47th INTERNATIONAL CONFERENCE ON ENVIRONMENTAL SYSTEMS

ICES 2017

JULY 16 -20TH - FRANCIS MARION HOTEL - CHARLESTON, SC

ICES 2017 CALL FOR PAPERS / 1ST ANNOUNCEMENT

ABSTRACT DEADLINE : 07 NOVEMBER 2016

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ORGANIZED BY
ICES STEERING COMMITTEE

SUPPORTED BY

American Institute of Aeronautics and Astronautics (AIAA) Space Environmental Systems Program Committee

ICES International Committee (INT)

American Institute of Chemical Engineers (AIChE) Environmental Systems Committee

American Society of Mechanical Engineers (ASME) Crew Systems Technical Committee

American Institute of Aeronautics and Astronautics (AIAA) Life Sciences and Systems Technical Committee

SYNOPSIS

The 47th International Conference on Environmental Systems (ICES) will cover all topics related to humans living and working in extreme environments with applications inside or outside of terrestrial or outer space habitats or vehicles, including aerospace human factors; environmental control and life-support system technology; environmental monitoring and controls; planetary protection; EVA system technology; life sciences; planetary habitats and systems; and thermal control systems technology for both manned and unmanned vehicles. The conference is open to participants from any nation, from academic, government, or industry organizations. There will be four days of technical presentations, with approximately 40 sessions. The conference is organized by the ICES Steering Committee and supported by the American Institute of Aeronautics and Astronautics Space Environmental Systems (AIAA-SES) Program Committee, ICES International Committee (INT), American Institute of Chemical Engineers (AIChE) Environmental Systems Committee, American Society of Mechanical Engineers (ASME) Crew Systems Technical Committee, American Institute of Aeronautics and Astronautics Life Sciences and Systems (AIAA-LS&S) Technical Committee.

LOCATION AND ACCOMMODATIONS

ICES has made accommodations for a block of rooms at the Francis Marion Hotel located in the Historic District of Charleston, South Carolina. All Conference Events will be held on-site.

FRANCIS MARION HOTEL - 387 King Street, Charleston, SC 29403

BOOK ONLINE: Francis Marion ICES room block for dates 7/15-7/20

$159.00 room rate* (single/double occupancy)

Available until Thursday, June 15, 2017 (5:00pm EST or until room block is FULL)

7 Day Cancellation Policy

If needing reservations outside of the contracted dates please call the hotel directly at (877)756-2121 for availability.

* Room rates are subject to applicable state and local taxes. A destination marketing fee of $1.00 per room night will also be applied to each individual guest folio and is subject to sales tax. After June 15, 2017 any unused rooms will be released to the general public. Room bookings MUST BE CANCELLED 7 DAYS PRIOR TO ARRIVAL in order to avoid a one night room and tax charge.

ORGANIZING COMMITTEE

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Amy Ross
NASA Johnson Space Center

Conference Vice-Chair
Grant Anderson
Paragon Space Development Corporation

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Tom Leimkuehler
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Jacobs

Matthias Holzwarth
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(AIChE Program Chair)
UTC Aerospace Systems

Shawn Macleod
(ASME Program Chair)
UTC Aerospace Systems

Kevin R. Duda
(AIAA LS&S Program Chair)
Draper Laboratory

Olivier Pin
(Past Conference Chair 2016)
European Space Agency ESTEC

Wes Ousley
(Past Conference Chair 2015)
Genesis Engineering Solutions, LLC

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TECHNICAL TOPICS

ICES101: AIAA SES

Spacecraft and Instrument Thermal Systems

This session presents thermal design, testing, and on-orbit performance of near-earth and interplanetary unmanned/robotic spacecraft, instruments, and payloads, and the application of key new technologies.

Jose Rodriguez, NASA Jet Propulsion Laboratory,
jose.i.rodriguez@jpl.nasa.gov
Joe Gasbarre, NASA Langley Research Center
Wes Ousley, Genesis Engineering Solutions LLC
Dave Wasson, Orbital Sciences Corporation

ICES102: AIAA SES

Thermal Control for Planetary and Small Body Surface Missions

This session focuses on active and passive thermal control for planetary and small body surface missions utilizing vehicles such as rovers, landers, atmospheric probes, and rendezvous systems. Also covered is the characterization and modeling of the thermal environment for such bodies.

Eric Sunada, NASA Jet Propulsion Laboratory,
Eric.T.Sunada@jpl.nasa.gov
Jennifer Miller, NASA Jet Propulsion Laboratory
Gaj Birur, Consultant

ICES103: AIAA SES/INT

Thermal and Environmental Control of Exploration Vehicles and Surface Habitats

This session covers environmental control, thermal control (passive and active), and thermal protection topics for vehicles used to transport crew and cargo to/from the moon, Mars, and asteroids, including landers, surface habitats, and crew transport vehicle systems. Papers on related systems within the U.S. and international programs are welcome. Potential topics include encountered space environment, base heat rejection, dust mitigation, thermal and environmental control and life support requirements, design, analysis, verification, and testing.

