Aloha!

On behalf of the people of Maui, we are pleased that you are participating in the 16th AMOS Conference. Although we will be sitting in a darkened ballroom, intently listening to technical briefings throughout the week, we are, indeed, in a culturally rich and beautiful setting...

It is our pleasure to share with you a few of the things that make Maui unique. We have sprinkled elements throughout the week to remind us of our Hawaiian “Sense of Place.”

Among them are the leis worn at the welcome reception, our traditional Native Hawaiian invocation opening the conference, and a private luau buffet and show on Wailea Beach.

If there is anything our Conference Team can do to make your week more productive and enjoyable, please let us know.

Warmest Aloha,
Conference Chairs Paul Kervin, AFRL and Wes Freiwald, IAI-PDS and the AMOS Conference Organizing Committee
Mahalo to our Sponsors

Po‘okela | striving for the best

Laulima | working together

Lokahi | collaboration and unity

Kupa‘a | loyal and committed

Malama | to care for
Featured Exhibitors

Air Force Research Laboratory, Det 15 | www.kirtland.af.mil
Analytical Graphics, Inc. | www.agi.com
Applied Optimization | www.appliedo.com
ASRC Federal | www.asrcfederal.com
Astro Haven Enterprises | www.astrohaven.com
The Boeing Company | www.boeing.com
Celestron | www.celestron.com
COM DEV International | www.comdev.ca
Lockheed Martin Corporation | www.lockheedmartin.com
MARS Scientific | www.marsscientific.com
Maui High Performance Computing Center | www.mhpcc.hpc.mil
PlaneWave Instruments | www.planewave.com
Scitor Corporation, an SAIC company | www.scitorcorporation.com
Software Bisque | www.bisque.com
Solers Inc. | www.solers.com
Trex Enterprises Corporation | www.trexenterprises.com
University of Hawai'i | www.hawaii.edu/research
Technical Short Courses 1 & 4

8:00 am - 12:00 pm | Mauna Loa Room
1 | Satellite Conjunction Assessment: Theory and Practice
Presented by CNES, the French Space Agency (for CAESAR, Francois Laporte in coordination with Monique Moury) and NASA GSFC (for CARA, Ryan Frigm and Matt Hejduk in coordination with Lauri Newman)

8:00 am - 12:00 pm | Ilima Room
4 | Near Earth Object Tracking Using Radar Astrometry
Presented by Patrick Taylor, Staff Scientist, National Astronomy and Ionosphere Center, Arecibo Observatory

Technical Short Courses 2 & 3

1:00 pm - 5:00 pm | Ilima Room
3 | Observing and Characterizing Space Debris
Presented by Thomas Schildknecht, Professor, Optical Astronomy Group of the Astronomical Institute of the University of Bern, Switzerland, and Director, Swiss Optical Ground Station and Geodynamics Observatory Zimmerwald

Exhibitor Load-in

8:00 am - 5:00 pm | Aulani Ballroom

Welcome Reception
Co-sponsored by The Boeing Company

6:00 pm - 7:30 pm | Luau Gardens

With Aloha,

is donating to the MEDB Ke Alahele Education Fund in lieu of a flower lei at the Welcome Reception.
Wednesday | Po‘akolu

**Conference Opening**

7:30 am - 8:15 am | Aulani Ballroom

**Jeanne Unemori Skog**, President & CEO, Maui Economic Development Board

Invocation by Reverend Kealahou Alika, Keawala‘i Congregational Church

**Keynote Address**

**Major General Clinton E. Crosier**
Director of Plans and Policy, U.S. Strategic Command

**Exhibits Open**

9:40 am | Aulani Ballroom

Coffee Break

Co-sponsored by Harris Corporation

9:40 am - 10:00 am | Exhibit Room

**Optical Systems Session | Chaired by Jim Mayo, Tau Technologies**

10:00 am - 11:00 am | Aulani Ballroom


The MetaTelescope, a System for the Detection of Objects in Low and Higher Earth Orbits, **Michel Boer**, French National Centre for Scientific Research (CNRS)

