

16th ASRC Detailed Program

Monday - Stream 1 (*Storey Hall main theatre*)

Time	Speakers Name	Title
7:45-9:00	Registration	
9:00-9:10	Iver Cairns, Wayne Short	Welcome to ASRC
9:10-9:20	<i>Acting Vice Chancellor, Professor Paul Gough</i>	Welcome to RMIT University
Plenary Session I		
9:20-9:50	Prof Frances Bagenal, University of Colorado	Exploration of the Outer Solar System: New Horizons at Pluto and Juno at Jupiter
9:50-10:20	Dr Gordon J. Frazer, DST Group	Wide field-of-view sensing for surveillance-of-space
10:20-10:50	Dr Robert Norman, RMIT University	RMIT SPACE Research Centre – overview of past and present research endeavours
10:50-11:15	<i>Morning Tea</i>	
National Context		
11:15-11:30	John Le Marshall	Earth Observation from Space (Bureau of Meteorology)
11:30-11:45	Ben Greene	SERC
11:45-12:00	Mark Todd	DIIS (Civil Space, Cyber Security and ICT)
12:00-12:15	Kirco Arsov	BoM Space Weather Services
12:15-12:30	Nick Stacy	DST Group
12:30-12:45	Alice Gorman	SIAA / IAC2017
12:45-13:00	Russell Boyce	NCSRS
13:00-14:00	<i>Lunch</i>	
Space Engineering: Cubesats		
14:00-14:15	Noor Huq, UNSW Australia	Evaluation of Current and Projected CubeSat Propulsion Technologies for Navigating Cislunar Space
14:15-14:30	Angus Muffatti, RMIT	Multi-objective Design Optimisation of a small scale Cusped Field Thruster for micro satellite platforms

Time	Speakers Name	Title
14:30-14:45	Prof Christine Charles, ANU	Plasma experiments in the laboratory and space: the emerging role of 'CubeSat' nano-satellites and miniaturised propulsion systems.
14:45-15:00	Roger Dudziak, UNSW Canberra	Passive Thermal Control System for CubeSats
15:00-15:15	Dr Li Qiao, UNSW Canberra	Knowledge exploration for CubeSat design trade space using multi-dimensional scaling and clustering
15:15-15:30	Dr Andrew Wabnitz , DST Group	SpaceLink: A Lightweight, Robust and Secure Communication Link for Small Satellites
15:30-15:45	George Coulloupas, RMIT University	A Systems Engineering Approach to Miniaturised Satellite Constellation Design Optimisation
15:45-16:00	Victor Lim, RMIT University	Optimising the launch, deployment and performance of a smallsat constellation
16:00-16:30	<i>Afternoon Tea</i>	

Cubesats

16:30-16:50	Dr David Lingard , DST Group	Australian Participation in the Biarri CubeSat Missions
16:50-17:10	Dr Douglas Griffin, UNSW Canberra	DST Group and UNSW Canberra Buccaneer Programme Status and Plans
17:10-17:30	Dr Matthew Tetlow, Inovor Technologies	The SUSat QB50 mission
17:30-17:50	Prof Andrew Dempster, ACSER, UNSW Australia	Updates and progress of UNSW-EC0 Cubesat
17:50-18:10	Prof Iver Cairns, University of Sydney	The INSPIRE-2 / AU03 Cubesat for the QB50 Project
18:30-21:30	ASRC Gala Dinner	

Monday - Stream 2 (*Conference Rooms 1/2*)

