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Australian Space Science Conference Series

1st Edition

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Editors: Wayne Short and Iver Cairns

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Preface to the Proceedings

A large number of the presenters at the conference later submitted completed written papers which form the basis of this Conference Proceedings.

All papers published in these proceedings have been subject to a peer review process whereby a scholarly judgement by suitable individuals endorsed by the Program Committee determined if the paper was suitable to be published. All papers not rejected were revised until deemed suitable. Responsibility for the content of each paper lies with its author(s). The publisher also retains copyright over the text. Papers appear in the Conference Proceedings with the permission of the authors.

The Editors would like to give special thanks to the Program Committee and those scholars who participated in the peer review process:

Amit Acharyya, John Auld, Daniel Bayliss, James Bennett, James Biggs, Mark Blair, Rod Boswell, Melrose Brown, Brad Carter, Jon Clarke, Daniel Cotton, Andrew Dempster, Con Doolan, Lisa Fogarty, Alan Forghani, Brian Fraser, John Fryer, Yue Gao, Eamon Glennon, Marion Grange, Jose Guivant, Duane Hamacher, Alex Held, Jonathan Horner, Michael Ireland, Trevor Ireland, Michael Jokic, Fred Jourdan, John Kennewell, Elliot Koch, Phil Lubin, Jonathan Marshall, Steve Martin, David Mee, Fred Menk, Frank Mills, Harvey Mitchell, Neil Mudford, Andrew Neely, Marc Norman, Sean O'Byrne, Hideaki Ogawa, John Olsen, Craig O'Neill, Simon O'Toole, John Page, Birenda Pandey, Tim Payne, Rob Pidgeon, Gordon Pike, Stuart Ryder, Richard Samuel, Jizhang Sang, Daniel Shaddock, Nagaraj C. Shivaramaiah, Duncan Steel, Leon Stepan, Ross Taylor, Matthew Tetlow, Tanya Vladimirova, Carl Wang, Colin Waters, Vincent Wheatley, Rob Wittenmeyer and Xaoifeng Wu.

Finally we would like to thank our sponsors (the Space Policy Unit of DIISR and Engineers Australia) for their support in funding student participation and the Organising Committee and Program committee for giving generously of their time and efforts. We trust that you will find the 2011 Conference Proceedings enjoyable and informative.

Wayne Short and Iver Cairns
Editors, 11ASSC Conference Proceedings, May 2012

Conference Background

The Australian Space Science Conference (ASSC) is the focus of scientific cooperation and discussion in Australia on research relating to space. It is a peer reviewed forum for space scientists, engineers, educators, and workers in Industry and Government.

The conference is of relevance to a very broad cross section of the space community, and therefore generates an enlightening and timely exchange of ideas and perspectives. The scope of the conference covers fundamental and applied research that that can be done from space and space-based platforms, and includes the following:

- **Space science**, including space and atmospheric physics, remote sensing from space, planetary sciences, astrobiology and life sciences, and space-based astronomy and astrophysics
- **Space engineering**, including communications, navigation, space operations, propulsion and spacecraft design, testing, and implementation
- **Space industry**
- **Government, International relations and law**
- **Education and outreach**

The 11th ASSC was held at Australian National University in Canberra from September 26 to 29, 2011. The Conference was opened by the Minister for Innovation, Industry, Science, and Research, Senator the Honourable Kim Carr (Labor, Victoria). During his speech the Minister announced for the first time the principles for the new National Space Industry Policy. The Minister's speech was followed by invited talks from Dr Craig Smith (EOS Systems, holder of an Australian Space Research program grant) and by Professor Michael Tobar (University of Western Australia).

The conference included a comprehensive program of plenary talks and special sessions on the national context for space (including papers on the new Roadmap for the National Research Infrastructure, the new Australian Space Industry Association, and the status and implementation of the 2010 Decadal Plan for Australian Space Science), the foci and programs of Australian Government units with interests in space, and detailed descriptions and progress reports of research funded by the Australian Space Research Program. In addition, the program contained a special student session, with a strong preponderance of projects involving the Australian Space Research Institute. The program also contained multiple sessions of invited and contributed presentations, both oral and poster, on Hypersonics, Planetary Science, Remote Sensing and Geodesy, Space Capabilities / Education / Hazards, Space Physics, and Space Technology.

