Adelaide Convention Centre

September 30 to October 2, 2019

Supported by the:

WELCOME

TO THE 8TH SPACE FORUM & 19TH AUSTRALIAN SPACE RESEARCH CONFERENCE

AUSTRALIA'S FIRST JOINT SPACE SCIENCE & SPACE INDUSTRY CONFERENCE

ADELAIDE, SOUTH AUSTRALIA
30 SEPTEMBER - 2 OCTOBER 2019

THANK YOU TO OUR SUPPORTERS & SPONSORS

Contents

Session Overview - September 30 to October 2

Time	Monday / Joint Space Forum & ASRC
08.00 - 08.45	Registration Foyer L
08.45 - 08.50	Opening Hon Steve Marshall MP Hall L
08.50 - 10.15	National and International Space Trends Hon Karen Andrews MP, Dr Megan Clark, Mr Richard Price, Mr Luca Del Monte, Dr Sarah Pearce, Dr James Johnson, Dr Graeme Kernich Hall L
10.15 - 11.00	Morning Tea Exhibition Halls M&N
11.00 - 12.30	Space Science, Industry and Applications: National Context Facilitator: Anna-Maria Arabia. Panellists: Dr Murray Parkinson, Prof Andrew Dempster, Prof Caroline McMillen, Prof Graham Durrant, Mr Darin Lovett, Prof Fred Menk Hall L
12.30 - 13.30	Lunch Exhibition Halls M&N
13.30 - 14.50	Australian Space Research Conference Plenaries Fred Menk Dr Jason Held, Prof Phil Bland, A/Prof Suelynn Choy, Dr John Le Marshall Hall L
14.50 - 15.30	Afternoon Tea Exhibition Halls M&N
15.30 - 16.50	SmartSat CRC - Building Australia's Space Industry Facilitator: Peter Nikoloff. Panellists: Prof Anna Moore, Dr Andrew Seedhouse, Ms Aude Vignelles, Mr Brad Yelland, Dr Koukou Suu, Mr Shaun Wilson, Dr Doug Griffin, Mr Martin Duursma Hall L
16.55 - 18.30	Networking event Exhibition Halls M&N
19.15 - 20.45	MSA "David Cooper Memorial lecture", Adelaide University Jon Clarke Dr Gordon Cable University of Adelaide

Time	Tuesday				Wednesday			
08.00 - 08.30	Registration City Rooms Foyer				Registration City Rooms Foyer			
08.30 - 10.00	Gender Equity and Diversity Graziella Caprarelli Anna-Maria Arabia (Plenary), Rose O'Dea (invited), Eriita Jones, Alice Gorman, Sumen Rai City Rooms 1&2				Plenaries Iver Cairns Isabelle Kingsley, Alina Donea, Anatoly Rozenfeld City Rooms 1&2			
10.00 - 10.30	Morning Tea City Rooms Foyer				Morning Tea City Rooms Foyer			
10.30 - 12.30	**Stream 1** City Room 1	**Stream 2** City Room 2	**Stream 3** City Room 3	**Stream 4** City Room 4	**Stream 1** City Room 1	**Stream 2** City Room 2	**Stream 3** City Room 3	**Stream 4** City Room 4
	Space engineering 1 Gavin Conibeer	Space business & industry Suelynn Choy	Education & training Isabelle Kingsley	Remote sensing, Earth observations Julia Mitchell	Space missions 2 Sarah Pearce	Space situational awareness Melrose Brown	Space policy, GNSS & history Carol Oliver	Space & atmos phys 2, Space eng 4 Trevor Harris
12.30 - 13.30	Lunch City Rooms Foyer				Lunch City Rooms Foyer			Women in Space Networking Event City Room 4
13.30 - 15.00	**Stream 1** City Room 1	**Stream 2** City Room 2	**Stream 3** City Room 3	**Stream 4** City Room 4	**Stream 1** City Room 1	**Stream 2** City Room 2	**Stream 3** City Room 3	**Stream 4** City Room 4
	Space engineering 2 Kimberley Clayfield	Entrepreneur pitch sessions Jason Held	Planets & exoplanets Brad Carter	Space missions 1 Andrew Dempster	Space engineering 5 Shanae King	Meteorites, asteroids & space resources Jonti Horner	Space medicine & human factors Gordon Cable	Space & atmospheric physics 3 Alina Donea
15.00 - 16.30	Afternoon Tea & Posters 1 City Rooms Foyer				Afternoon Tea & Posters 2 City Rooms Foyer			
16.30 - 18.00	**Stream 1** City Room 1	**Stream 2** City Room 2	**Stream 3** City Room 3	**Stream 4** City Room 4	**Town hall discussion** City Rooms 1&2			
	Spaceengineering 3 Monique Hollick	Space law Liz Pearce	Mars Lucyna Chudczer	Space &atmospheric physics 1 Brett Carter	Fred Menk, Carol Oliver Development of Australia's next decadal plan for space science			
19.00 - 21.30	Gala Dinner							

