Applied Space Environments Conference (ASEC) 2017 Summary

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Overview

The Applied Space Environments Conference is a forum for the space environment engineering and applied space science community to discuss the discipline's ability to support current space programs and to identify gaps in knowledge and technology needs required for future exploration goals

- Theme: Measurements, Modeling, Testing, and Tools
- The Westin Hotel in Huntsville, Alabama on May 15-19, 2017
- ~110 conference participants
  - NASA (multiple Centers, JPL, HQ), AFRL, NRL, industry, LANL, universities

- 60 Contributed Talks
- 4 Tutorials
- 13 Invited Talks

Presentation Topics

- Overview
  - Modeling
  - Testing
- Environment
  - Ionosphere
  - MOD
  - Plasma
  - Radiation
- Interactions
  - Atmospheric 9
  - Contamination 1
  - Hypervelocity 4
  - Induced (e.g., v x B) 1
  - Radiation Effects 14
  - Solar Array Interaction 3
  - Space Weather 20
  - Spacecraft Charging 12
  - Other 7

Overview Presentations

- William Hill, Deputy AA for Exploration System Development, NASA HEOMD
- Jeffrey Newmark, Deputy AA for Research, NASA SMD
- Irfan Azeem, Program Director for Space Weather, NSF
- William Murtagh, Program Coordinator, Space Weather Prediction Center, NOAA
- Michael Mastaler, NASA Space Environments Testing Management Office
- Steven Clarke, Director, Heliophysics Division, NASA SMD

Tutorials

- Atomic Oxygen Effects and Contamination
  - Sharon Miller, NASA
- Radiation Effects in Electronic Systems
  - Jonny Pellish, NASA
- Spacecraft Charging
  - Henry Garrett, JPL
- Orbital Debris and Meteoroid Environments
  - Mark Matney, NASA

Radiation

- The AE9/AP9 Radiation and Plasma Environment Models – Paul O'Brien
- Comparison of Energetic Particle Radiation Environments – Cary Zeitlin
- Europa Lander Radiation Environment Definition and Initial Shielding Design – Luz Maria Martinez Sierra
- Applied Atmospheric, Ionospheric, and Radiation Tools Specify Space Environment Effects for End-user Systems – W. Kent Tobiska
- New Approach to Total Dose Specification for Spacecraft Electronics – Mike Xapsos
- Mapping the 3D Dose Distribution from Space Radiation – Zi-Wei Lin

