



'Caring for Country' by Maddison Gibbs

Webinar 1 – Empowering Aboriginal communities and organisations to adapt to climate change

Adaptation in Action: Building Resilience in NSW

Tuesday 17 November 2020 | 10am – 11:30pm





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AdaptNSW Webinar Series

Welcome

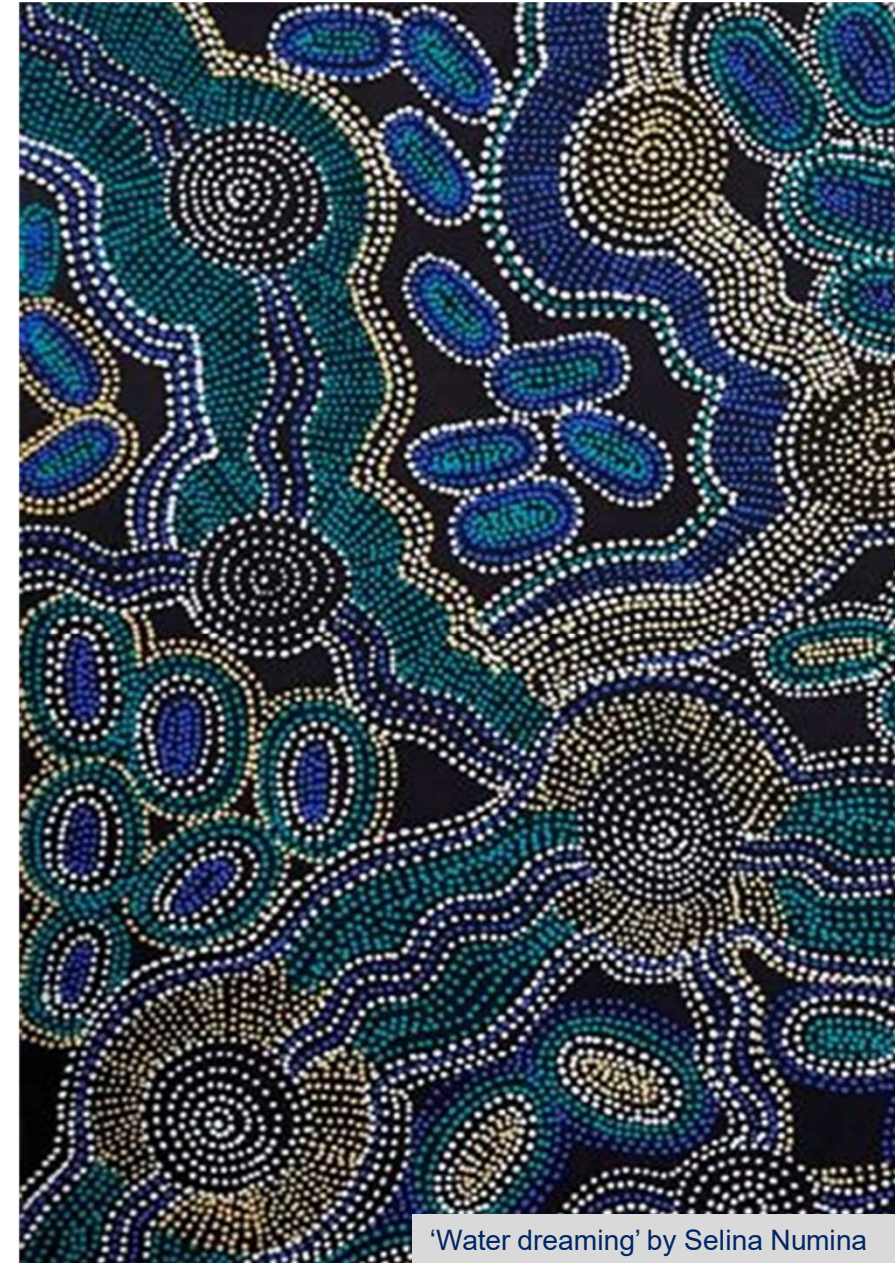
Oliver Costello
Director - Firesticks Alliance



Acknowledgement of Country

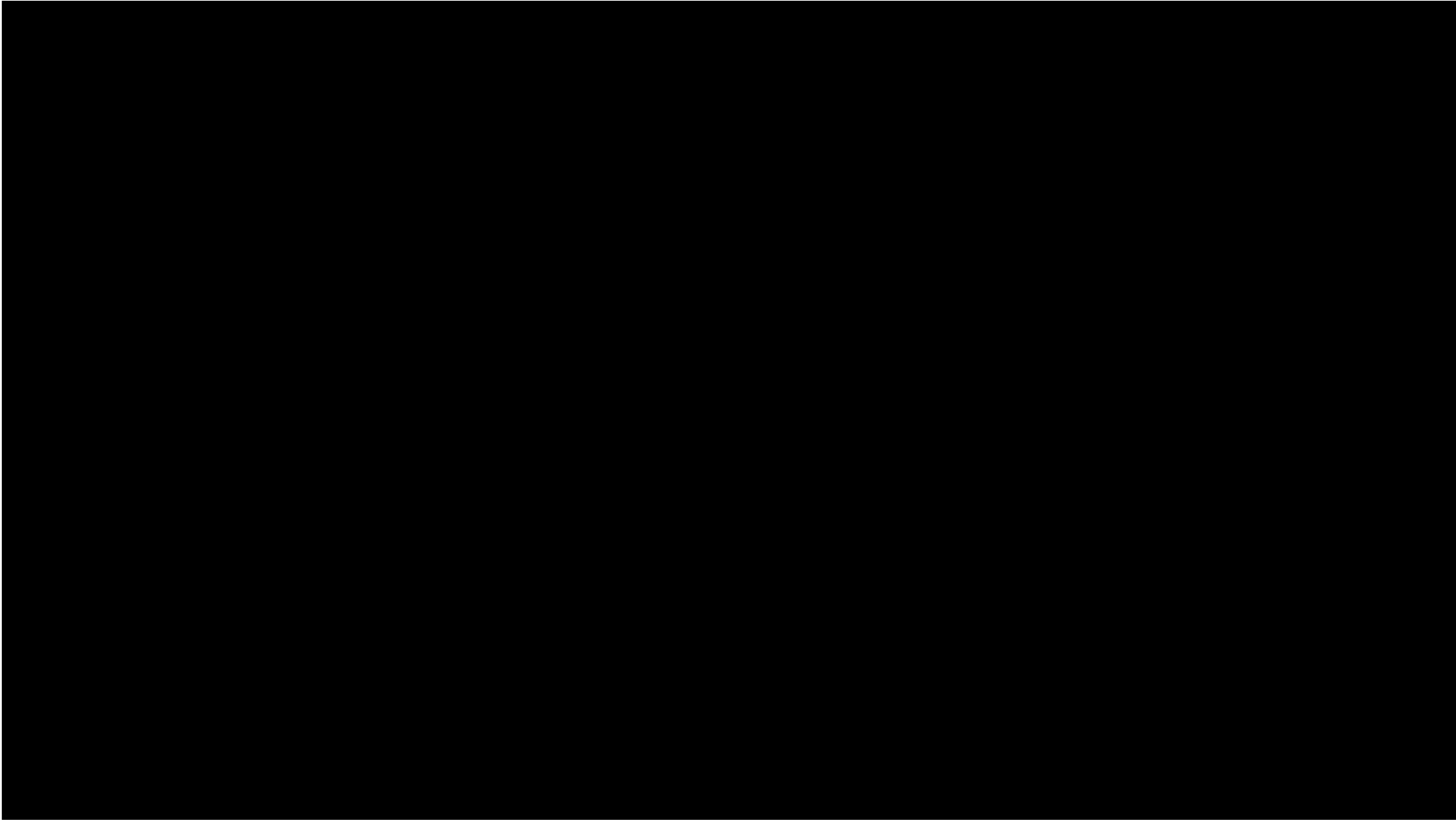
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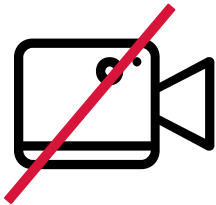


'Water dreaming' by Selina Numina

Video



Meeting rules and interaction



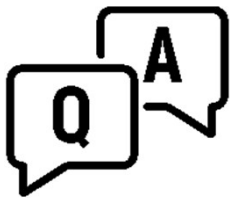
Turn off your camera



Mute yourself



Use the chat box



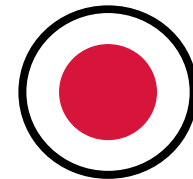
Dedicated Q&A
time after the event



Closed captions
are available



Presentation will be
available



Today's webinar will
be recorded



Minister's Address

AdaptNSW Webinar Series

The Hon. Matt Kean
NSW Minister for Energy and Environment



Video





Overview of NSW Government Action

AdaptNSW Webinar Series

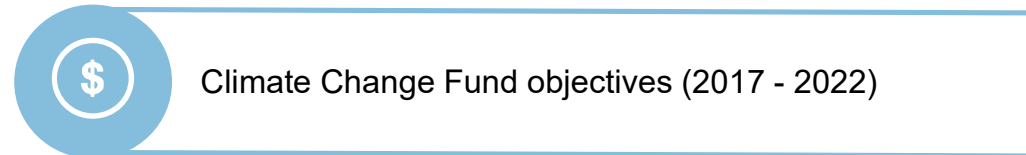
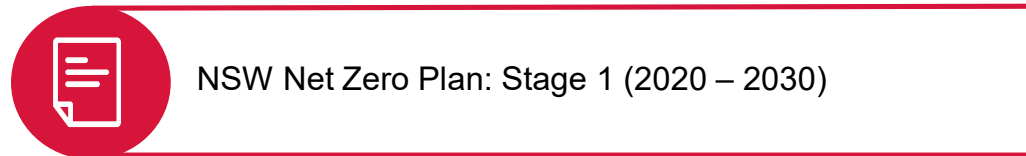
Dr Stephen Bygrave

Director, Climate Resilience and Net Zero Emissions Branch
NSW Department of Planning, Industry and Environment



Climate Resilience and Net Zero Emissions

NSW Government is leading initiatives to make NSW more resilient to climate change and to support the state to achieve net zero emissions by 2050.



Cultural and Ecosystem Adaptation

NSW land, water and sea management practices are responding to climate change impacts on cultural and natural values; and

- Delivering climate change adaptation responses for biodiversity, ecosystems and threatened species on private and public land and marine and terrestrial parks
- Delivering climate-ready revegetation initiatives
- Producing and promoting guides and training for ecological and cultural adaptation
- Delivering adaptation assessment and support for Aboriginal owned lands and Aboriginal Cultural Heritage protection



Climate Change Adaptation for Aboriginal Cultural Values Project

- A key principle is to acknowledge, value and embed Aboriginal cultural knowledge and world views in program delivery and business as usual
- Our Cultural and Ecosystem Adaptation team has a “Climate adaptation planning pilot’ as a Priority Action under the strategy
- **Project Aims:** Increase the capacity of NSW Aboriginal communities to discuss and consider adaptation decision making around climate change
- Enables Aboriginal communities to develop strategies to reduce impacts on cultural practice and cultural values
- Each community group determines their cultural values in specific locations and identifies key actions and stakeholders to realise their strategy



Climate Preparedness

Assisting NSW businesses, government and the community to prepare and adapt to the impacts of climate change

The XDI NSW (Cross Dependency Initiative) Project - we work with NSW asset owners and operators to assess impacts of climate change on critical infrastructure and identify shared risks.

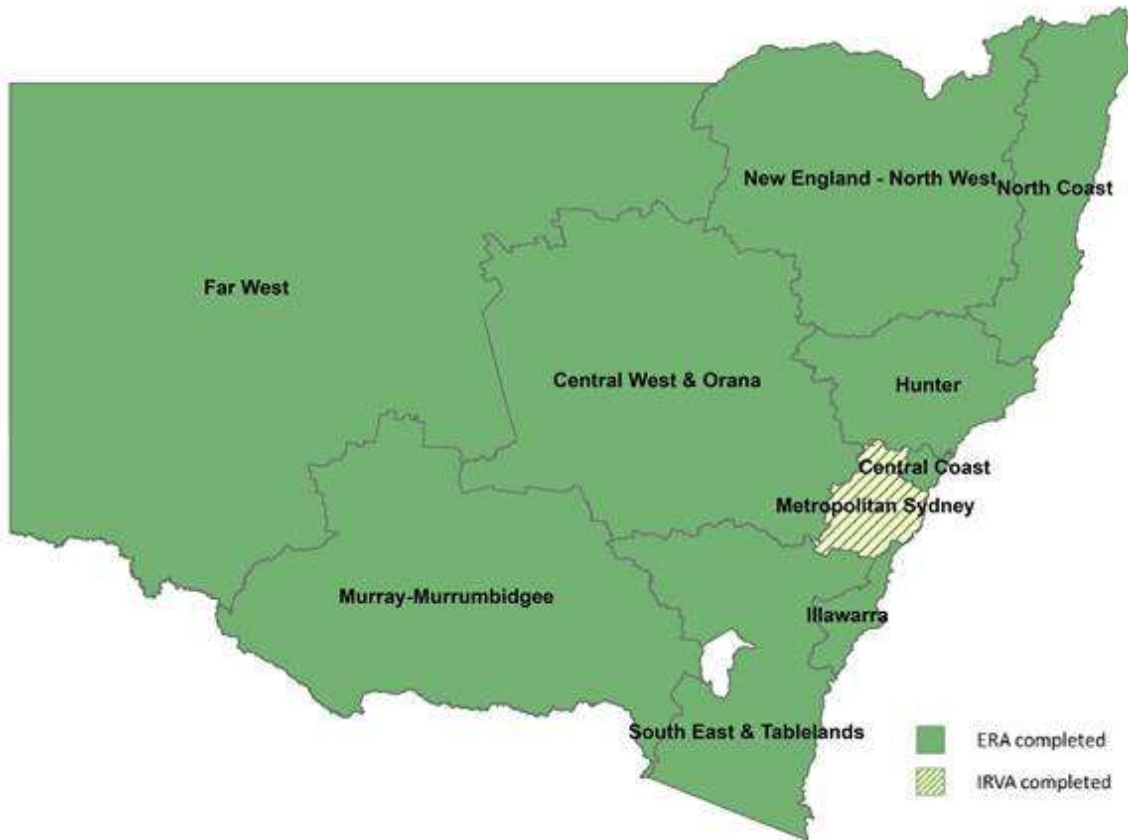
Climate Risk Ready NSW: building the capability of the public sector to manage climate-related risks through training, guidance, policy alignment and executive engagement.

Engaging with regional leaders to support locally-driven adaptation action and establishing regional governance models.

Enabling Regional Adaptation assessments for all regions of NSW that identify priority sectors and pathways for adaptation and transition.



Climate Preparedness: Enabling Regional Adaptation



- Completed assessment across all NSW regions
- The project has engaged more than 1740 state and local government participants in 60+ workshops over a 10 year period
- The process increases knowledge and capacity of regional decision makers
- Resulted in 67 co-designed qualitative change models presenting potential adaptation pathways
- Prioritised engaging with Aboriginal communities
- Informs strategic planning across NSW

Climate Information Delivery

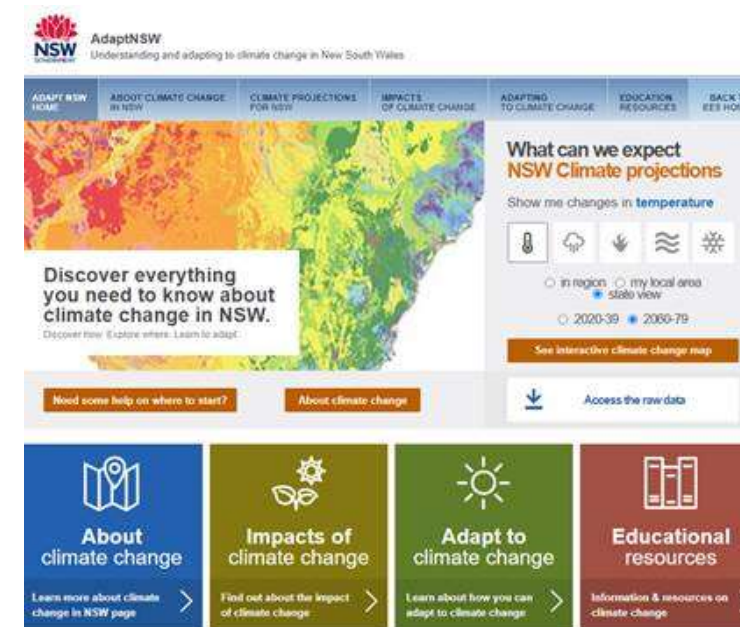
Helping NSW households, businesses, community groups and government to understand how climate change may affect them and what they can do to respond and adapt to the impacts.

Providing access to credible climate change information through the [AdaptNSW website](#) and Forum.

Providing \$3.5m in grants that support local government and the community implement on ground action.

Facilitating a more coordinated and collaborative response by State and Local Government in regional NSW.

Encouraging others to take action to build resilience to climate change by promoting our efforts and the actions of others.



Net Zero Land

Delivering abatement in the primary industries and land sectors under the Net Zero Plan

- Reducing emissions from livestock and agricultural processes.
- Driving the uptake sequestration in soils and vegetation
- Increasing access to carbon markets for land managers
- Supporting abatement projects on Aboriginal managed lands, National Parks and Crown Lands
- Recognising and valuing the multiple benefits that come from carbon projects, including biodiversity, social outcomes and economic outcomes.