Early CAL/VAL Process for an Optical Tracking System by Korea, **Jung Hyun Jo**, Korea University of Science and Technology, Korea Astronomy and Space Science Institute

**Lunch**

11:00 am - 12:00 pm | Lokelani Ballroom

12:00 pm - 1:00 pm | Aulani Ballroom

Developing Geostationary Satellite Imaging at the Navy Precision Optical Interferometer, **Gerard van Belle**, Lowell Observatory

Night and Daytime Detection of Orbital Objects and Filter Photometry at Short-Infrared Wavelengths, **Guillaume Langin**, Artemis Observatoire de Côte d'Azur

SPIDER: Next Generation Chip Scale Imaging Sensor, **Alan Duncan**, Lockheed Martin

**SSA Policy Forum | Moving Towards a Combined Space Situational Awareness**

8:20 am - 9:20 am

**Panel**

**Kay Sears**, IntelSat General

**Col John Giles**, 614th Air and Space Operations Center, USAF

**Lt Col (RCAF) John Van Der Laan**, JSpOC Combat Operations Division

**Col (select) Thomas Spangenberg**, GSSAC, German Air Force

**Lt Col Hyeon-seock Jeon**, Korean Space Monitoring Center

**Cary Chun**, Brig Gen (Ret, USAF), ASRC Federal (Moderator)

9:20 am - 9:40 am

**Invited Remarks**

**Frank Rose**, Assistant Secretary of State for Arms Control, Verification, and Compliance, U.S. Department of State
Space Situational Awareness Session | Chaired by Lt Col Elizabeth Campbell, SMC/SYAZ and Lt Col Larry Gunn, DARPA

1:00 pm - 2:20 pm | Aulani Ballroom

Application of a COTS Resource Optimization Framework to the SSN Sensor Tasking Domain – Part I: Problem Definition, Triet Tran, Braxton Technologies LLC

Dynamic Steering for Improved Sensor Autonomy and Catalogue Maintenance, Tyler Hobson, The University of Queensland

First Results of Coherent Uplink from a Phased Array of Widely Separated Antennas: Steps Toward A Verifiable Real-Time Atmospheric Phase Fluctuation Correction for a High Resolution Radar System, Barry Geldzahler, NASA-HQ

Technique for GEO RSO Station-Keeping Characterization and Maneuver Detection, Jake Decoto, Orbital-ATK

Coffee Break
2:20 pm - 2:40 pm | Exhibit Room

2:40 pm - 5:20 pm | Aulani Ballroom

Heimdall System for MSSS Sensor Tasking, Alex Herz, Orbit Logic


Operations Analysis of Australian-based Systems for Surveillance of Space, Mark Graham, Defence Science and Technology Group, Department of Defence

Integrated Space Asset Management Database and Modeling, Larry Gagliano, NASA/MSFC

Collaborative Work Environment for Operational Conjunction Assessment, Francois Laporte, CNES

Project UNITY: Cross Domain Visualization Collaboration, Jason Moore, Air Force Research Laboratory

Space Fence Overview, Joseph Haimerl, Lockheed Martin

Exhibit and Poster Session | Reception
Co-sponsored by University of Hawaii

5:20 pm - 6:30 pm | Aulani Ballroom

SOAR Team Reception | (By Invitation)

6:30 pm - 9:00 pm | Pacific Terrace Rooftop
**SEP 17**
Thursday | Po‘aha

**Breakfast at Leisure**
6:00 am - 7:15 am | Luau Gardens

**SSA Policy Forum** | SSA for Enhancing Norms of Behavior and Resilience
7:30 am - 9:00 am | Aulani Ballroom

**Keynote**
John Hill, Principal Director For Space Policy, Office of the Under Secretary of Defense for Policy

**Panel**
John Hill, Office of the Under Secretary of Defense for Policy

**Eric Desautels**, U.S. Department of State

**Andrew D’uva**, Providence Access Company

**Victoria Samson**, Secure World Foundation (Moderator)

**Exhibits Open**
9:00 am | Aulani Ballroom

**Coffee Break**
9:00 am - 9:20 am | Exhibit Room

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**Space Weather Session** | Chaired by Randall Alliss, Northrop Grumman Corp.
9:20 am - 11:00 am | Aulani Ballroom
Sub-Auroral Ion Drifts as a Source of Mid-Latitude Plasma Density Irregularities, Vladimir Sotnikov, Air Force Research Laboratory