Joe Chambliss, NASA Johson Space Center,
joe.p.chambliss@nasa.gov
Andrea Ferrero, Thales Alenia Space,
andrea.ferrero@thalesaleniaspace.com
Tom Leimkuehler, Jacobs
Jose Roman, NASA Marshall Space Flight Center
Sean Tuttle, University of New South Wales

ICES104: AIAA SES/INT

Advances in Thermal Control Technology

This session addresses novel or advanced technologies and development activities pertaining to heat acquisition, transport, rejection, and storage, as well as cryogenic cooling and thermal protection systems not specific to any existing or future scientific instruments, spacecraft, or planetary systems. Some examples include advanced insulation, "smart" optical coatings, variable heat transport and rejection approaches, advanced heat transfer fluids and materials, hot structures, and novel heat lift technologies.

Jeff Farmer, NASA Marshall Space Flight Center,
jeffery.t.farmer@nasa.gov
Matthias Holzwarth, Airbus Safran Launchers GmbH
matthias.holzwarth@airbusafran-launchers.com
Richard Briet, CNES
Brian O'Connor, NASA Marshall Space Flight Center
Olivier Pin, European Space Agency
Angel Alvarez-Hernandez, NASA Johnson Space Center

ICES105: AIAA SES

Thermal Standards and Design/Development Practices

This session focuses on current and future efforts and needs for development of spacecraft thermal control standards and reference documents dealing with such areas as design, analysis, testing, equipment, specifications, and processes. These standards might be dedicated to a specific company or applicable to programs, space centers, or agencies.

Eric Grob, NASA Goddard Space Flight Center,
eric.w.grob@nasa.gov
Art Avila, NASA Jet Propulsion Laboratory
Joe Gasbarre, NASA Langley Research Center

TECHNICAL TOPICS

ICES106: AIAA SES

Thermal Control for Space Launch Vehicles, Propulsion, and Nuclear Power Systems

This session features papers on thermal control design, analysis, testing, and flight performance. Three aspects are addressed in this session: (1) Launch vehicles, both commercial and government, including NASA's Space Launch System (SLS); (2) Propulsion systems for rockets, spacecraft, orbiting platforms, space vehicles, and landers, including advanced propulsion techniques; (3) Nuclear power systems for spacecraft, orbiting platforms, space vehicles, landers, and rovers, including systems for power generation, propulsion, and heating.

Jose Roman, NASA Marshall Space Flight Center,
jose.roman@nasa.gov
Joe Chambliss, NASA Johnson Space Center,
joe.p.chambliss@nasa.gov

ICES107: AIAA SES

Thermal Design of Microsatellites, Nanosatellites, and Picosatellites

Satellites that are smaller than smallsats run into issues with limited radiative surface area and increased power density that make their thermal environment in some ways more challenging than larger satellites. This session presents and discusses the unique thermal concerns pertaining to very small satellites (nanosatellites, cubesats, microsats, etc.). Potential topics include the thermal design, analysis, testing, and on-orbit performance of very small satellites, and the application of relevant key new technologies.

Robert Coker, NASA Marshall Space Flight Center,
robert.f.coker@nasa.gov
Brian Briggs, NASA Jet Propulsion Laboratory
Stephanie Mauro, NASA Marshall Space Flight Center
Hosei Nagano, Nagoya University

ICES108: AIAA SES/INT

Thermal Control of Cryogenic Instruments and Optical Systems

This session covers cryogenic thermal control as applied in instruments, focal plane assemblies, detectors, and optical systems. This includes relevant passive and active cooling technologies, as well as cryogenic testing facilities, test processes, and lessons learned.

Wes Ousley, Genesis Engineering Solutions LLC,
wes.ousley@nasa.gov
Gerd Jahn, Airbus Defence and Space
Jose Rodriguez, NASA Jet Propulsion Laboratory

ICES201: INT

Two-Phase Thermal Control Technology

This session presents the latest developments and innovations of two-phase heat transport systems, modeling techniques, and on-orbit performances for space applications. It covers all variants of heat pipe technologies, capillary and mechanically pumped loops, and loop heat pipes.

Frank Bodendieck, OHB System AG,
frank.bodendieck@ohb.de
Darius Nikanpour, Canadian Space Agency
Wolfgang Supper, European Space Agency
Alejandro Torres, IberEspacio S.A.
Alain Chaix, Thales Alenia Space

ICES202: INT

Satellite, Payload, and Instrument Thermal Control

This session covers the development and design of thermal control systems for satellites, payloads, and instruments.

Patrick Hugonnot, Thales Alenia Space,
patrick.hugonnot@thalesaleniaspace.com
Marco Molina, Leonardo
Hiroyuki Ogawa, Japan Institute of Space and Astronautical Science
Johannes van Es, NLR

ICES203: INT

Thermal Testing

The thermal testing session focuses on all aspects of thermal tests, test methods, test correlation, and test facilities. Tests for all kinds of spacecraft, instruments, equipment, and materials are of interest. Special attention is given to sharing lessons learned from thermal test and test analysis and correlation activities, and also to innovative test methods, set-ups, and approaches to testing and verification of the hardware and of the analysis.