Net Zero Emissions Implementation

Supporting a variety of stakeholders to achieve net zero emissions by 2050

- Tailored support to local councils to achieve net zero emission by 2050
- Assisting NSW Government towards net zero in its own operations through an emissions reduction pathways tool.
- Place-based action including working with Randwick Collaboration area to develop an Emissions Reduction Strategy for the precinct and its businesses and stakeholders such as health, education, transport, private sector and utilities.

Other initiatives include work on **Net Zero Emissions Transport**;

- Electric Vehicle Infrastructure and Model Availability
- Making Buildings EV Ready
- Transport Consumer Information



Department of Planning, Industry and Environment

Net Zero Plan
Stage 1: 2020–2030





“Caring for Country”: a visual map of the Australian cultural landscape past, present and future

Introduction

Maddison Gibbs
Boomalli Aboriginal Artists Co-operative





Maddison Gibbs >> Caring For Country

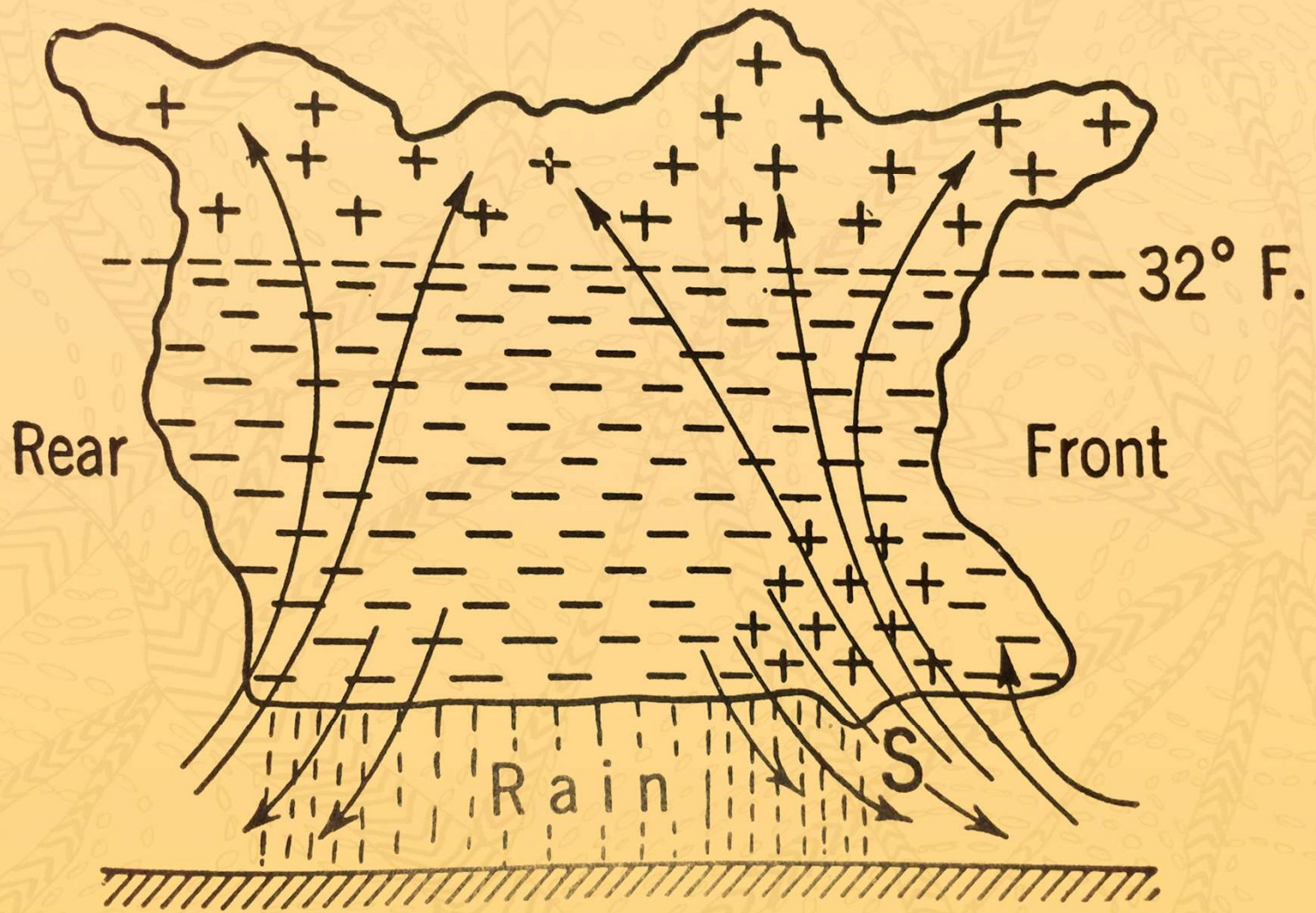
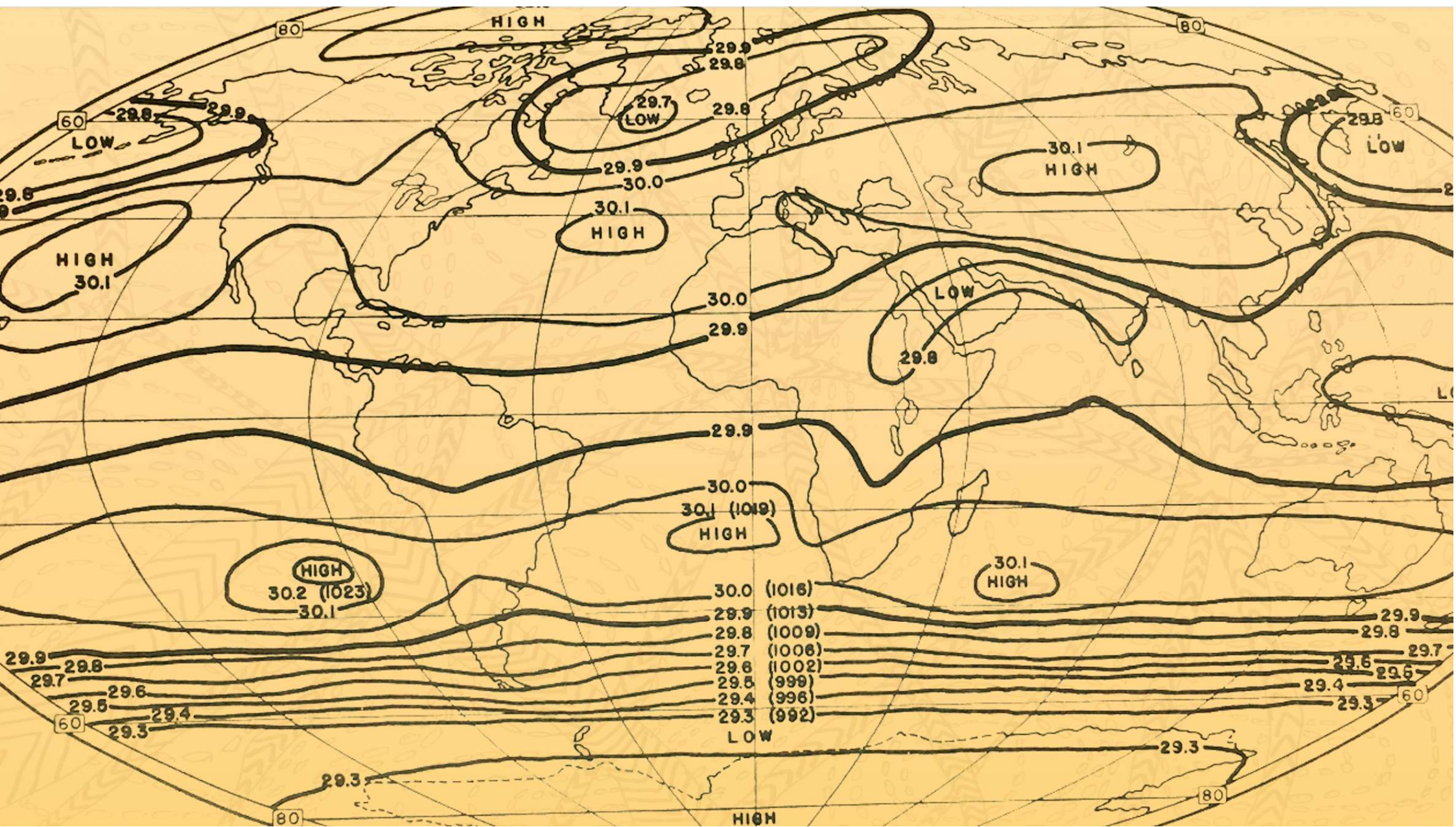
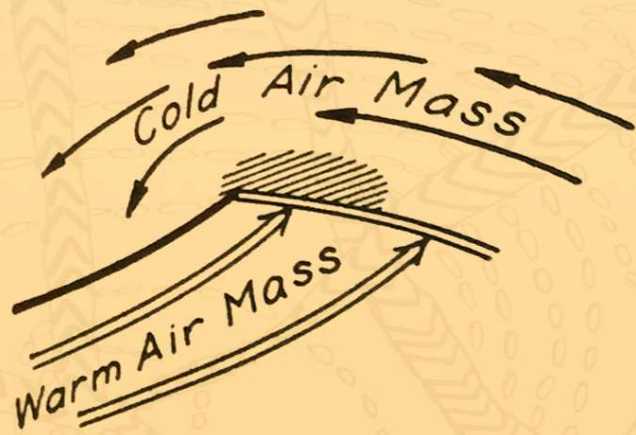
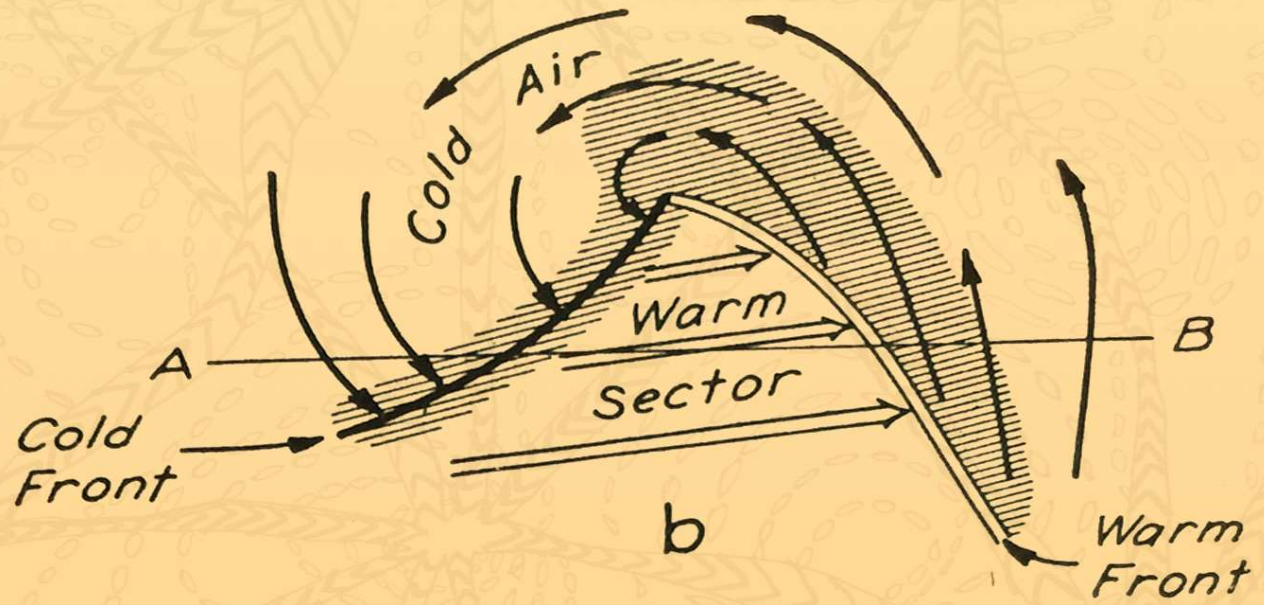


Fig. 73. Cross Section of Typical Local Thunderstorm.