Detailed Program

Monday

Time	Speakers Name	Title
8:15-8:45	**Registration**	
8:45-8:50	Opening Hon Steve Marshall MP	
National and International Space Trends		
8:50-10:15	Hon Karen Andrews MP, Dr Megan Clark, Mr Richard Price, Mr Luca Del Monte, Dr Sarah Pearce, Dr James Johnson, Dr Graeme Kernich	
10:15-11:00	***Morning Tea***	
National Context – Q & A Expert Panel		
11:00-12:30	Anna-Maria Arabia, Dr Murray Parkinson, Prof Andrew Dempster, Prof Caroline McMillen, Prof Graham Durrant, Mrs Maureen Dougherty, Prof Fred Menk	
12:30-13:30	***Lunch***	
ASRC Plenaries		
13:30-13:50	Dr Jason Held, Saber astronautics	Responsive Space Operations Centre (RSOC)
13:50-14:10	Prof Phil Bland, Curtin University	FireOPAL: A sovereign Australian space situational awareness solution
14:10-14:30	A/Prof SueLynn Choy, RMIT University	Satellite Navigation Technology: Past, Present and Future
14:30-14:50	Dr John Le Marshall, Bureau of Meteorology	The Considerable Benefits of Earth Observations from Space in Meteorology - Status and Future
14:50-15:30	***Afternoon Tea***	
SmartSat CRC – Q & A Expert Panel		
15:30-16:50	Dr Koukou Suu, Peter Nikoloff, Prof Anna Moore, Dr Andrew Seedhouse, Ms Aude Vignelles, Mrs Gaby Costigan, Mr Shaun Wilson, Prof Russell Boyce	
16:55-18:30	**Networking Session**	
19:15-20:45	**MSA "David Cooper memorial lecture" Dr Gordon Cable Venue: Adelaide University**	

Tuesday - Plenary *(City Rooms 1 & 2)*

Time	Speakers Name	Title
7:45-8:30	**Registration**	
Gender Equity and Diversity Session		
8:30-9:00	Anna Maria Arabia, Australian academy of Science	Ten Years, six opportunities: why gender equity in STEM can't be achieved without you
9:00-9:20	Rose O'Dea University of NSW	Why are fewer women than men employed in fields associated with brilliance?
9:20-9:40	Eriita Jones University of South Australia	Gender balance and inclusion is still a problem: An overview of delegates at the Australian Space Research Conference over the past 4 years
9:40-10:30	**Panel discussion** Anna-Maria Arabia, Rose O'Dea, Eriita Jones, Alice Gorman, Sumen Rai	
10:00-10:30	***Morning Tea***	