Appendix A has a copy of all abstracts accepted for presentation at the conference.

The 11th ASSC was organised by the National Space Society of Australia (NSSA) and the Academy of Sciences National Committee for Space Science (NCSS). The Australian Space Research Institute (ASRI) also helped significantly with organising abstract submissions. The 2011 conference was held in conjunction with an Italy-Australia Space Science Symposium which which was held held on day 3 and allowed researchers from both Italy and Australia to discuss future collaborative efforts.

A call for papers was issued in March 2011 and researchers were invited to submit abstracts for presentation at the conference. Following the conference itself, a call for written papers was issued in October 2011: this invited presenters to submit a formal written paper for this Proceedings that covered their abstracts.

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David J. Petty , V. Wheatley and M. K. Smart	A Parametric Study of Oxygen Enriched Scramjet Combustion	pages 339 – 350
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Welcome to the 11th Australian Space Science Conference

and to the Australian National University in Canberra! This will be the fifth ASSC jointly sponsored and organised by the National Committee for Space Science (NCSS) and the National Space Society of Australia (NSSA). The ASSC is intended to be the primary annual meeting for Australian research relating to space science. It welcomes space scientists, engineers, educators, and workers in Industry and Government.

The conference was opened by Senator Kim Carr, the Minister for Industry, Innovation, Science and Research. The Vice-Chancellor of the ANU, Professor Ian Young, was in attendance to welcome and introduce the minister. The Italy - Australia Space Science Symposium was held on Day 3 of the conference.

This year we are working again with the Australian Space Research Institute (ASRI). We will also hear more about the successful projects from the last two rounds of the “Australian Space Research Program” (ASRP) – an initiative managed by the Space Policy Unit.

We look forward to an excellent meeting!

Iver Cairns
Co Chair ASSC 2011
Chair, NCSS

Wayne Short
Co Chair ASSC 2011
President, NSSA

Conference Plenary Speakers

Professor Harvey BUTCHER
Australian National University
“New Space Technology Centre at Mt Stromlo”

Ms Kerrie DOUGHERTY
Powerhouse Museum
“Space Science Education in Australia: where is it now? What paths could it take?”

Dr William KLIPSTEIN
Jet Propulsion Laboratory
“NASA’s GRAIL Mission to the Moon and Related Gravity-Sensing Instruments”

Dr Sergio G. LEON-SAVAL
University of Sydney
“Space Photonics: a new era of space instrumentation”

Dr Naomi MATHERS
Victorian Space Science Education Centre (VSSEC)
“Teaching STEM Using Scenario-based Learning: Mission Programs at VSSEC”

Conference Plenary Speakers

Professor Fred MENK
University of Newcastle
“The Next Generation OTH Radar”

Dr Marc NORMAN
Australian National University
“Planetary Science in Australia: 2011”

Professor Iain REID
University of Adelaide
“Upper atmosphere and near space research at Buckland Park”

Professor Mike TOBAR
University of Western Australia
“Australian contributions to the Atomic Clock Ensemble in Space Mission”

Professor Tanya VLADIMIROVA
University of Leicester, UK
“Microelectronics Design and Embedded Systems for Small Satellites”

Dr Mike WHEATLAND
University of Sydney
“Solar flares, active regions, and associated Australian research”