Time	Speakers Name	Title
Space & Atmospheric Physics		
14:00-14:15	Dr Alina Donea, Monash University	Far side imaging of the Sun for space weather prediction: how many active regions do we miss?
14:15-14:30	Ms Samira Tasnim, University of Sydney	A generalized equatorial model for the accelerating solar wind
14:30-14:45	Dr Dave Neudegg, Space Weather Services, BOM	Long term median foF2 variations in the Antarctic polar cap and the competing effects of solar EUV, magnetospheric precipitation and ionisation transport
14:45-15:00	Dr Melrose Brown, UNSW Canberra	Low Earth Orbit interaction with the atmosphere
15:00-15:15	David Netherway, DST Group	Measured and Predicted Power Received via HF Ionospheric Propagation
15:15-15:30	Miss Julie Currie, University of Newcastle	Relationship between HF radar spectral broadening and field aligned currents
15:30-15:45	Mr Kehe Wang , Space Weather Services, BOM	The Metadata Development of Space Weather Services and a Proposal of a United Australian Space Research Metadata Portal
15:45-16:00	Dr Anne Unewisse, DST Group, Edinburgh	Imagers for Ionospheric Airglow Observations
16:00-16:30 Afternoon Tea		
Indigenous Sky Knowledge		
16:30-16:45	Robert S. Fuller, UNSW Australia	The astronomy of the Aboriginal peoples of the Sydney Basin
16:30-17:00	Carla B. Guedes, UNSW Australia	Australian Indigenous Traditions of the Moon and its Relationship to Women
17:00-17:15	Dr Duane W. Hamacher, Monash University	How Torres Strait Islanders "Read" the Twinkling of Stars to Predict Weather
17:15-17:30	Trevor M. Leaman, UNSW Australia	Sacred Celestial Landscapes: Were Wiradjuri Cultural Sites also used as Astronomical "Observatories"?
17:30-17:45	Karlie Noon, University of Newcastle	Australian Indigenous uses of Moon Haloes to Predict Weather

Time	Speakers Name	Title
17:45-18:00	Edoardo Tescari, University of Melbourne	Exploring Indigenous Astronomical Knowledge in Australia and Central America: A Cross-Cultural Collaboration

Monday - Stream 3 (*Seminar Rooms 1/2*)

Time	Speakers Name	Title
13:00-14:00	Lunch	

Planetary Science

14:00-14:15	Dr Kurt Liffman, Swinburne University	A Unified Framework for Producing CAI Melting, Wark-Lovering Rims and Bowl-Shaped CAIs
14:15-14:30	Miss Emily Jessica Bathgate, UTS	Raman, SEM and EPMA analyses of Australian eucrites
14:30-14:45	Jack Soutter, USQ	The Long-Term Stability of the Known Neptune Trojans
14:45-15:00	Dr Lucyna Kedziora- Chudczer, UNSW Australia	Auroral emissions of Jupiter
15:00-15:15	Dr Jerome Daquin, RMIT University	Heterogeneous Multiscale Methods for the mean orbital motion: a discussion
15:15-15:30	Dr Franklin Mills, ANU	Simulations of time-of-day variability of SO ₂ on Venus
15:30-15:45	A/Prof Jonti Horner, USQ	Towards the Exo-Earth Era - a Dedicated Australian Exoplanet Observatory
15:45-16:00	Prof Jeremy Bailey, UNSW Australia	How did we discover what planetary atmospheres are made of?

Tuesday - Stream 1 (*Storey Hall main theatre*)

Time	Speakers Name	Title
8:00-9:00	Registration	
Plenary Session II		
9:00-9:30	Prof Kathleen Campbell, University of Auckland	Astrobiology of Hot Springs on Early Earth and Mars
9:30-10:00	Dr Peter May, Bureau of Meteorology	Earth Observations from Space: Critical information used by the Bureau for national benefit
10:00-10:30	Dr Bradley Evans, University of Sydney	Leveraging "Big Environmental Data" for Modelling Ecosystem Production in Space and Time
10:30-11:00	Morning Tea	
Remote Sensing and GNSS		
11:00-11:15	John Le Marshall, Bureau of Meteorology	Recent and Impending Advances in the Use of Earth Observations from Space for Numerical Weather Prediction
11:15-11:30	Dr. Graham Dorrington, School of Engineering	On the Feasibility of Nanosats for Early Bushfire Detection
11:30-11:45	Ruken Alac Barut, UNSW	Analysing Post-Seismic Deformation of Izmit Earthquake with InSAR, GNSS AND Coulomb Stress Change Modelling
11:45-12:00	Prof. Stuart John Anderson, University of Adelaide	Space-borne interception of HF radar echoes for environmental intelligence
12:00-12:15	Dr. German Olivares-Pulido, CRCSI	CRCSI Project 1.21: Ionospheric Modelling
12:15-12:30	Dr. Kirco Arsov, Bureau of MEteorology	High accuracy ionospheric modelling to support GNSS positioning and navigation in Australia
12:30-12:45	Prof Kefei Zhang, RMIT University	An Advanced Near Real-Time Water Vapour Platform for Severe Weather and Climate Studies
13:05-14:00	Lunch	
Space & Atmospheric Physics II		
14:00-14:15	Dr Zahra Bouya, Space Weather Services, Bureau of Meteorology	The Australian Region Ionospheric Maps