Gerd Jahn, AirbusDefence and Space,
gerd.jahn@airbus.com
Steve Price, Airbus Defence and Space
Hiroyasu Mizuno, JAXA
Andrea Ferrero, Thales Alenia Space

TECHNICAL TOPICS

ICES204: INT/AIAA LS&S

Bioregenerative Life Support

This session focuses on the design and development of ground-based facilities and experiments, and flight hardware designs and experiments associated with integrated systems which incorporate biological, physical, and chemical processors.

Mark Kliss, NASA Ames Research Center,
mark.kliss@nasa.gov
Masato Sakurai, JAXA
Cesare Lobascio, Thales Alenia Space

ICES205: INT/AIChE

Advanced Life Support Sensor and Control Technology

This session includes papers describing approaches to monitoring water and air in enclosed habitats, thermal control of habitats, chemical sensors and sensing devices for detection of chemical constituents in water and air, and systems and system concepts for environmental monitoring and control.

Abhijit V. Shevade, NASA Jet Propulsion Laboratory,
abhijit.v.shevade@jpl.nasa.gov
Darrell L. Jan, NASA Ames Research Center
Timo Stuffler, OHB System AG

ICES206: INT/AIAA SES

Manned Orbiting Infrastructures, Space Station and Payload Thermal Control

This session addresses thermal control on board the current Space Station and future long term, manned (or man-tended) orbiting habitats, platforms, or laboratories including their payloads and on-board experimental test prototypes. Topics range from system and component issues with the Space Station and Orbiting Infrastructures thermal control systems to thermal aspects of payloads and experiments that utilize the Space Station or other Orbiting Infrastructures as a science platform or as a test bed for future exploration applications including advanced thermal control solutions/techniques.

Zoltan Szigetvari, Airbus Defence and Space,
zoltan.szigetvari@airbus.com
Matteo Lamantea, Thales Alenia Space
Gary Adamson, UTC Aerospace Systems
Dale Winton, Honeywell International

ICES207: INT/AIAA SES

Thermal and Environmental Control Engineering Analysis and Software

This session addresses thermal and environmental control engineering analysis and software. This may include novel user experiences with existing tools, new tool and utility developments, improvements in existing commercial tools, cross-discipline tool integration and data exchanges, as well as any other software or analysis related topics.

Henri Brouquet, ITP Engines UK,
henri.brouquet@itp-engines.co.uk
Brian Briggs, NASA Jet Propulsion Laboratory
Olivier Pin, European Space Agency
Hume Peabody, NASA Goddard Space Flight Center

ICES300: AIChE

ECLSS Modeling and Test Correlations

This session reports on applications and advances in modeling physiochemical and biochemical life support processes, as well as in numerical modeling of atmospheric pressure, cabin ventilation, and composition distributions in closed space habitats, such as the International Space Station, exploration spacecraft, the habitats, and commercial crewed and cargo space transport vehicles.

Chang Hyun Son, The Boeing Company,
chang.h.son@boeing.com
Nikolay Ivanov, Saint Petersburg Polytechnic University, Russia

ICES301: AIChE

Advanced Life Support Systems Control

This session reports on advanced life support system control topics, such as controller technology; control theory and application; autonomous control; integrated system control; control software; and modeling, simulation, and emulation for control development.

Chang Hyun Son, The Boeing Company,
chang.h.son@boeing.com
Nikolay Ivanov, Saint Petersburg Polytechnic University, Russia

TECHNICAL TOPICS

ICES302: AIChE/ASME/INT

Physio-chemical Life Support- Air Revitalization Systems -Technology and Process Development.

This session addresses research, development, and enhancement of physio-chemical technologies and systems associated with Air Revitalization Systems (ARS). Integration of these systems in closed loop life support applications such as space vehicles and habitats, recent findings and performance of on orbit systems, cross cutting applications of ARS technologies, in addition to approaches to reducing mission costs and improving overall mission logistics, associated with ARS technologies are also presented.

Morgan Abney, NASA Marshall Space Flight Center,
morgan.b.abney@nasa.gov
Carsten Matthias, Airbus Defence and Space
Tim Nalette, UTC Aerospace Systems,
Darrell Jan, NASA Ames Research Center

ICES303: AIChE/INT

Physio-Chemical Life Support- Water Recovery & Management Systems- Technology and Process Development.

This session addresses research, development, and enhancement of physio-chemical technologies and systems associated with Water Recovery & Management (WRM) Systems, including water/wastewater regeneration, water quality management and water storage. Integration of these systems in closed loop life support applications such as space vehicles and habitats, recent findings and performance of on orbit systems, cross cutting applications of WRS technologies, in addition to approaches to reducing mission costs and improving overall mission logistics, associated with WRS technologies are also presented.

