

**17th Australian Space Research Conference -
Detailed Program**

Monday - Stream 1 (Messel lecture theatre)

7:45-9:00 Registration

9:00-9:10	Iver Cairns, Wayne Short	Welcome to ASRC
9:10-9:30	Professor Laurent Rivory, University of Sydney	Welcome to University of Sydney

Plenary Session I

9:30-10:00	Prof Colin Waters, University of Newcastle	Probing the ionosphere with HF signals: Space weather results from SuperDARN
10:00-10:30	Dr Janaina Avila, Australian National University	The pre-solar history of solar system matter

10:30-11:00 Morning Tea

National Context

11:00-11:15	Prof Russell Boyce	Space Industry Review Committee
11:15-11:30	Dr Sarah Pearce	An Overview of CSIRO's Space Science Activities
11:30-11:45	Prof Stuart Phinn	Australia's Earth Observation Capabilities in 2026: Our National Strategies for Spatial and Earth Observation
11:45-12:00	Dr Coen van Antwerpen	Defence Science and Technology Group activities
12:00-12:15	Prof Iver Cairns	ARC Training Centre for CubeSats, UAVs, and Their Applications
12:15-12:30	Dr Murray Parkinson	The Australian Bureau of Meteorology Space Weather Services
12:30-12:45	TBA	Space Industry association of Australia (SIAA), IAC2017 update
12:45-13:00	Prof Fred Menk	National Committee for space and Radio Science (NCSRS) update

13:00-14:00 Lunch

Space & Atmospheric Physics I

14:00-14:15	Dr Julie Currie, RMIT University	On the use of the spectral width boundary for monitoring magnetospheric boundary regions
14:15-14:30	Dr Trevor Harris, DST Group	An overview of HFR Branch ionospheric activities
14:30-14:45	Dr Kenneth Lyn, Ionospheric Systems Research	Doppler measurements of ionospheric turbulence
14:45-15:00	Dr David Neudegg, Space Weather Services, BOM	Radiation effects on spacecraft in Earth orbits
15:00-15:15	Dr Sean Ables, University of Newcastle	EMIC Wave Source investigation using ten Ground Stations and a Geosynchronous Satellite
15:15-15:30	Dr David Netherway, Defence Science and Technology Group	Uncertainty in Registration of HF Signals Propagated via the Ionosphere

15:30-16:00 Afternoon Tea

**16:00-18:30 Poster Session /
Cocktail function**

19:00-20:30 MSA "David Cooper memorial lecture" by Prof Martin Van Kranendonk

Monday - Stream 2 (Lecture theatre 1)

Solar System & Exoplanets

14:00-14:15	Dr Robert Wittenmyer, University of Southern Queensland	Understanding Super-Earths with MINERVA-Australis at USQ's Mount Kent Observatory
14:15-14:30	Max Joshua, Blue Skies Space Ltd	Twinkle – a low-Earth orbit visible and infrared exoplanet spectroscopy observatory
14:30-14:45	A/Prof. Jonti Horner, University of Southern Queensland	Dynamics as a 'Red Flag' in Exoplanetary Science
14:45-15:00	Dr Lucyna Kedziora-Chudczer, University of NSW	News from Jupiter - Juno mission and supporting observations from ground telescopes
15:00-15:15	Prof Trevor Ireland, Australian National University	Hayabusa 2 and Osiris REx: Sample return missions to C-type asteroids
15:15-15:30	Dr Craig Benson, UNSW Canberra	A Southern Hemisphere Planetary Radar Demonstration

15:30-16:00 Afternoon Tea

16:00-18:30 **Poster Session / Cocktail function**

Tuesday - Stream 1 (Messel lecture theatre)

8:00-9:00 Registration

Plenary Session II

9:00-9:30	Dr David Ciardi, Caltech/IPAC-NExSci	NASA's Kepler Mission: Spawning a Revolution in Exoplanets and Beyond!
9:30-10:00	Tara Djokic, Australian Centre for Astrobiology, UNSW	Hydrothermal systems, early life on Earth and implications for astrobiology
10:00-10:30	Dr Julia Mitchell, CRC for Spatial Information	Space Based Augmentation System (SBAS) Testbed Demonstration Project