APPENDIX A

11ASSC List of Presentations & Posters

List of Presentations

Abstracts are listed in alphabetical order of first author

Name of Presenter	Names of all authors	Title
Elias Aboutanios	Elias Aboutanios	A Comprehensive Tertiary Education Program in Satellite Systems Engineering
Yuri Amelin	Yuri Amelin	A supernova-induced irradiation event in the early Solar System not confirmed by new ^{176}Lu - ^{176}Hf data
Jeremy Bailey	Jeremy Bailey	Methane and Deuterium in Titan's Atmosphere
James Barth	James Barth, Vincent Wheatley, Michael Smart	Effects of Ethylene Combustion in a Hypersonic Turbulent Boundary Layer
James Bennett	James Bennett, Jizhang Sang	Modelling the evolution of the Low Earth Orbit debris population
Chris Betters	C. Betters, I. H Cairns, J. Bland-Hawthorn, X. Wu, L. Fogarty, J. Funamoto, S.G. Leon-Saval, A. Monger, S.Z. (A.) Xiao.	Instrumentation of the i-INSPIRE satellite
Brett Biddington	Brett Biddington	Getting the Narrative Right: Next Steps in the Australian Space Journey
Zahra Bouya	Zahra Bouya and Mike Terkildsen	Empirical Orthogonal Function (EOF) analysis applied to Australian regional ionospheric Total Electron Content, based on GPS observations and Spherical Cap Harmonic Analysis (SCHA).
Russell Boyce	Russell Boyce	SCRAMSPACE
Russell Boyce	Russell Boyce, Iver Cairns	NCSS and the Decadal Plan for Australian Space Science
Cameron Boyd	Cameron Boyd, Daniel Faber, Shaun Wilson	Indicative Space Activities for Australian Capability Development
Daniel Bunker	Daniel Bunker, Jason Held	A Tether Deployment System for Picosatellites
Harvey Butcher	Harvey Butcher	New Space Technology Centre at Mt Stromlo
Brett Carter	B. A. Carter, R. A. Makarevich, J. C. Devlin and A. McDonald	An analysis of the electric field dependence of the E-region irregularity phase velocity using a new HF radar configuration
Brett Carter	B. A. Carter, R. Norman, C. Wang, Y. Li, S. Gordon, G. Hooper and K. Zhang	An investigation of the factors controlling the ionospheric scintillation levels observed by space-based and ground-based GPS receivers
Aditya Chopra	Aditya Chopra, Charles Lineweaver	What can the elemental abundances tell us about the site of the origin of life?
Kalun Chow	Kalun Chow, Lachlan Thompson	Finite Element Analysis on Ausroc Nano Launch Vehicle
Hai Tung Chu	Hai Tung Chu	Integration of textural information from multispectral and Synthetic Aperture Radar (SAR) data for land cover classification
Edhem Custovic	Edhem Custovic, Thomas Kane, Andrew McDonald, Vinh Vu, Jim Whittington and John Devlin	Next Generation Over The Horizon HF Radars and the determination of foF2 in real-time

Name of Presenter	Names of all authors	Title
Andrew Clark	Mr. Andrew Clark Dr. Denis O'Brien, Prof. David Griffith, Dr. Nicholas Jones, Prof. Peter Rayner	Preliminary Results and Objectives of the ASRP Greenhouse Gas Monitor Program
Jonathan Clarke	Jonathan Clarke and Michael West	Australian planetary analogues and their global context: a status report
Kimberley Clayfield	Kimberley Clayfield	CSIRO Space Sciences and Technology Program
Daniel Cotton	Daniel V. Cotton and Jeremy Bailey	Quantifying Carbon Monoxide Variation Below Venus' Clouds
Jeremy Davis	Jeremy Davis, Kumaravelu Ganesan, Susanna Guatelli, Marco Petasecca, Jayde Livingstone, Michael Lerch, Dale A. Prokopovich, Mark I. Reinhard, Rainer N. Siegele, Steven Prawer, David Jamieson, Zdenka Kuncic and Anatoly B. Rosenfeld	Characterisation of a Novel Diamond-Based Microdosimeter for Radioprotection Applications in Space Environments
Philip Diamond	Philip Diamond	The Square Kilometre Array: project status and Australia's bid to host the telescope
Kerrie Dougherty	Ms. Kerrie Dougherty	Space Science Education in Australia: where is it now? What paths could it take?
Kerrie Dougherty	Ms. Kerrie Dougherty, Dr. Carol Oliver and Ms. Jennifer Fergusson	Pathways to Space: a Mission to Foster the Next Generation of Scientists and Engineers
Robert T. Duffin	Robert T. Duffin, Stephen M. White, Paul S. Ray, Michael L. Kaiser	Type III-L Solar Radio Bursts and their Associations with Solar Energetic Proton Events
Enroco Flamini	Enroco Flamini	The Italian Space Agency's science projects
Lisa Fogarty	L. Fogarty, J. Bland-Hawthorn, I. H. Cairns, X. Wu, C. Betters, J. Funamoto, S. G. Leon-Saval, A. Monger, S. Xiao	The i-INSPIRE Satellite
Victor Fok	Victor Fok, David Lingard, David Clark	Using a Genetic Algorithm to Optimise Maritime Surveillance Performed by Space-based Sensors
Alan Forghani	Alan Forghani, Anisul Islam, Richard Moxham, Jason Alexandra	The application of remote sensing to assess water quality monitoring in the Murray Darling Basin
Glenn Frankish	Glenn Frankish, Simon Oliver, Leo Lymburner and Medhavy Thankappan	Unlocking the Landsat Archive: a national capability for Earth observation data analysis.
Jiro Funamoto	J. Funamoto ¹ , X. Wu ¹ , I.H. Cairns, J. Bland-Hawthorn, C. Betters, L. Fogarty, S.G. Leon-Saval, A. Monger, S. Xiao	Engineering the i-INSPIRE satellite
Jiro Funamoto	J. Funamoto, J. Khachan, A. Israel	The Charge Exchange Thruster

