

THE YEAR 2000 CONFERENCE ON CHARACTERIZATION AND RADIOMETRIC CALIBRATION FOR REMOTE SENSING

**Space Dynamics Laboratory
Utah State University**

September 19-21, 2000

Sponsored by: Space Dynamics Laboratory/Utah State University

Cosponsored by: US Department of Defense Ballistic Missile Defense Organization, The Aerospace Corporation, The National Aeronautics and Space Administration (NASA), The National Institute of Standards and Technology (NIST), The National Oceanic and Atmospheric Administration (NOAA), The Working Group on Calibration and Validation/Committee on Earth Observation Satellites (WGCV/CS), The University of Alabama-Huntsville, and The University of Arizona Optical Sciences Center.

Tuesday, September 19th

0730 **Continental Breakfast and Registration**

0830 **Welcome by Dr David Norton, Chief Executive Officer, Utah State University Research Foundation**

Introduction of Keynote Presentation, Dr Allan Steed, President, Space Dynamics Laboratory, Utah State University

Keynote Presentation, Mr John D. Cunningham, System Program Director, NPOESS Integrated Program Office, National Oceanic and Atmospheric Administration (NOAA)

0945 **Refreshment Break**

1000 **Session I: Traceability of Absolute Radiometry in Remote Sensing to SI Units**
Session Chair -Keith Lykke, NIST; Co-Chair - Steven Brown, NIST

"Improvements in POST Radiometric Uncertainty Determination," W. B. Gaumer and C. L. Hern, The Boeing Company

"Results of Radiometric Measurements on ITT's Novel Specular Blackbody Simulator," Allan Roberts and D.S. Smith, ITT Industries

"Electromagnetic Analysis of the ITT Specular Blackbody," Douglas Cohen, ITT Industries

"Comparison of Surface Reflectance Measurements from Three ASD Field Spec FR Spectroradiometers," Michele Kuester, University of Arizona, and K. Krause, K. Canham, E. Whittington, and K. Thome

"A Calibration System Analysis Toolkit," David B. Pollock, The University of Alabama in Huntsville, and D. Bancroft, T.L. Murdock, and V. Sapritsky

POST "Radiometric Measurement Comparison at NASA's Ames Research Center's Radiometric Calibration Laboratory," James J. Butler, NASA's Goddard Space Flight Center, B.C. Johnson, S.W. Brown, S. Biggar, E. Zalewski, John Cooper, R.A. Barnes, and P. Hajek

POST "The Portable Optical Sensor Testbed (POST) Facility Capabilities and Calibration for Infrared Sensor Characterization," Lynn Hern, The Boeing Company

POST "Assessment of the Accuracy of the MOBY Spectral Radiance Sources using the SXR and the VXR," B. Carol Johnson, NIST and H.W. Yoon, M.E. Feinholtz, and D.K. Clark

POST "Toward Uniformity of Terms and Definitions in Radiometric Calibration of Spaceborne Sensors," Alexander Prokhorov, Vega International, Inc. and R. Datla, V. Privalsky, and V. Sapritsky

1215 **Lunch Break**

1330 **Special Poster Session - Poster Authors will accompany their posters during this session.**

1500 **Session II: Calibration Planning Efforts for New and Emerging Programs**

Session Chair - Virendra Mahajan, Aerospace; Co-Chair - Ray Russell, Aerospace

1520 "Space-Based Radiometry using Active Cavity Radiometers: NISTAR/Triana," Steven Lorentz, J.P. Rice, and T.M. Jung, NIST

"Domain-engineered and Thin-film Pyroelectric Detectors for Improved Radiometric Transfer Standards," John H. Lehman, NIST, and G. Eppeldauer, C.N. Pannell, A.M. Radojevic, R.M. Osgood Jr, and M. Levy

"Cone Reflectance Measurements for Total Irradiance Monitor," Greg Kopp, University of Colorado, Laboratory for Atmospheric and Space Physics (LASP), and G. Lawrence, G. Rottman, A. Ebbets, K. Heuermann, and J. Richardson

"Expanding IR Sensor Calibration Capabilities at the AEDC Into the 21st Century," Randy Nicholson, Sverdrup Technology, and K.D. Mead

1700 **Adjourn**

Wednesday, September 20th

0745 Continental Breakfast and Poster Session

0800 **Session III: Calibration of Operational Meteorological Satellite Sensors in the Visible and IR**

Session Chair: C.R. Nagaraja Rao, NOAA/NESDIS

- ~~"Inter-calibration of Meteorological Satellite Sensors in the Visible and Near-infrared," C.R. Nagaraja Rao, NOAA/NESDIS and J.T. Sullivan and N. Zhang~~
- ~~"Calibration Support for Terra's Moderate Resolution Imaging Spectrometer Sensor with Marine Optical Buoy and Shipboard Observations," Dennis Clark, NOAA/NESDIS~~
- "On-Orbit Improvements of MODIS Response versus Scan Angle," K. Chiang, NASA, and X. Xiong, X. Wang, B. Guenther
- "Using the Moon for the On-Orbit Determination of MODIS PC Bands Optical Leak," X. Xiong, NASA, and T. Dorman, S. Xiong, K. Chiang, Y. Zhang, C. Moeller, B. Guenther
- "The Calibration of SeaWiFS," Robert A. Barnes, NASA/Goddard Space Flight Center (GSFC), R.E. Eplee Jr., W.D. Robinson, G.M. Schmidt, F.S. Patt, S.W. Bailey, M. Wang, and C.R. McClain
- ~~"On the Calibration of the SBUV/2 Photomultiplier Tube Gain Range Ratio," Shobha Kondragunta, NOAA, and L.E. Flynn, M.T. DeLand, L-K Huang~~
- "Relative and multitemporal calibration using POLDER characterization of desert sites," François Cabot, CNES, and O. Hagolle, P. Henry
- ~~"Effects of Solar Impingement on the calibration of AVHRR Infrared channels," Changyong Cao, NOAA and M. Weinreb~~