Time	Speakers Name	Title
14:15-14:30	Mr Andrew Heitmann, DST Group, Edinburgh	Parameterised modelling of travelling ionospheric disturbances using angle-of-arrival observations on oblique HF propagation paths
14:30-14:45	Dr Kenneth J.W. Lynn, Ionospheric Systems Research	Descending Intermediate layers/Descending Sporadic E
14:45-15:00	Dr Bo Li, University of Sydney	Mapping Magnetic Field Lines between the Sun and Earth
15:00-15:15	Prof Fred Menk, University of Newcastle	Role of Ultra-low Frequency Plasma Waves in Energizing Particles in Earth's Radiation Belts
15:15-15:30	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
15:30-15:45	Ms Belinda Nicholson, USQ	Stars as proxies for studying the Sun's early history
16:00-16:30	<i>Afternoon Tea</i>	
16:30-18:00	Poster session	
18:00-19:20	<i>Cocktail Function</i>	

Tuesday - Stream 2 (Conference Rooms 1/2)

Time	Speakers Name	Title
10:30-11:00	<i>Morning Tea</i>	
<i>Human factors</i>		
11:00-11:20	Dr Rowena Christiansen, University of Melbourne	Space Medicine 101 – A Primer on What Happens to the Human Body in Space
11:20-11:40	Dr Rowena Christiansen, University of Melbourne	NASA's Human Research Program – The 33 Key Issues for Human Health and Performance in Space
11:40-12:00	Dr Tracey Sletten, Monash University	Circadian misalignment and sleep disruption during long-term analog space missions.
12:00-12:20	LCDR Luke Dixon, RAN, Future Submarine Program	Human Factors in Hostile Environments: Projecting 102 Years of experience in Australian Submarines to long haul space missions
12:20-12:40	Dr Kimberley Norris, University of Tasmania	Antarctic Behavioural Health as a Space Analogue

Time	Speakers Name	Title
13:00-14:00	Lunch	

Time	Speakers Name	Title
Space Business & Entrepreneurship		
14:00-14:20	Mrs Melanie Revellat, Airbus	Bartolomeo – Your All-In-One Mission Service
14:20-14:40	Dr Jason Held, Saber Astronautics	Planning missions for large constellations
14:40-15:00	Troy McCann, Melbourne University	Growing Australia's Space Sector
15:00-15:20	Ian Whitchurch, Neumann Space	The Barsoom Express : Earth orbit to Mars orbit in three months by solar electric propulsion
15:20-15:40	Ivan Voropaev, Wave Power Engineering Pty Ltd	Satellite electric drive
15:40-16:00	Speaker TBA	

Tuesday - Stream 3 (Seminar Rooms 1/2)

Time	Speakers Name	Title
13:00-14:00	Lunch	

Education, Outreach & Ethics		
14:00-14:15	Dr Tanya Hill, Melbourne Planetarium	The planetarium – connecting the public to current space research
14:15-14:30	Lachlan Thompson, Mount Burnett & Emerald Observatory	New Capability for Emerald & Mount Burnett Observatories, Victoria for Earth Situational Awareness, Research, Education and Tourism
14:30-14:45	A/Prof Graziella Caprarelli, UniSA	The International Space University Southern Hemisphere Program
14:45-15:00	Prof Jeremy Bailey, UNSW	A Large Fully-Online Astrobiology Course
15:00-15:15	Mrs Gabriela-Nicoleta Hobbs, UNSW Canberra	The Ethics of Working with Robots
15:15-15:30	Victoria Tasker, Australian National University	Becoming cyborgs to expand humanity: will the integration of technology and humans reinforce humanity, or redefine it?
15:30-15:45	Mrs Gabriela-Nicoleta Hobbs, UNSW Canberra	Educational and Scientific Benefits of Extreme Environments