Justine Richardson, NASA Ames Research Center,
tra-my.j.richardson@nasa.gov
Cesare Lobascio, Thales Alenia Space,
John Fisher, NASA Ames Research Center
Mike Flynn NASA Ames Research Center
Leonid Bobe, Niichimmash

ICES304: AIChE/INT

Physio-Chemical Life Support- Waste Management Systems- Technology and Process Development.

This session addresses research, development, and enhancement of physio-chemical technologies and systems associated Waste Management Systems (WMS). Integration of these systems in closed loop life support applications such as space vehicles and habitats, recent findings and performance of on orbit systems, cross cutting applications of WMS technologies, in addition to approaches to reducing mission costs and improving overall mission logistics, associated with WWS technologies are also presented.

John Fisher, NASA Ames Research Center,
john.w.fisher@nasa.gov
Mike Flynn, NASA Ames Research Center
Justine Richardson, NASA Ames Research Center
Matteo Lamantea, Thales Alenia Space,
Jeffrey Lee, NASA Ames Research Center

ICES305: AIChE/ASME/AIAA SES

Environmental and Thermal Control of Commercial Spacecraft

This session seeks papers that describe the design, operation, and performance of reliable and cost-efficient thermal and environmental control systems and subsystems for crew and cargo transport, space stations, deep space habitats, and other space vehicles.

Barry Finger, Paragon Space Development Corporation,
bfinger@paragonsdc.com
Chang Hyun Son, The Boeing Company
David Williams, NASA Johnson Space Center
David Steslicki, Orbital ATK

ICES306: AIChE/AIAA LS&S

Orion Multi-Purpose Crew Vehicle Environmental Control and Life Support System

This session addresses Crew Exploration Vehicle current configuration and status.

John Lewis, NASA Johnson Space Center,
john.f.lewis@nasa.gov
Tim Nalette, UTC Aerospace Systems

ICES307: AIChE

Collaboration, Educational Outreach, and Public Engagement

This session features papers that link human activities in space with human activities on earth and reaches out to educators and students, contractors and researchers, and other innovators to share Science, Technology, Engineering, and Math (STEM) experiences and present new methodologies for linking students, vendors, and the general public to human exploration of space. The session includes innovative collaborations and networks between industries, academia, governments, and the public to address global and local challenges on earth and beyond.

Dean Muirhead, Barrios Technology,
dean.muirhead-1@nasa.gov
Jean Hunter, Cornell University,
Javier Garcia, University of Texas Rio Grande Valley
Charlie Galindo, Tierra Luna Engineering, LLC

ICES308: AIChE

Advanced Technologies for In-Situ Resource Utilization

This session provides the most recent advancements in the area of In Situ Resource Utilization (ISRU) as they relate to Environmental Control and Life Support for Lunar surface missions, Martian surface missions, and asteroid exploratory missions.

Christian Junaedi, Precision Combustion, Inc.,
cjunaedi@precision-combustion.com
Morgan Abney, NASA Marshall Space Flight Center

ICES400: ASME

Extravehicular Activity: Space Suits

This session covers topics related to space suit pressure garments. It includes advanced development work for the spectrum of missions including micro-gravity EVA operations in low-Earth orbit, cis-lunar space, and deep space Mars transit; long-duration surface campaigns; and launch/entry/abort pressure garments for multiple vehicles, as well as sustaining engineering and lessons learned on the ISS Extravehicular Mobility Unit (EMU) space suit assembly (SSA).

Shane McFarland, Wyle Laboratories,
shane.m.mcfarland@nasa.gov
Lindsay T. Aitchison, NASA Johnson Space Center,
lindsay.t.aitchison@nasa.gov
Jinny Ferl, ILC Dover

ICES401: ASME/AIAA LS&S

Extravehicular Activity: Systems

This session includes topics describing aspects of EVA systems, technologies, and studies that envision the space suit as a system. Concepts and testing of advanced space suit systems are also included.

Robert Trevino, NASA Johnson Space Center,
robert.c.trevino@nasa.gov
Keith Splawn, ILC Dover,
splawk@ILCDover.com

ICES402: ASME

Extravehicular Activity: PLSS Systems

This session covers topics describing design studies and new technology development or significant experience and lessons learned with existing systems in the area of portable life support systems and associated support hardware. Also, this session will deal with emerging technology and concepts for use in and from Orion or other exploration platforms.

Gregory Quinn, UTC Aerospace Systems,
gregory.quinn@utas.utc.com
Bruce Conger, Jacobs Technology,
bruce.conger@jacobs.com

ICES403: ASME

Extravehicular Activity: Operations

This session addresses EVA operational activities and EVA simulations associated with the International Space Station (ISS), analog or field studies, and other future EVA missions. This may also include, but is not limited to, lessons learned during EVA preparations, such as logistics, maintenance, training, and flight controlling.