a



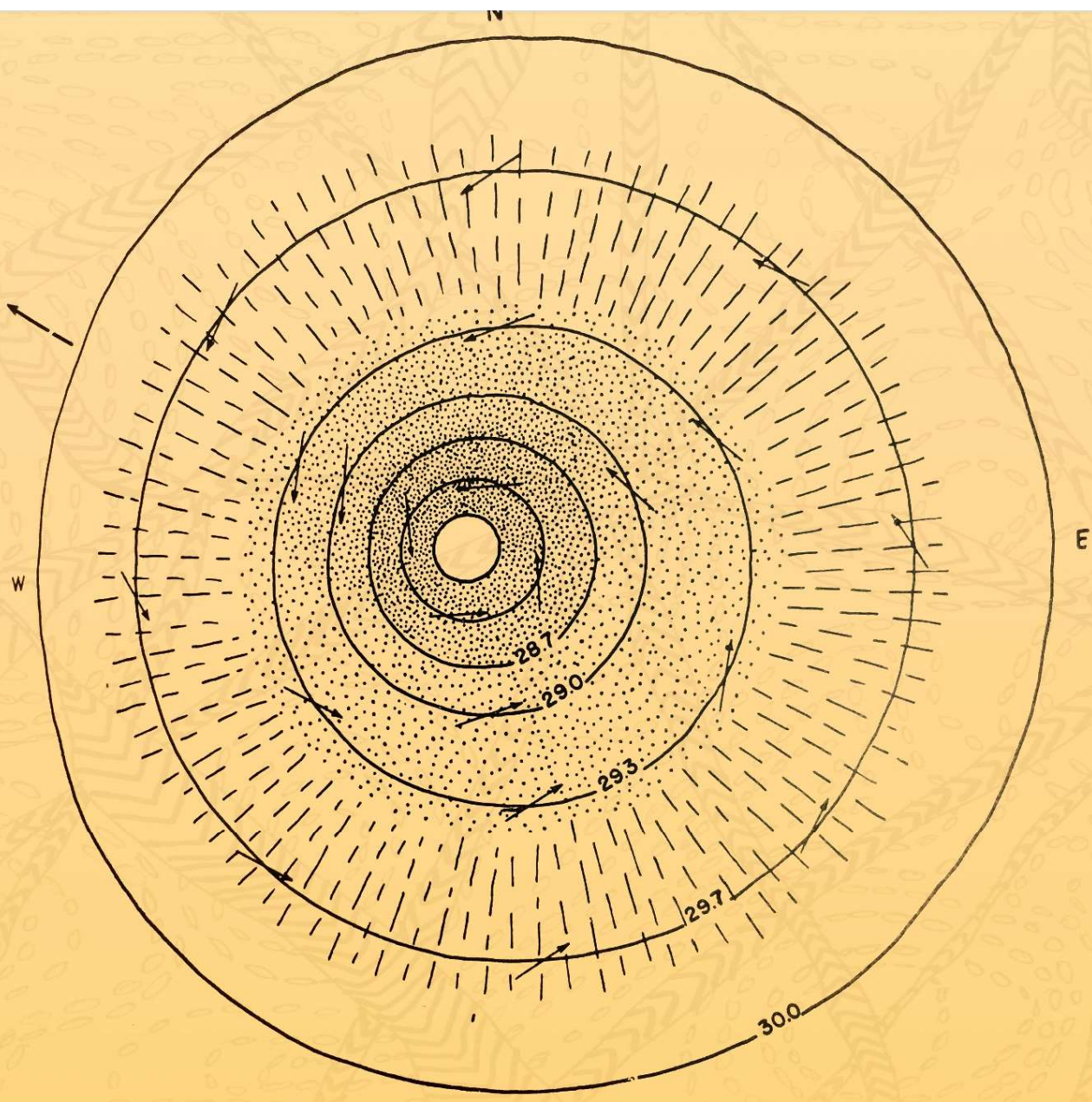
b



c



d





Man



Woman or
People sitting

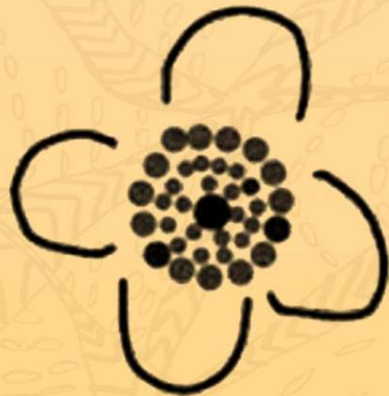


Child

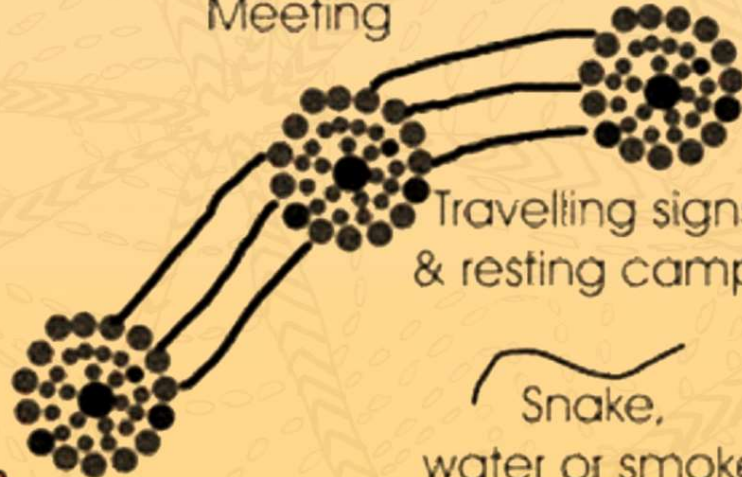


Camp Fire
Waterhole
Meeting

River - Bushfire



People sitting
around camp



Travelling signs
& resting camps

Snake,
water or smoke



Cloud/sand hill



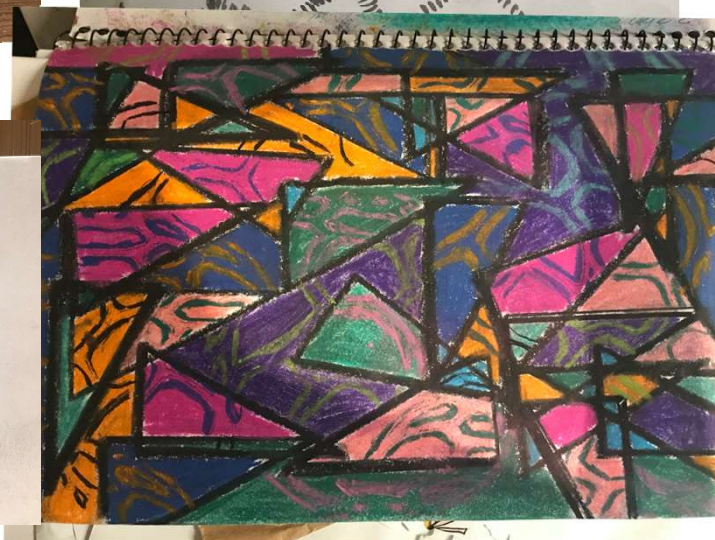
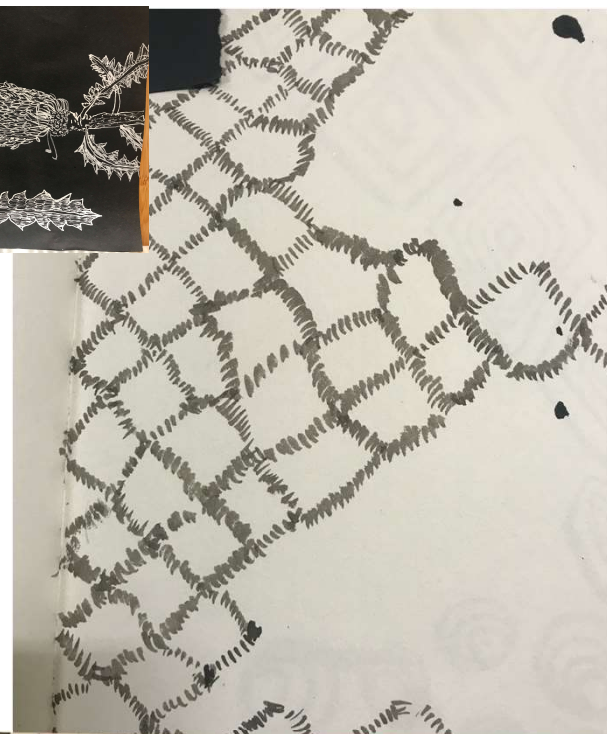
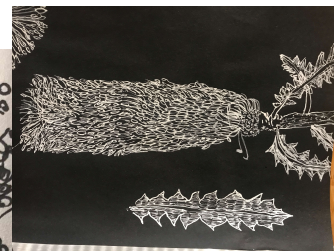
Stick
fire

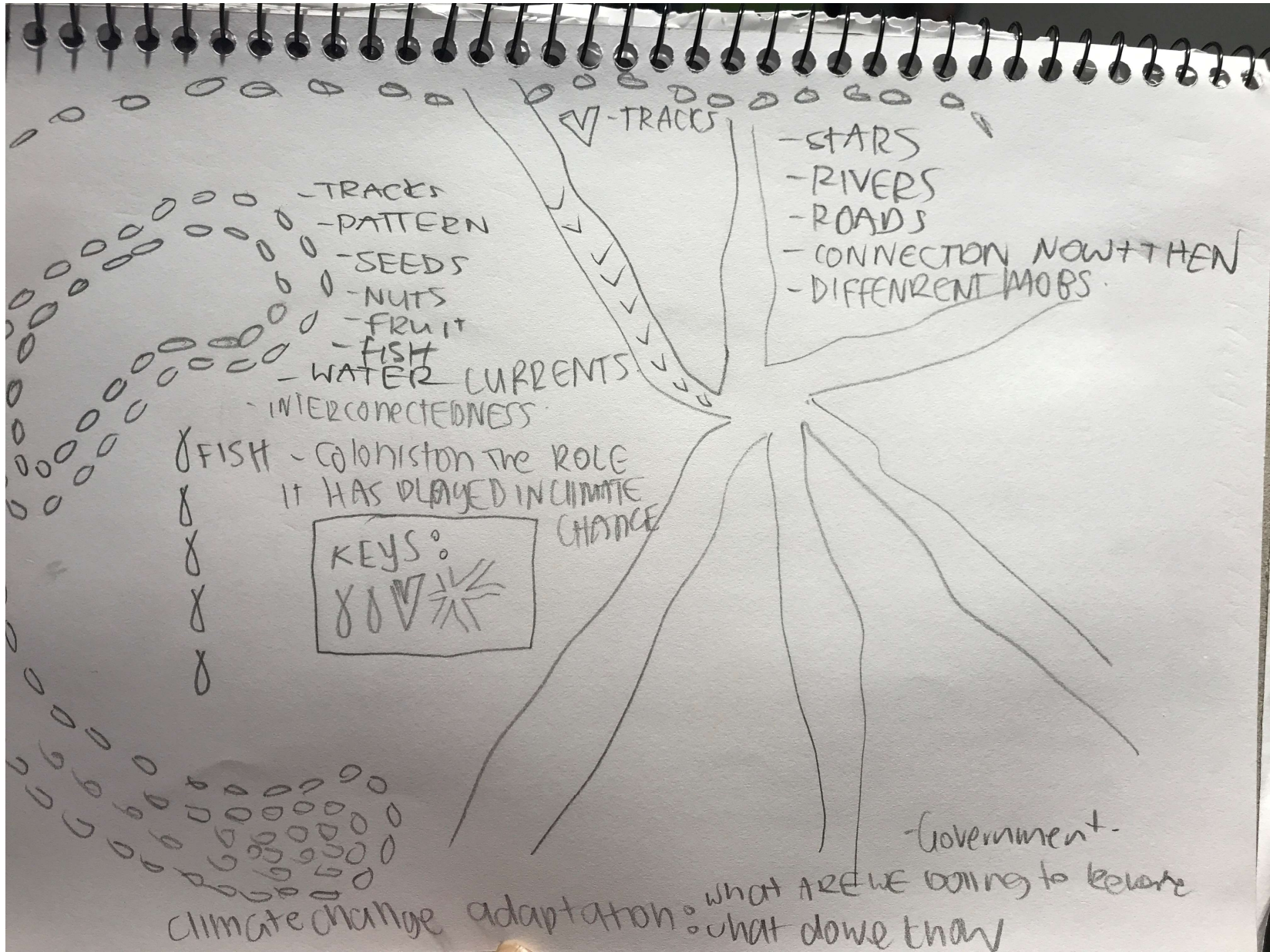


Star



Track, path





- TRACKS
- PATTERN
- SEEDS
- NUTS
- FRUIT
- FISH
- WATER CURRENTS
- INTERCONNECTEDNESS

- STARS
- RIVERS
- ROADS
- CONNECTION NOW+THEN
- DIFFERENT MOBS

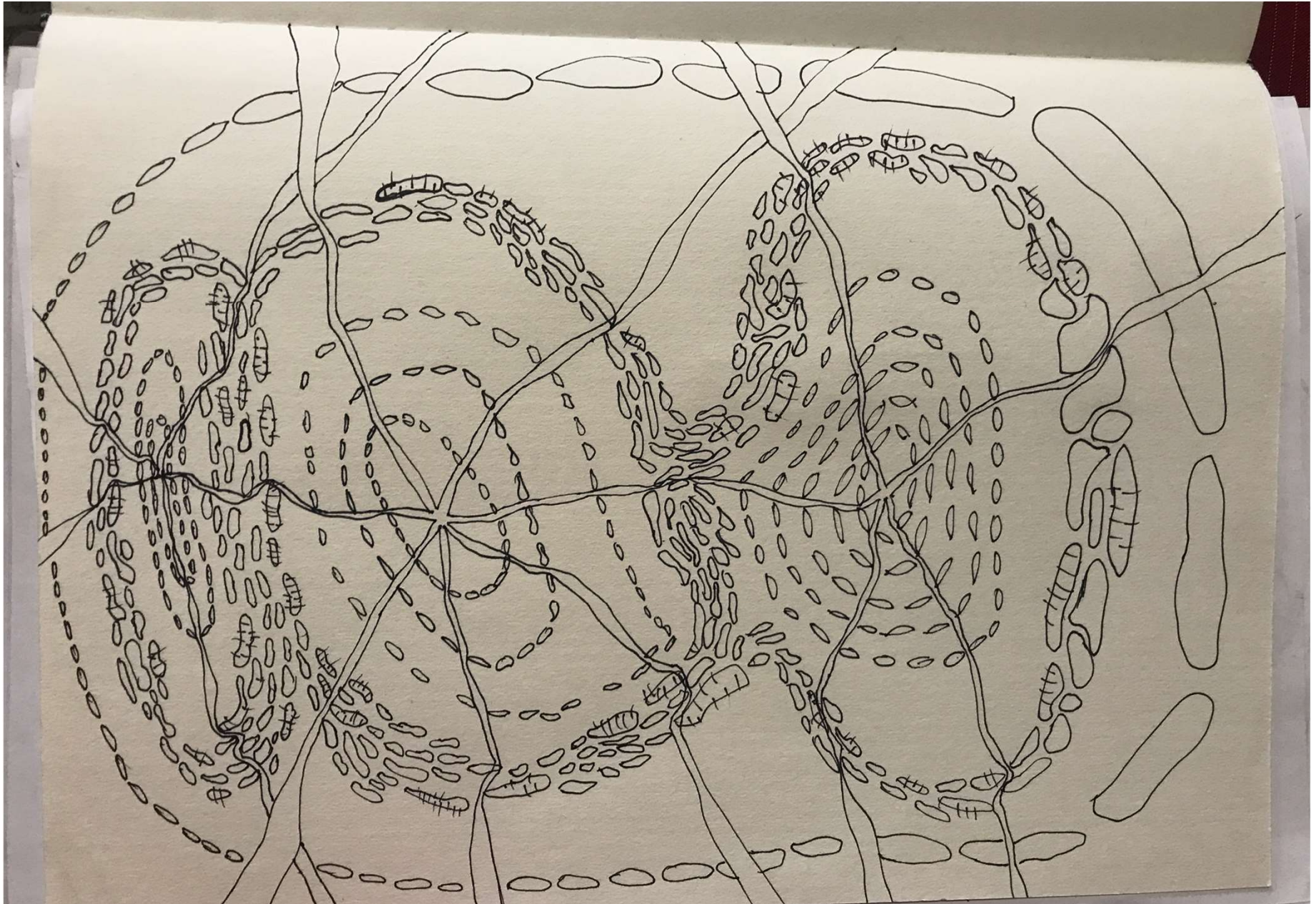
FISH - COLONIZATION THE ROLE IT HAS PLAYED IN CLIMATE CHANGE

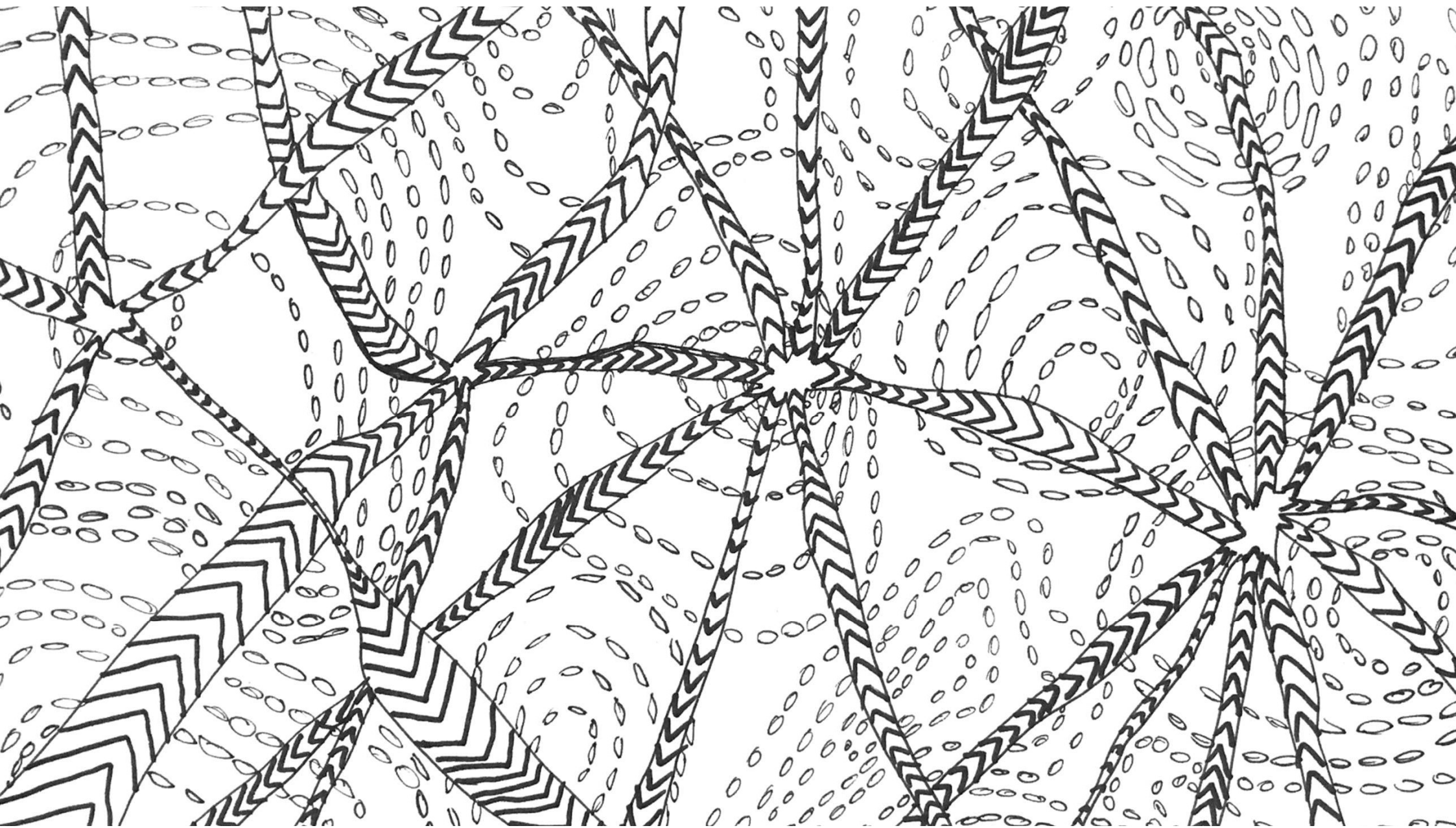
KEYS:

⌘ ⌘ ⌘ ⌘

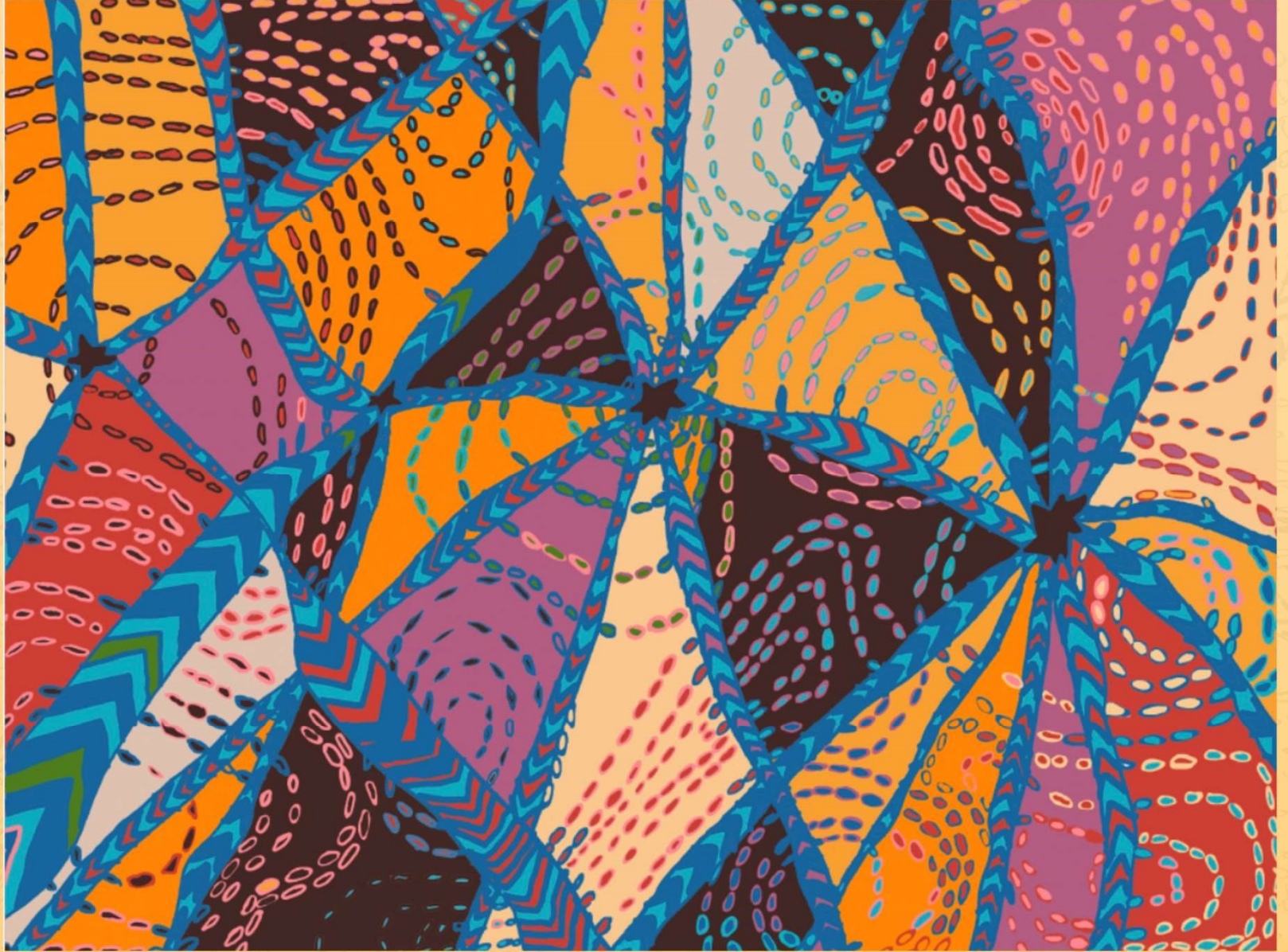
climate change adaptation: what ARE WE going to release
 what do we know