10:30-11:00 Morning Tea

Space Entrepreneurs

11:00-11:30	Martin Duursma, CSIRO	Raising funding for innovation and entrepreneurship
11:30-11:45	Lloyd Damp, Southern Launch	FlyBack: Flying spent first stage boosters gently back to Earth to be reused
11:45-12:00	Noor Taofiqul Huq, Luna Letter	Luna Letter: Creating a reason to go to the Moon
12:00-12:15	Lloyd Damp, Southern Launch	Southern Launch Spaceport: Simplifying access to polar Earth orbits
12:15-12:30	Troy McCann, MoonshotX	Building Foundations for Accelerated Australian Participation in the Global Space Sector
12:30-12:45	Sebastian Choui, Arula	Arula
12:45-13:00	William Crowe, HEO-Robotics	HEO-Robotics

13:00-14:00 Lunch

GNSS & GPS

14:00-14:15	Dr German Olivares-Pulido, CRC for Spatial Information	Ionospheric modelling to support ambiguity resolution for PPP-RTK
14:15-14:30	Dr Julie Currie, RMIT University	The role of atmospheric gravity waves in seeding unseasonal Equatorial Plasma Bubbles
14:30-14:45	Dr Eamonn Glennon, University of NSW	Distributed Beamforming Architectures for Space and Airborne Applications: Taxonomy, Requirements and Synergies
14:45-15:00	Ben Southwell, University of NSW	Simulating Delay Doppler Maps of GNSS Signals Reflected Off the Ocean Surface

15:30-16:00 Afternoon Tea**Space Business & Technology**

16:00-16:15	Dr Patrick Neumann, Neumann Space	Australian Space Activities: Past, Present and Plans for the Future
16:15-16:30	Duncan Blake, University of Adelaide	Opportunities, not obstacles, for Australian space enterprises by addressing challenges in global space governance
16:30-16:45	Jamie Anderson, Gilmour Space Technologies	Enabling Low-Cost Access to Space
16:45-17:00	Lachlan Richter, University of Adelaide	A Review of Lunar Base Power Requirements
17:00-17:15	Dr Gavin Conibeer, University of NSW	Concentrating photovoltaic solar tower systems as power sources for bases on the Moon or on Mars
17:15-17:30	George Coulloupas, RMIT University	Earth to Lunar Interchangeable Transportation Environment
17:30-17:45	Arunkumar Rathinam, University of NSW	3D reconstruction of an asteroid shape using visual SLAM for autonomous navigation
19:00-21:00	Gala Dinner	

Tuesday - Stream 2 (Lecture Theatre 1)**10:30-11:00 Morning Tea****Mars**

11:00-11:20	Dr Jonathan Clarke, Mars Society Australia	Meridiani Planum: a candidate for the first crewed mars missions
11:20-11:35	Sophia Casanova, University of NSW	Geology of the Protonilus Mensae, Mars – A Potential Human Exploration Zone
11:35-11:50	Savannah McGuirk, Australian National University	Can sand dunes be used to understand localised weather patterns in Martian valleys?
11:50-12:05	Prof Graziella Caprarelli, University of South Australia	Searching for Subsurface Structures in Lunae Planum
12:05-12:20	Liane Loiselle, Australian National University	Resolving in situ triple oxygen isotopic compositions of Martian meteorites with Shrimp SI

12:20-12:35	Dr Patrice Rey, University of Sydney	Is central Australia the best terrestrial analogue for Mars surface processes?
12:35-12:50	Annalea Beattie, Mars Society Australia	The MARS 160 expedition, a twin mars analogue study in contrasting environments
12:50-13:05	Dr Steven Hobbs, Mars Society Australia	Bringing Mars to Earth: Designing Suitable Analogue Environments and Equipment for Planetary Science.

13:05-14:00 Lunch**Cubesats**

14:00-14:25	Ben Southwell, University of NSW	UNSW-ECO Cubesat in orbit: Challenges and Results
14:25-14:50	Prof Iver Cairns, University of Sydney	INSPIRE2 Cubesat status and plans
14:50-15:15	Dr Douglas Griffin, UNSW Canberra	DST Group and UNSW Canberra Buccaneer Programme Status and Plans

15:30-16:00 Afternoon Tea**Human Factors, History, Literature, Education, & Outreach**

16:00-16:20	Dr David Cooper, Royal Hobart Hospital	Babies on Mars: Biomedical Considerations for the First Martian Generation
16:20-16:35	Annalea Beattie, Mars Society Australia	Field Drawing In and Out of Simulation
16:35-16:50	Dr Jonathan Clarke, Mars Society Australia	Preliminary operational observations from 110 days of simulated mars surface activities
16:50-17:05	Carolyn Brown, University of Southern Queensland	Astronomy and Space Science Outreach at USQ
17:05-17:20	Isabelle Kingsley, University of NSW	A new tool to assess scientific literacy in an astrobiology course
17:20-17:35	Kerrie Dougherty, University of NSW	Project Moonwatch: Citizen Science at the Beginning of the Space Age

