**2014 HyspIRI Science Workshop**

NASA Decadal Survey Mission

14 - 16 October 2014

Beckman Institute Auditorium (BIA)

California Institute of Technology

1200 E California Blvd, Pasadena, CA 91125.

**AGENDA**

**Tuesday, 14 Oct 2014**

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| 8:00 AM | Registration Opens |
| 9:00 AM | Welcome and Objectives of HyspIRI Science Workshop - Woody Turner |
| 9:20 AM | Status of the HyspIRI Mission Concept and Level 1 Requirements - Robert O. Green, Simon Hook and Betsy Middleton |
| 9:40 AM | Small Sat VSWIR Study Results with 30 m Spatial Sampling and 16 Day Revisit - Michael Mercury, Ernie Diaz |
| 10:00 AM | Small Sat TIR Study Results with 60m Spatial Sampling and 5 day Revisit - William R. Johnson |
| 10:20 AM | Break and Picture |
| 10:40 AM | Changes in non-photosynthetic vegetation cover and liquid water thickness during California's record drought - Philip Dennison, Austin Coates, and Dar Roberts |
| 11:00 AM | Species mapping using a phenologically inclusive multi-temporal spectral library - Kenneth Dudley, Philip Dennison, Dar Roberts, and Keely Roth |
| 11:20 AM | Exploring biodiversity through optical diversity - John Gamon |
| 11:40 AM | Observing and modeling plant functional diversity - Ryan Pavlick |
| 12:00 PM | Lunch |

1:10 PM Summary of the 2014 HysPIRI Product Symposium at GSFC - Elizabeth Middleton

1:30 PM HyspIRI-VSWIR type Level 2 processing: Investigations, Advances, Products
- David R. Thompson, Bo-Cai Gao, Sarah Lundeen, and Elyse Pennington

1:50 PM Linking Seasonal Foliar Chemistry to VSWIR-TIR Spectroscopy Across California Ecosystems
- Susan Meerdink

2:10 PM HyspIRI-TIR, MASTER and HyTES LST&E Algorithms - Hulley

2:30 PM Mapping of land cover in Northern California with simulated HyspIRI images - Matthew L. Clark and Nina E. Kiham

2:50 PM Break

3:10 PM COMEX Update ‚Äì A validation/comparison campaign of imaging and non-imaging spectroscopy to observe and quantify methane emissions with application to the HyspIRI and CarbonSat Satellites - Ira Leifer

3:30 PM Retrieval of methane concentrations using the airborne imaging spectrometers AVIRIS and AVIRISng - Andrew Thorpe, Christian Frankenberg, Dar Roberts, and Andrew Aubrey

3:50 PM Real-time retrieval of Methane with AVIRIS-NG - David Thompson

4:10 PM Snow and Ice Science with HyspIRI type measurements - Tom Painter and Alex Gardner

4:25 PM An Overview of NEON Airborne Data Collected in June 2013 in support of the NASA HyspIRI project - Brian Karpowicz

4:40 PM How do optical properties from imaging spectroscopy data relate to structural attributes from LIDAR? - Margarita Huesca, Keely Roth, Mariano Garcia, Angeles Casas, and Susan L. Ustin

5:00 PM Close

**Wednesday, 15 Oct 2014**

8:40 AM Overview of ECOSTRESS mission - Hook

8:40 AM ECOSTRESS Science Goals and Objectives - Fisher

9:20 AM ECOSTRESS Coverage refernced to Landsat - Diaz

9:40 AM ECOSTRESS Level 1 and Level 2 Products - Hulley

10:00 AM ECOSTRESS ET Algorithms - Overview - Guellivic

10:20 AM Break

10:40 AM ECOSTRESS PT-JPL Algorithm - Fisher

11:00 AM ECOSTRESS ALEXI Algorithm - Anderson

11:20 AM ECOSTRESS METRIC Algorithm - Allen

11:40 AM ECOSTRESS L1 and L2 CalVal - Hook

12:00 PM ECOSTRESS L3 and L4 CalVal - Drewry

12:20 PM Lunch

1:40 PM Poster Session

2:00 PM Poster Session

2:20 PM Poster Session

2:40 PM Poster Session

3:00 PM Status and Plans of the HyspIRI Airborne Preparatory Campaign and Plan for 2015 - Ian McCubbin

