

2019 Australian Space Research Conference Program

Monday September 30 Joint Space Forum/ASRC

08:00-08:45 **Registration**

08:45-08:50 **Opening**

Hon Steven Marshall MP, Premier of South Australia

08:50-10:15 **National and International Space Trends**

Hon Karen Andrews MP, Megan Clark, Richard Price, Luca Del Monte, Sarah Pearce, James Johnson, Graeme Kemich

10:15-11:00 ***Morning Tea***

11:00-12:30 **National Context: Q&A Expert Panel**

Anna-Maria Arabia, Murray Parkinson, Andrew Dempster, Caroline McMillen, Graham Durrant, Darin Lovett, Frederick Menk

12:30-13:30 ***Lunch***

Plenary Session

13:30-13:50 Jason Held, Saber Astronautics Responsive Space Operations Centre (RSOC)

13:50-14:10 Phil Bland, Curtin University FireOPAL: A sovereign Australian space situational awareness solution

14:10-14:30 Suelynn Choy, RMIT University Satellite navigation technology: Past, present and future

14:30-14:50 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***

15:30-16:50 **SmartSat CRC - Q&A Expert Panel**

Anna Moore, Andrew Seedhouse, Aude Vignelles, Brad Yelland, Koukou Suu, Shaun Wilson, Russell Boyce

16:50 **Conclusion**

16:55 **Networking Event**

19:00-20:30 **MSA "David Cooper" memorial lecture by Dr Gordon Cable AM MB BS DAvMED MRAeS**

Tuesday October 1

08:00-08:30 **Registration**

Gender Equity and Diversity Session

08:30-9:00

Plenary

Anna-Maria Arabia, Australian Academy of Science

09:00-09:20

Rose O'Dea, University of New South Wales (Invited) Why are fewer women than men employed in fields associated with brilliance?

09:20-09:40

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

09:40-10:00

Panel Discussion

Anna-Maria Arabia, Rose O'Dea, Eriita Jones, Alice Gorman, Sumen Rai

10:00-10:30 **Morning Tea**

Tuesday - Stream 1

Space Engineering 1

10:30-10:45

Jan-Erik Ronningen, Gilmour Space Technologies

Hybrid rockets - past, present, future

10:45-11:00	Mitchell Galletly, University of Sydney	Project Silvereye: The design architecture of a reusable 10,000 ft high power rocket
11:00-11:15	Aiden O'Brien, Saber Astronautics	Automated conceptual design of cubesats
11:15-11:30	Stuart Buchan, Curtin University	The Binar CubeSat Program: design and development of a CubeSat digital twin
11:30-11:45	R K Manchanda	Role of tethered balloons and aerostats in communication, surveillance and disaster management
11:45-12:00	Kawsihen Elankumaran, University of New South Wales	Autonomous navigation of distributed spacecraft for proximity operations in small celestial bodies
12:00-12:15	Job Nijhuis, University of Adelaide	Microfluidic chip-based synthesis and spray of quantum nanodots as spectral decoy to protect satellites
12:15-12:30	Graham Dorrington, RMIT University	Novel concept for a partly reusable Lunar lander

12:30-13:30 ***Lunch***

Space Engineering 2

13:30-13:45	Monique Hollick, DST Group	Deployable optics payload for the Buccaneer Main Mission
13:45-14:00	Paul Alvino, DST Group	Australian radiation testing of liquid lenses for the Buccaneer Main Mission SELFIE payload
14:00-14:15	Fergus Downey, Curtin University	The Binar CubeSat Program: Developing a reliable and efficient CubeSat electronics power system
14:15-14:30	Nathaniel Brough, Curtin University	The Binar CubeSat Program: attitude control for small satellites
14:30-14:45	Ben Jarvis, University of Sydney	Development of low-cost testing methodologies for star trackers
14:45-15:00	Shanae King, Australian National University	A small form-factor detector controller for the Emu space telescope mission and beyond

15:00-16:30 ***Posters 1 and Afternoon Tea***

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
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16:45-17:00	C K Chwa, 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

Gala Dinner

Tuesday - Stream 2

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 Cassanova, 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

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
14:45-15:00	Patrick Wang, Space Ops Australia	Space Ops business pitch plan

15:00-16:30 *Posters 1 and Afternoon Tea*

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?