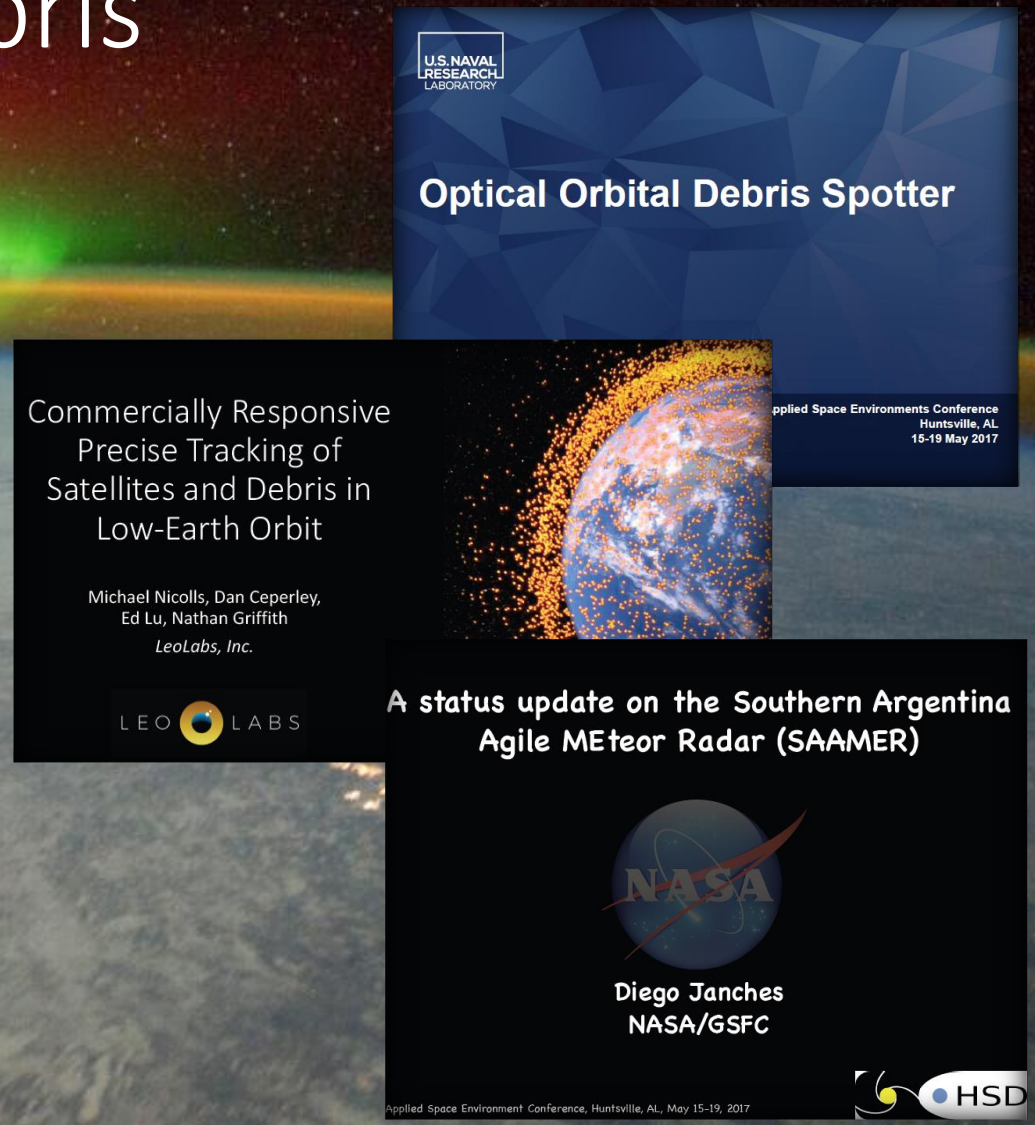
Space Weather

- An All-Clear Space Weather Forecasting System Based on Near Real Time Magnetograms – David Falconer
- A Data-Driven 3D MHD Simulation Model for the Initiation of a Coronal Mass Ejection CME and SEP Event – ST Wu
- Solar Wind Models of Multi-Scale Fluid-kinetic Simulation Suite (MS-FLUKSS) – Tae Kim
- Coronal Mass Ejections in a Data-Driven Global MHD Model – Mehmet Yalim
- Magnetic Flux Ropes in the Sun-Earth Environment – Qiang Hu