Name of Presenter	Names of all authors	Title
Mark Gargano	Mark Gargano, Marjan Zadnik, David Blair, Fred Deshon, Mzamose Gondwe, Auriol Heary, Nancy Longnecker, Marina Pitts, Grady Venville, Brad Whitaker	Earth and Space Sciences Professional Development: Does it make a real difference to the classroom experiences of you and your students?
Eamonn Glennon	Eamonn Glennon, Nagaraj Shivaramaiah, Peter Mumford and Kevin Parkinson	A GPS Receiver Designed for Cubesat Operation
Alice Gorman	Alice Gorman	Skylab vs Wresat 1: space icons in Australian social memory
Ali Haydar Göktoğan	Md. Essa Attia, Ali Haydar Göktoğan	Martian Rovers 'Pathways To Space' Technical Paper
Ali Haydar Göktoğan	Johanne Thibault, Ali Haydar Göktoğan	A Manipulator Development for an Experimental Mars Rover
Daniel Graham	Daniel Graham, Iver Cairns, Peter Robinson, Olaf Skjaeraasen	Beam-driven turbulence and localized structures
Duane Hamacher	Duane Hamacher, Andrew Buchel, Craig O'Neill, Tui Britton	The Palm Valley Depression, Central Australia: Diagnosing small impact craters
Jason Held	Jason Held, Alex Green, Daniel Bunker	Vostok "4-Pines" Stout, the First Space Beer: The Flight Test and Research Plan
Ken Ho	Ken Ho, Thierry Peynot, Salah Sukkariah	Analysis of Terrain Geometry Representations for Traversability of a Planetary Rover
Steven Hobbs	Steven Hobbs	GIS, Erosion and Mars: What Lake George Gullies can Tell us about Mars
Jonti Horner	Jonti Horner, Barrie Jones	Jupiter - Friend or Foe? An answer...
Jonti Horner	Jonti Horner, Patryk Sofia Lykawka	Are two of the Neptune Trojans dynamically unstable?
Md. Ali Hossain	Md. Ali Hossain, Mark Pickering, Xiuping Jia	Supervised Feature Reduction Based on a Mutual Information Measure for Hyperspectral Image Classification
Trevor Ireland	Trevor Ireland	Samples from the Hayabusa Mission to Itokawa-25143
Xiuping Jia	Xiuping Jia	Hyperspectral Imaging and Feature Mining
Thomas Kane	Thomas Kane, Roman Makarevich, John Devlin	HF radar observations of ionospheric backscatter during geomagnetically quiet periods
Andrew Klekociuk	Andrew Klekociuk	Australia's Antarctic Interests in Remote Sensing
William Klipstein	William Klipstein	NASA's GRAIL Mission to the Moon and Related Gravity-Sensing Instruments
Yedhu Krishna	Yedhu Krishna, Joseph John Kurtz, Sean O'Byrne	Diode Laser Measurement of Mach Number and Angle of Attack in a Hypersonic Inlet
Andrew Layden	Andrew Layden, Iver Cairns, Peter Robinson	Electrostatic decay in a magnetized plasma with applications to polarized Langmuir waves in the solar wind
Brett Layden	Brett Layden, John Percival, Iver Cairns, Peter Robinson	Exact quadratic longitudinal response of a Maxwellian plasma and its application to the rate of electrostatic decay
Joseph Leach	Joseph Leach	BASE SURGE ERUPTION IN THE TUFF RINGS OF SOUTH EAST AUSTRALIA: Possible implications for the interpretation of Martian surficial geology

