



Australia's National
Science Agency

Urban Design and Heat Mitigation in the Tropics

Inaugural Annual Science Symposium hosted by Darwin Living Lab

12-13 December 2019





The CSIRO-led Darwin Living Lab was announced as part of the Darwin City Deal and involves a ten-year collaboration with all three tiers of government in Darwin that will test and monitor new ways to improve Darwin's liveability, sustainability and resilience in the wet/dry tropics.

A key objective of the Darwin Living Lab is to support innovative, climate-appropriate responses to heat mitigation and tropical urban design that not only informs future development in Darwin but builds local tropical city knowledge and expertise that can be exported to cities that face similar heat migration challenges, particularly in tropical areas of the Asia-Pacific region. The Darwin Living Lab Annual Science Symposium has the intention to engage with experts, local community and practitioners to transfer knowledge developed from Living Lab activities and collaboratively identify priorities for further experimentation in heat mitigation and urban design challenges.

The Symposium

The symposium will bring together leading experts from across Australia and overseas to engage with the Darwin community and its practitioners. Each day will have a unique approach to achieve the desired outcomes of the event.

Day 1: ***The Science Day*** will provide a forum to bring together global expertise with local practitioners such as planners, architects, government and council to explore integrated issues relevant to Darwin's context and the vision for a "thriving, cool capital of the north". It will feature technical presentations and facilitated discussions that encourage cross-disciplinary learning.

Day 2: ***The Darwin Living Lab Deep Dive*** will allow stakeholders to engage in more depth with existing Living Lab projects and provide the opportunity to shape future activities to experimentation and learning.

Overall the Symposium will deliver insights on:

- What can we learn from urban design and heat mitigation responses from international cities/regions with similar climates to Darwin? What makes the heat mitigation challenge in Darwin unique?
- What local ideas could be implemented to move toward the vision of Darwin as a "thriving, cool capital of the north"?
- Which opportunities and at what scale could Darwin export 'tropical knowledge of design and heat mitigation' to areas with similar climate?

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Inaugural Science Symposium hosted by the Darwin Living Lab

Program

Day 1 - Science Day

Venue: Charles Darwin University, Waterfront Campus, Darwin.

Attendees: International Guests, Advisory Group & Management Committee, local practitioners and expanded networks.

Time	Title	Presenter
8:15	Registration and arrival tea and coffee	
8:30	Welcome to Country	Larrakia Nation
8:40	Ministerial/Mayoral Opening	
8:55	Welcome	Chris Chilcott, CSIRO
	An Introduction to the Darwin Living Lab	Chair: Nerida Horner, CSIRO
9:00	The Darwin Living Lab. Science and collaboration supporting the Liveability, Sustainability and Resilience of our city.	Nerida Horner, CSIRO
9:10	The science of CSIRO Urban Living Labs, pushing the boundaries	Dr Tim Muster, CSIRO
9:20	Keynote: Sydney Science Park CSIRO Urban Living Lab	Duncan Challen, Celestino
9:40	Darwin Heat Mitigation Draft Strategy Preview	City of Darwin and NTG
10:00	MORNING TEA BREAK	30 mins
	Theme 1 – Darwin Urban Heat and Heat Island Effects	Chair: Guy Barnett, CSIRO
10:30	Keynote: Global efforts to reduce urban heat and emerging technologies. Summary of Darwin initial work.	Prof. Mat Santamouris, UNSW
10:50	Heat hotspots across greater Darwin – heat, infrastructure and social aspects	Dr Jacqui Meyers, CSIRO
11:05	Darwin Urban Greening Initiatives	City of Darwin
11:20	Influence of prevailing wind on urban heat	CDU
11:35	Garramilla Boulevard – How water and heat was factored into the green design	Tony Cox, Cloustone
11:50	Interactive Panel Discussion on ways forward	Panel of the above speakers.
12:30pm	LUNCH BREAK	45 mins
	Theme 2 – Building Resilience to Climate and Future Change	Chair: Dr Seona Meharg
13:15	Keynote: Climate Resilience as a Thought Leader in Regenerative Cities	Gilbert Rouchecoste, Village Well
13:35	The seasons of Darwin, current and future climate projections.	Bureau of Meteorology
13:50	Indigenous perspectives on Darwin's climate and seasons	Larrakia Nation
14:05	Smart city - informing change through the ethical use of IOT (Internet of Things)	Josh Sattler, City of Darwin and Yeong Zee Kin, IMDA Singapore
14:25	Interactive Panel Discussion on responses to Future Change in Darwin	Panel of the above speakers
15:15	AFTERNOON BREAK	30 mins

	Theme 3 – Tropical Urban Design for the Future	Chair: Stephen Cook, CSIRO
15:45	Keynote: Cooling Singapore and making optimal urban design choices for outdoor thermal comfort	
16:05	Your Tropical City – resource and knowledge hub	Stephen Cook, CSIRO
16:20	Designing for the Wet - Cairns Tropical Urbanism and Design Lab Collaboration	Roger Mainwood, TPG Architects
16:35	Designing for the Dry	
16:50	Getting around in the dry tropics - Active Transport in Darwin	Jo Cruikshank, NT Department of Infrastructure, Planning and Logistics
17:05	Interactive Panel Discussion on Darwin Dry tropical living	Panel of the above speakers
17:45	Day close	
17:45 – 19:00	Networking with refreshments and substantial canapes	Waterfront Restaurant

Please note that the content presented in Day 1 has been designed to have the following flow. First, we will start with the framework of urban living labs, with a seemingly technical challenge (of reducing heat). By the end of Theme 1 it should become apparent that things will need to change, but how to do this is not straight forward. Theme 2 builds on the need to change and explores Darwin, acknowledging some of the city's complexity. Theme 3 seeks to understand design and practical interventions and how this interacts with the people of Darwin. The breadth of discussion will provide a good starting point for collaborative discussions on Day 2, where implications and future focus areas are considered for the Darwin Living Lab.

Day 2 - Darwin Living Lab Reflection and Future Planning.

Venue: Charles Darwin University, Waterfront Campus, Darwin.

Attendees: smaller subgroup of International Guests, Advisory Group & Management Committee, local practitioners who may wish to collaborate on projects in the near future

Time	Title	Presenter
8:15	Arrival coffee and tea	
	Darwin Living Lab Project Deep Dives	Chair: Dr Tim Muster, CSIRO
8:30	Darwin Heat Mitigation Strategy	Dr Brenda Lin, CSIRO
9:10	Your Tropical City - Urban Design Knowledge Hub	Stephen Cook, CSIRO
9:50	Tracking Darwin - Monitoring and evaluating change and impact	Dr Rachel Williams, CSIRO
10:30	Morning Tea	30 mins
11:00	Interactive Ideation Session – future focus and exploring new approaches for Darwin	
12:45	Wrap-up and next steps	Nerida Horner, CSIRO
13:00	Light lunch	
13:30	Close	