Cinda Chullen, NASA Johnson Space Center,
cinda.chullen-1@nasa.gov
Stephanie Johnston, NASA,
stephanie.s.johnston@nasa.gov

ICES404: ASME

International Space Station ECLS: Systems

This session addresses ECLS System issues and lessons learned from the International Space Station.

Gregory Gentry, The Boeing Company,
gregory.j.gentry2@boeing.com
David Williams, NASA Johnson Space Center,
dave.e.williams@nasa.gov
Zoltan Szigetvari, Airbus Defence and Space,
Zoltan.Szigetvari@airbus.com

ICES405: ASME

Human/Robotics System Integration

This session addresses the design and development of robotics for Space Exploration and how these robotic systems will work together with humans.

Darren Samplatsky, UTC Aerospace Systems,
darren.samplatsky@utas.utc.com
Ron Diftler, NASA Johnson Space Center

ICES406: ASME/AIChE

Spacecraft Water/Air Quality: Maintenance and Monitoring

This session focuses on recent results from flight-and ground-based chemical analyses of spacecraft water and air samples along with recent developments in spacecraft water and air quality monitoring technology.

Shawn Macleod, UTC Aerospace Systems,
shawn.macleod@hs.utc.com
Darrel Jan, NASA Ames Research

ICES500: AIAA LS&S

Life Science/Life Support Research Technologies

This session emphasizes research technologies to support space biology, habitation and life support system design. Life sciences-related hardware developments, experiment designs, and flight experiment results for manned spaceflight, unmanned systems such as free flying platforms and planetary spacecraft, and terrestrial analogs will be presented.

Bob Morrow, Orbital Technologies Corporation (ORBITEC),
morrowr@orbitec.com
John Wetzel, Orbital Technologies Corporation (ORBITEC),
wetzelj@orbitec.com

ICES501: AIAA LS&S

Life Support Systems Engineering and Analysis

This session addresses life support for future crewed space missions, including defining systems architecture and selecting technology options. Life support systems engineering and analysis should help guide overall design and selection, development, and integration of technologies to produce complete systems.

Harry Jones, NASA Ames Research Center,
harry.jones@nasa.gov
John Hogan, NASA Ames Research Center,
john.a.hogan@nasa.gov
Jeffrey Lee, NASA Ames Research Center,
jeffrey.m.lee@nasa.gov

ICES502: AIAA LS&S

Space Architecture

This session focuses on the application of architectural principles to the design of facilities beyond Earth (orbital, lunar, planetary, deep space and interplanetary), to provide supportive and comfortable living and working environments, and enjoyment of life, in full recognition of the technical challenges presented by the environment.

Relevant topics include: Configurations and structures; Construction and robotics; Habitability design, including food and clothing; Human factors integration; Gravity regimes; Integration of life support systems within space habitats; Analogues, mockups, simulators, and field trials; Terrestrial applications to extreme environments and ground-based facilities; Education for space architects; Space Architecture as a discipline; Sustainability from space to Earth.

Georgi Petrov, Synthesis International New York,
georgipetrov@synthesis-intl.com
Sandra Haeuplik-Meusburger,
Vienna University of Technology,
haeuplik@hb2.tuwien.ac.at
Mark Kerr, US Army Corps of Engineers,
okiwi@spacearchitect.org

ICES503: AIAA LS&S

Radiation Issues for Space Flight

This session addresses major issues in space radiation and analysis, tools, and research that are being developed and applied to support the space exploration initiative to insure astronaut and avionics radiation protection and safety.

Bill Atwell, The Boeing Company (retired),
bigshot.ba@gmail.com
Lawrence Townsend, University of Tennessee,
ltownsen@tennessee.edu

ICES504: AIAA LS&S

Management of Air Quality in Sealed Environments

This session enables experts who manage submarine, spacecraft, and airliner air quality to share new research findings on the control of air pollutants in these sealed or semi-sealed environments to include air quality standards, hazards associated with specific compounds, and monitoring of those compounds to protect the health of crew and passengers.

Thomas Limero, Wyle Laboratories,
thomas.f.limero@nasa.gov

ICES505: AIAA LS&S/ASME

Microbial Factors Applied to Design

This session focuses on the dynamic effects of microorganisms on materials and systems in order to minimize hardware performance issues.

Monserrate Roman, NASA Marshall Space Flight Center,
monsi.roman@nasa.gov
Rebekah Jean Bruce, Wyle Laboratories,
rebekah.j.bruce@nasa.gov

ICES506: AIAA LS&S

Human Exploration Beyond Low Earth Orbit:

Missions and Technologies

There are many potential destinations for human exploration beyond Low Earth Orbit (LEO), each with specific mission requirements, capabilities, and other attributes that may be common or unique. This session addresses mission designs, technology needs, vehicle systems and analyses for sending humans to destinations beyond LEO including geosynchronous orbit, libration points, the moon, near Earth objects (comets and asteroids), Mars, and its moons. Relevant subjects include mission requirements, concepts, and architectures, technology development needs, challenges, and gaps, and candidate system designs. Special attention will be given to Environmental Control and Life Support Systems (ECLSS), habitability, unique environmental considerations, planetary protection, and architectures.