- Government -

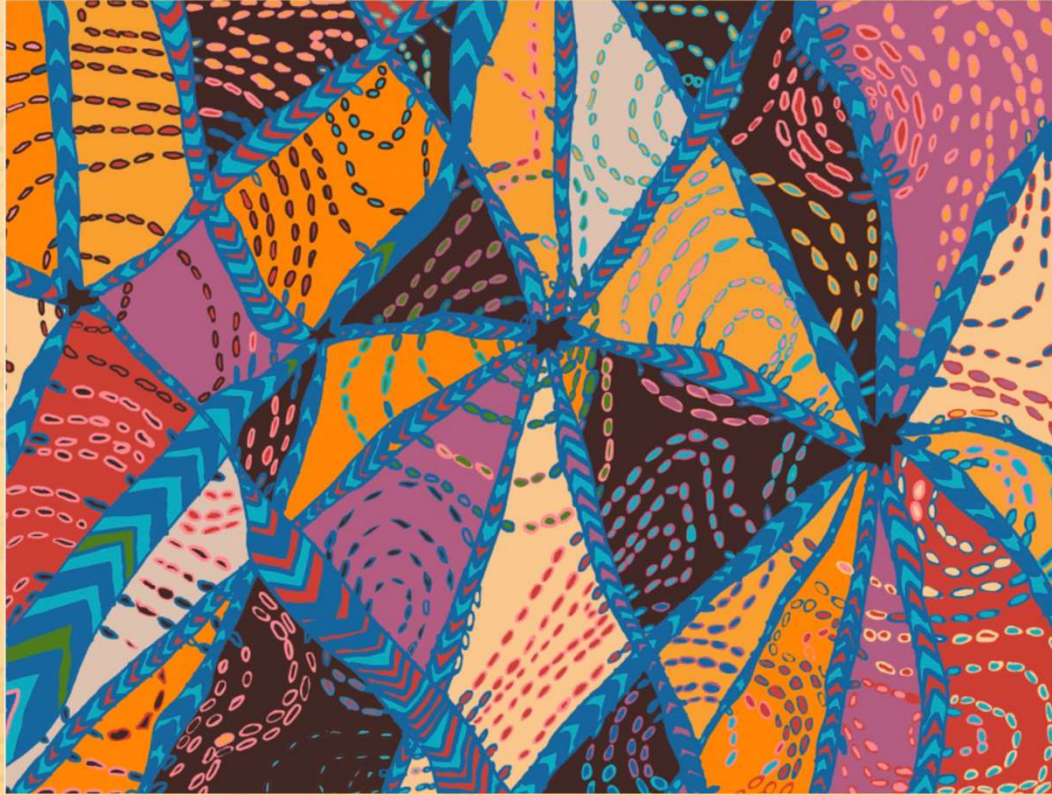




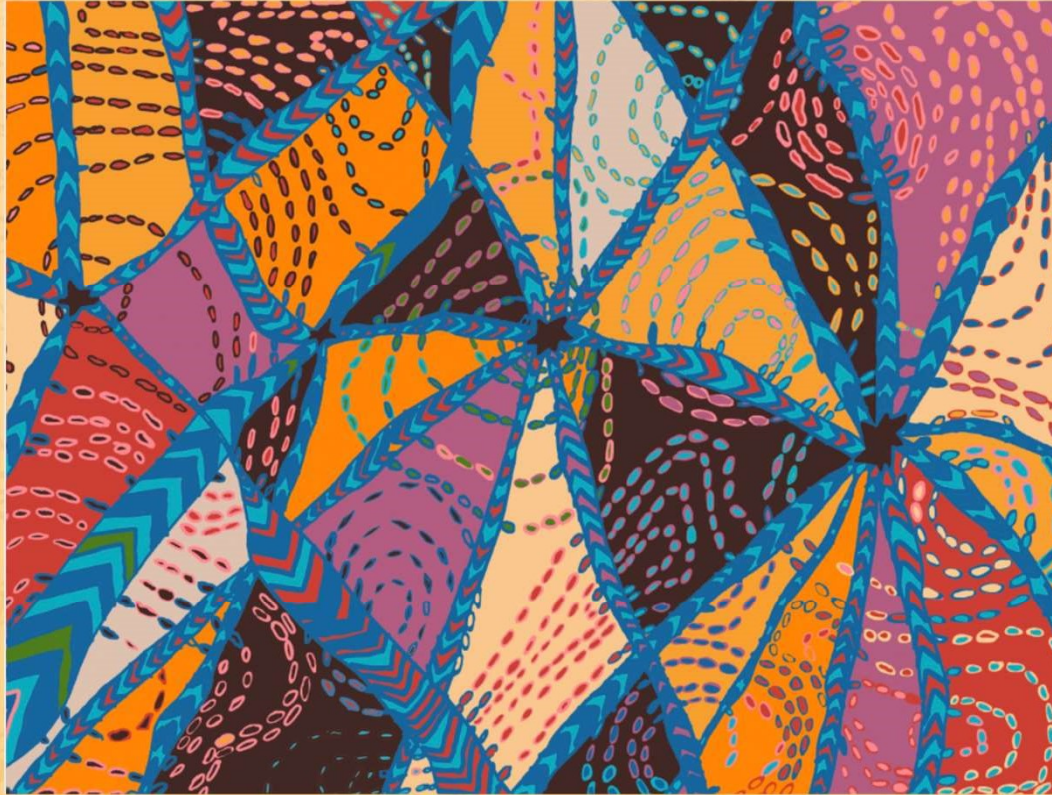
>> Artwork



>>Artist Statement

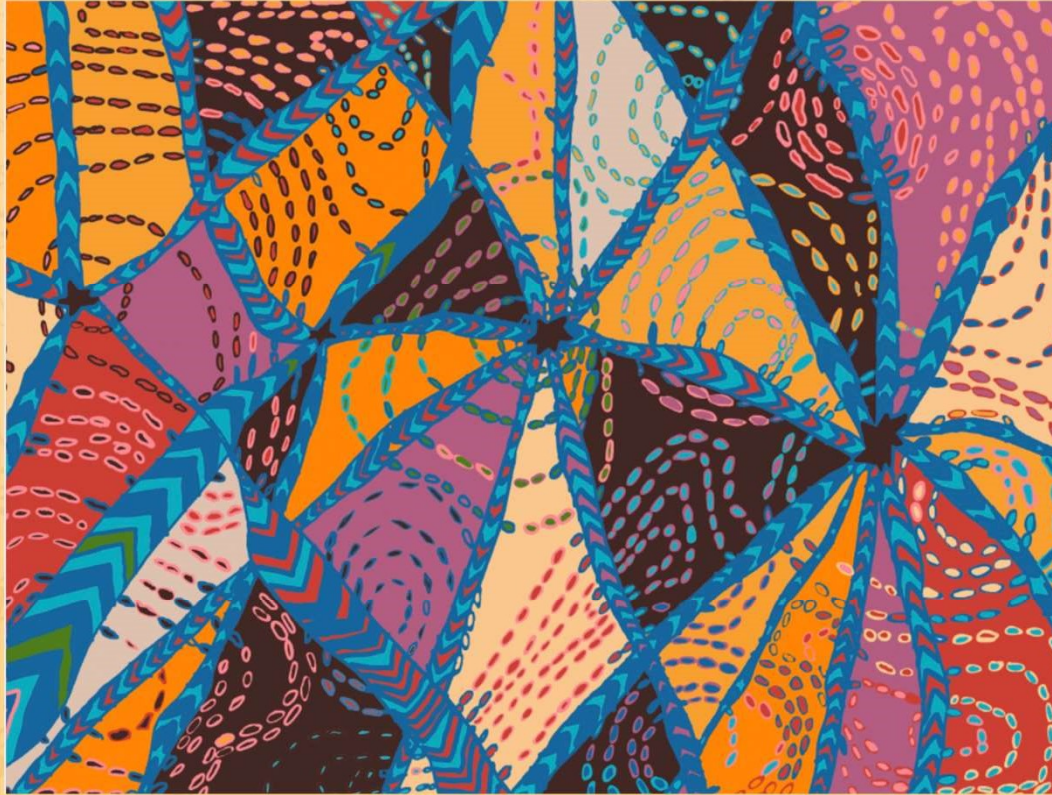


My artwork is an abstract visual map of the Australian cultural landscape past, present, and future. I have acknowledged traditional imagery and created a personal contemporary multidimensional landscape.



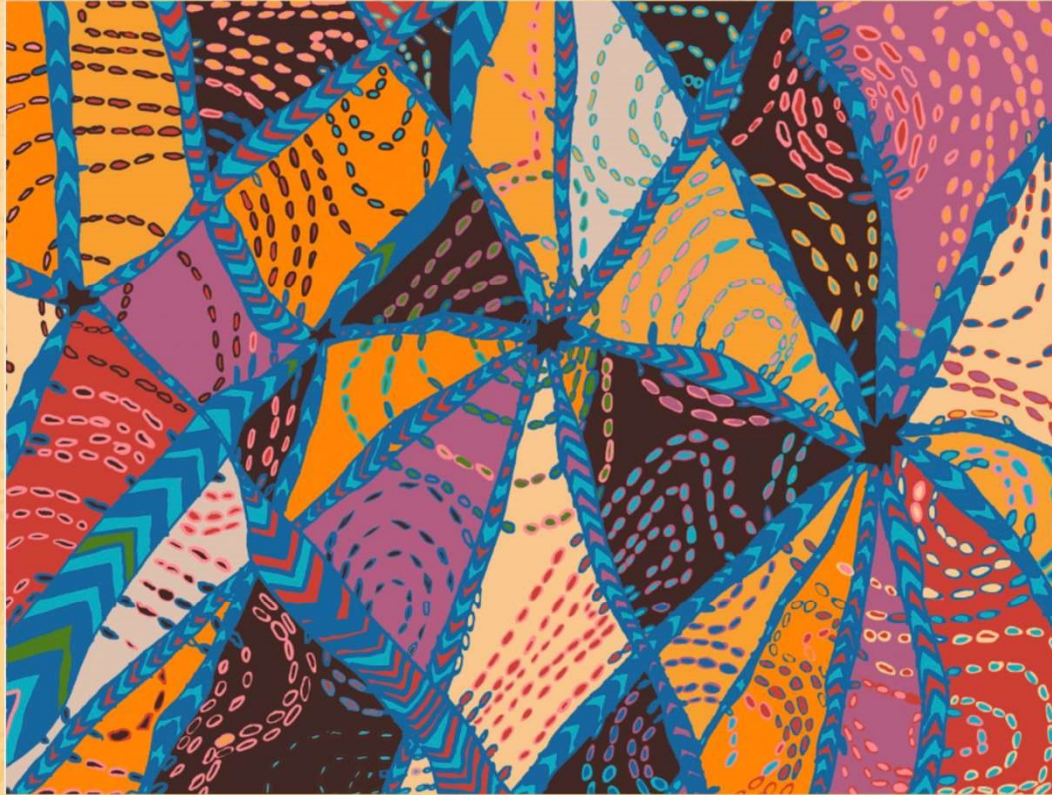
My artwork *Caring for Country* speaks to past, present and future climate, land, sea management.

Aboriginal people are the oldest land management people in the world. Aboriginal people worked with the land and sea to co-exist for 100,000s of years. Since the British colonisation of Australia during 1770, the current result is the devastation of all resources.

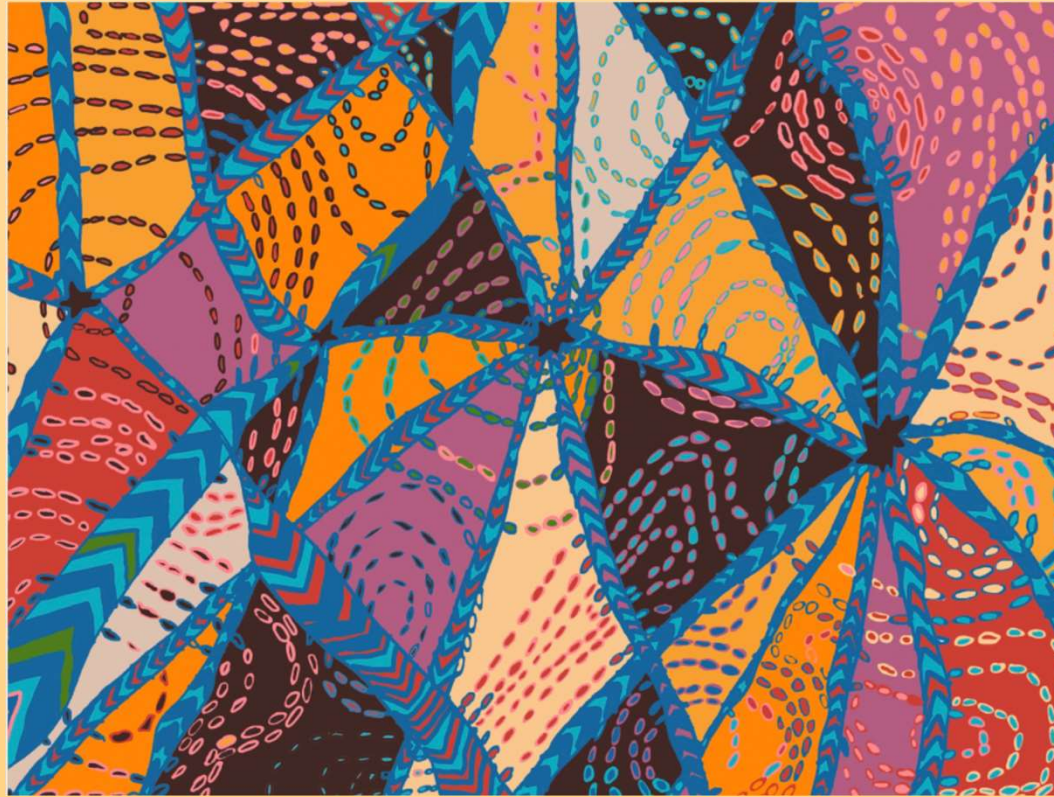


The rainbow serpent is represented by the blue arrows it travels through the star and numerous simultaneous multiple timelines. The four white stars represent the rainbow serpent, past, present, and future. The rainbow serpent created all of our Australian landscapes.

This is also reflected in the weather pattern diagrams. These patterns refer to smoke, campsites, industrial waste, sea currents, migrations, fish traps and more.



The central triangles are an abstract map of Australia and the surrounding shapes represent the rest of the world. The Blue connection lines represent our rivers and water sources and how they are the connectors of our country and culture. They also infer rainbow serpent tracks, waterways, ancestral portals, trade routes, division, fences, boundaries, borders, information highways and pastoral land.



The smallest shift in the environment and have a butterfly effect on the rest of the world and vice versa. The graphics connect us all in a global effort to learn from sustainable development practiced by the ancient people around the world. We have learned from the tragedy of the commons and we now live in a world where we can not feed our population. The dominant land management models are not working. It is time to consult with Aboriginal people in a genuine authentic way reflected by ongoing financial and other support to action the advice from the oldest living culture in the world. Care for Country, and the world.