SEESAW, Boulder 2017

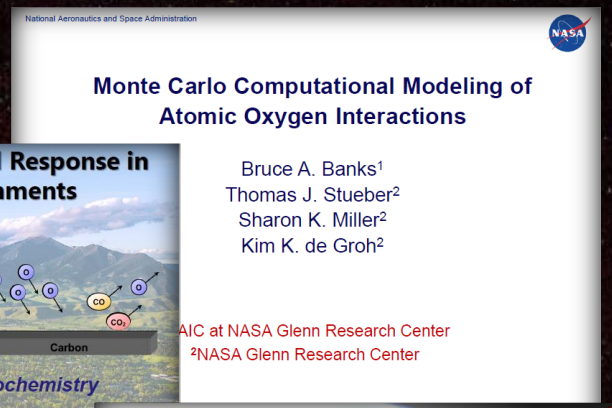
Meteoroids and Orbital Debris

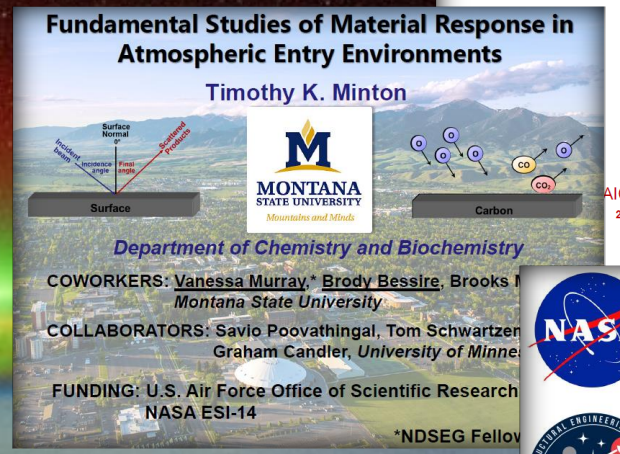
- A Status Update on the Southern Argentina Agile Meteor Radar (SAAMER) – Diego Janches
- Commercially Responsive Precise Tracking of Satellites and Debris in Low-Earth Orbit – Michael Nicolls
- Optical Orbital Debris Spotter – Christoph Englert

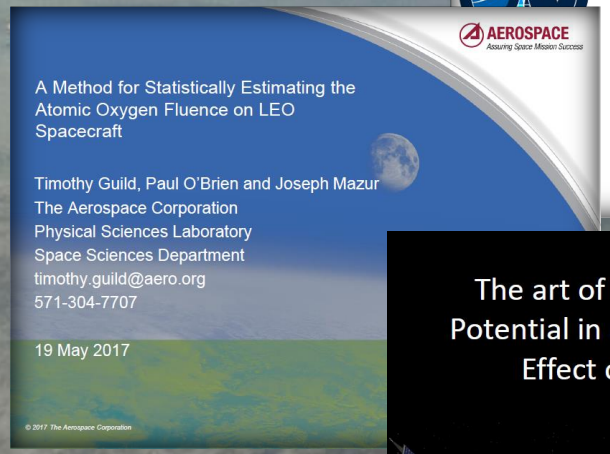


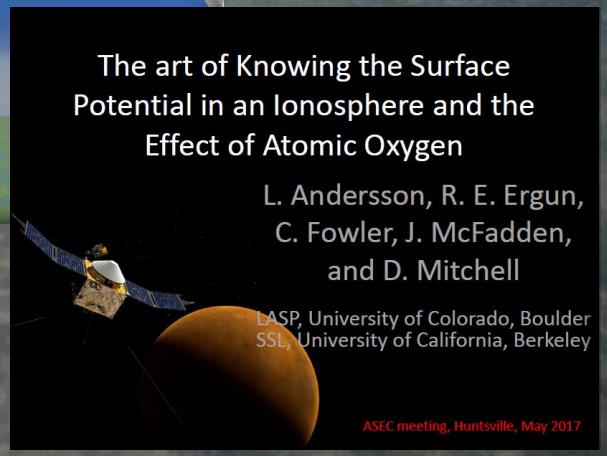
Atomic Oxygen

- The Art of Knowing the Surface Potential in an Ionosphere and the Effect of Atomic Oxygen – Laila Andersson
- Fundamental Studies of Material Response in Atmospheric Entry Environments – Timothy Minton
- Atomic Oxygen Erosion of EVA-stranded Soft-goods on the ISS – John Alred
- A Method of Statistically Estimating the Atomic Oxygen Fluence on LEO Spacecraft – Timothy Guild
- Monte Carlo Computational Modeling of Atomic Oxygen Interactions – Bruce Banks









Observations/Testing

- Long-term Neutron Background Environment Measured by the Dynamic Albedo of Neutrons (DAN) Instrument Onboard Mars Science Laboratory – Insoo Jun
- Using the Galileo Solid State Imager as a Sensor of Jovian Energetic Electrons – Ashley Carlton
- GOES-16 Space Environment In-Situ Suite: Sensors, Performance, and Early Orbital Data – Gary Galica – Bronislaw Dichter
- Flowing Plasma Interaction with an Electric Sail Tether Element – Todd Schneider
- Test facilities and internal/surface charging test results

Future Plans

- Presentations on-line: http://sti.usra.edu/asec2017/
- Extended abstracts will be published as NASA Technical Memorandum

Next ASEC in 2019


USRA
NASA
NSF