1000 **Refreshment Break**

1145 **Lunch Break**

1235 **Session IV: Intrinsic and Extrinsic Changes in Optical Systems: Detectors, Optics, Surfaces, Etc.**

Session Chair - Gary Rottman, University of Colorado, Boulder, Co-Chair - Jim Butler, NASA GSFC

- 1245 "Ionizing Radiation Induced Darkening of Cryogenically Cooled Infrared Filters," Jonathan H. Fisher, Mission Research Corporation and C. Elliott, R. Clement, B.M. Mut, S. Dewalt, G. Ezell
- "Long-term Diffuser Reflectivity Changes in SBUV/2 Instruments," Matthew DeLand, Raytheon ITSS, and L-K Huang
- "Optics and Sensors: An Overview," George M. Lawrence, University of Colorado/LASP, and G. Rottman, G. Kopp, J. Harder, and T. Woods,
- "Possible Effects of Solar Proton Bombardment on the Spectral Irradiance Monitor (SIM) Wavelength Drive," Jerald Harder, University of Colorado/LASP and T. Leach, N. Duchane, P. Marshall, J. Barth, and G. Lawrence
- POST "Black Cavity Reference for Infrared Emittance Testing," Russ E. Clement, Space and Naval Warfare Research Center and C. Elliott

1450 **Refreshment Break**

1505 **Session V: Spectral-radiometric Calibration: System and Component Characterization for Ultraviolet, Visible, and/or Infrared**

Session Chair - Carol Johnson, NIST; Co-Chair - Bob Barnes, NASA GSFC

- "Diffraction effects in the TIM/SORCE Instrument," Eric Shirley, NIST
- "NIST Infrared Optical Component Characterization Overview," Leonard Hanssen, NIST, and S. Kaplan
- "Cryogenic Infrared Filter Transmittance Test Chamber," Scott Hansen, SDL/USU, and A. Thurgood
- "Analysis of the Scan Angle Function for Mirrors in Remote Sensing Instrument," by David S. Smith, ITT Industries
- "SBIRS High IR Filter Procurement and Calibration," Captain Frederick Hunt, USAF

1700 **Adjourn**

1830 **Traditional Cookout up Logan Canyon with "The Better Half -- Great Comedy, Bluegrass, Folk, Contemporary and a whole lot of Fun"**

Thursday, September 21th

0745 Continental Breakfast and Poster Session

0815 **Session VI: Recent and Current Programs**

Session Chair -- Mark Larsen, SDL; Co-Chair - Edward Zalewski , University of Arizona, Optical Sciences Center

"[Current Status of NIST BMDO Transfer Radiometer BXR](#)," Timothy Jung, NIST and A. Carter, S. Lorentz, R. Datla


"[Small Area Characterization of an Imaging Radiometer for Remote Sensing](#)," Ed Zalewski, Optical Sciences Center, and R. Turner and M. Zenor

"[Calibration of an IR Imaging Sensor - Part 1: Concept and Methodology](#)," Steven C. Bender, Los Alamos National Laboratory, and W.H. Atkins, W. Christensen, W.B. Clodius, C.K. Little, D. Bridenstine, and D. Anderson

"[Calibration of an IR Imaging Sensor - Part 2: Experience and On-orbit Results](#)," Steven C. Bender, Los Alamos National Laboratory et.al.

"[Recent Test Activities and Evaluations in the AEDC 7V Chamber](#)," Kimberly D. Mead, Sverdrup Technology and R. A. Nicholson

"[Landsat-7 ETM+ On-Orbit Radiometric Calibration](#)," Brian L. Markham, NASA/GSFC, and J.L. Barker, E. Kaita, J. Miller, J. Barsi

~~"[Polarization results from the SABER ground calibration](#)," James Q. Peterson, SDL/USU~~ 

1115 **Refreshment Break**

POST "[Polarmetric imaging](#) using a continuously spinning polarizer element," James Q. Peterson, SDL/USU

POST "[SABER Ground Calibration](#)," Joe J. Tansock, SDL/USU

POST "[Radiometric Characterization and Calibration of the Marine Optical System \(MOS\) for the Marine Optical Buoy \(MOBY\) Project](#)," Catharine Habauzit, NIST, and S.W. Brown, B.C. Johnson, M. Yarbrough, M. Feinholz, and D.K. Clark

POST "[Calibration Sources](#)," Andrew Shumway, SDL/USU

POST "[Global Minimization of the MSX SPIRIT III Radiometer](#)," Tom Murdock, Frontier Technology, Inc. and E.G. Layton, V. Pera, D. Pollock, R. Russell, J. Mill, V.A. Thurgood, A.J. Byrne, M.E. Calkins, M.W. Baca, D.P. Bancroft

1130 **Session VII: Focus on the Future - A Summary With the Six Session Chairs.**

Session Chair - Joe Tansock, SDL; Co-Chair - Alan Thurgood, SDL

1215 **Wrap up, Joe Tansock, Conference Chair**

1230 **Adjourn**