17th Australian Space Research Conference - Detailed Program

Monday - Stream 1 *(Messel lecture theatre)*

Time	Speakers Name	Title
7:45-9:00	**Registration**	
9:00-9:10	Iver Cairns, Wayne Short	Welcome to ASRC
9:10-9:30	*???Dean of Science, 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	Janaina Availa, 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	Dr Stuart Phinn	Australia's Earth Observation Capabilities in 2026: Our National Strategies for Spatial and Earth Observation
11:45-12:00	Nick Stacy	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	Dr Alice Gorman	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***	

Time	Speakers Name	Title
Space & Atmospheric Physics I		
14:00-14:15	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	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	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 Dr Martin von Kranendonk**	

Monday - Stream 2 *(Lecture theatre 1)*

Time	Speakers Name	Title
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	Dr 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)*

Time	Speakers Name	Title
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	Tim Guo, Luna Letter	Luna Letter: Creating a reason to go to the Moon
12:00-12:15	John Weir, University of Southern Queensland	Characterisation of Near Earth Asteroids – An Asteroid Mining Perspective
12:15-12:30	Lloyd Damp, Southern Launch	Southern Launch Spaceport: Simplifying access to polar Earth orbits
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	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		

Time	Speakers Name	Title
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	Troy McCann, MoonshotX	Building Foundations for Accelerated Australian Participation in the Global Space Sector
16:45-17:00	Jamie Anderson, Gilmour Space Technologies	Enabling Low-Cost Access to Space
17:00-17:15	Lachlan Richter, University of Adelaide	A Review of Lunar Base Power Requirements
17:15-17:30	Dr Gavin Conibeer, University of NSW	Concentrating photovoltaic solar tower systems as power sources for bases on the Moon or on Mars
17:30-17:45	George Coulloupas, RMIT University	Earth to Lunar Interchangeable Transportation Environment
17:45-18:00	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)*

Time	Speakers Name	Title
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

Time	Speakers Name	Title
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		
14:00-14:20	Prof Andrew Dempster, University of NSW	Updates and progress of UNSW-EC0 Cubesat
14:20-14:40	Prof Iver Cairns, University of Sydney	INSPIRE2 Cubesat status and plans
14:40-15:00	David Lingard, Defence Science and Technology Group	Australian Participation in the Biarri CubeSat Missions
15:00-15:20	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

Time	Speakers Name	Title
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 Taofiqul Huq, University of NSW	Student space projects at BLUEsat

Tuesday - Stream 3 *(Physics Lecture Theatre 1)*

Time	Speakers Name	Title
Space Missions and Projects		
11:00-11:15	Robert Mearns, University of Melbourne	Near real-time telecommand solutions for CubeSats: State of the art and applications to the SkyHopper mission
11:15-11:30	Michele Trenti, University of Melbourne	The SkyHopper Space Telescope CubeSat
11:30-11:45	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-EC0 and INSPIRE2
12:00-12:15	Ben Southwell, University of NSW	UNSW-EC0 Cubesat in orbit: Challenges and Results
12:15-12:30	Robert Brand, ThunderStruck Aerospace	Mars Median - The Search for Life
12:30-12:45	John Weir, University of Southern Queensland	Characterisation of Near Earth Asteroids – An Asteroid Mining Perspective
13:00-14:00	***Lunch***	

Tuesday - Stream 3 *(Physics Lecture Theatre 1)*

Time	Speakers Name	Title
15:30-16:00	***Afternoon Tea***	
Space & Atmospheric Physics II		
16:00-16:15	Dr Marc 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	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)*

Time	Speakers Name	Title
8:30-9:00	**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	Robert Gardiner-Garden, Defence Science and Technology Group	A real time estimate of extra-ordinary versus ordinary ionospheric variability in the Australian region
11:15-11:30	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	Julie Currie, RMIT University	Relationship between field aligned current gradients and HF spectral broadening
11:00-12:00	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***	

Time	Speakers Name	Title
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 Eriita Jones, University of South Australia	Using the ejecta of impact craters on Mars to model the burial depth of water within the martian crust.
14:45-15:00	Dr Katarina Miljkovic, Curtin University	Bombardment of the young Moon
15:00-15:15	Leonardo Baeza, The Australian National University	Ordinary chondrite chondrule oxygen isotope and chemical systematics
15:15-15:30	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)*

Time	Speakers Name	Title
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	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 Yunlong Lin, University of Wisconsin	Small satellite development for Space Science Research Enrichment in recent years
12:30-12:45	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

Wednesday - Stream 3 *(Slade lecture theatre)*

Time	Speakers Name	Title
13:00-14:00	***Lunch***	
Remote Sensing & Earth Observations		
14:00-14:15	John Le Marshall, Bureau of Meteorlogy	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	Angus Muffatti, Aerospace Systems Pty Ltd	FireySat – Australia's first dedicated satellite imaging system for emergency service operations.
14:45-15:00	Paras Sidiqui, 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***	