Dan Barta, NASA Johnson Space Center,
daniel.j.barta@nasa.gov
James Chartres, Millennium Engineering & Integration (MEI),
james.chartres@nasa.gov

ICES507: AIAA LS&S/SES

Debris and Meteoroid Problems and Mitigation for ECLS and TCS

This session deals with space debris and meteoroid impact mitigation and also techniques for reduction of debris. Focus includes the impact of debris and meteoroid presence on the design of manned and unmanned vehicles, including reinforcement, special structural concepts, other design requirements, and operational mitigation.

Marie-Christine Desjean, CNES,
Marie-Christine.Desjean@cnes.fr
Eric Grob, NASA Goddard Space Flight Center,
eric.w.grob@nasa.gov

ICES508: AIAA LS&S

Cost Considerations for Space Life Support Systems

This session focuses on understanding, estimating, and reducing the cost of human space missions, especially Environmental Control and Life Support Systems (ECLSS). Papers are sought that address cost metrics such as launch mass, Equivalent System Mass (ESM), and Life Cycle Cost (LCC) as well as actual costs of systems. Methodologically oriented papers with improved ways of calculating LCC as a reflection of total space mission cost, as well as specific case studies for costing of future missions in Earth orbit, cis-lunar space, and beyond are encouraged.

Harry Jones, NASA Ames Research Center,
harry.jones@nasa.gov
Olivier de Weck, Massachusetts Institute of Technology,
deweck@MIT.edu

ICES509: AIAA LS&S

Fire Safety in Spacecraft and Enclosed Habitats

This session covers all aspects of fire safety in closed environments including prevention, detection, and suppression. Relevant subjects include material controls for fire prevention; fire suppression; fire detection; fire signatures and toxicity; post-fire cleanup; risk assessment; material selection; fire related combustion research; lessons learned and design status of current systems; and life support and control system designs to enable fire detection and suppression. Applicable environments include EVA suits; past, present, and future space transportation vehicles; different gravitational levels; extraterrestrial habitats; aircraft; ships; and submarines.

Gary A. Ruff, NASA Glenn Research Center,
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Grunde Jomaas, University of Edinburgh,
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Stephen Peralta, NASA White Sands Test Facility,
stephen.f.peralta@nasa.gov

ICES510: AIAA LS&S

Planetary and Spacecraft Dust Properties and Mitigation Technologies

This session focuses on the properties of planetary and asteroid surface dust linked to environment description, within vehicles and external to spacecraft in flight or landed and on mitigation technologies for internally generated dust and externally brought from planetary medium. The effects of dust will pose significant challenges to space operations for crewed and robotic missions. Papers are solicited on environmental concerns and on mitigation strategies for life support systems and dust encountered in planetary surface environments. Mitigation strategies may involve cleaning and repelling approaches for the protection and nominal performance of susceptible hardware, and the capture and filtration of airborne dust that may enter the pressurized volumes of spacecraft and habitats. Characterization and measurements of lunar, Martian, asteroid or internally generated dust properties that provide engineering data for the development of mitigation technologies are also of interest.

Marie-Christine Desjean, CNES,
Marie-Christine.Desjean@cnes.fr
Juan H. Agui, NASA Glenn Research Center,
juan.H.Agui@nasa.gov
Thomas Triumph, Orbital Environments,
tom@orbitalenvironments.com

ICES511: AIAA LS&S

Reliability for Space Based Systems

is session covers testing and analysis for system reliability and maintainability. Relevant subjects include verification and validation, risk assessment, accelerated life testing and aging, environmental screening, acceptance testing, and qualification testing. Special attention is given to failure modes and mechanisms associated with electronic devices, mechanical assemblies, chemical processing, and life sciences.

Gregory L. Davis, NASA Jet Propulsion Laboratory,
gregory.l.davis@jpl.nasa.gov
Todd H. Treichel, Orbital Technologies Corporation (ORBITEC),
treichelt@orbitec.com

ICES513: AIAA LS&S

Computational Modeling for Human Health and Performance Analysis

This session covers practical application of computational modeling (deterministic and probabilistic) for analysis of human health and performance risks, and countermeasure development. Discussion areas include modeling and simulation of physiologic, biomechanical and behavioral responses to reduced gravity, radiation, spacecraft environment, planetary environment, extravehicular activity, crew dynamics, ergonomics, work-load, and countermeasure prescriptions (exercise and non-exercise).

Claas Olthoff, Technical University of Munich,
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Jonas Schnaitmann, Technical University of Munich,
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ICES600:

Other

If you are not sure of the best placement for your abstract, please submit to ICES600.