Wednesday - Stream 1 (Storey Hall main theatre)

Time	Speakers Name	Title
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Time	Speakers Name	Title
8:00-9:00	Registration	
Plenary Session III		
9:00-9:30	Uplie Diveksara, Monash University	A New Era of Space Exploration
9:30-10:00	Dr Eriita Jones, UniSA	Identifying Something Which Can't Be Seen: Holistic Methodologies In The Search For Subsurface Water on Mars and Other Planets.
10:00-10:30	Dr. Douglas Griffin, UNSW Canberra	The Engineering of Space Flight Programmes in the Australian Context: a sustainable model
10:30-11:00 Morning Tea		
GNSS		
11:00-11:15	Arunkumar Rathinam, ACSER, UNSW	Prospects for Multi-GNSS for Space Service Volume
11:15-11:30	Francesco Cappello, RMIT University	GNSS Attitude Determination and Control for Space Transportation Applications
11:30-11:45	Dr Zishen Li, RMIT University	Towards a Two-Layer Ionospheric Delay Model for Real-time Single-frequency PPP over Australian Region
11:45-12:00	Changyong He, SPACE Research Centre, School of Science, RMIT	Comparison of atmospheric mass density models and their impact on the orbit propagation of low Earth orbit satellites
12:00-12:15	Changjiang Hu, UNSW Canberra	Contemporary Space-based GNSS Remote Sensing
12:15-12:30	Francesco Cappello, RMIT University	Navigation and Guidance Systems for Space Transportation Applications
12:30-12:45	Subramanian Ramasamy, RMIT University	Design and Development of Communication System for Unmanned Reusable Space Vehicles
13:00-14:00 Lunch		
Space Engineering		
14:00-14:15	Mr Garland Hu , DST Group	Modular and Reusable Flight Software Design for the Buccaneer Risk Mitigation Mission
14:15-14:30	Ms Natalie Olsen , DST Group	Ground Segment Software Design and Development for the Buccaneer Risk Mitigation Mission
14:30-14:45	Simon Barradough, UNSW Canberra	Assessment and Verification of the Thermal Performance of the BRMM Spacecraft

Time	Speakers Name	Title
14:45-15:00	Dr Giuseppina Dall'Armi-Stoks, DST Group	Computational Electromagnetic Modelling to Support Spacecraft Design
15:00-15:15	Prof Roberto Sabatini, RMIT University	Overview of the ISS Columbus module astrionics
15:15-15:30	Mr Subramanian Ramsamy, RMIT University	Astrionics Systems for Unmanned Reusable Space Vehicles
15:30-15:45	Mr Yi Xiang Lim, RMIT University	Cognitive Human Machine Interface for the Ground Pilot Station of an Unmanned Reusable Space Vehicle
15:30-16:00	Prof. Michael Smart, University of Queensland	Flyback booster for dedicated launch of small satellites
16:00-16:20 Afternoon Tea		
Space Situational Awareness		
16:20-16:35	Brenton Smith, UNSW Canberra	The Impact Of Lift And Drag On 6D of Motion Of Leo Objects : Formation Control And Debris Behaviour
16:35-16:50	Adam Harris, RMIT University	An analysis of short-arc orbit determination for Low Earth Orbit objects comparing batch and Kalman Filter methods
16:50-17:05	Andoh Michael Afful, RMIT University	Space Object Characterisation - A Case for Ballistic Coefficient Estimation
17:05-17:20	Dr Yang Yang, RMIT University	Schmidt-Kalman Filter and its Applications to Orbit Determination of Space Objects
17:20-17:35	Dr Florent Deleflie , IMCCE (Celestial Mechanics Institute) @ Paris Observatory (France)	Atmospheric reentry prediction for artificial satellites from TLE time series and precise orbit determination
17:35-17:50	Dr Jerome Daquin, RMIT University	Stability, chaos and transport in Earth orbits
17:50-18:00	Iver Cairns, Wayne Short	Closing remarks
18:30-20:00	MSA "David Cooper memorial lecture" by Dr James Waldie	Public talk (level 2): From the outback to the space station: developing revolutionary spacesuits with NASA and ESA