Name of Presenter	Names of all authors	Title
Sergio G. Leon-Saval	Sergio G. Leon-Saval and Joss Bland-Hawthorn	Space Photonics: a new era of space instrumentation
Adam Lewis	Adam Lewis, Gary Johnston	Geoscience Australia and its interests in space activities and data
Bo Li	Bo Li, Iver Cairns, Peter Robinson	Type III Solar Radio Bursts Perturbed by Coronal Shocks
Charles Lineweaver	Charles Lineweaver, Aditya Chopra	What can life on Earth tell us about life in universe?
Jayde Livingstone	Jayde Livingstone, Dale Prokopovich, Marco Petasecca, Michael Lerch, Yigal Horowitz, Mark Reinhard, Vladimir Perevertaylo, Anatoly Rosenfeld	Detectors for Micro- and Nanodosimetry in Space Radiation Fields
Maria Lugaro	Maria Lugaro, Amanda I. Karakas, Carolyn Doherty, Kurt Liffman, and Sarah Maddison	Radioactivity in the early Solar System
Sin Ting Angela Lui	Sin Ting Angela Lui, Salah Sukkarieh	Decentralised Decision Making with Hard Constraints for Multi-Wheeled Rovers
Rathini Mahendran	Rathini Mahendran, Graziella Caprarelli	A new approach to impact crater dating of Martian surfaces
Naomi Mathers	Naomi Mathers and Michael Pakakis	Teaching STEM Using Scenario-based Learning: Mission Programs at VSSEC
Denis Margetic	Denis Margetic, Bodo Zeschke, Christopher Down, Chen-Hsu Su	Adapting and developing multi-spectral satellite imagery at the Bureau of Meteorology
Clare McLaughlin	Clare McLaughlin	2011 Strategic Roadmap for Australian Research Infrastructure
Fred Menk	F. W. Menk, J. C. Devlin	The Next Generation Over-the-Horizon Radar
Fred Menk	F. W. Menk, C. J. Rodger, and M. A. Clilverd	Relationship Between the Earth's Radiation Belts and the Atmosphere
Fred Menk	Y. H. Liu, B. J. Fraser, F. W. Menk	Electromagnetic Ion Cyclotron Waves Observed by Cluster near the Plasmapause
Neil Mudford	Neil R. Mudford, Sean O'Byrne, David Buttsworth and Sudantha Balage	Aerodynamic Coefficients in Hypersonic Flight Determined from Free Flight in a Wind Tunnel
Neil Mudford	Albert K. Chong, David Buttsworth, Neil Mudford, Michael Jokic, Sudantha Balage, Sean O'Byrne, Andrew Neely	Photogrammetric application at USQ Ludwig Tunnel Facility
David Neudegg	Phil Wilkinson, David Neudegg	The Bureau of Meteorology Space Weather Services
Marc Norman	Marc Norman	Planetary Science in Australia: 2011
Marc Norman	Marc Norman	The Lunar Impact Record: Greatest Hits and One Hit Wonders
Sean O'Byrne	Varun Prakash, Sean O'Byrne	In-Model Free-Flight Instrumentation For Hypersonic Shock Tunnel Testing
Roberto Orosei	Angioletta Coradini, Roberto Orosei	Planetary Science in Italy: An Overview
Pakpoom Oraphin	Pakpoom Oraphin	Nose and Fairing Payload Design of AUSROC NANO Launch Vehicle
Gian Gabriele Ori	Gian Gabriele Ori	Fluvial systems on Mars