ABSTRACT SUBMITTAL GUIDELINES AND PROCEDURES

Authors who wish to contribute a paper to the conference must submit a 300-word abstract electronically to the ICES submission site. Papers should present technical developments and progress in any of the fields of environmental systems listed in this Call for Papers and should make a new and original contribution to the state of the art, or be a constructive review of the technical field. Authors need not be affiliated with any of the co-sponsoring societies. Papers proposed will be evaluated solely on the basis of their suitability for inclusion in the program. Please note that only electronically submitted abstracts will be accepted. If a submitter would like to submit a suggestion for a panel, please provide title, abstract of the panel and up to 4 POTENTIAL panel participants and submit it to the 600 session.

The electronic submission process is as follows:

1. Access Easy Chair for ICES 2017 (https://easychair.org/conferences/?conf=ices2017)
2. Log in or create an account.
3. Click on Submissions in top menu
4. Click on "Add a submission" in upper right corner.

The deadline for receipt of abstracts via electronic submittal is ***Monday, 07 November, 2016 by midnight Eastern Standard Time.***

Authors having trouble submitting abstracts electronically should send an email to ***info@ices.space***

AIAA SES
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ASME
Shawn Macleod, UTC Aerospace Systems
shawn.macleod@hs.utc.com

Questions pertaining to the abstract or technical topics, or general inquiries concerning the program format or policies of the conference, should be referred to the corresponding Program Chair:

Authors will be notified of abstract acceptance or rejection on or about **12 December 2016**. An Author's Kit, containing detailed instructions and guidelines for submitting papers to ICES, will be made available to authors of accepted abstracts on www.ices.space. Authors of accepted abstracts must provide a draft manuscript by **Monday, March 6, 2017**. Authors of accepted draft manuscripts must then provide a complete final manuscript to ICES by **Friday, May 12, 2017** for inclusion in the conference proceedings and for the right to present at the conference. It is the responsibility of those authors whose papers or presentations are accepted to ensure that a representative attends the conference to present the paper. Sponsor and/or employer approval of each paper is the responsibility of the author(s). Government review, if required, is the responsibility of the author(s). Authors should determine the extent of approval necessary early in the paper preparation process to preclude paper withdrawals or late submissions.

