

7th Annual Winter School

Climate Extremes and High Impact Weather

Welcome

Thank you for participating in the ARC Centres of Excellence for Climate System Science and Climate Extremes [7th Annual Winter School](#). The theme of the 2018 Winter School is Climate Extremes and High Impact Weather.

The 2018 Winter School is a week-long high-level education program for honours and graduate students interested in climate science consisting of a series of lectures and lab sessions delivered by Centre of Excellence researchers and guest speakers from our five universities and the Bureau of Meteorology.

The Winter School will examine the key processes that effect long- and short-term weather and climate events, with an emphasis on how regional climate extremes are related to variability, climate teleconnections and climate sensitivity.

We hope that the skills gained from this workshop provide you with an insight into the science of climate extremes and high impact weather and prove to be an invaluable reference for your future careers.

Dr Melissa Hart
Graduate Director

Table of Contents

<i>Welcome.....</i>	<i>1</i>
<i>Introduction</i>	<i>4</i>
<i>Our Commitment to Diversity</i>	<i>4</i>
<i>Transport</i>	<i>4</i>
Sydney and Wollongong to Canberra	4
Winter School to Airport Friday June 29 th	5
Local transportation.....	5
<i>Accommodation</i>	<i>5</i>
University House – ANU	5
Important information	5
<i>Venue.....</i>	<i>6</i>
ANU	6
Food and retail on campus	6
Winter School teaching and breakout spaces	6
Registration	6
Lectures.....	7
Breakout rooms.....	7
<i>Researcher Development Workshop</i>	<i>8</i>
<i>Mini Projects</i>	<i>8</i>
<i>Optional tours</i>	<i>8</i>
GFD Lab tours	8
Palaeo Lab tours	8
NCI tour.....	8
<i>Social Events</i>	<i>9</i>
Monday night ice-breaker	9
ARCCSS Showcase	9
<i>Supplementary Material.....</i>	<i>10</i>
<i>IT and WiFi details.....</i>	<i>10</i>
<i>Food.....</i>	<i>10</i>
Food near ANU Acton campus	11
<i>Winter School 2018 Staff and Speakers</i>	<i>12</i>
Who can help.....	12
Speakers.....	12
Demonstrators and mentors	15
<i>Winter School 2018 Schedule</i>	<i>16</i>

<i>ANU Campus map</i>	<i>17</i>
------------------------------------	------------------

Introduction

The [ARC Centre of Excellence for Climate System Science \(ARCCSS\)](#) and the recently launched [ARC Centre of Excellence for Climate Extremes \(CLEX\)](#) are research consortiums of five Australian universities and a suite of outstanding national and international partner organisations. An important strategic objective of the two centres is to transform graduate education in climate science at the national scale. This is where our graduate program, led by graduate director, [Melissa Hart](#), comes in. The graduate program reaches beyond a single university and aims to develop the technical and intellectual capacity of Australian graduate students engaged in climate science.

An integral component of our Graduate Program is [our annual winter school](#). The winter schools are highly competitive, week-long, graduate-level courses, and are open to all students regardless of their affiliation with ARCCSS/CLEX. This year we are happy to welcome you to our 7th Annual Winter School, *Climate Extremes and High Impact Weather*, hosted by [the Research School of Earth Sciences](#), ANU, Canberra.

Our Commitment to Diversity

Gender, ethnicity, sexuality, age, disability and other personal characteristics should not be impediments to your full engagement and enjoyment of the Winter School. Nor should such personal traits be grounds for language or actions from any Winter School participants that are discriminatory or intimidating. By attending the Winter School you agree to abide by standards that are ethical, respectful and considerate of all other attendees and venue staff at all times.

We also acknowledge and celebrate the traditional custodians of the land we are meeting on – the Ngunnawal people, and pay our respects to elders past and present.

Transport

Upon arrival in Canberra, please make your own way to accommodation at University House at the ANU. [Uber](#) is an easy and cost-efficient way of getting around, make sure you have their app downloaded if you plan to use their service.