17:35-17:50	Bronwyn Lovell, Flinders University	The Astronaut as Hero: How popular culture influences how we imagine men and women in space
17:50-18:05	Gabi Hobbs, University of NSW, Canberra	Which Ethical Theory Should Apply to the Mining of Asteroids?
18:05-18:20	Noor Taofiqui Huq, University of NSW	Student space projects at BLUEsat

Tuesday - Stream 3 (*Slade Lecture Theatre*)

Space Missions and Projects

11:00-11:15	Dr Michele Trenti, University of Melbourne	The SkyHopper Space Telescope CubeSat
11:15-11:30	Dr Robert Mearns, University of Melbourne	Near real-time telecommand solutions for CubeSats: State of the art and applications to the SkyHopper mission
11:30-11:45	Dr Patrick Neumann, Neumann Space	Pulsed Cathodic Arc Thruster Mission Plans
11:45-12:00	Mark Brodie, University of NSW	Implementation of collaborative and automated ground stations for UNSW-ECO and INSPIRE2
12:00-12:15	Robert Brand, ThunderStruck Aerospace	Mars Median - The Search for Life
12:15-12:30	Trent Jansen- Sturgeon, Curtin University	Satellite Orbit Determination using the Desert Fireball Network
12:30-12:45	Ben Hartig, Curtin University	Hardware Development for Global Fireball Observatory

13:00-14:00 Lunch

Tuesday - Stream 3 (*Slade Lecture Theatre*)

13:15-14:00 Women in Space seminar

15:30-16:00 Afternoon Tea

Space & Atmospheric Physics II

16:00-16:15	Dr Mark Cheung, Stanford University	Solar Drivers of Space Weather as Revealed by NASA's Solar Dynamics Observatory
16:15-16:30	Mr Wen Yi, ATRAD	Response of neutral mesospheric density to geomagnetic forcing
16:30-16:45	Dr Anne Unewisse, Defence Science and Technology Group	DST Group airglow studies
16:45-17:00	James Harding University of Sydney	Simulating Type III radio bursts in 3D
17:00-17:15	Dr Lenard Pederick, DST Group	Using 2-hop OIS Measurements to Estimate Ionospheric Parameters
17:15-17:30	Dr Brett Carter, RMIT University	Unseasonal development of F-region irregularities over Southeast Asia on 28 July 2014
17:30-17:45	Dr Fuyang Ke, Nanjing University of Information Science & Technology	Ionospheric Disturbance Response to Cyclone Debbie Landing on Eastern Australia in 2017
17:45-18:00	Prof Iver Cairns, University of Sydney	Prediction and Testing of Type II Radio Emission, White Light Images, and CME Properties from the Sun to Earth

Wednesday - Stream 1 (Messel lecture theatre)

8:15-9:00 Registration

Plenary Session III

9:00-9:30	Prof Graziella Caprarelli, University of South Australia	A World of Ice and Fire: Mars Unravelled
9:30-10:00	Dr Duane Hamacher, Monash University	Aboriginal Observations of Red-Giant Variable Stars
10:00-10:30	Prof Dietmar Mueller, University of Sydney	Seafloor tectonic fabric mapping from satellite altimetry: a key for modelling solid Earth evolution through deep time

10:30-11:00 Morning Tea

Space & Atmospheric Physics III

11:00-11:15	Dr Robert Gardiner-Garden, Defence Science and Technology Group	A real time estimate of extraordinary versus ordinary ionospheric variability in the Australian region
11:15-11:30	Dr Samira Tasnim, University of Sydney	A Detailed Comparison of Simulation Outputs with Observations and Analytic Predictions for an Accelerating Solar Wind
11:30-11:45	Dr Julie Currie, RMIT University	Relationship between field aligned current gradients and HF spectral broadening
11:45-12:00	Dr Andrew Heitmann, Defence Science and Technology Group	Relating the temporal and spatial characteristics of travelling ionospheric disturbance signatures across a network of oblique angle-of-arrival ionosondes
12:00-12:15	Dr Zahra Bouya, Space Weather Services, Australian Bureau of Meteorology	The 06-09 September 2017 "Mega" event of solar cycle 24
12:15-12:30	Ronald Maj, University of Sydney	Quasi-Thermal Noise (QTN) / shot noise spectroscopy and dust detection on a CubeSat in the Earth's ionosphere
12:30-12:45	Dr Subhash Pawar, Physics Dept. A.C.S. College Palus, India	Comparison of Air Ion Variation during Morning/Evening Period at Rural Station Ramanandnagar (17° 4' N 74° 25' E) India