>> Thank you



Identifying the health impacts of climate change, adaptation strategies and responses among Aboriginal communities in NSW

Presentation 1

Jessica Spencer

Regional Environmental Health Project Officer – Dubbo
NSW Health

Jeffrey Standen

Manager, Aboriginal Environmental Health
NSW Health



Identifying the health impacts of climate change, adaptation strategies and responses among Aboriginal communities in NSW

Presented by

Jeff Standen

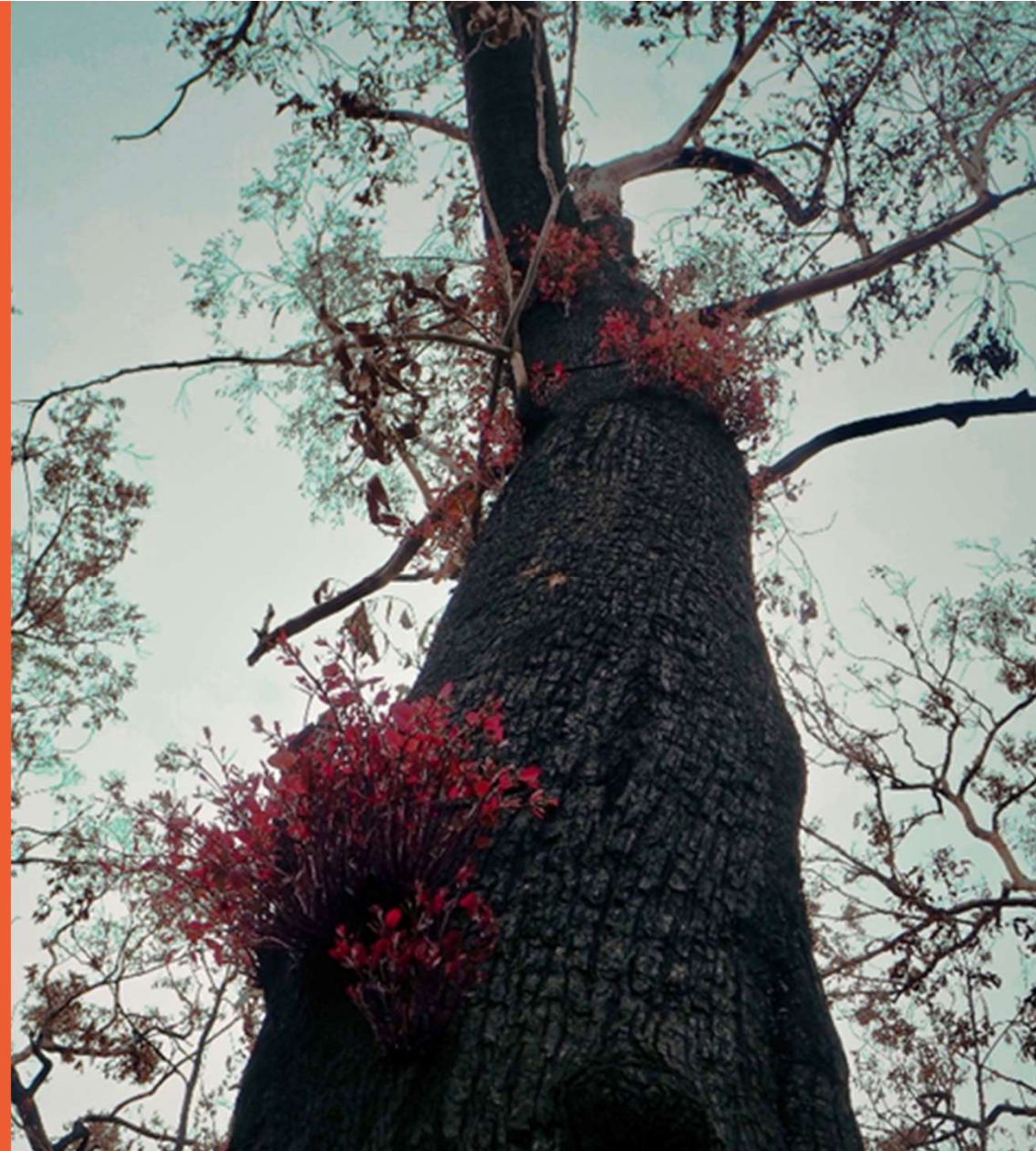
Manager, Aboriginal Environmental Health Unit, NSW Health
&

Jessica Spencer

Regional Environmental Health Project Officer, NSW Health



THE UNIVERSITY OF
SYDNEY



Project Aims

Scoping Study - to inform follow up project

Aims:

1. Review existing evidence on the health risks of climate change on Aboriginal populations in NSW and identify locally relevant climate-related health indicators
2. Identify Aboriginal populations and discrete communities in NSW
3. Conduct preliminary consultation with NSW Health and selected NSW state agency stakeholders and collaborators - identify existing adaptive responses, including those based on Aboriginal knowledge
4. Recommendations re: health service preparedness, adaptation responses/ strategies, future research

Project Principles

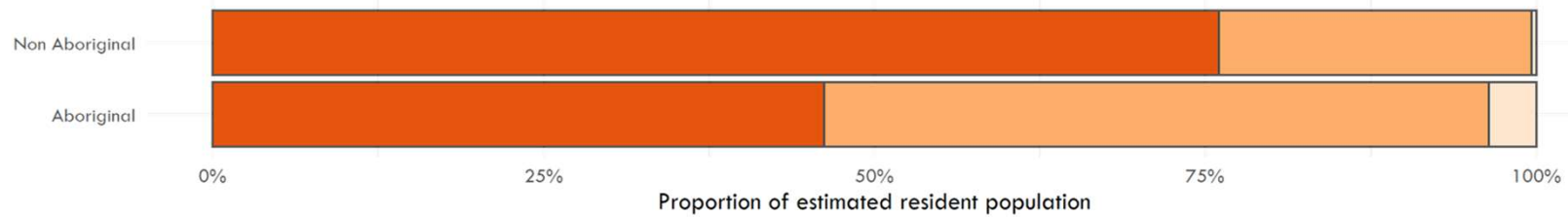
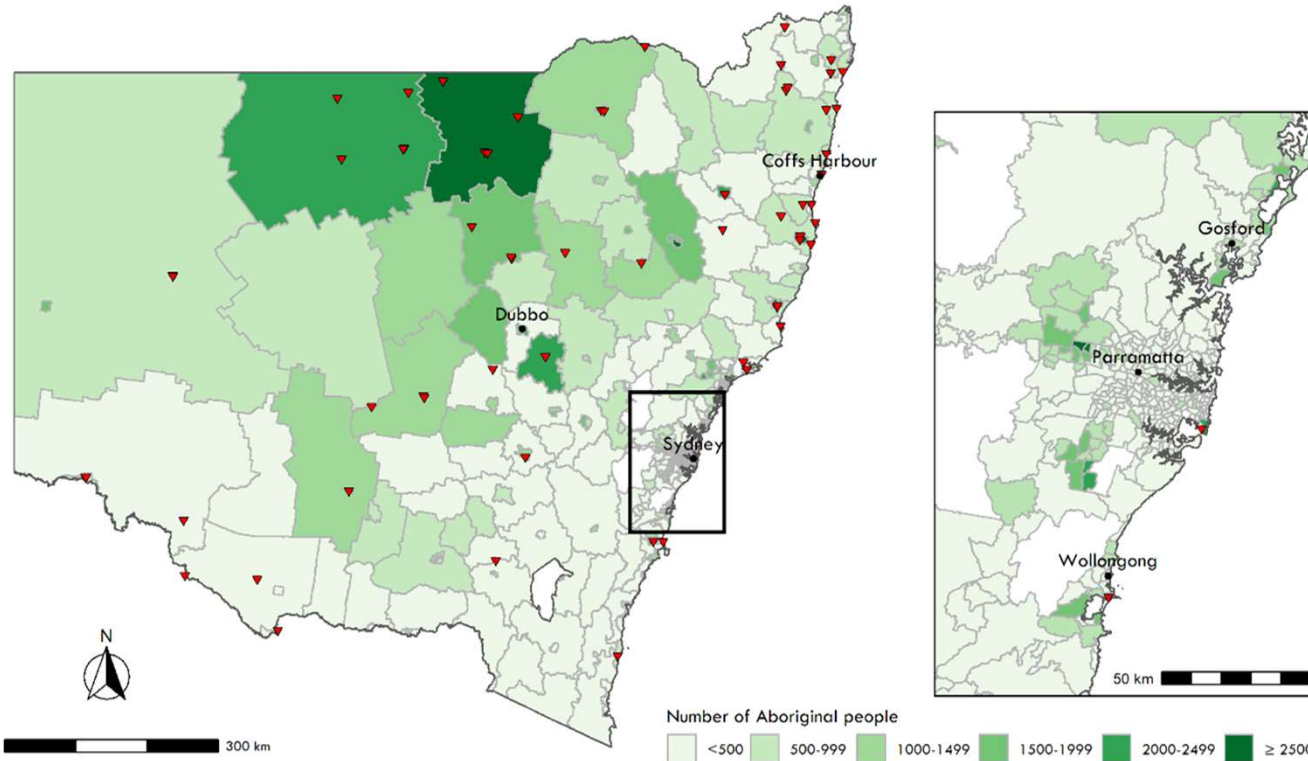
- Acknowledge/ understand Aboriginal concept of health
 - Holistic, ecologically focused approach
 - Environmental, cultural, historical and spiritual identity
 - Key cultural determinants: connection to Country; family, kinship and community; Aboriginal beliefs and knowledge; cultural expression and continuity; Aboriginal language; and self-determination and leadership Identify Aboriginal populations and discrete communities in NSW
- Acknowledge and incorporate Aboriginal knowledge on climate and health developed over many thousands of years.
- Limited stakeholder consultations due to scoping nature of project and Covid-19 disruptions.

NSW climate in near (2020 – 39) and far future (2060)

Projected change in climate compared to baseline (1990–2009)

Climate variable	Region	Near Future (2020 – 39)	Far Future (2060 – 79)
Maximum temperatures	NSW	↑ 0.4 – 1°C	↑ 1.8 – 2.6°C
Minimum temperatures	NSW	↑ 0.0 – 0.5°C	↑ 1.4 – 2.6°C
Number of hot days (maximum temperatures above 35°C) per year	NW NSW	↑ 10 – 20 days	↑ > 40 days
	Coastal NSW	↑ 5 – 10 days	↑ 10 – 20 days
Number of cold nights (minimum temperatures below 2°C) per year	NSW	↓ 10 – 20 days	↓ > 40 days
Frequency of heatwave events per year	NSW	↑ 1 – 1.5 events	↑ 2.5 – 4.5 events
Heatwave duration per year	NSW	↑ 1.5 – 3.5 days	↑ 2 – 11 days
Severe fire weather (change in days with FFDI > 50) – Spring/Summer	Inner NSW		↑ 1 – 3 days
	Coastal NSW		↑ 0 – 1 day
Mean rainfall – Spring	Inner NSW	↓	↓
	Coastal NSW	↑	↑
Mean rainfall – Autumn	NSW	↑	↑

Aboriginal people in NSW, 2016



Climate and adaptation in Aboriginal people

- Climate hazards in NSW (eg. floods, heatwave, droughts and bushfires) projected to become more frequent and intense
- Socially and economically disadvantaged groups, including Aboriginal people, disproportionately affected
- Adaptation responses require understanding of the impact of climate on health of Aboriginal people
- Aboriginal knowledge on climate and health developed over many thousands of years used to inform adaptation responses

Climate and health

- Human health impacted by climate via three main pathways:
 1. Primary (direct) harm – heatwaves, floods and bushfires;
 2. Secondary (indirect) harm – altered environmental and ecological systems, eg. vectors, Q fever, changing waterways; and
 3. Tertiary (referred) harm – mental health and social wellbeing
- Current research focuses on primary impacts
 - limited assessment of indirect/referred harms such as ecosystem changes, food insecurity, mental health, social wellbeing.
- Aboriginal populations disproportionately **affected** to the adverse health impacts of climate
 - Few studies examine these relationships using NSW data

Heat and health

Heat Related Illness*:

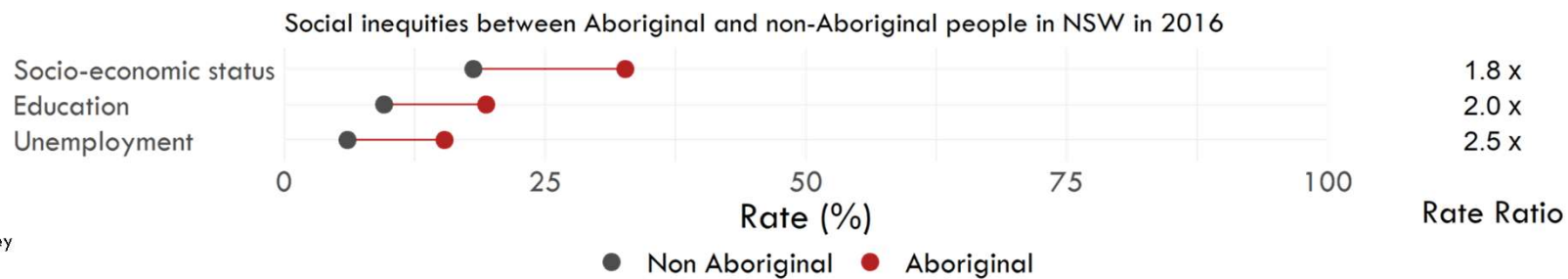
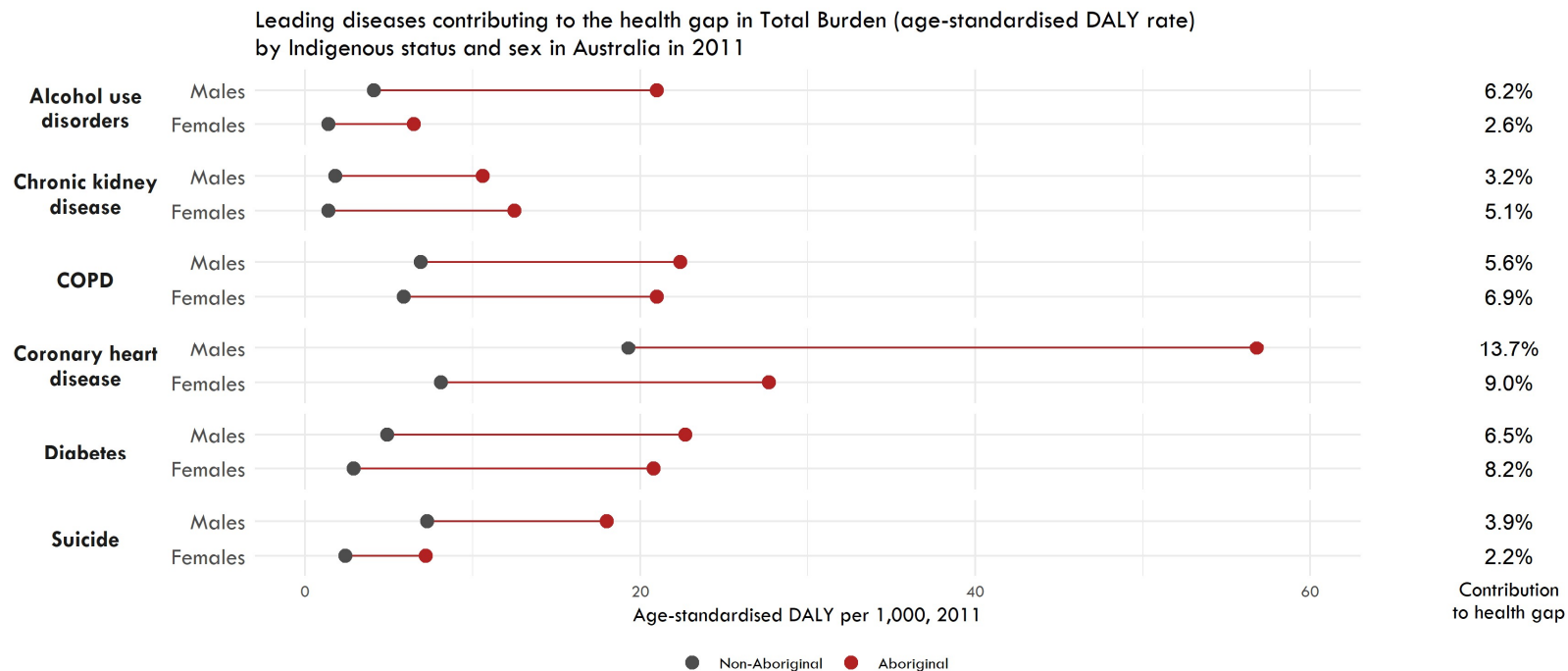
- Sunburn
- Heat Rash
- Heat Syncope (Fainting)
- Dehydration
- Heat Cramps
- Heat Exhaustion
- Heat Stroke
- Death

* Often identified in data as a secondary cause of death

Risk factors:

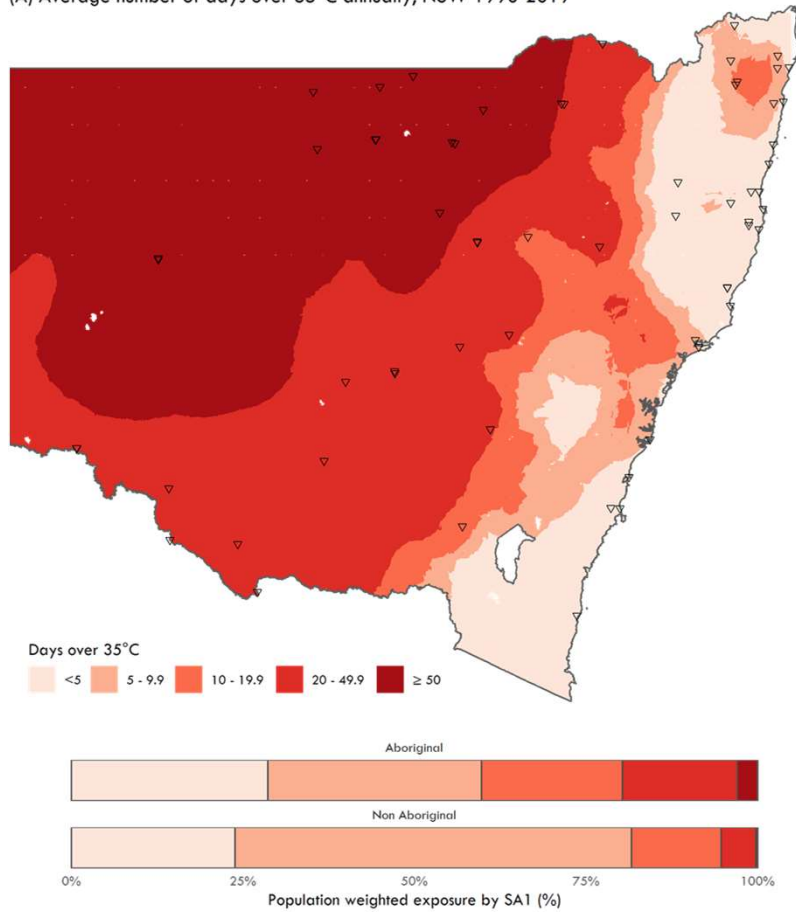
- Babies and Infants
- Elderly
- Cardiovascular Diseases
- Other Chronic & Acute Illnesses
- Mental Illnesses
- Some Medications and Drugs
- Lack of Acclimatisation
- Working, Exercising & Playing Sport in Hot Environment
- Lack of Air Conditioning / Air Cooling