Sydney and Wollongong to Canberra

UNSW and University of Wollongong students are encouraged to book their travel to and from Canberra with Murrays Coaches (Sydney Express):

<https://www.murrays.com.au/express-services/murrays-express-services-between-canberra-sydney-sydney-airport/>

or <https://www.murrays.com.au/express-services/canberra-wollongong-via-goulburn-moss-vale/> (Wollongong service) .

If you choose to travel by car, please try to carpool with other students if possible. In Canberra, the coach arrives and departs from Jolimont Centre, Bay 6/7, 65-67 Northbourne Avenue.

Winter School to Airport Friday June 29th

For students and staff leaving Canberra on the afternoon on Friday the 29th, we are providing a complementary bus service from ANU UniHouse to the domestic airport at 4.30pm. Students wishing to leave for the airport earlier or later will need to make their own way to the airport.

Local transportation

If you wish to catch a bus locally during your stay in Canberra, please visit the ANU bus information page for the best option for your destination:

<https://services.anu.edu.au/campus-environment/transport-parking/catching-the-bus>

A list of taxi services can be found below:

- ACT Cabs (02) 6280 0077
- Cabxpress (02) 6181 2700
- Canberra Elite Taxis (02) 6126 1600

Accommodation

University House – ANU

Participants will be staying at [University House](#). Set within a leafy enclave, University House offers guests a sanctuary from the hustle and bustle of the ANU campus and the city centre, while only being a short stroll from all its attractions.

Once the exclusive home to students and academics, the hotel provides guests with a warm, intimate atmosphere and the utmost in personal attention. The classic 1950s building has been carefully preserved with rooms offering the perfect blend of heritage décor and modern facilities.

Most of the hotel's 105 rooms boast features such as a large writing desk, in-floor bathroom heating, direct dial telephones, security key card access, wireless internet access, mini bar and large balconies with views overlooking the elegant gardens or towards the city.

Important information

All guests will be required to provide a **personal credit card** or \$50 cash deposit at check in for any incidental charges (Winter School covers the room and breakfast charge). Check in from 2.00pm on Sunday the 24th and check out by 10.00am on Friday the 29th. The reception is open until 11pm. If anyone is to arrive later they have to advise reception on 6125 5211.

Free Wifi is available for use at University house. Please ask for login details at reception. Those requiring parking will need to advise reception on check-in that they require parking. You will be given a voucher and advised where they can park. No additional costs are involved for parking.

Contact details:

University House
The Australian National University
Cnr Balmain Cr & Liversidge St
ACTON

(02) 6125 5211

Contact: unihouse@anu.edu.au

Website: <http://unihouse.anu.edu.au/>

Venue

ANU

[The Australian National University](#) (ANU) is located in the heart of Canberra. Its main campus in Acton encompasses seven teaching and research colleges, in addition to several national academies and institutes.

ANU is well-known for its intensive research, education and policy engagement and is home to an interconnected community of scholars.

The ANU Campus Map can be found at : <http://www.anu.edu.au/maps#>



Food and retail on campus

ANU Acton campus is home to a wide range of services and food options.

<http://about.anu.edu.au/campus/services>

Food options at the Village, ANU:

<https://pop-up.anu.edu.au/eat-drink>

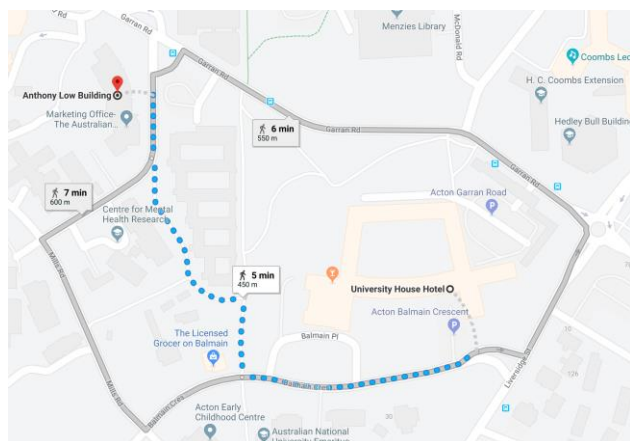
Winter School teaching and breakout spaces

Registration

Registration will commence at 8:15 am in the foyer of the Anthony Low Building, Innovations Theatre for lectures entrance.