13:00-14:00 Lunch

Solar System & Exoplanets II

14:00-14:15	Dr Helen Maynard-Casely, Australian Nuclear Science and Technology Organisation	Prospects for organic minerals on Saturn's moon Titan
14:15-14:30	Christoph Tylor, University of Southern Queensland	The long-term orbital evolution of Jupiter's satellite system
14:30-14:45	Dr Katarina Mijlkovic, Curtin University	Bombardment of the young Moon
14:45-15:00	Leonardo Baeza, The Australian National University	Ordinary chondrite chondrule oxygen isotope and chemical systematics
15:00-15:15	Geoffrey Bonning, Australian National University	Chemical and oxygen isotope compositions of chondrules from carbonaceous chondrites: Tracing the evolution of the early Solar System

15:30-16:00 Afternoon Tea

Australian Space Agency Discussion

16:00-17:50	Iver Cairns and Fred Menk to lead	Group discussion – draft of resolution
17:50-18:00	Wayne Short, Iver Cairns	Closing remarks for conference

Wednesday - Stream 2 (Lecture theatre 1)

10:30-11:00 Morning Tea		
Space Engineering & Technology		
11:00-11:15	Dr Alexey Kondyurin, University of Sydney	Stratospheric flight experiments on curing of composite materials
11:15-11:30	Mr Tao Sun, University of Sydney	CUBOT: Design of a CubeSat Based Robot for Co-orbiting Missions
11:30-11:45	Prof Rod Boswell, Australian National University	The Pocket Rocket electro-thermal plasma thruster for 'CubeSat' nano-satellites
11:45-12:00	Dr Stephen Bathgate, University of Sydney	A thruster using magnetic reconnection to create high-speed plasma jets
12:00-12:15	Dr Gavin Conibeer, University of NSW	Patch Antennas Integrated with Solar Cells for Cubesats – A Study on the Losses of the Integrated Antennae/PV system
12:15-12:30	Dr Steven Hobbs, Mars Society Australia	Field Testing a Compact Rover for Planetary Science: Mobility and Sensor Considerations.
13:00-14:00 Lunch		
Indigenous Sky Knowledge / Space Archeology		
14:00-14:10	Uncle Marcus Hughes, MAAS	Traditional welcome by Aboriginal Representative
14:10-14:25	Kirsten Banks, University of NSW	Planets in Aboriginal Astronomy
14:25-14:40	Robert S. Fuller, University of NSW	Aboriginal Solar Observatories in Southeast Australia
14:40-14:55	Trevor M. Leaman, University of NSW	Which Way is Up? The Sky Orientation of Aboriginal Cultural Ancestors Associated with the Constellation of Orion
14:55-15:10	Melanie Ward, Flinders University	The Interstellar Archaeologist
15:10-15:25	Carla Guedes, University of NSW	Exploring Cultural Competence for Astronomers
15:30-16:00 Afternoon Tea		

Wednesday - Stream 3 (Slade lecture theatre)

13:00-14:00 Lunch		
Remote Sensing & Earth Observations		
14:00-14:15	Dr John Le Marshall, Bureau of Meteorology	Benefits to Southern Hemisphere Analysis and Forecasts from Use of New Generation Earth Observations from Space
14:15-14:30	Daniel Stevens, UNSW Canberra	Proposal of 2.4 and 5.8 GHz Spatial Reuse for Small Satellites in LEO
14:30-14:45	George Coulloupas, Aerospace Systems Pty Ltd	FireySat – Australia's first dedicated satellite imaging system for emergency service operations.
14:45-15:00	Paras Sidiqi, University of Technology, Sydney	Mapping and monitoring the influence of heat waves onto urban heat island effect using remote sensing and GIS data A Case Study Sydney, Australia
15:00-15:15	Dr Li Guo, SASMAC, China	Geometric Accuracy Verification of ZY-3 Surveying and Mapping Satellite Data for the Korean Peninsula
15:15-15:30	Jianming Kuang, University of NSW	Finite fault model of the 24 August 2016 Amatrice earthquake (Central Italy) inferred from DInSAR and GPS co-seismic deformation
15:30-16:00 Afternoon Tea		