Name of Presenter	Names of all authors	Title
Tim Paine	Tony Lindsay and Tim Paine	DSTO Space R&D – A National Partnership
David Petty	D. J. Petty, V. Wheatley, M. K. Smart & S. A. Razzaqi	A Parametric Study of Oxygen Enriched Scramjet Combustion
Robert Pidgeon	Robert Pidgeon, Alexander Nemchin and Marion Grange	The earliest history of the Moon and the Earth; Zircon geochronological evidence
Dawid Preller	Dawid Preller and Michael Smart	Longitudinal Control Strategy for Hypersonic Accelerating Vehicles
Iain Reid	Iain Reid	Upper atmosphere and near space research at Buckland Park
Amit Saha	Amit Saha, Tapabrata Ray, Hideaki Ogawa, Russell Boyce	Learning From Evolutionary-Algorithm Based Design Optimisation Of Axisymmetric Scramjet Inlets
Jizhang Sang	Jizhang Sang, Craig Smith	An Analysis of Observations from EOS Space Debris Tracking System
Roy Sach	Roy Sach	Where is Space?
Richard Samuel	Richard Samuel, Bernard Davison, Mark Blair	ASRI Small Sounding Rocket Program
Daniel Shaddock	D.A. Shaddock, P. Tregoning, D.E. McClelland, D.M.R. Wuchenich, A.J. Sutton, A.Stochino, C.M. Mow-Lowry, J. Miller, S.P. Francis, S. McClusky, E.-K. Potter, N. Darbeheshti, M. Blundell, C. Smith, J. Burke, S. Dligatch, K.L. Green, J.A. Seckold, B.F. Oreb, M.B. Gray, M.T.L. Hsu, R.B. Warrington, K. McKenzie, G. de Vine, R.E. Spero, W.M Folkner, W.M Klipstein, M. Watkins, B.S. Sheard, C. Mahrtdt, G.H. Heinzl, K. Danzman	The GRACE Follow-on Mission
Elyse Schinella	Elyse Schinella, Craig O'Neill	Constraining weathering processes on Venus from particle size distributions and Magellan Synthetic Aperture Radar (SAR)
Murray Sciffer	Murray Sciffer, Colin Waters	Estimating ULF wave equatorial electric fields from ground magnetic field measurements
Amrat Srisajjalertwaja	Amrat Srisajjalertwaja, Pariwat	AUSROC Nano stage one engine cooling system
Paolo Sossi	Paolo Sossi, Oliver Nebel	Metal – Silicate Fractionation of Iron Isotopes in Chondritic Meteorites
Duncan Steel	Duncan Steel	Space Debris: Quantifying and Mitigating the Impact Hazard
Duncan Steel	Duncan Steel	A hypothesis for Mercury's high metal content
Graham Steward	Graham Steward	Automatic Recognition of Complex Magnetic Regions on the Sun in GONG Magnetogram Images and Prediction of Flares: Techniques for the Flare Warning Program Flarecast
Jiraporn Thongcharoenpunporn	Jiraporn Thongcharoenpunporn	AUSROC Nano Stage1 Propulsion Sub-system