Directions from University House are listed below:

1. Walk south-west on Balmain Crescent towards Balmain Place (180 m)
2. Turn right towards Eggleston Rd (60 m)
3. Turn left towards Eggleston Rd (150 m)
4. Continue onto Eggleston Rd (47 m)
5. This walk should take approximately 5 minutes



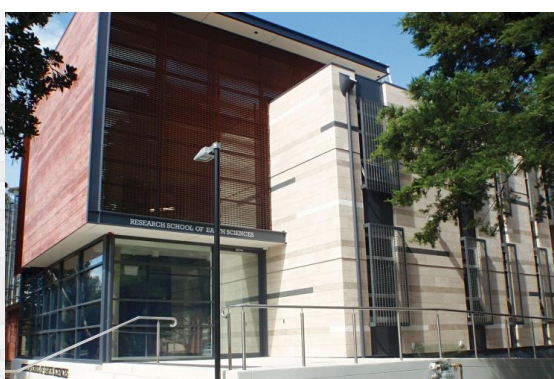
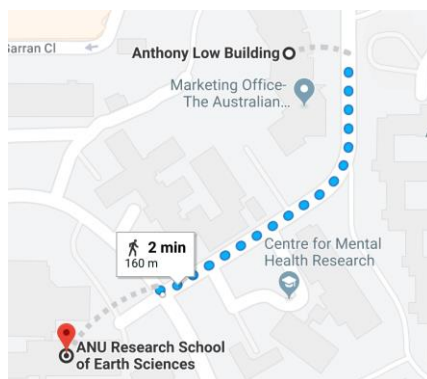
Lectures

All of the Winter School's lectures will take place in the Innovations Lecture Theatre, Anthony Low building.

Breakout rooms

The afternoon break-out sessions will be held in Jaeger 8, RSES, 142 Mills Road. The building is located a 2-minute walk from the Anthony Low building:

1. Walk south Eggleston Rd towards Mills Rd
2. Turn left onto Mills Rd, cross the road. Your destination is to the left



Researcher Development Workshop

As part of the Winter School, we will be running a research communications workshop delivered by [Dr Merryn McKinnon](#) from the Australian National Centre of Public Awareness of Science (CPAS) on Friday the 29th.

The workshop aims to equip attendees with skills and strategies to better 'sell' themselves and their research to prospective employees and collaborative partners.

Please note: As a part of this workshop, we ask attendees to bring a copy of their bio. Please note that this can be a draft or a work in progress, but you will need something that you can work on.

Mini Projects

You will be working on a mini project throughout the week. You will be placed in groups of 5-6 and assigned your project on the Monday of the Winter School. You will present results from these projects on the Thursday.

Optional tours

During the Winter School you will have the opportunity to register for and take part in two optional activities, the RSES GFD Lab and PalaeoLab tours and the NCI tour. The tours have a limited number of spaces available, and are filled at a first come, first serve basis. Please follow the links to the Doodle registrations – do not forget to enter your name when registering!

GFD Lab tours

The Geophysical Fluid Dynamics (GFD) laboratory is a purpose-built 400 sq. m laboratory for experimental fluid dynamics.

Date and time: Tuesday June 26th and Wednesday June 27th 1.00– 1.30pm

Link to register: [GFD Lab tour](#)

Palaeo Lab tours

Tour of the ANU Palaeo Labs

Date and time: Tuesday June 26th and Wednesday June 27th 1.00– 1.30pm

Link to register: [Palaeo Labs tour](#)

NCI tour

NCI Australia is the nation's most highly-integrated, high-performance research computing environment. Based at ANU, NCI provides high-performance data services to more than 4,000 researchers at a number of the national science agencies, along with more than 35 Australian universities, eight ARC Centres of Excellence, several other NCRIS capabilities, and several medical research institutes and industry partners.