Climate as a health risk multiplier – climate sensitive risk factors

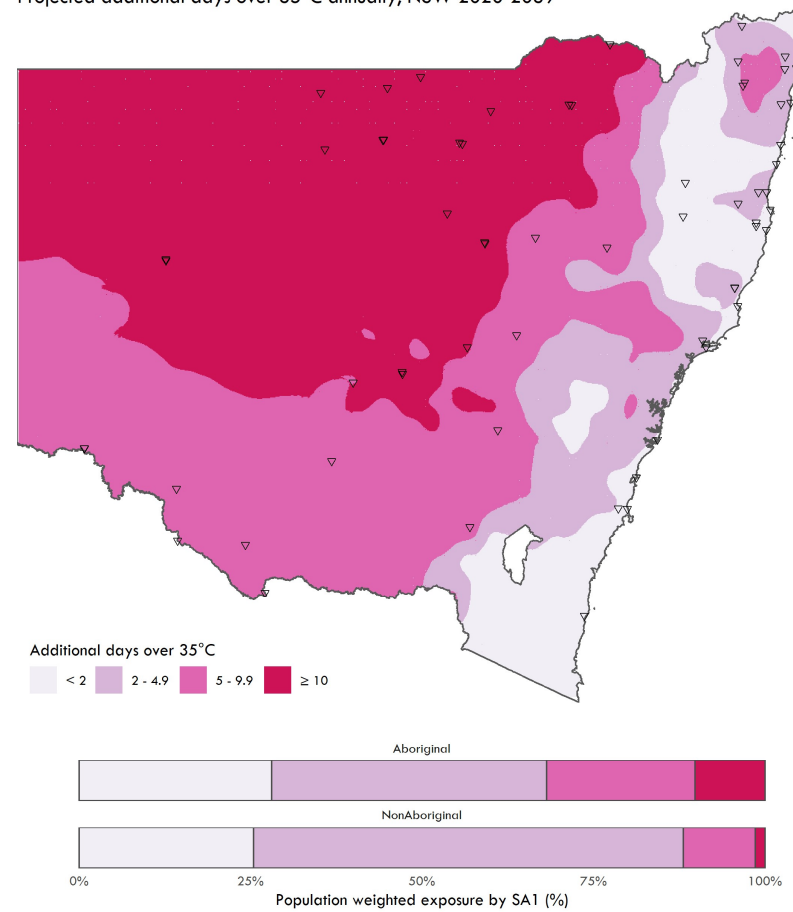


Exposures - Heat and Aboriginal population

(A) Average number of days over 35°C annually, NSW 1990-2019

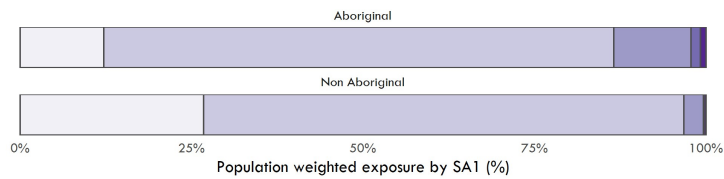
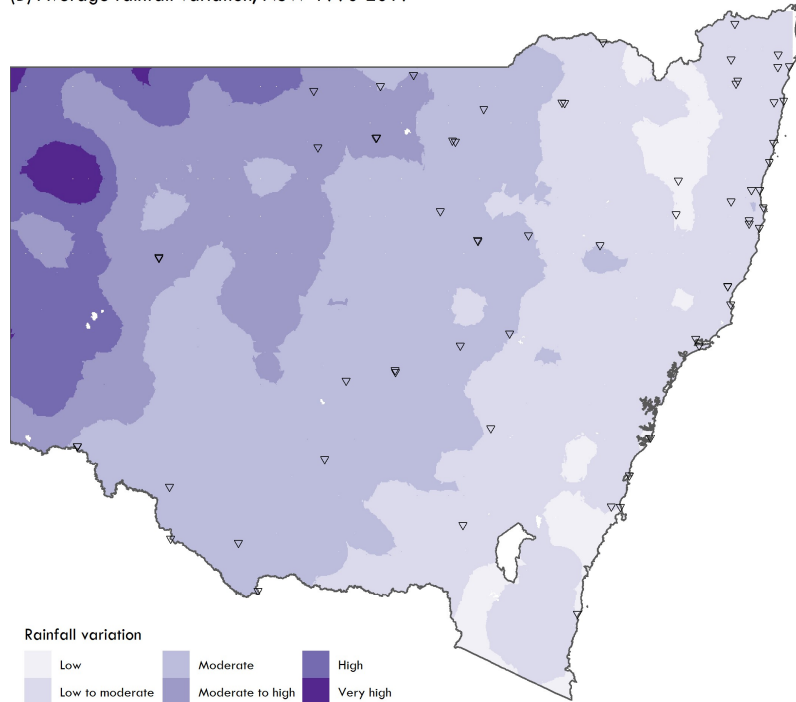


Projected additional days over 35°C annually, NSW 2020-2039

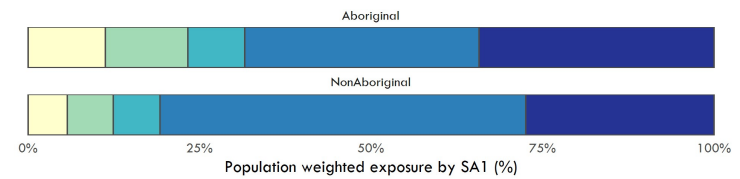
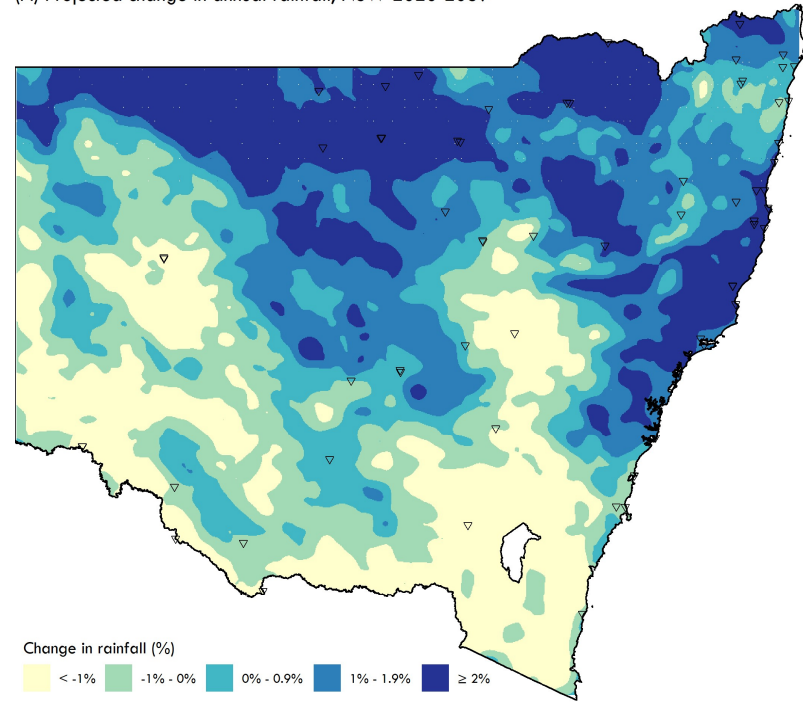


Exposures - Rainfall and Aboriginal population

(B) Average rainfall variation, NSW 1990-2019

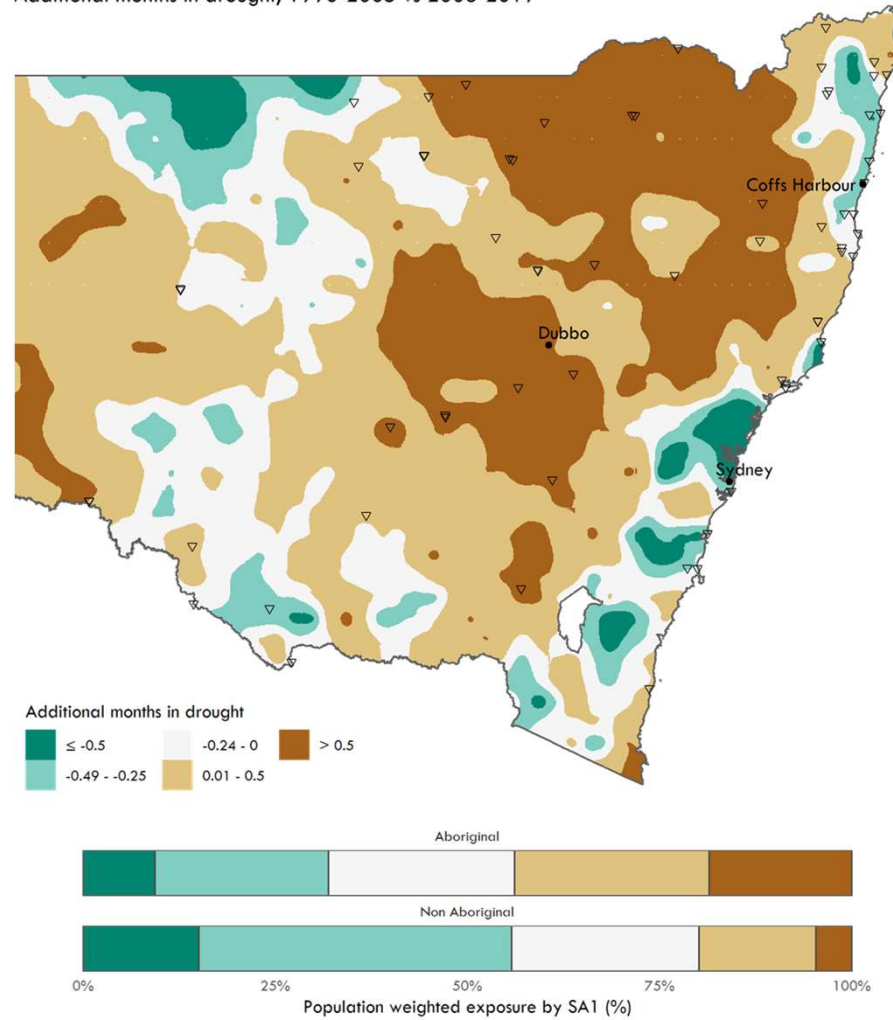


(A) Projected change in annual rainfall, NSW 2020-2039



Exposures - Drought and Aboriginal population

Additional months in drought, 1990-2005 vs 2006-2019



Climate and Aboriginal people – health case studies

- Current housing and living infrastructure often unsuitable for the needs of Aboriginal people
- Issues with water and electricity infrastructure impact the availability and perception of clean drinking water, housing temperature regulation and cultural practices and incomes of Aboriginal people
- Preliminary consultation identified three key areas where need exists, that will likely be exacerbated by climate change
 - Connection to country
 - Water
 - Housing suitability

Connection to country



Connection to country



Water



Water



Housing



Recommendations – guiding principles

- More quantitative and qualitative **participatory-based** research with stakeholders
- Better understanding of the impacts of climate on Aboriginal health and health infrastructure
 - Stakeholder engagement to identify specific health impacts and current adaptation responses
- Development and enhancement of adaptation responses to improve resilience

THANK YOU

This project was funded as part of the Climate Change, Human Health and Social Impacts Node by the NSW Department of Planning, Industry and Environment (DPIE)





Shifting sands – using climate change adaptation to support the vision for Worimi Conservation Lands

Presentation 2

Jamie Tarrant

Chair, Worimi Conservation Lands Board of Management,
Worimi Conservation Lands





Climate Change Adaptation for Aboriginal Cultural Values

Worimi Conservation Lands Case Study

Jamie Tarrant, Chairperson, Worimi Conservation Lands Board of Management



The Worimi Conservation Lands

She is a natural and cultural landscape



She faces many challenges from climate change

- More East Coast Lows: erosion
 - *more erosion threatens frontal dune*
- More severe storm surges: inundation
 - *inundation kills freshwater vegetation*
- Increased wind: shifting sands
 - *a highly dynamic landscape changes even faster*



Other threats she faces

- Very high visitation
 - *impact from 4WD*
- Neighbouring sand mining
 - *net loss of sand*
- Water quality
 - *regional water contamination*



How climate change affects her cultural values

- Erosion affects physical sites like middens
- Inundation affects access for culture
- Changes to sand and inundation affects cultural resources – like pipis and fishing



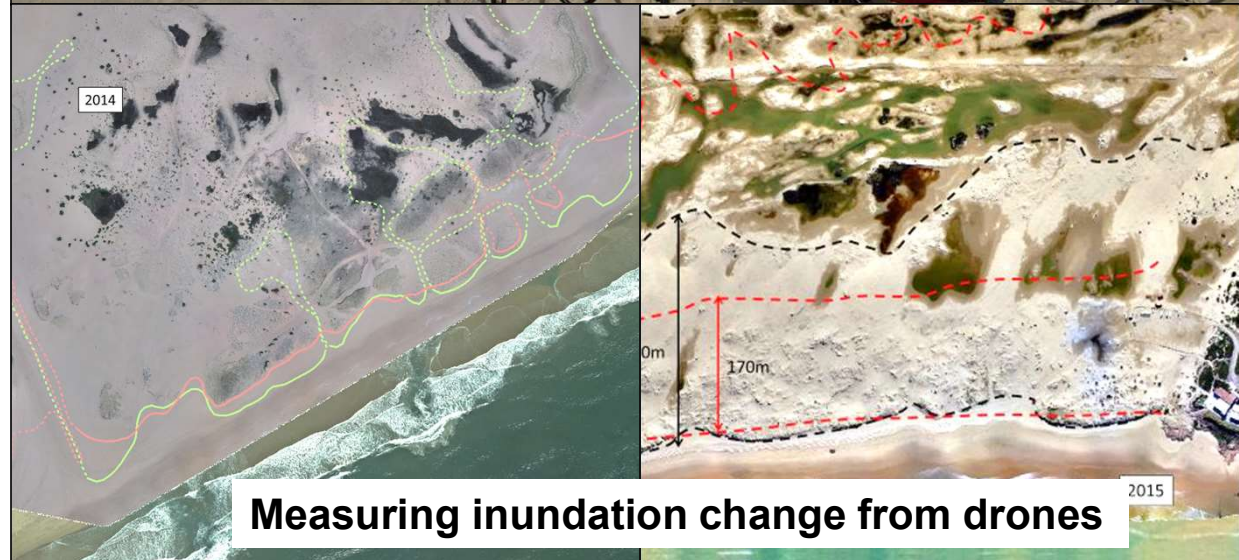
Adapting: tools

- The “sands” are a highly dynamic landscape
- Monitoring change is essential but hard
- Measuring coastal inundation change
- Measuring midden exposure
- Measuring sand movement
- Resourcing long-term monitoring is hard

Landscape laser scanning for sand movement



Ground penetrating radar for buried middens

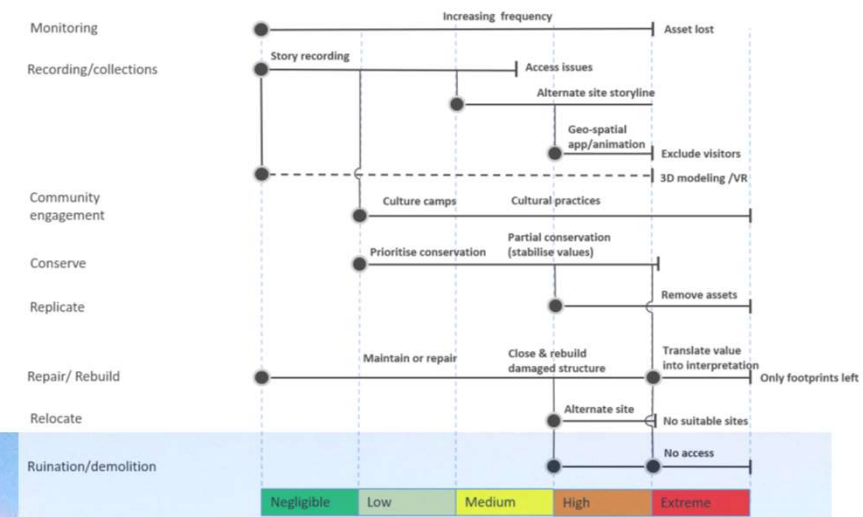


Measuring inundation change from drones

Cultural adaptation pathways

Challenges to resolve:

- How to triage middens: natural erosion; conservation intervention; creating new middens
- Culturally sustainable camping: to safely promote continuity of cultural practice
- Public awareness of cultural values: the sands are a sensitive landscape – everyone needs to respect her and adapt their behaviour



Protect Respect Connect

- We have just celebrated 10 years of management
- What we've learnt is the pressing need to act, but also the complexities of acting un-informed
- The challenge for us now is to organise our monitoring so we know when and how to act
- Culture will adapt to change



Making progress...