Kevin Jim
MAMBA All-sky Camera, Edward Pier, Oceanit

Characterizing the Performance of Haleakala as a Ground Site for Laser Communications, Billy Felton, Northrop Grumman

Predicting Space Weather Effects on Close Approach Events, Lauri Newman, NASA

Research to Operations of Ionospheric Scintillation Detection and Forecasting, James Jones, Northrop Grumman

**Lunch**
11:00 am - 12:00 pm | Lokelani Ballroom

**Orbital Debris Session** | Chaired by Tim Flohrer, European Space Agency
12:00 pm - 2:00 pm | Aulani Ballroom
Statistical Track-Before-Detect Methods Applied to Faint Optical Observations of Resident Space Objects, Kohei Fujimoto, Texas A&M University

Streak Detection Algorithm for Space Debris Detection on Optical Images, Thomas Schildknecht, Astronomical Institute, University of Bern

Deploying the NASA Meter Class Autonomous Telescope (MCAT) on Ascension Island, Susan Lederer, NASA JSC
Orbital Debris Session (continued)

GEO Collisional Risk Assessment Based on Analysis of NASA-WISE Data and Modeling, Capt Samantha Howard, AFRL Space Vehicles Directorate

Environment Characterisation by Using Innovative Debris Detector, Waldemar Bauer, German Aerospace Center (DLR)

Space Debris Attitude Simulation - IOTA (In-Orbit Tumbling Analysis), Ronny Kanzler, Hyperschall Technologie Göttingen GmbH

Coffee Break
2:00 pm - 2:20 pm | Exhibit Room

Non-Resolved Object Characterization Session |
Chaired by Doyle Hall, Boeing LTS and Matt Hejduk, Astrorum Consulting

2:20 pm - 5:00 pm | Aulani Ballroom

Photometric Monitoring of Non-resolved Space Debris and Databases of Optical Light Curves, Thomas Schildknecht, Astronomical Institute (AIUB), University of Bern

IRTF SpeX Observations of Orbital Object, Brent Buckalew, Jacobs Technology


Active Polarimetry for Orbital Debris Identification, Michael Pasqual, Massachusetts Institute of Technology

Spatio-Temporal Scale Space Analysis of Photometric Signals with Tracking Error, Brien Flewelling, AFRL/RVSC

NIR Color vs Launch Date: A 20-year Analysis of Space Weathering Effects on the Boeing 376 Spacecraft, James Frith, University of Texas El Paso

Satellite Photometric Error Determination, Tamara Payne, Applied Optimization Inc.

Automated Algorithm to Detect Changes in Geostationary Satellite’s Configuration and Cross-Tagging, Phan Dao, AFRL/RVB

Exhibit and Poster Session
Reception Co-sponsored by SpaceNav

5:00 pm - 6:00 pm | Aulani Ballroom

Satellite Watching and Star Party
Sponsored by Analytical Graphics, Inc.

8:00 pm - 10:00 pm | Pacific Terrace Rooftop

SEP 17
Thursday | Po‘aha
Friday | Po'alauma

**SSA Policy Forum | SSA Challenges and Opportunities from the Growing Private Sector Presence in Space**

7:30 am - 9:00 am | Aulani Ballroom

**Keynote**

**George Nield**, Associate Administrator, Commercial Space Transportation, Federal Aviation Administration

**Panel**

**Stewart Bain**, NorStar-Data, Inc.
**Mike Lindsay**, OneWeb
**Craig Smith**, EOS Space Systems
**Brian Weeden**, Secure World Foundation (Moderator)