Date and time: Friday June 29th, 1.00 – 2.00pm

Link to register: [NCI tour registration](#)

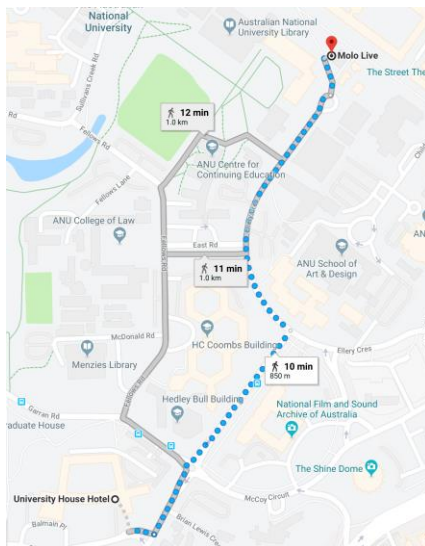
Social Events

Monday night ice-breaker

The Winter School will be hosting an ice breaker event on **Monday night from 6.00pm** at the [Molo Live Pop-up Bar](#). This will be a great opportunity for students to meet each other in a more informal setting, and to network with people both within and outside their field. Canapés will be served from 6.20pm onwards, and there will be a bar tab.

The Pop-up Club is approx. a 10 min walk from UniHouse:

1. Walk east on Balmain Cres towards Liversidge St (37 m)
2. Turn left onto Liversidge St (350 m), turn left onto Ellery Cres (400 m)
3. Turn left, Pop-Up Molo Live Bar will be on your right



ARCCSS Showcase

All Winter School students are invited to attend the ARC Centre of Excellence for Climate System Science (ARCCSS) [Showcase](#) on **Wednesday June 27th**, held at the Old Parliament House.

Come along to meet the ARCCSS researchers and hear about the legacy of seven years of world class research into the past, present and future of our climate. You will have the opportunity to try out some Virtual Reality, have fun engaging with our future climate scientists and build your own climate simulation. Drinks and canapes will be provided upon arrival. This is a great opportunity for networking in multiple environment/policy/science industries.

Please note you do **NOT** have to register for this event. We have already registered you.

Important- The event has a dress code of - business casual/smart casual.

A complimentary bus service to the Showcase will depart from UniHouse, Garran road Bus stop at 4.30pm, and return from the Old Parliament House at 8.30pm. If you wish to travel outside of these times, please arrange your own transport.

Supplementary Material

Supporting material including the schedule, recommended and required prior readings, presentation slides, and instructions for the labs will be made available on the [Winter School website](#).

Please note that this site will be continuously updated up to and during the Winter School week so be sure to keep checking it for new material.

IT and WiFi details

Please note that all students are required to bring their own laptops.

Students will be able to access Wi-Fi via the below account which has been enabled for both ANU-Access and ANU-Secure.

Configuration guides for ANU-Secure are located here:

<http://wireless.anu.edu.au/anusecure.php>

Guests can access the guides by first connecting to ANU-Access and following the links on the login page, however IT services cannot provide direct support for conference guests. As such guests who are unable to connect to ANU-Secure should use ANU-Access.

User name: CoEWS

Password: CLEXWS2018

Please note that usernames and passwords are case-sensitive.

Food

Morning tea and lunch will be provided throughout the week for Winter School attendees. This will be served in the foyer of the Anthony Low building.

Students and staff staying at the UniHouse will also receive a complimentary breakfast.

During the two 'free' nights, Tuesday the 26th and Thursday the 28th, students are expected to make their own dinner arrangements. There is an array of food options located on and around the campus.

Food near ANU Acton campus

Novotel

Dinner available 5:30 - 9:30pm, seven days a week

<http://novotelcanberra.com.au/Restaurant-Bar/one-restaurant-at-novotel-canberra.html>

Bicicletta

1/5 Edinburgh Ave

Sun 5pm - 11pm

<http://www.bicicletta.com.au/>

Happy's Chinese Restaurant

1/17 Garema Pl

Sun 5pm - 9:30pm

<http://www.happys.com.au/>

City Labor Club

16 Petrie Plaza

Sun 6.00 - 9.00pm

<http://www.laborclub.com.au/city-labor-club/dining/>

Zen Yai Thai

111 London Circuit

Sun 5.00 - 9.45pm

<http://zenyaithai.com.au/>

Flavours of India

70 Bunda St Canberra

Sun 5.30 - 10.00pm

<http://flavoursofindia.com.au/>

Hog's Breath




143 London Circuit

Sun 11.30am - 9.00pm

<https://www.hogsbreath.com.au/location/canberra/>

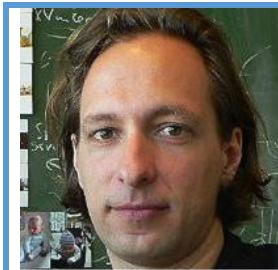
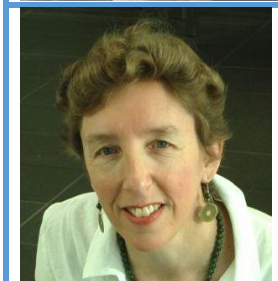