Frontal dune restoration





Managing the Fossil Trackway Site through increased aridity and a changing landscape – Case study from the Willandra Lakes Region

Presentation 3

Leanne Mitchell

Aboriginal Heritage Programs Officer, Willandra Lakes Region World Heritage Area, National Parks & Wildlife Service

Ivan Johnson

Chair, Willandra Lakes World Heritage Region Aboriginal Advisory Group



FOSSIL TRACKWAY

Willandra Lakes Region

Leanne Mitchell, World Heritage Aboriginal Program Officer

Ivan Johnston, Aboriginal Advisory Group Chairperson



Acknowledgements



NSW National
Parks and Wildlife
Service



The Sharing
Stories Foundation



Vera Hong
Productions



The Australian
Museum - Sydney



Griffith University
(Australia)



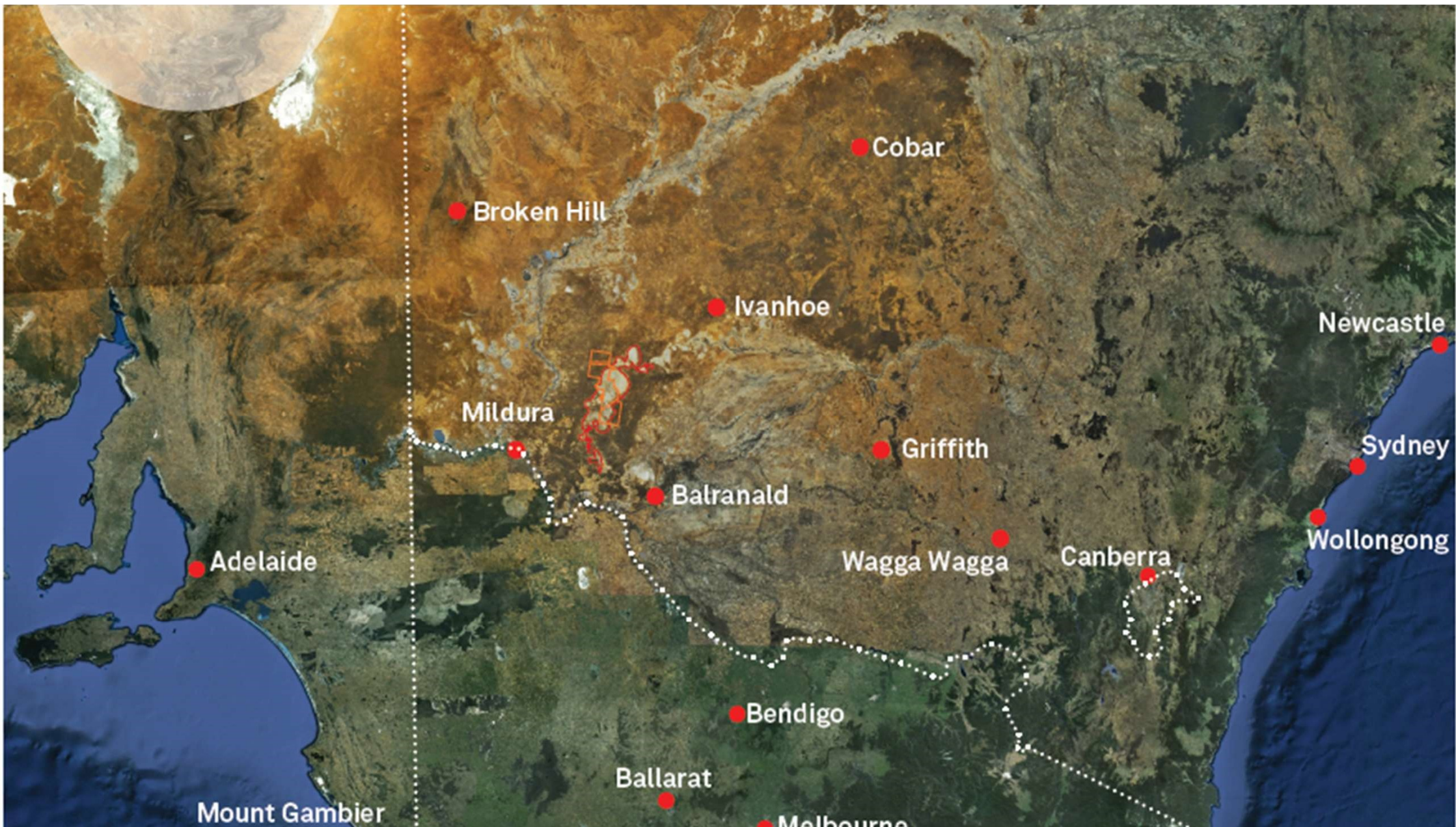
University of
Melbourne
(Australia)



University of
Technology Sydney
- Data Arena



Australian
Heritage Grants



Outstanding Universal Value



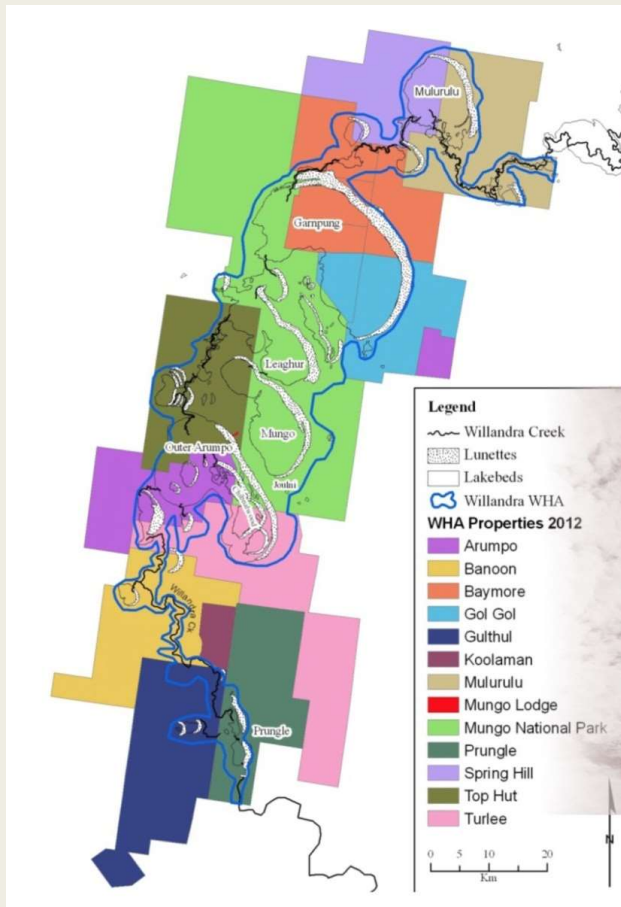
Criterion iii

- The drying up of the Willandra Lakes some 18,500 years BP allowed the survival of remarkable evidence of the way early people interacted with their environment. The undisturbed stratigraphy has revealed evidence of *Homo sapiens sapiens* in this area from nearly 50,000 years BP, including the earliest known cremation, fossil trackways, early use of grindstone technology and the exploitation of fresh water resources, all of which provide an exceptional testimony to human development during the Pleistocene period



Criterion viii

- Geologically – The Australian geological environment, with its low topographic relief and low energy systems, is unique in the longevity of the landscapes it preserves, and the Willandra Lakes provides an exceptional window into climatic and related environmental changes over the last 100,000 years. The Willandra Lakes, largely unmodified since they dried out some 18,500 years BP, provide excellent conditions for recording the events of the Pleistocene Epoch, and demonstrate how non-glaciated zones responded to the major glacial-interglacial fluctuations.



restructuring land management 1981–2014

Since 1981 conserved lands have expanded considerably. Mungo National Park (shown in green) was 4% of the WHA in 1981. It now makes up 30%.

Private properties have been amalgamated (only 13 in 2014, down from 19 in 1981).

Privately grazed lands made up 96% of the WHA in 1981. They now make up 70% of the WHA.





Some faces of the Willandra

Objectives for the Fossil Trackway



Create meaningful engagement with a site that cannot be visited and may not exist due to ongoing erosional processes.



Why can't people go there?

Impact from foot traffic

Vandalism

Exposure to elements

The best way to conserve is to rebury with natural materials e.g. sand



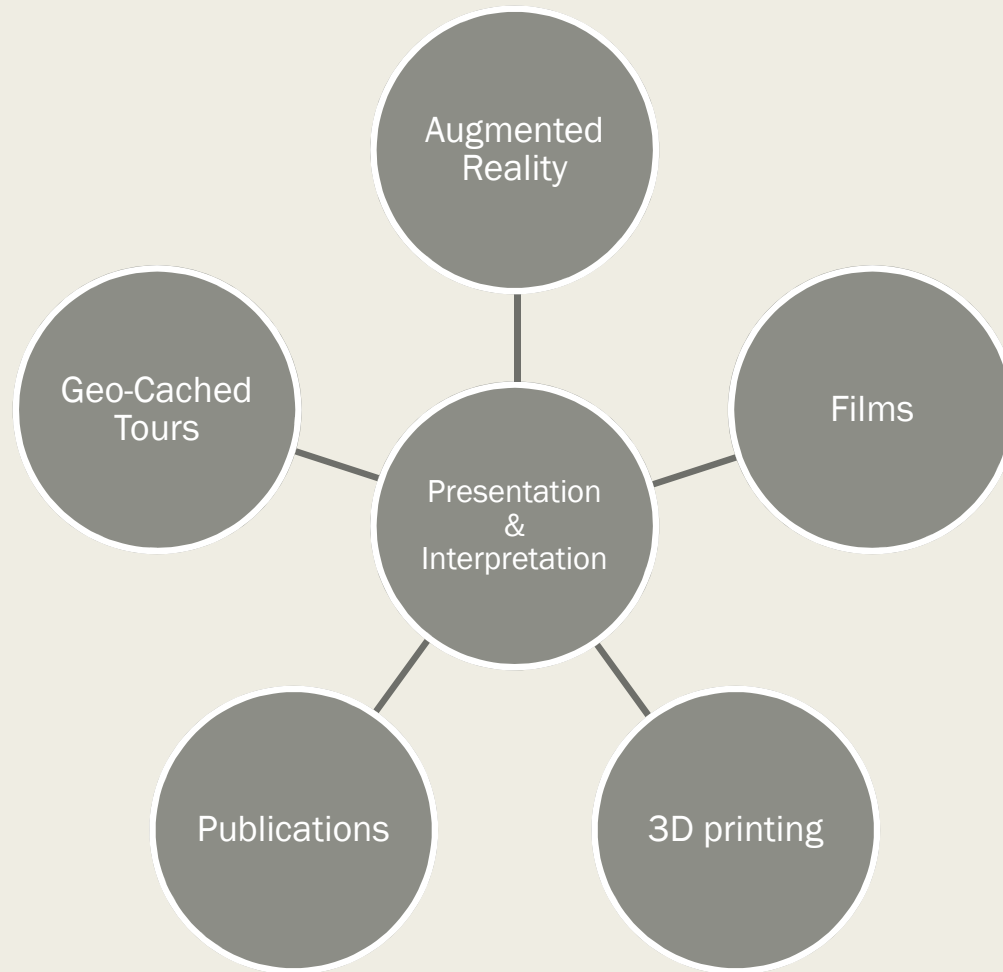
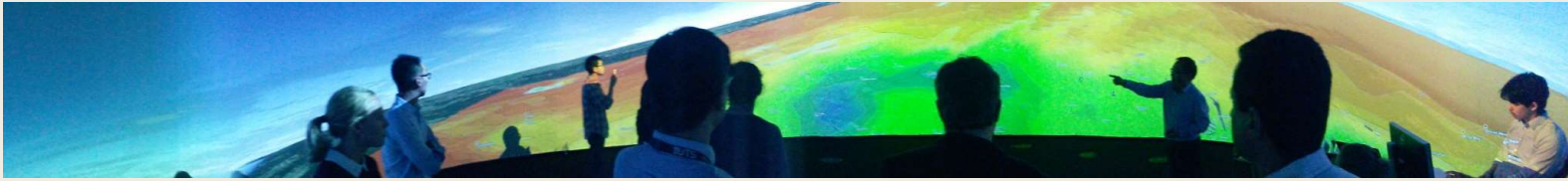
How? Repurposing data collected for monitoring