Wednesday - Stream 2 (*Conference Rooms 1/2*)

Time	Speakers Name	Title
10:30-11:00	<i>Morning Tea</i>	
Space & Atmospheric Physics 3		
11:00-11:15	Lenard Pederick, DST Group	Observations of Travelling Ionospheric Disturbances with a Network of Quasi-Vertical Incidence Sounders in the Alice Springs region
11:15-11:30	Dr Brett Carter, RMIT University	Geomagnetically induced currents around the world during the 2015 St. Patrick's Day storm
11:30-11:45	Prof Colin Waters, University of Newcastle	Global magnetic signature of the 2015 St Patricks day geomagnetic storm
11:45-12:00	Mr Ronald Maj, University of Sydney	Quasi-thermal Noise Spectroscopy on a Cubesat in Earth's Ionosphere
12:00-12:15	Mr Christopher Capon, UNSW Canberra	Ionospheric Wake Modelling for Improved Resident Space Object Detection
12:15-12:30	Dr Anne Unewisse, DST Group	Airglow Observations from ELOISE
12:30-12:45	Dr Jeanne Young, Space Weather Services, Bureau of Meteorology	New Space Weather Services products using observations of the Earth's magnetic field and their relevance to the user community

Wednesday - Stream 2 (*Seminar Rooms 1/2*)

Time	Speakers Name	Title
13:00-14:00	<i>Lunch</i>	
Mars		
14:00-14:15	Danielle Shean, VSSEC	Created Mars analogues as effective tools for learning
14:15-14:30	Dr Graziella Caprarelli, UniSA	It was a dark and stormy night in Lunae Planum.
14:30-14:45	Dr. Helen E. A. Brand, Australian Synchrotron	In Situ studies of Jarosite Formation: From Tasmania to Mars
14:45-15:00	Dr Steven Hobbs, UNSW Australia	A4 Rover: First Build to Initial Field Trials of a Small Planetary Science Rover for Mars Surface Exploration
15:00-15:15	Dr Eriita Jones, UniSA	Inferring the presence of subsurface water on Mars from surface ejecta grain size.

Time	Speakers Name	Title
15:15-15:30	Dr Graham Dorrington , RMIT University	Rationale and Strategies for Reconnaissance of Lunar and Martian Pit-Voids
15:30-15:45	Dr Steven Hobbs, UNSW Australia	Hands Off Field Work: Comparison of Human and Robotic Methods for Gathering Terrain Data using Structure From Motion
15:30-16:00	Dr Craig Benson, UNSW Canberra	A Southern Hemisphere Planetary Radar Demonstration
16:00-16:20	<i>Afternoon Tea</i>	

Space Missions & Projects

16:20-16:35	Igor Dimitrijevic, UNSW Canberra	Buccaneer Risk Mitigation Mission Assembly, Integration and Verification Programme
16:35-16:50	Dr Anthony John Horton, Australian Astronomical Observatory	The Australian Space Eye: a CubeSat to study the history of galaxy formation
16:50-17:05	Igor Rozenberg, Space Association of Australia	Russian New Generation "Federation" Crewed Spacecraft Project Status
17:05-17:20	Mr Sanat Biswas, UNSW Australia	Position and Velocity estimation of Re-entry Vehicles using Fast Unscented Kalman Filters
17:20-17:35	Rohan Kapoor , RMIT University	Modelling a Rendezvous to Comet Hartley 2 around its Perihelion
17:50-18:00	<i>Iver Cairns, Wayne Short</i>	<i>Closing remarks (Level 5)</i>