Winter School 2018 Staff and Speakers




Who can help

	<p>Dr Melissa Hart <i>ARCCSS/ CLEX Graduate Director</i> Phone: (02) 9385 6263 / 0409 224 033 Email: melissa.hart@unsw.edu.au</p>
	<p>Jenny Rislund <i>CLEX Executive Assistant</i> Phone: (02) 9385 9393 / 0424 622 411 Email: j.rislund@unsw.edu.au</p>
	<p>Alina Bryleva <i>ANU Node Administrator</i> Phone: (02) 6125 0610 / 0474 348 869 Email: alina.bryleva@anu.edu.au</p>






Speakers

	<p>A/Prof Julie Arblaster <i>CLEX Chief Investigator</i> <i>ARCCSS Associate Investigator</i> Monash University julie.arblaster@monash.edu</p>
	<p>Dr Martin De Kauwe <i>CLEX Research Associate</i> UNSW Sydney m.dekauwe@unsw.edu.au</p>

	<p>Dr Dietmar Dommenget <i>CLEX Chief Investigator</i> <i>ARCCSS Chief Investigator</i></p> <p>Monash University dietmar.dommenget@monash.edu</p>
	<p>Dr Beth Ebert <i>Research Program Leader, Weather and Environmental Prediction</i></p> <p>Bureau of Meteorology beth.ebert@bom.gov.au</p>
	<p>Prof Neil Holbrook <i>CLEX Chief Investigator</i> <i>ARCCSS Chief Investigator</i></p> <p>UTAS neil.holbrook@utas.edu.au</p>
	<p>Prof David Karoly <i>Leader, Earth Systems and Climate Change Hub, the Australian Government's National Environmental Science Program</i></p> <p>CSIRO david.karoly@csiro.au</p>
	<p>Dr Andrew King <i>CLEX Associate Investigator</i></p> <p>University of Melbourne andrew.king@unimelb.edu.au</p>
	<p>Dr Laurie Menviel Research Associate ARCCSS</p> <p>UNSW Sydney l.menviel@unsw.edu.au</p>

	<p>Prof Andy Pitman CLEX Director</p> <p>UNSW Sydney a.pitman@unsw.edu.au</p>
	<p>Dr Martin Singh Lecturer, School of Earth, Atmosphere & Environment CLEX Associate Investigator</p> <p>Monash University martin.singh@monash.edu</p>
	<p>Dr Hamish Ramsay Research Scientist, Oceans and Atmosphere ARCCSS Associate Investigator</p> <p>CSIRO hamish.ramsay@csiro.au</p>
	<p>Prof Michael Reeder CLEX Chief Investigator ARCCSS Chief Investigator</p> <p>Monash University michael.reeder@monash.edu</p>
	<p>Professor Mike Roderick CLEX Chief Investigator ARCCSS Chief Investigator</p> <p>ANU michael.roderic@anu.edu.au</p>
	<p>Dr Rob Warren Research Fellow, School of Earth, Atmosphere and Environment ARCCSS Associate Investigator</p> <p>Monash University rob.warren@monash.edu</p>