3:20 PM Comparative mineral mapping of alluvial fans and associated aeolian and lacustrine deposits around the Salton Sea, California using MICA: A new tool for rapid classification of HyspIRI VSWIR imagery - Bernard Hubbard, J. Mars, R. Kokaly, and D. Hooper

3:40 PM Integrated AVIRIS and MASTER analysis for surface composition determination and mapping - Meryl McDowell and Fred Kruse

4:00 PM Hyperspectral analysis of an inactive open-pit sulfur mine for qualitative and quantitative geochemical features related to temporal changes in acid mine drainage. - Gwen Davies

4:40 PM Geologic Imaging Spectroscopy of the Mono Basin Region - Neil Pearson

5:00 PM Characterizing land surface energy budget under varying climatic conditions from the AVIRIS and MASTER data - Dongdong Wang

5:20 PM Using HyspIRI preparatory data for rapid classification of hydrothermal alteration and lithology - Elizabeth Pace

5:40 PM Plume Tracker Analyses of TIR Data from Recent Volcanic Eruptions in Iceland and Japan - V.J. Realmuto, A. Berk, and C. Guiang

6:00 PM Close

**Thursday, 16 Oct 2014**

8:20 AM Recent Activities of the HyspIRI Aquatic Studies Group (HASG) - Kevin R. Turpie, Ph.D. on behalf of the HASG

8:40 AM Hyperspectral Visible Derivative Spectroscopy for compositional analysis of CPAs in aquatic systems - Joseph Ortiz

9:00 AM Remote monitoring of giant kelp biomass and photosynthetic condition: An evaluation of the potential for the Hyperspectral Infrared Imager (HyspIRI) mission - Tom Bell

9:20 AM Potential HyspIRI Coral Reef Science Applications - Eric Hochberg

9:40 AM Application of Hyperspectral Remote Sensing to Cyanobacterial Blooms In Inland Waters - Raphael M. Kudela, Sherry L. Palacios, Daivd C. Austerberr, y K. Accorsi Liane S. Guild, and Juan Torres-Perez

10:00 AM Break

10:20 AM Status of the HyspIRI Special Issue of Remote Sensing of Enviornment - Eric Hochberg and Dar Roberts

10:40 AM EcoSIS: The Ecosystem Spectral Information System - Phil Townsend and the EcoSIS Team

11:00 AM Imaging Spectroscopy and Ecosystem Physiology - Phil Townsend, Shawn Serbin, Eric Kruger, Andrew Jablonski, Sean DuBois, and Ankur Desai

11:20 AM Data products and applications emerging from the NEON 2013 Airborne Campaign at Domain 17 in California - John Musinsky

11:40 AM Flight Validation of Generation of OLI data products Onboard Earth Observing One: Status Update - Steve Chien, Jay Torres, Daniel Tran, David R. Thompson, Robert Green, Daniel Mandl, Elizabeth Middleton, Stephen Ungar, Lawrence Ong, Petya Campbell,Bruce Trout, Jerry Hengemihle

12:00 PM Lunch

1:20 PM AVIRIS and MASTER capabilities for monitoring post-fire environments as HyspIRI precursors: examples from the 2013 Rim fire and other fires in California - Sander Veraverbeke

1:40 PM Characterizing the Rim and King MegaFires with MASTER/AVIRIS and LIDAR - Stavros

2:00 PM PHyTIR - Instruments and Test Results - William Johnson

2:20 PM VSWIR-Dyson Imaging Spectreometer and an ISS option - Byron van Gorp and Robert Green

2:40 PM Break

3:00 PM Update on Intelligent Payload Module and Efficient Cloud Based Data Product Distribution Work - Daniel Mandl

3:20 PM A MODTRAN Line-By-Line Option for Band Model Validation and High Resolution Prediction of Emission and Scattering - Alexander Berk