Tuesday - Stream 1 *(City Rooms 1)*

Time	Speakers Name	Title
Space Engineering 1		
10:30-10:45	Jan-Erik Ronningen, Gilmour Space Technologies	Hybrid Rockets – past, present, future
10:45-11:00	Aiden O'Brien, Saber Astronautics	Automated conceptual design of cubesats
11:10-11:15	Stuart Buchan, Curtin University	The Binar CubeSat Program: design and development of a CubeSat digital twin
11:15-11:30	R K Manchanda,	Role of tethered balloons and aerostats in communication, surveillance and disaster management
11:30-11:45	Kawsihen Elankumaran, University of New South Wales	Autonomous navigation of distributed spacecraft for proximity operations in small celestial bodies
11:45-12:00	Job Nijhuis, University of Adelaide	Microfluidic chip-based synthesis and spray of quantum nanodots as spectral decoy to protect satellites
12:15-12:30	Brian Tran, RMIT University	Novel concept for a partly reusable Lunar lander
12:30-13:30	***Lunch***	

Time	Speakers Name	Title
Space Engineering 2		
13:30-13:45	Monique Hollick, DST Group	Deployable optics payload for the Buccaneer Main Mission
13:45-14:00	Fergus Downey, Curtin University	The Binar CubeSat Program: Developing a reliable and efficient CubeSat electronics power system
14:00-14:15	Nathaniel Brough, Curtin University	The Binar CubeSat Program: attitude control for small satellites
14:15-14:30	Ben Jarvis, University of Sydney	Development of low-cost testing methodologies for star trackers
14:30-14:45	Shanae King, Australian National University	A small form-factor detector controller for the Emu space telescope mission and beyond
15:00-16:30	***Afternoon Tea***	***Poster Session 1***
Space Engineering 3		
16:30-16:45	Muhammad Furqan, Queensland University of Technology	Efficient utilization of radio frequency electromagnetic spectrum for satellites in lower Earth orbits
16:45-17:00	Robert Tracey, Keysight Technologies	Emulating radio links for wideband SATCOM systems
17:00-17:15	Jack Rintoul, DST Group	Augmenting CubeSat communication using Low Earth Orbit (LEO) communication networks
17:15-17:30	Edwin Peters, University of New South Wales Canberra	Real-time demodulation of multiple modulation schemes from satellites using a GPU based matched filtering approach
17:30-17:45	Francis Bennet, Australian National University	Towards an optical communications ground station network for next generation satellite communications
17:45-18:00	Gavin Conibeer, University of New South Wales	Laser power beaming for transmission of power in space
19:00-21:30	**Gala Dinner. Welcome by SIAA**	

Tuesday - Stream 2 *(City Rooms 2)*

Time	Speakers Name	Title
Space Business and Industry		
10:30-10:45	Daniel Floreani, CyberOps	The Australian space cybersecurity environment
10:45-11:00	Richard Matthews, University of Adelaide	How security ready is the Australian Space Industry? The challenges of digital security in space
11:00-11:15	Taofiq Huq, SpiralBlue	Spiral Blue: Space Edge Computing
11:15-11:30	Christopher Tylor, NEO Resources Atlas Pty Ltd	The NEO Resource Atlas - A commercial solution to a legal problem
11:30-11:45	Sophia Casanova, University of New South Wales	Developing exploration strategies and development guidelines for Lunar and Martian volatile resource extraction and utilisation
11:45-12:00	Nicholas Bennett, University of New South Wales	On the virtue of supplying just oxygen from a lunar polar water mine
12:00-12:15	Scott Wallis, Equatorial Launch Australia	NASA launches from the Arnhem Space Centre in 2020
12:15-12:30	Vickal Kumar, Bureau of Meteorology	Impacts of space weather on aviation
12:30-13:30	***Lunch***	
Entrepreneur Pitch Sessions		
13:30-13:45	Max Arshavsky, Zenno Astronautics Limited	Novel satellite propulsion technology
13:45-14:00	Bohan Deng, Sperospace Pty Ltd	Sperospace
14:00-14:15	Benjamin Koschnick, Spectral Aerospace	Spectral Aerospace: changing the way we see our world
14:15-14:30	Brian Lim, Wise Networking	On demand telecommunication infrastructure for planetary exploration and colonisation
14:30-14:45	Sai Krishna Vallapureddy, Ground Zero Space	The Australian space cybersecurity environment
15:00-16:30	***Afternoon Tea***	***Poster Session 1***