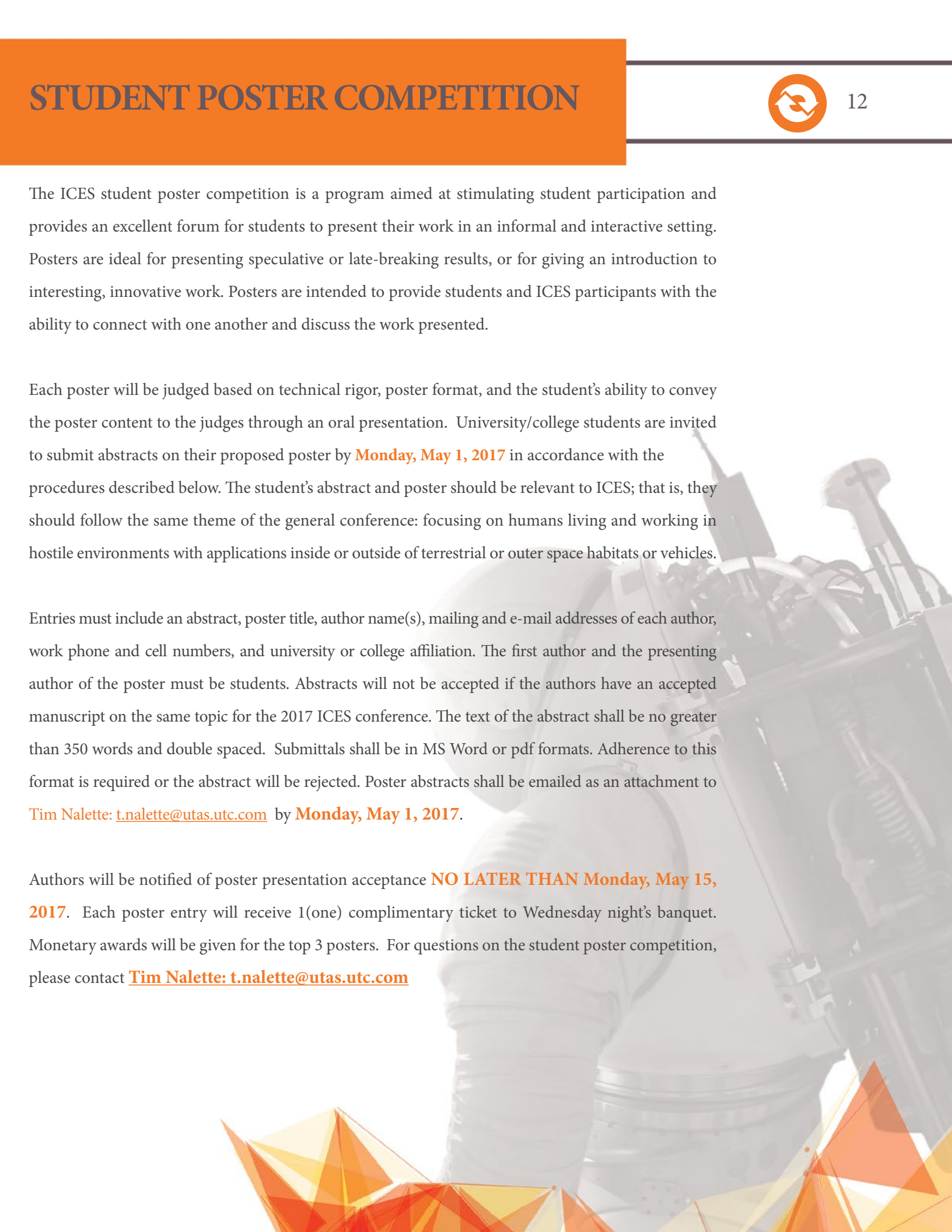
STUDENT POSTER COMPETITION

The ICES student poster competition is a program aimed at stimulating student participation and provides an excellent forum for students to present their work in an informal and interactive setting. Posters are ideal for presenting speculative or late-breaking results, or for giving an introduction to interesting, innovative work. Posters are intended to provide students and ICES participants with the ability to connect with one another and discuss the work presented.

Each poster will be judged based on technical rigor, poster format, and the student's ability to convey the poster content to the judges through an oral presentation. University/college students are invited to submit abstracts on their proposed poster by **Monday, May 1, 2017** in accordance with the procedures described below. The student's abstract and poster should be relevant to ICES; that is, they should follow the same theme of the general conference: focusing on humans living and working in hostile environments with applications inside or outside of terrestrial or outer space habitats or vehicles.

Entries must include an abstract, poster title, author name(s), mailing and e-mail addresses of each author, work phone and cell numbers, and university or college affiliation. The first author and the presenting author of the poster must be students. Abstracts will not be accepted if the authors have an accepted manuscript on the same topic for the 2017 ICES conference. The text of the abstract shall be no greater than 350 words and double spaced. Submittals shall be in MS Word or pdf formats. Adherence to this format is required or the abstract will be rejected. Poster abstracts shall be emailed as an attachment to Tim Nalette: t.nalette@utas.utc.com by **Monday, May 1, 2017**.

Authors will be notified of poster presentation acceptance **NO LATER THAN Monday, May 15, 2017**. Each poster entry will receive 1(one) complimentary ticket to Wednesday night's banquet. Monetary awards will be given for the top 3 posters. For questions on the student poster competition, please contact **Tim Nalette: t.nalette@utas.utc.com**



CONFERENCE POLICIES

On behalf of the entire ICES Steering Committee we thank you for your participation and look forward to organizing another successful ICES conference in Charleston. The collaboration of the ICES community to organize and hold this premier technical conference in the environmental systems domain continues to result in an enriching and educational experience to all that attend. We look forward to reviewing your abstracts for acceptance for the 47th International Conference on Environmental Systems. Please make note of the following Important Dates:

Abstract Deadline	**07 November 2016**
Author Notification	**12 December 2016**
Draft Manuscript Deadline	**06 March 2017**
Final Manuscript Deadline	**12 May 2017**

Amy Ross

ICES 2017 Conference Chair

"No Paper, No Podium" and "No Podium, No Paper" Policies

If a written paper is not submitted by the final manuscript deadline, authors will not be permitted to present the paper at the conference. It is the responsibility of those authors whose papers or presentations are accepted to ensure that a representative attends the conference to present the paper. If a paper is not presented at the conference, it will be withdrawn from the conference proceedings. These policies are intended to eliminate no-shows and to improve the quality of the conference for attendees.

Publication Policy

ICES will not consider for presentation or publication any paper that has been previously published elsewhere

WARNING-Technology Transfer

Prospective authors are reminded that technology transfer guidelines have considerably extended the time required for review of abstracts and completed papers by U.S. government agencies. Internal (company) plus external (government) reviews can consume 16 weeks or more. Government review if required is the responsibility of the author. Authors should determine the extent of approval necessary early in the paper preparation process to preclude paper withdrawals and late submissions. The conference technical committee will assume that all abstracts papers and presentations are appropriately cleared.

Export Compliance with U.S. Export Control Laws

When presenting publications or having technical conversations, ICES speakers and attendees are reminded that some topics discussed in the conference may be controlled by the International Traffic in Arms Regulations (ITAR) or other applicable export control laws, such as the Export Administration Regulations (EAR). U.S. persons (U.S. citizens and permanent residents) are responsible for ensuring that technical data they present in open sessions to non-U.S. person in attendance or in conference proceedings are not export restricted by the ITAR or other export control laws. U.S. persons are likewise responsible for ensuring that they do not discuss export-restricted information with non-U.S. persons in attendance. It is the responsibility of the authors and attendees, not the ICES Conference or ICES Steering Committee, to determine whether disclosure of their material requires an export license to non-U.S. persons.