Name of Presenter	Names of all authors	Title
Mike Tobar	M. E. Tobar, A. N. Luiten, E. N. Ivanov, J. G. Hartnett, W. Featherstone, P. Teunissen, C. Vale, B. Hall, R. B. Warrington, P. Fisk	Australian contributions to the Atomic Clock Ensemble in Space Mission
Steven Tsitas	Steven Tsitas, Robert Middleton, Andrew Dempster, Chris Rizos	GARADA SAR Formation Flying Low Cost L-Band Satellite Constellation
Tzu-Pang Tseng	Tzu-Pang Tseng, Kefei Zhang, Jizhang Sang	Precise orbit determination of low earth orbiters: analysis of orbit errors and quality assessment of receiver oscillators
Angelo Villarosa	Angelo Villarosa, Aubrey Keller	Aerodynamic Analysis of AusROC Nano using CFD and Wind Tunnel Testing
Tanya Vladimirova	Tanya Vladimirova	Microelectronics Design and Embedded Systems for Small Satellites
Tanya Vladimirova	Tanya Vladimirova, Nigel P. Bannister, John Fothergill, George W. Fraser, Mark Lester, Darren Wright, Michael J. Pont, David J. Barnhart	CubeSat Mission for Space Weather Monitoring
Mike Wheatland	Mike Wheatland, Stuart Gilchrist, Pat Noble, Paul Cally, Alina Donea, Aimee Norton	Solar flares, active regions, and associated Australian research
Pariwat Witthawatpongton	Pariwat Witthawatpongton and Amrat Srisajjalertwaja	Stage 1 Engine Regenerative Cooling Design of AUSROC Nano
Nicolle Zellner	Nicolle Zellner	Impacts on the Moon: Understanding the Record of Lunar Impact Glasses
Kefei Zhang	Kefei Zhang	The Australian Space Research Program Project – Platform Technologies for Space Atmosphere and Climate

Posters

Posters are listed in alphabetical order of first author

Name of Presenter	Names of all authors	Title
Iver Cairns	Vasili V. Lobzin, Iver H. Cairns, and Peter A. Robinson	Solar cycle variations of the occurrence of coronal type III radio bursts and a new solar activity index
Iver Cairns	Hagen Schulte in den Baeumen, Iver H. Cairns, Peter A. Robinson	Nonzero azimuthal magnetic fields at the solar source surface: Extraction, model, and implications
Brett Carter	B. A. Carter, T. A. Kane, A. C. Kellerman, R. Norman, C. Wang, Y. Li and K. Zhang	The ionospheric variability leading up to the Japanese Tohoku earthquake
Robert T. Duffin	Robert T. Duffin, Iver H. Cairns, Vasily Lobzin, Steven J. Tingay	MWA Solar Data Access Tools and New Analysis of Type III Solar Radio Bursts from MWA Burst Mode Data
Jonti Horner	Jonti Horner, Jonathan Marshall, Robert Wittenmyer, Chris Tinney	The curious case of HU Aquarii
Eriita Jones	Eriita Jones, Graziella Caprarelli, Jonathan Clarke, Franklin Mills	Remote Identification of Soil and Moisture Variation at Gale Crater, Mars
John Kennewell	James D Biggs and John A Kennewell	Orbital Space Debris and Sky Glow
Joseph Leach	Joseph Leach	Some Possible Victorian Analogues of the Flat Topped Volcanoes of Venus
Bo Li	Bo Li, Iver Cairns, Yihua Yan, Peter Robinson	Predictions of Decimetric Type III Solar Radio Bursts
Vanessa McCaffrey	Vanessa P. McCaffrey, Nicolle E. B. Zellner, Erica Bennett, Casey Waun	Assessing the Survival of Simple Sugars After High Velocity Impact
Franklin Mills	F.P. Mills, M. Sundaram Shunmuga M. Allen and Y.L. Yung	Preliminary modelling of odd nitrogen photochemistry on Venus
Raquel Salmeron	Raquel Salmeron	The environment and processing of solids in the early solar system
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Leon Stepan	Leon Stepan, Robert Earl	Simulation and Modelling of Nanosatellites
Malte Willmes	Malte Willmes, Dennis Reiss, Harald Hiesinger, Michael Zanetti	Crater retention ages of the ice-dust mantle deposit in Malea Planum, Mars
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Tanya Vladimirova	Chafik Egho and Tanya Vladimirova	Hardware Acceleration of the Karhunen-Loève Transform for Compression of Hyperspectral Satellite Imagery
Kegen Yu	Kegen Yu, Chris Rizos and Andrew Dempster	Sea State Estimation Using Data Collected from Low-Altitude Airborne Experiments