Space Law		
16:30-16:45	Alex Seneta, Australian Space Agency	The new rules: Space (Launch and Returns) Act 2018
16:45-17:00	Rodrigo Praino, Flinders University	Measuring space power: A comparative assessment of worldwide space actors
17:00-17:15	Mark Meegan	Earth Observation data - climate change monitoring
17:15-17:30	Rebecca Leshinsky, RMIT University	Valuing real estate interests in space – a frontier exercise
17:30-17:45	John Lee, University of Newcastle	Care of the outer space environment: An emerging aspect of human involvement with outer space.
17:45-18:00	Rowena Christiansen, University of Melbourne	'Space tourism - is it a disaster waiting to happen?

Tuesday - Stream 3 *(City Rooms 3)*

Time	Speakers Name	Title
Education and Training		
10:30-10:45	Carol Oliver, University of New South Wales	Can high school students undertake publishable space science research?
10:45-11:00	Vira Wallis, Mawson Lakes School	M.A.R.S.U.P.I.A.L.S project
11:00-11:15	Ady James, University of South Australia	The Southern hemisphere Space Studies Program: international, intercultural and interdisciplinary.
11:15-11:30	Fabian Zander, University of Southern Queensland	STEM education using hybrid rocket motors
11:30-11:45	Yiwei Mao, Jack Liell-cock, Sholto Douglas University of Sydney	TweetS@
11:45-12:00	Nataliia Sergiienko, University of Adelaide	CubeSat as a tool for training engineers of the future
12:00-12:15	Panwar Rakesh, Bureau of Meteorology	Australian Bureau of Meteorology space weather training
12:15-12:30	David Holdsworth, DST Group	JORN Open Innovation Network: Description and Defence Science & Technology group perspective
12:30-13:30	***Lunch***	

Time	Speakers Name	Title
Planets and Exoplanets		
13:30-13:45	Shin-Chan Han, University of Newcsatle	High-resolution gravitational fields of the Moon from crustal density estimates and topographic data
13:45-14:00	Jonti Horner, University of Southern Queensland	Minerva-Australis - searching for alien worlds
14:00-14:15	Graziella Caprarelli, Hypatia Scientifica P/L	Exploratory analysis of the NASA Exoplanet Archive
14:15-14:30	Graeme Melville, University of New South Wales	Characterising Hot Jupiter exoplanets
14:30-14:45	James O'Connor, University of Southern Queensland	Orbital constraints on terrestrial exoplanet climates
14:45-15:00	Jake Clark, University of Southern Queensland	Can stellar abundances help explain the architecture of planetary systems discovered by TESS?
15:00-16:30	***Afternoon Tea***	***Poster Session 1***
Mars		
16:30-16:45	Nick Carter, CSIRO	CubeSat to Mars - A feasibility study
16:45-17:00	Jon Clarke, Mars Society Australia	Lonar Crater in India as an analogue for Mars analogue studies
17:00-17:15	Eriita Jones, University of South Australia	A battle between machine learning, traditional clustering and citizen scientists in the detection and segmentation of polar spring-time fans on Mars
17:15-17:30	Lucy Forman, Curtin University	Lava flows on Mars
17:30-17:45	Anthony Lagain, Curtin University	Automatic surface age dating of impact events on Mars
17:45-18:00	Ken Orr, Curtin University	Spectral characterization of Martian meteorites: Searching for the source craters on Mars

