events

21-25 August, 2017

The 12th International Congress of Ecology (INTECOL 2017), Beijing, China. See [website](#) for details.

25-28 September, 2017

Australian Rangeland Society 19th Biennial Conference, Port Augusta, South Australia. See [website](#) for details.

6-15 November, 2017

TERN OzFlux-SuperSites workshop, conference and meeting, The OzFlux annual workshop and conference will be held at Western Sydney University 6–14 November, and the SuperSites PI meeting will follow on 15 November. Contact Elise Pendall for details on the OzFlux workshop/conference.

26 November-1 December, 2017

EcoTAS 2017, The joint conference of the Ecological Society of Australia and the New Zealand Ecological Society, Cypress Lakes Conference Centre, Hunter Valley, NSW. See [website](#) for details.

5-9 February, 2018

AMOS-ICSHMO 2018, TERN OzFlux will sponsor a session on "Land-atmosphere exchange of carbon, water and energy" at the joint conference of the Australian Meteorological and Oceanographic Society and the American Meteorological Society's International Conference on South Hemisphere Meteorology and Oceanography, UNSW, Sydney, NSW. See [website](#) for details.

The next issue of the Newsletter will be published in September 2017. If you have any news articles, photos, upcoming events, etc that you would like included please email shielalloyd@jcu.edu.au

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