Demonstrators and mentors

	<p>Dr Eva Cougnon <i>CLEX Associate Investigator</i></p> <p>UTAS eva.cougnon@utas.edu.au</p>
	<p>Dr Annette Hirsch <i>CLEX Research Associate</i></p> <p>UNSW Sydney / ANU a.hirsch@unsw.edu.au</p>
	<p>Dr Tamas Loughran <i>ARCCSS Alumni</i></p> <p>UNSW Sydney t.loughran@student.unsw.edu.au></p>
	<p>Dr Amelie Meyer <i>CLEX Research Associate</i></p> <p>UTAS amelie.meyer@utas.edu.au</p>
	<p>Dr Jennifer Wurtzel <i>ARCCSS Alumni</i></p> <p>ANU jennifer.wurtzel@anu.edu.au</p>



climate extremes
ARC centre of excellence

Winter School 2018- Climate Extremes and High Impact Weather



ARC CENTRE OF EXCELLENCE FOR
CLIMATE SYSTEM SCIENCE

Winter School 2018 Schedule

	Monday June 25	Tuesday June 26	Wednesday June 27	Thursday June 28	Friday June 29
8:15 - 8:45	Registration Anthony Low Building foyer				
8:45 - 9:00	Introduction and Welcome Melissa Hart <i>Innovations Lecture Theatre - Anthony Low</i>				
9:00 - 10:00	L1 - What are climate extremes? David Karoly <i>Innovations Lecture Theatre - Anthony Low</i>	L4 - Drought Martin De Kauwe /Mike Roderick <i>Innovations Lecture Theatre -Anthony Low</i>	L7 - Extreme rainfall 'Tropical cyclones' Hamish Ramsay <i>Innovations Lecture Theatre -Anthony Low</i>	L10 - Variability- Extratropical Julie Athlaster <i>Innovations Lecture Theatre -Anthony Low</i>	L13 - Compound events Andy Pitman <i>Innovations Lecture Theatre -Anthony Low</i>
10:00 - 11:00	L2 - Data, indices David Karoly <i>Innovations Lecture Theatre - Anthony Low</i>	L5 - Drought Martin De Kauwe /Mike Roderick <i>Innovations Lecture Theatre -Anthony Low</i>	L8 - Temperature extremes- heatwaves Michael Reeder <i>Innovations Lecture Theatre -Anthony Low</i>	L11 - Variability - ENSO Dietmar Domeig <i>Innovations Lecture Theatre -Anthony Low</i>	L14 - Thunderstorms and severe weather Rob Warren <i>Innovations Lecture Theatre -Anthony Low</i>
11:00 - 11:30			Morning Tea		
11:30 - 12:30	L3 - Detection and Attribution Andrew King <i>Innovations Lecture Theatre - Anthony Low</i>	L6 - Extreme Rainfall 'The dynamics of precipitation extremes' Morty Singh <i>Innovations Lecture Theatre -Anthony Low</i>	L9 - Temperature extremes- marine. Neil Holbrook <i>Innovations Lecture Theatre -Anthony Low</i>	L12 - Variability- paleo Laurie Merviel <i>Innovations Lecture Theatre -Anthony Low</i>	L13 - High Impact weather @BoM Beth Ebert <i>Innovations Lecture Theatre -Anthony Low</i>
12:30 - 13:30		Lunch			
		GFD and Palaeo Lab tours	GFD and Palaeo Lab tours		NCI tour
13:30 - 14:30	Introduction to projects <i>Innovations Lecture Theatre - Anthony Low</i>	Work on projects RSES, 142 Mills Rd, Jaeger 8	Work on projects RSES, 142 Mills Rd, Jaeger 8	Work on projects RSES, 142 Mills Rd, Jaeger 8	Researcher Development workshop - Researcher communications Merryn McKinnon <i>Innovations Lecture Theatre - Anthony Low</i>
14:30 - 15:30	Work on projects RSES, 142 Mills Rd, Jaeger 8	Work on projects RSES, 142 Mills Rd, Jaeger 8	Work on projects RSES, 142 Mills Rd, Jaeger 8	Presentation of projects <i>Innovations Lecture Theatre - Anthony Low</i>	
15:30 - 16:00		Afternoon Tea			
16:00 - 17:00	Work on projects RSES, 142 Mills Rd, Jaeger 8	Work on projects RSES, 142 Mills Rd, Jaeger 8	ARCCSS Showcase Old Parliament House	Presentation of projects <i>Innovations Lecture Theatre - Anthony Low</i>	The end
Evening	Icebreaker Pop-up Club Molo Love Bar, Reunion Village	On your own	ARCCSS Showcase Old Parliament House	On your own	

ANU Campus map