Tuesday - Stream 4 *(City Rooms 4)*

Time	Speakers Name	Title
Remote Sensing and Earth Observations		
10:30-10:45	Amy Parker, CSIRO	Australia's NovaSAR-1 national research facility
10:45-11:00	Trent McDougall, Mars Society Australia	Flown in space: Can low cost electronics perform useful science in the near-space environment?
11:00-11:15	Mark Ramsey, Sitael Australia	An Australian national satellite water monitoring system concept
11:15-11:30	Stephen Gensemer, CSIRO	CSIRO's small-satellite optical instrumentation development
11:30-11:45	Victor Fok, DST Group	SAR constellation designs for barrier surveillance applications
11:45-12:00	Joon Wayn Cheong, ACSER, University of New South Wales	Target detection applications using GNSS-reflectometry
12:00-12:15	Elizaveta Klantsataya, University of Adelaide	Upconversion fluorescence spectroscopy for active remote detection of acetone and other small size organic compounds in space
12:15-12:30	Andrew Robson, University of New England	Satellite imagery, if not properly trained then it can 'eat your sheep'
12:30-13:30	***Lunch***	
Space Missions 1		
13:30-13:45	Xueliang Bai, University of Sydney	The CUAVA-1 CubeSat
13:45-14:00	Nathaniel Brough, Curtin University	The Binar CubeSat program: Past, present and beyond
14:00-14:15	Michele Trenti, University of Melbourne	The SkyHopper space telescope CubeSat
14:15-14:30	Duncan Wright, University of Southern Queensland	Twinkle and Australia
14:30-14:45	Joice Mathew, Australian National University	Emu - A time delay imaging near-infrared survey mission on the international space station
14:45-15:00	Shin-Chan Han, University of Newcastle	An overview of NASA and DLR's Gravity Recovery And Climate Experiment (GRACE) and GRACE Follow-On missions
15:00-16:30	***Afternoon Tea***	***Poster Session 1***

Time	Speakers Name	Title
Space and Atmospheric Physics I		
16:30-16:45	Patrick Shober, Curtin University	Skipping fireballs and what they tell us about the evolution of the solar system
16:45-17:00	Eleanor Sansom, Curtin University	Hayabusa II re-entry observation campaign
17:00-17:15	George Bowden, University of New South Wales	Numerical simulation of ionospheric disturbances resulting from rocket launches
17:15-17:30	Ronald Maj, RMIT University	Comparison of the predictive power of RMIT's and existing atmospheric mass density (AMD) models using satellite measurements
17:30-17:45	Andrew Spargo, University of Adelaide	Multistatic meteor radar observations of gravity wave-tide interactions in the lower E-region
17:45-18:00	Baden Gilbert, University of Adelaide	Simultaneous ionospheric sounder and airglow observations of sporadic-E layers

Wednesday - Plenary *(City Rooms 1 & 2)*

Time	Speakers Name	Title
7:45-8:30	**Registration**	
Plenaries		
8:30-9:00	Isabelle Kingsley, University of NSW	Deep impact: how to achieve effective and meaningful space science education and outreach
9:00-9:30	Alina Donea, Monash University	Advances and results in enhancing and developing helioseismic methods for the space weather predictions
9:30-10:00	Anatoly Rozenfeld, University of Wollongong	Innovative radiation sensors for prediction of radiation hazard to astronauts and electronics during space missions
10:00-10:30	***Morning Tea***	

Wednesday - Stream 1 *(City Rooms 1)*

Time	Speakers Name	Title
Space Missions 2		
10:30-10:45	Stephen Gensemer, CSIRO	CSIROSat-1 CubeSat mission update
10:45-11:00	William Crowe, HEO Robotics	Asteroid Century whitepaper: a flagship mission for Australia
11:00-11:15	Andrew Dempster, ACSER, University of New South Wales	The Wilde Project: A Moon Mission for Australia
11:15-11:30	Ed Kruzins, CSIRO	Deep space missions from Australia, the capability of the Canberra Deep Space Communication Complex at Tidbinbilla and the future of new tracking technologies
11:30-11:45	Guifré Molera Calvés, University of Tasmania	Spacecraft tracking capabilities by the UTAS radio telescope network
11:45-12:00	Ben Adams, Inovor Technologies	Apogee satellite bus missions
12:00-12:15	Rasit Abay, University of New South Wales Canberra	Space mission architecture with AI on the edge
12:15-12:30	Elias Aboutanios, University of New South Wales	A high altitude balloon borne synthetic aperture radar
12:30-13:30	***Lunch***	
Space Engineering 5		
13:30-13:45	Volker Hessel, University of Adelaide	Asteroid@ChemEng: Orders of magnitude water savings by intensified metal extraction from mimicked asteroid ores?
13:45-14:00	Heiki Ebendorff-Heidepriem, University of Adelaide	Next-generation extreme-low loss optical fibres through automated manufacture in space
14:00-14:15	Daniel Liang, CSIRO	Shape memory alloy foils produced by near-net-shape casting
14:15-14:30	Yang Yang, RMIT University	PHiFA – A high-fidelity orbit-attitude propagator
14:30-14:45	Benjamin Dix-Matthews, University of Western Australia	Coherent optical Doppler orbitography
14:45-15:00		
15:00-16:30	***Afternoon Tea***	***Poster Session 2***