Gala Dinner

Tuesday - Stream 3

Education & 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, 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**

Planets & 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

Posters 1 and Afternoon Tea

Mars

16:30-16:45

Nick Carter, CSIRO

CubeSat to Mars - A feasibility study

16:45-17:00

Jon Clarke, Mars Society Australia

Lunar 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

Gala Dinner

Tuesday - Stream 4

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, 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	Iver Cairns, University of Sydney	The CUAVA-1 CubeSat
13:45-14:00	Benjamin Hartig, 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 ***Posters 1 and Afternoon Tea***

Space & Atmospheric Physics 1

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

Gala Dinner

Wednesday October 2

08:00-08:30 **Registration**

Plenary Session

08:30-09:00	Isabella Kingsley, University of New South Wales	Deep impact: how to achieve effective and meaningful space science education and outreach
09:00-09:30	Alina Donea, Monash University	Advances and results in enhancing and developing helioseismic methods for the space weather predictions
09:30-10:00	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

Space Missions 2

10:30-10:45	Stephen Gensemer, CSIRO	CSIROSat-1 CubeSat mission update
10:45-11:00	Ali Buchberger, University of Southern Queensland	Firing up for the space race: Australia's national rocket static test facility
11:00-11:15	Andrew Dempster, 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	Doug Klotz, Flawless Photonics	The business case for next generation optical fiber manufactured in space
14:15-14:30	Shiqin Yan, CSIRO	Shape memory alloy foils produced by near-net-shape casting
14:30-14:45	Yang Yang, RMIT University	PHiFA – A high-fidelity orbit-attitude propagator
14:45-15:00	Benjamin Dix-Matthews, University of Western Australia	Coherent optical Doppler orbitography

15:00-16:30 **Posters 2 and Afternoon Tea**

Town Hall Discussion

16:30-18:00 **Development of Australia's next decadal plan for space science**

Close

Wednesday - Stream 2

Space Situational Awareness

10:30-10:45	Steve Gower, SERC Limited	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 & Space Resources

13:30-13:45	Eleanor Sansom, Curtin University	Near-Earth Objects characterisation with small space assets
13:45-14:00	Seamus Andreson, Curtin University	Drones and deep learning for meteorite recovery
14:00-14:15	Ruida Xie, University of New South Wales	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 ***Posters 2 and Afternoon Tea***

Town Hall Discussion

16:30-18:00 **Development of Australia's next decadal plan for space science**

Close

Wednesday - Stream 3

Space Policy, GNSS

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, University of Adelaide	GNSS trust & reliability
11:45-12:00	Eamonn Glennon, 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 & Human Factors

13:30-13:45	Jason Armstrong, Boeing	Anti-microbial polymer development for spacecraft cabin disease & system contamination
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 Adelaide	Applied anthropometry and human centered design for complex confined environments

15:00-16:30 ***Posters 2 and Afternoon Tea***

Town Hall Discussion

16:30-18:00 **Development of Australia's next decadal plan for space science**

Close

Wednesday - Stream 4

Space & 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
12:15-12:30	Kyll Schomberg, Shoal Group	Estimating non-axial thrust loss in bell rocket nozzles

12:30-13:30 ***Lunch***

Space & 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 ***Posters 2 and Afternoon Tea***

Town Hall Discussion

16:30-18:00 **Development of Australia's next decadal plan for space science**

Close

Poster Session 1: Tuesday 15:00 - 16:30

Space business, Education & Training, Mars, Space Engineering

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	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
John Hildebrandt, Amazon Web Services	Introduction to AWS (Amazon Web Services) Ground Station
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
Gavin Conibeer, University of New South Wales	Integrated patch antennas and solar cells for Cubesats – Optimising solar cell efficiency and antennae gain

André Franck Bauer, University of Sydney	Project Silvereye: A systems engineering approach to success at Spaceport America Cup 2019
Xiaojing Huang, University of Technology Sydney	Novel architecture and key technologies for achieving high capacity and low cost space and terrestrial integrated networks
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
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

Poster Session 2: Wednesday 15:00 - 16:30

Space missions, Space situational awareness, Space & Atmospheric Physics

Rowena Christiansen	Rethinking the paradigm - how the space environment challenges traditional ways of delivering clinical medicine
Ian Bartlett, University of New South Wales	Terrain reachability and operational constraints on robotic operations near Shackleton Crater
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
Nicholas O'Leary, University of New South Wales	Initial trajectory design for very-low altitude orbits at the Lunar south pole
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?
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
Bin Li, Queensland University of Technology	A machine learning-based approach for improved predictions of LEO objects with two-line element data sets
James Palmer, Silentium Defence	Passive radar for space situational awareness
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