



Australia's National
Science Agency

Urban Design and Heat Mitigation in the Tropics

The inaugural Annual Science Symposium

Hosted by the 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, such as 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.

The Symposium

The symposium will bring together leading experts from across Australia 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: **Science Meets Practice** 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 with a focus on 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 different and unique?
- What local ideas could be developed to enable 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 other areas with similar climate?

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Program

Day 1 - Science Meets Practice

Venue: Charles Darwin University, Waterfront Campus, Darwin.

Attendees: 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	Official Opening The Hon. Eva Lawler, Minister for Environment and Natural Resources; Minister for Infrastructure, Planning and Logistics; Minister for Climate Change Hon. Kon Vatskalis, Lord Mayor, City of Darwin	
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	Developing a Darwin Heat Mitigation Strategy	Tracey Duldig, NT Government Cindy Robson, City of Darwin and Dr Brenda Lin, CSIRO
10:00	MORNING TEA BREAK	30 mins
Theme 1 – Darwin Urban Heat and Heat Island Effects		Chair: Brenda Lin, CSIRO
10:30	Keynote: Global efforts to reduce urban heat and emerging technologies. Summary of Darwin initial work.	Prof. Mat Santamouris, UNSW
10:50	Land surface temperature and heat vulnerability in Darwin	Jacqui Meyers, CSIRO
11:05	Darwin Urban Greening Initiatives	Ron Grinsell, City of Darwin
11:20	Valuing the benefits of urban trees and green space	Dr Sorada Tapsuwan, CSIRO
11:35	Garramilla Boulevard – How water and heat was factored into the green design	Tony Cox, Clouston Associates Landscape Architects
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: Seona Meharg
13:15	Keynote: Global Future Cities and resilience initiatives	Guy Barnett, CSIRO
13:35	The seasons of Darwin, current and future climate projections.	Bureau of Meteorology
13:50	Larrakia perspectives on Darwin's climate and seasons	Larrakia Nation
14:05	Smart City – informing change through the ethical use of AI – case study of Singapore's approach to Human-Centric AI	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: Guy Barnett, CSIRO
15:45	Keynote: Liveable Tropics - Cairns JCU Tropical Urbanism and Design Lab. Urban Heat – Urban water – Urban Design	Roger Mainwood, TPG Architects
16:05	Your Tropical City – resource and knowledge hub	Stephen Cook, CSIRO
16:20	Darwin’s Weather Web – Cool gardens using less water	Jethro Laidlaw, Power and Water Corporation
16:35	Getting around in the dry tropics - Active Transport in Darwin	Jo Cruikshank, NT Department of Infrastructure, Planning and Logistics
16:50	Interactive Panel Discussion on Darwin Dry tropical living	Panel of the above speakers
17:30	Day close	
17:30 – 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 for experimentation are considered for the Darwin Living Lab.

Day 2 - Darwin Living Lab Deep Dive: the place and projects

Venue: Charles Darwin University, Waterfront Campus, Darwin.

Attendees: Guests, Advisory Group & Management Committee, local practitioners and potential collaborators

Time	Title	Presenter
8:15	Arrival coffee and tea	
8:30	Keynote: Climate Resilience as a Thought Leader in Regenerative Cities	Gilbert Rouchecoste, Village Well
Darwin Living Lab Project Deep Dives – interactive workshop sessions		Chair: Dr Tim Muster, CSIRO
8:50	Developing a Darwin Heat Mitigation Strategy	Dr Brenda Lin, CSIRO
9:30	Your Tropical City - Urban Design Knowledge Hub	Stephen Cook, CSIRO
10:10	Tracking Darwin - Monitoring and evaluating change and impact	Dr Rachel Williams, CSIRO
10:50	Morning Tea	20 mins

11:10	Interactive Ideation Session – future focus and exploring new approaches for Darwin	Facilitated by Gilbert Rouchecouste, Village Well
12:45	Wrap-up and next steps	Nerida Horner, CSIRO
13:00	Light lunch	
13:30	Close	