Wednesday – Townhall discussion *(City Rooms 1 & 2)*

Time	Speakers Name	Title
16:30-17:55	**Development of Australia's next decadal plan for space science**	
17:55-18:05	Iver Cairns, Wayne Short	Conference closing remarks

Wednesday - Stream 2 *(City Rooms 2)*

Time	Speakers Name	Title
Space Situational Awareness		
10:30-10:45	Steve Gower, SERC	Space Environment Research Centre (SERC) research
10:45-11:00	Albert Sztolc, University of Adelaide	Optical space fence development
11:00-11:15	Doris Grosse, Australian National University	Adaptive optics for space situational awareness
11:15-11:30	Brendan Hennessy, DST Group	Surveillance of space with passive radar using the Murchison Widefield Array
11:30-11:45	David Holdsworth, DST Group	Buckland Park VHF radar observations of low-earth orbit objects during SpaceFest 2019: operating configuration and signal processing
11:45-12:00	Samantha Le May, RMIT University	A quantitative analysis of space object registration using a graph database.
12:00-12:15	Richard Samuel, Australian National University	A new method of refining near-earth object characteristics and behaviours using differential correction
12:15-12:30	Emma Kerr, RMIT University	Limitations on the use of drag augmentation for post-mission disposal
12:30-13:30	***Lunch***	
Meteorites, Asteroids and Space Resources		
13:30-13:45	Eleanor Sansom, Curtin University	Near-Earth Objects characterisation with small space assets
13:45-14:00	Seamus Anderson, Curtin University	Drones and deep learning for meteorite recovery

Time	Speakers Name	Title
14:00-14:15	Ruida Xie, University of New South Walers	Mission opportunities' search for long stay-time exploration on near Earth asteroids
14:15-14:30	Jacob Parnell, Macquarie University	A smoothed particle hydrodynamics approach to asteroid modelling
14:30-14:45	Craig Lindley, CSIRO	Resource modelling for asteroid mining
14:45-15:00	Volker Hessel, University of Adelaide	In-Situ Resource Utilisation (ISRU) in space: water, phosphate, and metals
15:00-16:30	***Afternoon Tea***	***Poster Session 2***

Wednesday - Stream 3 *(City Rooms 3)*

Time	Speakers Name	Title
GNSS, Space policy and History		
10:30-10:45	Liz Pearce, Australian Space Agency	Civil Space Technical Roadmap - what's next for Australia
10:45-11:00	Kimberley Clayfield, CSIRO	CSIRO Space Technology Future Science Platform
11:00-11:15	Christopher Marshall, Frontier SI	The Australia and New Zealand SBAS Test-bed: Demonstrating the next-generation of positioning technology
11:15-11:30	Yanming Feng, Queensland University of Technology	Connected GNSS things for industry IoT solutions: case studies
11:30-11:45	Stefan Norman and Liam Shelby-James, University of Adelaide	GNSS trust & reliability
11:45-12:00	Joon Wayn Cheong, ACSER, University of New South Wales	Verification of a GPS reflectometry sensor using software defined radios
12:00-12:15	Kerrie Dougherty, University of New South Wales	HARP: Australia's first sounding rocket program
12:15-12:30	Owen Mace	The first satellite built in Australia
12:30-13:30	***Lunch***	
Space Medicine and Human Factors		
13:30-13:45	Jason Armstrong, Boeing	Anti-microbial polymer development for spacecraft cabin disease & system contamination