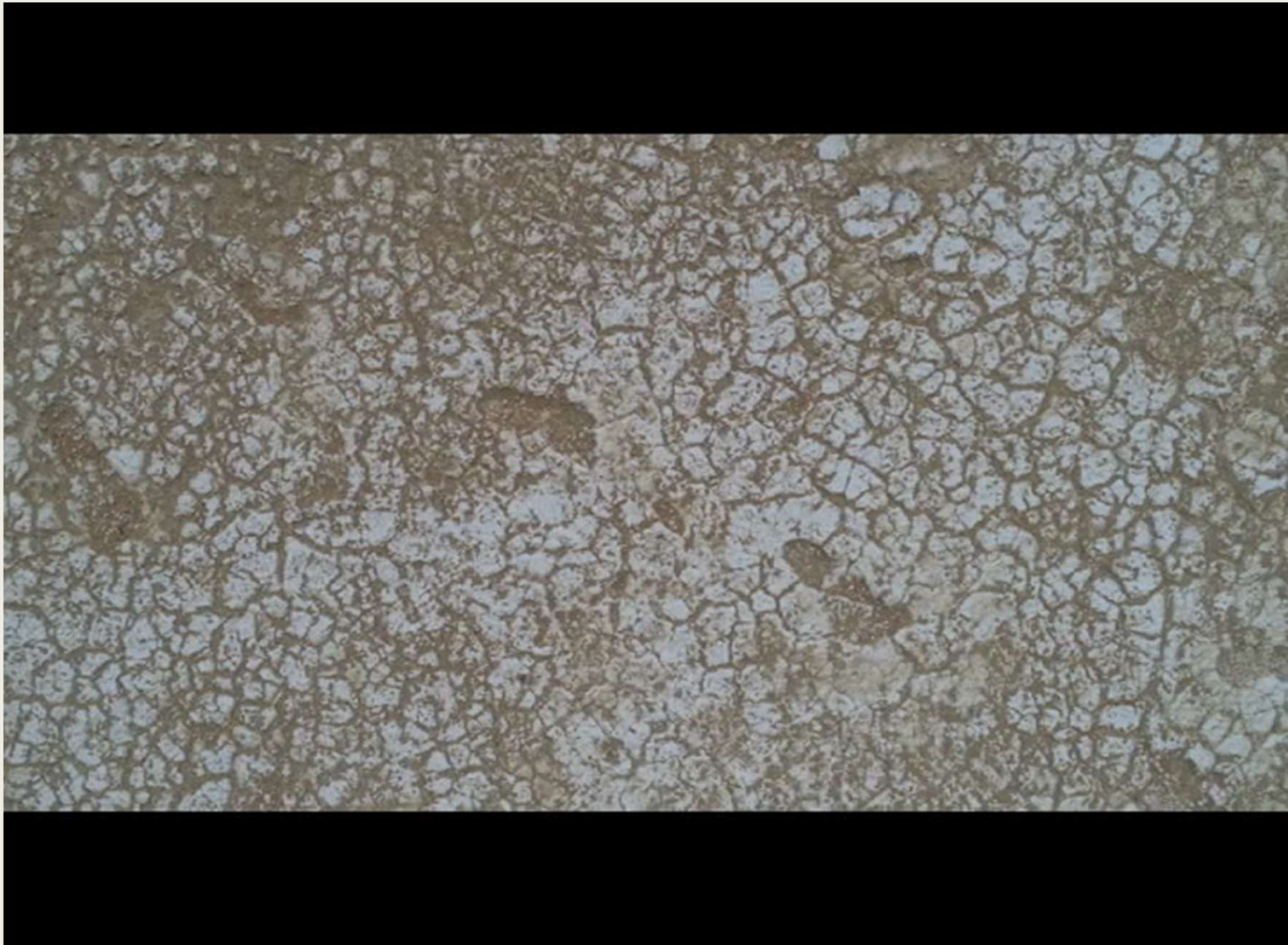


Scanning with new technologies

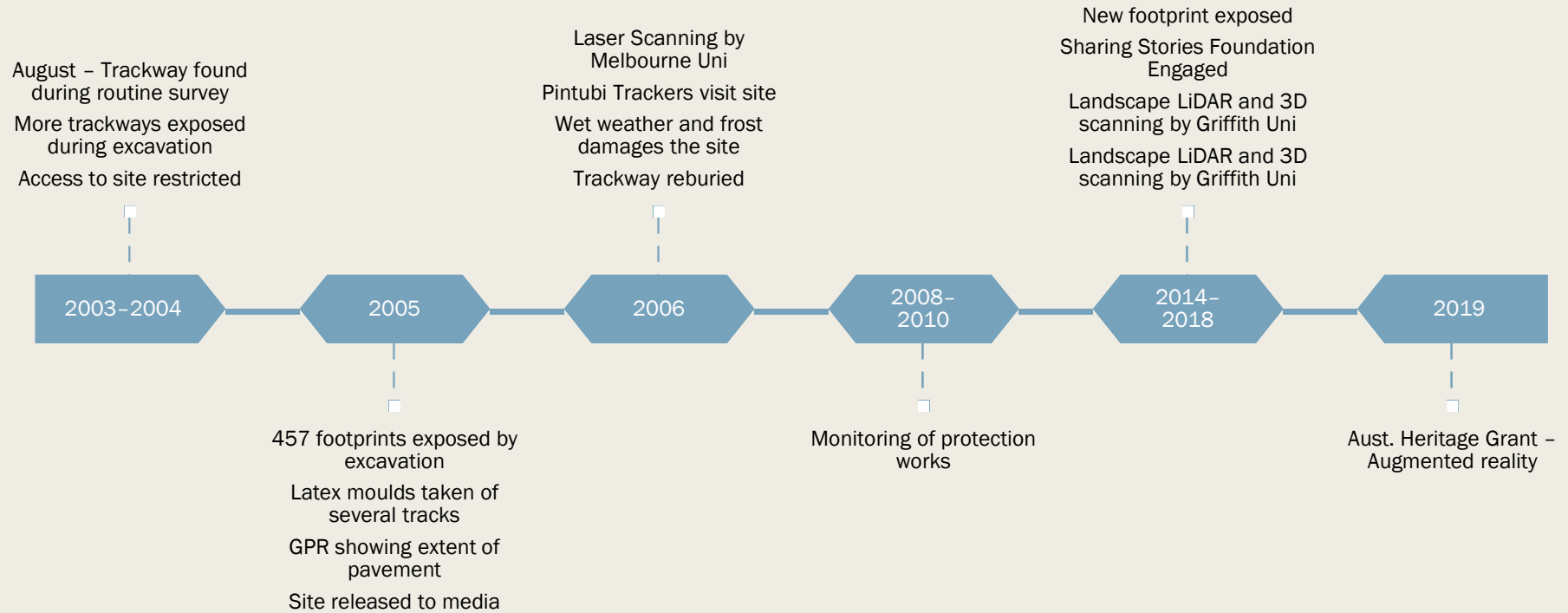


Augmented and Virtual Reality





Time Line



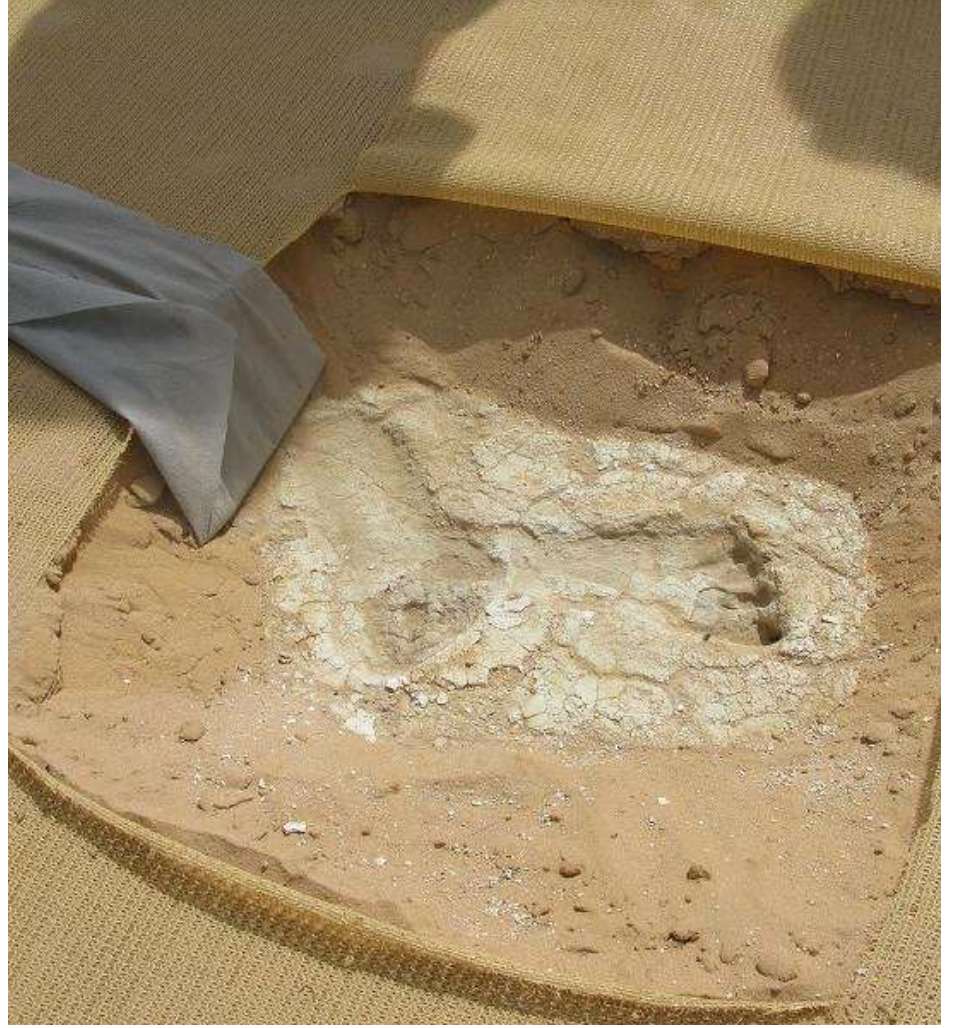




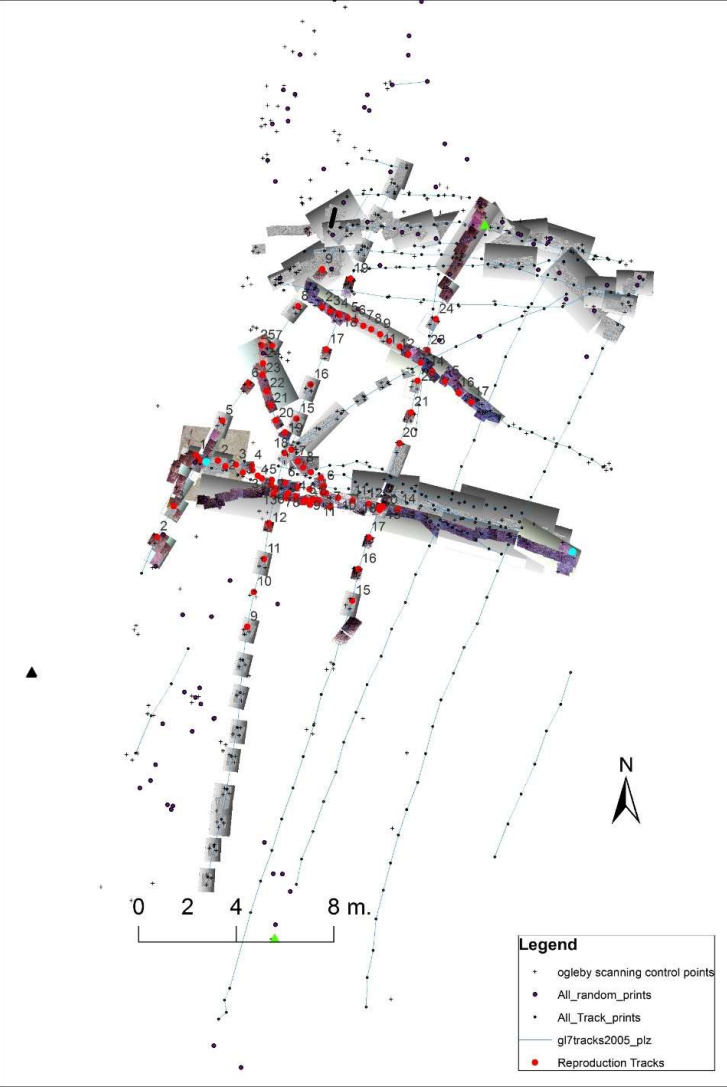






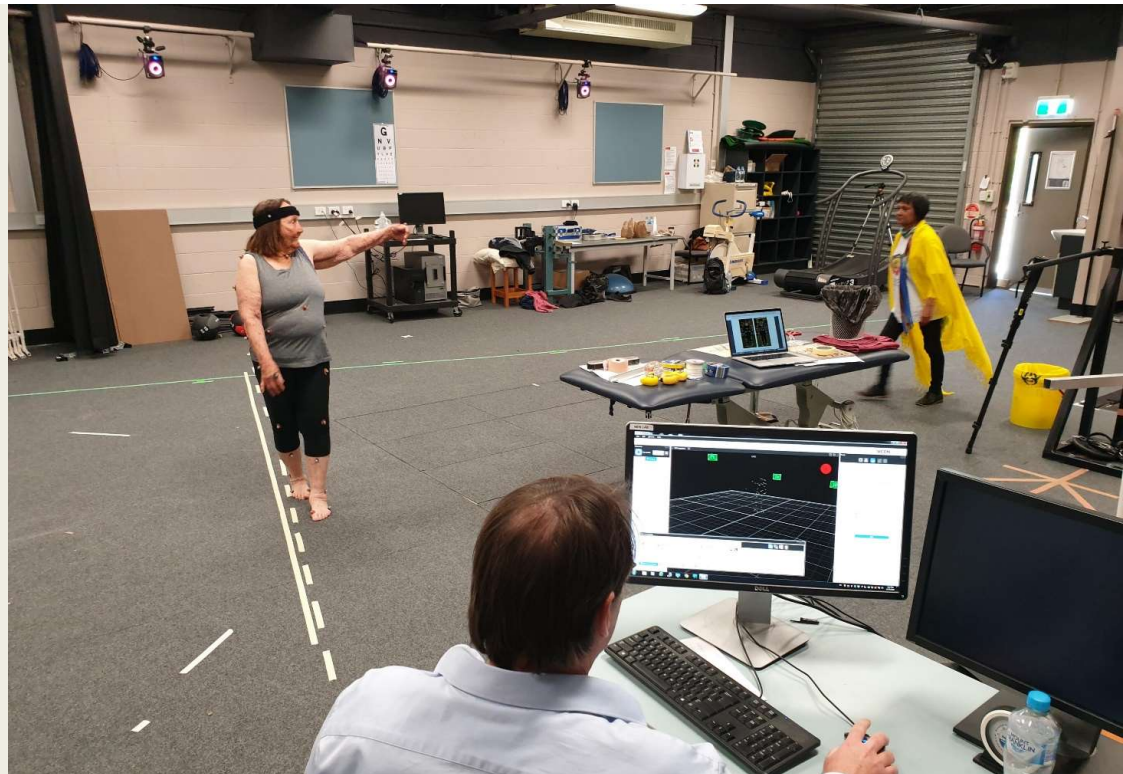




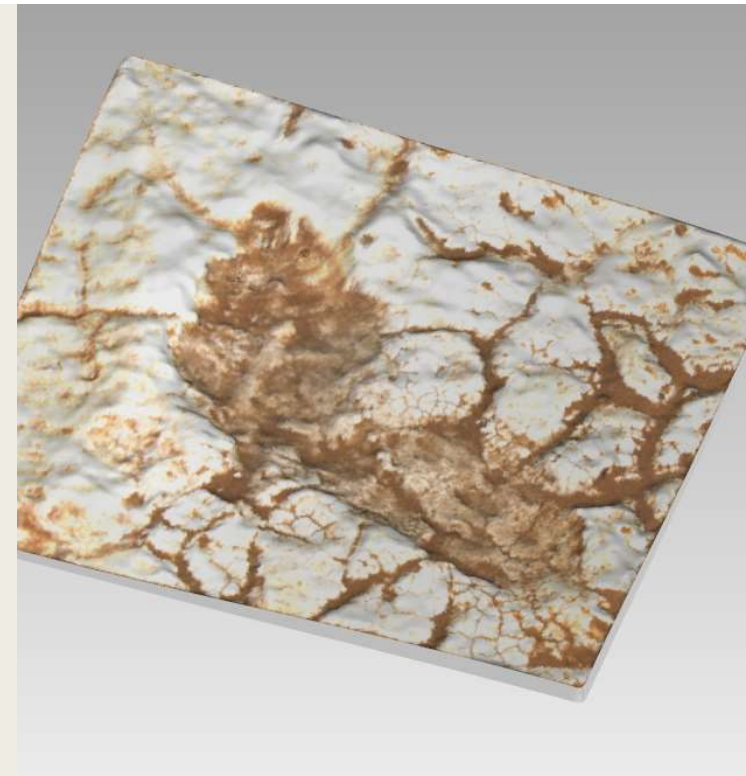
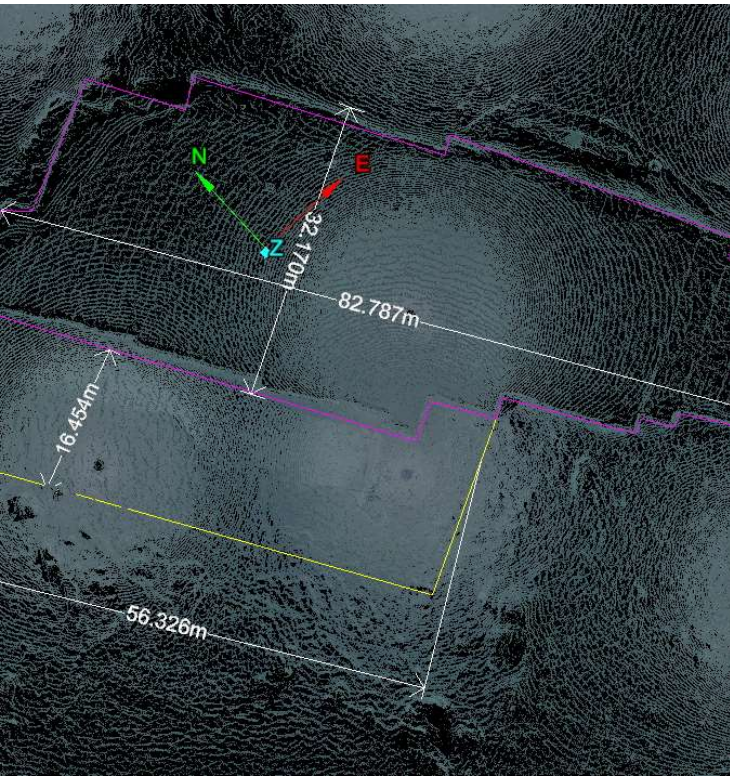


The Sharing Stories Foundation

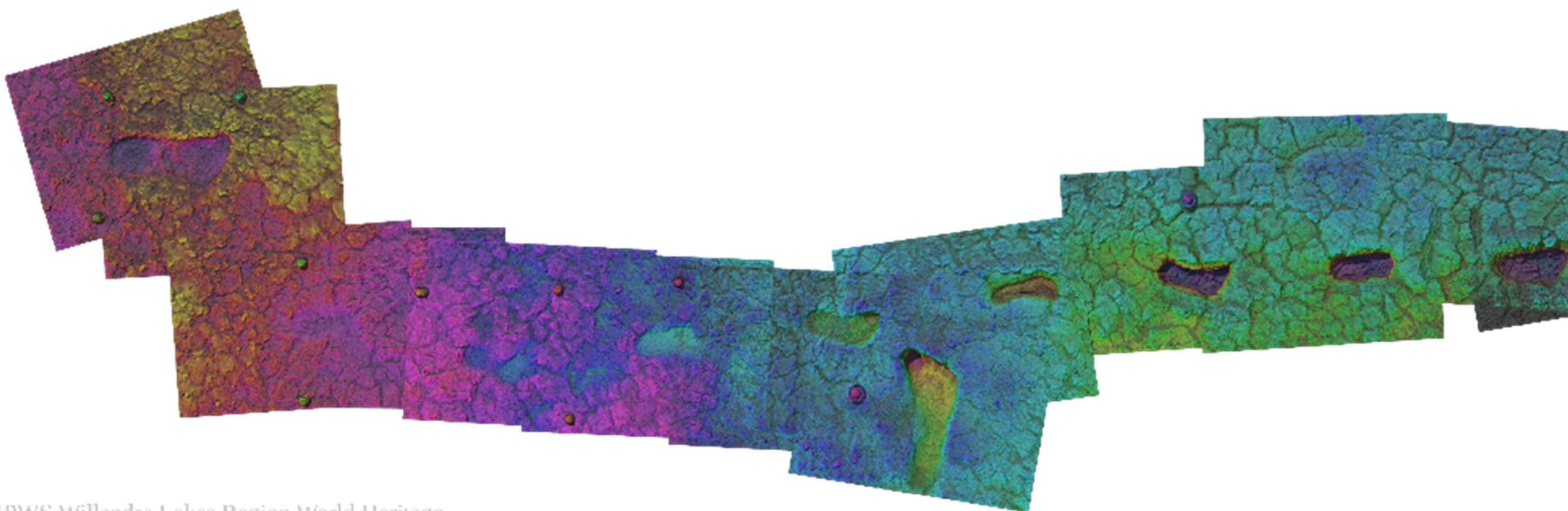




MOTION CAPTURE

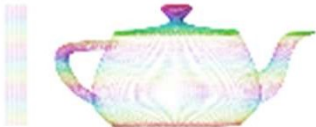


NEW TECHNOLOGIES



NPWS Willandra Lakes Region World Heritage
Footprints at Lake Mungo NSW
UTS Data Arena

Dan Rosendahl, OE&H NPWS Willandra Lakes
Chris Little, Griffith University
Jacqueline Gothe, Visual Communication DAB UTS
Ben Simons, UTS Data Arena



Colour represents relative height



Thank you!



Q & A

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