3:40 PM HyTES Science Results - Glenn Hulley

4:00 PM Real-time Airborne Demonstration of Fast Lossless Hyperspectral Data Compression System for AVIRIS-NG and PRISM - Didier Keymeulen, Nazeeh Aranki, Huy Luong, Charles Sarture, Michael Eastwood, Ian McCubbin, Alan Mazer, Matt Klimesh, Robert Green, David Dolman, Alireza Bakhshi

4:40 PM A demonstration of real-time, model driven reflectance retrieval on AVIRIS-NG imagery - Brian Bue, David Thompson, Michael Eastwood, Didier Keymeulen, Bo-Cai Gao, Robert Green

5:00 PM Discussion: Status of HyspIRI Requirements and Inputs to the Next Decadal Survey and 2015 plans

5:20 PM Close

**POSTERS** **Wednesday 1:40 to 3:00 pm. Poster may be up during the full workshop.**

Can Imaging Spectrometers actually provide better determination of multispectal indices than imagers restricted to the bands of comprising these indices? - Stephen Ungar

MCScene Limb-Viewing Hyperspectral Image Simulation based on a Polygonal Earth Cross-Section (PEX) Model - Alexander Berk

Hyperspectral application in agriculture and germplasm stratification - Chandrashekhar Biradar

The Europa Short Wavelength Infrared Spectrometer (ESWIRS) - Retiring Risk in Radiation Mitigation and Planetary Protection - Morgan Cable

Remote Sensing Observations at Multiple Scales to Define Ecosystem Form & Function - Lawrence Calvin

Building a spectral library of stress-induced non-thermal TIR emission - Melissa Govaerts

HyTES Spring 2014 Airborne Campaign - Eng

Infrastructure and Natural Resource Adaptation to Machine Space System (INRAMSS) - Sam Nwaneri

Improving Atmospheric Correction For Visible/Short Wave Infrared (VSWIR) Imaging Spectrometers With Iterative Fitting Of Absorption By Three Phases Of Water - Elyse Pennington

Assessing the Effectiveness of Simulated HyspIRI Data for Use in USDA Forest Service Post-Fire Vegetation Assessment and Decision Support - Ross Reahard

Building a spectral library of stress-induced non-thermal TIR emission - Andrew Reid

Exploring Spectral and Functional Trait Variation at Leaf & Canopy Scales Across California Ecosystems -Margarita Huesca, Angeles Casas, Mariano García, Spencer Mathews, Mimar Alsina-Martí, Michael Whiting, and Susan Ustin

Mapping coupled fluxes of carbon and water through multi-sensor data fusion - Mitchell Schull

Using Hypersectral Remote Sensing Imagery and Spectral Mixture Analysis to Understand fire Effects in the 2013 Rim Fire in Yosemite, CA - Zachary Tane

The COW-Gas (Cal pOly Winter Gas) Campaign: Continuous Mobile and Stationary Methane Monitoring by In Situ and Column Measurements at the Cal Poly Research Dairy - Sam Vigil, Ira Leifer, Elena Berman, Jeffery Hall, Laura Iraci, Brian Leen, Tryg Lundquist, Jun Qian, David Tratt, and Emily Wilson

Combined hyperspectral and field mapping along the 1999 Hector Mine earthquake surface rupture - Ryan Witkosky

Daily Field-Scale ET Mapping using a Data Fusion Approach - Yun Yang

Investigating the impact of spatially-explicit sub-pixel structural variation on the assessment of vegetation structure from imaging spectroscopy data: II. Simulation approach - Wei Yao and Jan Van Aardt

Near-Infra-Red Suppressed "Blue" Calibration Source - M. Eastwood, R. Green, and M. Helmlinger

Hyperspectral Imaging System Development and Applications at NASA GRC - Larry Liou

The COW-Gas (Cal pOly Winter Gas) Campaign: Continuous Mobile and Stationary Methane - Sam Vigil

Exploring Spectral and Functional Trait Variation at Leaf & Canopy Scales Across California Ecosystem - Keely Roth