Time	Speakers Name	Title
13:45-14:00	Bal Dhital	A conceptual review of the relationship between the glymphatic system, sleep, cognition, and neurodegenerative disease in the microgravity environment.
14:00-14:15	Julie Hides, Griffith University	Parallels between changes in trunk muscles in response to microgravity, prolonged bed rest and low back pain on Earth
14:15-14:30	Vienna Tran, University of Adelaide	The efficacy and stability of semi-finished and finished medicines made in space
14:30-14:45	Shane Usher, University of Melbourne	Australians in space analogues: Expedition Boomerang at MDRS and SIRIUS-20 at IMBP
14:45-15:00	Peter Schumacher, University of South Australia	Applied anthropometry and human centered design for complex confined environments
15:00-16:30	***Afternoon Tea***	***Poster Session 2***

Wednesday - Stream 4 *(City Rooms 4)*

Time	Speakers Name	Title
Space and Atmospheric Physics 2, Space Engineering 4		
10:30-10:45	Owen Giersch, Australian Space Academy	The Australian Space Academy solar radio spectrograph
10:45-11:00	Iver Cairns, University of Sydney	Hit or miss, arrival time, and Bz orientation predictions of BATS-R-US CME-driven shock simulations at 1 AU
11:00-11:15	Bolaji Olawale, University of Tasmania	Response of global ionospheric plasma fountain circulations to St. Patrick's storm of 2015
11:15-11:30	Sean Ables, University of Newcastle	Robust geolocation of EMIC wave sources in the high latitude ionosphere
11:30-11:45	Richard Marshall, Bureau of Meteorology	Modelling, monitoring, and mitigation of space weather for Australia's power grids
11:45-12:00	Alexander Ryan, University of Sydney	Experimental analysis of a Helicon plasma rocket developed using rapid Monte Carlo based inverse design
12:00-12:15	Robin Georg, University of Adelaide	Investigations of transient discharge behaviour in an inductive plasma generator for electric propulsion

Time	Speakers Name	Title
12:15-12:30	Kyll Schomberg, Shoal Group	Estimating non-axial thrust loss in bell rocket nozzles
12:30-13:30	***Lunch***	

Space and Atmospheric Physics 3

13:30-13:45	Daniel Field, University of Adelaide	A new empirical climatological model of ionospheric foF2 and hmF2
13:45-14:00	Zahra Bouya, Bureau of Meteorology	A prediction model of global ionospheric maps
14:00-14:15	Andrew Heitmann, DST Group	Characterising ionospheric gradients from oblique angle-of-arrival ionosondes
14:15-14:30	Chris Crouch, DST Group	Using neural networks to improve ionospheric models with radar backscatter sounder observations
14:30-14:45	Anne Unewisse, DST Group	Variation in the maximum range of HF spread Doppler clutter
14:45-15:00	Lenard Pederick, DST Group	TAPDANCE: A polarimetric vector-sensing ionosonde
15:00-16:30	***Afternoon Tea***	***Poster Session 2***

Poster Presentations

The presenters at the poster session on Tuesday October 1 are:

Richard Matthews, University of Adelaide:
The real Space Cowboys: An assessment of Space Exploration Technologies Corp sustainability using the Benn et al and Perrott Models of corporate sustainability

Jessica Ralph, University of South Australia: HRM in Outer Space

Andoh Afful, RMIT University:
Barriers inhibiting successful implementation of a space science program: perceptions of academics and students

Ady James, University of South Australia:
Developing skills in the space industry through the SmartSat CRC

James O'Connor, University of Southern Queensland:
Effective science communication using Instagram - @educatingspace

Jonti Horner, University of Southern Queensland:
Which ExoEarths should we search for life? The impact of planetary architecture on the Milankovitch cycles.