Coffee Break
9:00 am - 9:20 am | Exhibit Room

**Exhibits Open**

9:00 am | Aulani Ballroom

**Invited Presentations**

9:20 am - 10:00 am | Aulani Ballroom

**Invited Remarks**

**David Lassner**, President, University of Hawai‘i

**AMOS Overview**

Joint R&D and Ops: A Working Paradigm for SSA

**Keith Knox**, AFRL Det 15

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**Astrodynamics Session | Chaired by Moriba Jah, Air Force Research Laboratory**

10:00 am - 11:00 am | Aulani Ballroom

Space-to-Space Based Relative Motion Estimation Using Linearized Relative Orbit Elements, **Trevor Bennett**, University of Colorado Boulder

Orbital Element Generation for an Optical and Laser Tracking Space Object Catalogue, **James Bennett**, Space Environment Research Centre & EOS Space Systems

Track-to-Track Data Association using Mutual Information, **Islam Hussein**, Applied Defense Solutions

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**Lunch**
11:00 am - 12:00 pm | Lokelani Ballroom

12:00 pm - 1:40 pm | Aulani Ballroom

Improving Space Object Catalog Maintenance Through Advances in Solar Radiation Pressure Modeling, **Jay McMahon**, University of Colorado Boulder

Towards Real-Time Maneuver Detection: Automatic State and Dynamics Estimation with the Adaptive Optimal Control Based Estimator, **Daniel Lubey**, University of Colorado at Boulder

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**Space Exploration Student Day**

200 Maui middle school students to participate in hands-on STEM activities
Bridging the Gap between Academia and Operations for Orbital Debris Risk Mitigation, Mark Vincent, Raytheon

Total Probability of Collision as a Metric for Finite Conjunction Assessment and Collision Risk Management, Ryan Frigm, Omitron, Inc.

Coupled Simulations, Ground-based Experiments and Flight Experiments for Astrodynamics Research, Russell Boyce, University of New South Wales

Coffee Break
1:40 pm - 2:00 pm | Exhibit Room

Exhibitor Load-out
2:00 pm | Aulani Ballroom

Adaptive Optics and Imaging Session | Chaired by Glenn Tyler, the Optical Sciences Company

2:00 pm - 5:20 pm | Aulani Ballroom

Resolved Observations of Geosynchronous Satellites from the 6.5 m MMT, Michael Hart, University of Arizona

Italian Air Force Radar and Optical Sensor Experiments for the Detection of Space Objects in LEO Orbit, Capt Giovanni Marco Del Genio, Italian Air Force

Incorporating LWIR Data into Multi-Frame Blind Deconvolution of Visible Imagery, Michael Werth, Boeing

New Aperture Partitioning Element, Steven Griffin, Boeing


Adaptive Optics for Satellite Imaging and Space Debris Ranging, Francis Bennet, Research School of Astronomy and Astrophysics, Australian National University

A Comprehensive Comparison of COMBAT Data to Wave-Optics Simulations, Richard Holmes, Boeing LTS

Anisoplanatic Imaging through Turbulence using Principal Component Analysis, Roberto Baena-Gallé, Royal Academy of Sciences and Arts of Barcelona

Fundamental Constraints on Imaging Geosynchronous Satellites, David Mozurkewich, Seabrook Engineering

Multiple-Baseline Detection of a Geostationary Satellite with the Navy Precision Optical Interferometer, Henrique Schmitt, Naval Research Laboratory

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6:00 pm - 9:00 pm | Luau Gardens

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**Lobby Level**

- Lokelani Ballroom (located behind hotel front desk)
- Exhibit Room
- General Session
- Breakout Rooms 4615, 4617, 4619

**Ground Level**

- (located directly under the ‘Aulani Ballroom)
- Breakout Rooms 4425, 4427, 4429

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**Conference Map**

- Aulani Ballroom and Pacific Terrace Rooftop
- Luau Gardens
- Lokelani Ballroom (located behind hotel front desk)
- Breakouts: 4421, 4427, 4429
- Breakouts: 4615, 4617, 4619
- Lobby Level
- Ground Level
- Conference Map

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- Conference Map
- Lokelani Ballroom (located behind hotel front desk)
- Breakout Rooms 4615, 4617, 4619
- Breakout Rooms 4425, 4427, 4429
- Lobby Level
- Ground Level
- Conference Map
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