Steven Hobbs, University of New South Wales Canberra
Using point pattern and thermal inertia analyses to test self-organisation in Martian mid-latitude Gullies

Eriita Jones, University of South Australia:
Evidence of life on Mars? – A critical review of the recent publication by the same name

Savannah McGuirk, University of Sydney :
Opportunities for enhancing Australia's estimates of soil carbon in the age of hyperspectral imaging spectroscopy: from the farmers paddock to cubeSats and UAV's

Christopher Tylor, FUEGO International Pty Ltd :
FUEGO - Fire Urgency Estimator on Geostationary Orbit

Eriita Jones, University of South Australia :
Is higher spatial resolution always better? A quantitative analysis of the impact of pan-sharpening worldview-2 imagery on a neural networks detection and segmentation of vineyards

Aditya Kedlaya, AstrogateLabs :
Precision pointing system for a low-cost optical terminal for high-speed downlink from smallsats in LEO

Dylan Lawrence, Flinders University :
Dynamic modelling of systems with pitch control aerofoils

Xiaozhou Liu, University of New South Wales :
Integrated patch antennas and solar cells for Cubesats – Optimising solar cell efficiency and antennae gain

Patrick Neumann, Neumann Space :
Initial pulsed cathodic arc thruster impulse measurements using a calibrated torsional thrust stand

Eric Russo, Flinders University :
A detailed investigation and solution strategy of thermal impacts on pressure regulator valve in liquid space engine hydro-control system

James Veasey, Flinders University :
Dynamic analysis and component modelling of a thrust system in a liquid space engine

Dylan Vinall, Flinders University :
The application of surface dielectric barrier discharge plasma actuators, for improved active flow control on highly pitched aerofoil blades.

Ivan Voropaev, Wave Power Engineering : New propulsion system

Andrew Zhang, University of Technology Sydney :
Novel architecture and key technologies for achieving high capacity and low cost space and terrestrial integrated networks

The presenters at the poster session on Wednesday October 2 are:

Petar Belic, University of New South Wales :
Monopedal jumping robots in the context of the Lunar environment

William Crowe, HEO Robotics :
Asteroid Century whitepaper: a flagship mission for Australia

Frederick Menk, University of Newcastle :
An Australian space weather and climate satellite constellation

Melrose Brown, University of New South Wales Canberra :
Change detection SSA experiments for the M2 formation flying CubeSat mission

Brett Carter, RMIT University :
Does the movement of RMIT's rooftop Robotic Optical Observatory (ROO) impact its space situational awareness data?

Yanming Feng, Queensland University of Technology :
A machine learning-based approach for improved predictions of LEO objects with two-line element data sets

Daniel Field, University of Adelaide :
Buckland Park VHF radar observations of low-Earth orbit objects during SpaceFest 2019: observations and results

John Kennewell, Australian Space Academy :
Unresolved optical observations of material degradation in Geosats

Emma Kerr,RMIT University :
General perturbations method for orbit propagation

Emma Kerr,RMIT University :
Improving the accuracy of atmospheric density modelling and the effect on orbit propagation

Kathryn McDonnell, University of Adelaide :
Luminescence dating potential of the mineral constituents of meteorites

Brett Carter, RMIT University :
On the evaluation of deterministic ionospheric scintillation forecasts

Tam Dao, International University (HCMIU) :
On the variations of the total electron content observed over Ho Chi Minh City in 2018

Alina Donea, Monash University :
CNN machine learning techniques for identification of magnetic field polarities on the solar surface

Darrell Elton, La Trobe University :
Buckland Park HF radar: Enhanced capabilities and results

Owen Giersch, Australian Space Academy
The Australian Space Academy sunspot number

Vasily Lobzin, Bureau of Meteorology :
Predictions of relativistic electron fluence at geo-synchronous orbit

Ronald Maj, RMIT University :
Dust detection via voltage power spectroscopy on a CubeSat in Earth's ionosphere

Dave Neudegg, DST Group :
Coronal mass ejection and resultant geomagnetic-ionospheric response

Kehe Wang, Bureau of Meteorology :
Analysis of Australian historical foF2 data

John Hildebrandt, Amazon Web Services :
Introduction to AWS (Amazon Web Services) Ground Station