2013 HyspIRI Products Symposium

HyspIRI Products for Societal Benefit Areas (SBAs) and Aquatic Studies

May 29 – 30 (Wed-Thu), 2013

NASA/Goddard Space Flight Center

Building 34, Conference Room W150

Breakout Rooms W120A, W120B and B305

2013 HyspIRI Products Symposium: ***HyspIRI Products for Societal Benefit Areas (SBAs) and Aquatic Studies***

Day 1, Wednesday, May 29, 2013

8:00 Registration/ Posters Up/ Coffee

8:30 Symposium Opening, Goals and Agenda, W150 [*Chair Elizabeth Middleton NASA/GSFC*]
8:40 Current status of HyspIRI mission [*Woody Turner, NASA/HQ Co-Program Scientist*]
8:55 The NASA Applied Sciences Program and the US Group on Earth Observations SBAs: Earth Sciences Serving Society [*Lawrence Friedl, NASA/HQ Associate Director for Applied Sciences*]
9:10 Aircraft campaign – status update, sites, and flight plans [*Woody Turner*]
9:25 Instruments concept (IC-1): introducing VSWIR & TIR instruments on separate platforms [*Rob Green & Simon Hook, NASA/JPL*]

9:35 - 10:00 Coffee Break

10:00 Ecological Forecasting for Terrestrial and Aquatic Ecosystems, W150 [*Chair Susan Ustin, UC Davis*]
10:00 Improving ecological forecasting with hyperspectral data: A data assimilation system for the Community Land Model [*Andrew Fox, NEON*]
10:20 Evapotranspiration estimation with simulated HyspIRI data over arid lands [*Andrew French, USDA*]
10:40 HyspIRI data products for plant functional types [*Susan Ustin, UCD*]
11:00 Determining leaf dry matter content using the normalized dry matter index and its possible application for estimating fuel moisture content [*Raymond Hunt, USDA*]
11:20 Data fusion techniques for mapping daily water use at field scales [*Martha Anderson, USDA*]
11:40 The Matsu System for Rapid Analysis of Large Volumes of Data [*Bob Grossman, UChicago*]

12:00 – 13:00 Lunch

12:20 - 1:00 Aquatic Data Products Breakout, W150 *(during the lunch break)*
12:20 Angular dependence on sand density of the spectral BRDF [*Bill Philpot, Cornell*]
12:40 Photosynthetic condition of giant Kelp (*Macrocystis pyrifera*) in the Santa Barbara Channel [*Thomas Bell, UC St. Barbara*]

13:00 Coastal & Inland Aquatic Data Products Topical Areas, W150 [*Chair Kevin Turpie, UMBC*]
13:00 Coral reef products for HyspIRI [*Eric Hochberg, BIOS*]
13:20 Use of HyspIRI Observations to get Phytoplankton Functional Groups [*John Moisan, NASA/WFF*]
13:40 Improved Absorption and Taxonomic Composition Estimates with HyspIRI [*Tiffany Moisan, NASA/WFF*]
14:00 Impacts of Spatial and Spectral Resolution on Hyperspectral Remote Sensing of Aquatic Vegetation [*Richard Zimmerman, Old Dominion University*]
14:20 Using hyperspectral airborne PRISM imagery to map vulnerable coastal salt marsh and sea grass habitats [*Heidi Dierssen, University of Connecticut*]
14:40 Hyperspectral Imager for Coastal Ocean (HICO) [*Bo-Cai Gao, Naval Research Lab*]

15:00 – 15:20 Coffee Break

15:20 Special Topics 1, W150 [*Chair Stephen Ungar NASA/GSFC*]
15:20 HyspIRI Aircraft campaign: science goals, project overviews & data sharing [*Rob Green & Simon Hook*]
15:35 Initial science results of the NASA/MAGI airborne instrument at the Salton Sea, CA: implications for environmental studies using HyspIRI data [*David Tratt, Aerospace Corp.*]

15:50 Parallel Discussion Sessions: Charge, Goals and Anticipated Outcome [*Elizabeth Middleton*]
16:00 W150 Coastal/inland aquatic products: issues, products & requirements [*Kevin Turpie*] ***
16:00 W120A Ecological forecasting: products, requirements & issues [*Susan Ustin*]
16:00 W120B Instruments concept (IC-2): discussing benefits and concerns from having VSWIR & TIR on separate platforms [*Simon Hook & Rob Green*]

17:30 Adjourn

18:30 Happy Hour & Dinner [Ruby Tuesday]

*** *Aquatic breakout talks & discussion topics are listed on a separate page*

2013 HyspIRI Products Symposium: ***HyspIRI Products for Societal Benefit Areas (SBAs) and Aquatic Studies***

Day 2, Thursday, May 30, 2012

8:00 Registration/ Posters/ Coffee

8:30 Environmental & Human Impacts including Disasters, Natural Hazards, Water Management and Public Health, W150 [*Chair Jeff Luvall, NASA/MSFC*]

8:30 Traceability matrix, HyspIRI products in support of SBA requirements [*Jeff Luvall, NASA/MSFC*]

8:50 Ecologic niche models for neglected tropical diseases (NTD) in data-scarce landscapes in South America based on environmental suitability and poverty-related risk factors' [*John B. Malone, Louisiana State University*]

9:10 Volcanic CO_2 measurements from hyperspectral data [*Fabrizia Buongiorno, INGV*]

9:30 The feasibility of systematic inland water quality monitoring with HyspIRI [*Arnold Dekker, CSIRO*]

9:50 Discussion [*Chair Jeff Luvall*]

10:10-10:30 Coffee Break

10:30 Automated, Rapid Processing for Low Latency Data Products, W150 [*Chair Dan Mandl, NASA/GSFC*]

10:30 IPM Update and Preliminary Low Latency User Requirements [*Dan Mandl, NASA/GSFC*]

10:45 An open GeoSocial API to meet societal needs [*Pat Cappelaere, Vightel Co.*]

11:00 Rapid Co-Registration with Landsat GLS [*Maria Sazama, NASA/GSFC*]

11:15 Geo-correction for Airborne Platforms [*Vuong Ly, NASA/GSFC*]

11:30 EDOS high-rate data capture and delivery of low-latency HyspIRI level-zero data [*Bruce Mclemore, Honeywell*]

11:45 Discussion [*Chair Dan Mandl*]

12:00 – 13:00 Lunch

***DEMO*:** ENVI Services Engine for Web-Accessible HSI Applications, W120A *[Thomas Harris]*

13:00 Special Topics, W150 [*Chair Stephen Ungar*]

13:00 Current and future hyperspectral instruments [*Michael Abrams, NASA/JPL*]

13:20 HyspIRI Spectral Library: concept, status and requirements [*Simon Hook*]

13:40 Role of imaging spectrometer data for model-based cross-calibration of imaging sensors [*Kurt Thome, NASA/GSFC*]

14:00 Spectral time series for the study of ecosystem function, using EO-1 Hyperion [*Petya Campbell, UMBC*]

14:20 Linking terrestrial biosphere models with imaging spectrometry measurements of ecosystem composition, structure and function [*Paul Moorcroft, Harvard*]

14:40 Discussion Synopsis: Ecological Forecasting for Terrestrial and Aquatic Ecosystems [*Susan Ustin*]

14:50-15:15 Coffee Break

15:15 Interactive Poster Presentations, W150 [*1 slide/poster, 2 min/each*]

16:00 HyspIRI products in support of Societal Benefit Areas: ***Synopsis from Discussion Sessions and Open Discussions, W150*** [*Chairs Woody Turner & Elizabeth Middleton*]

16:00 Coastal and Inland Aquatic Data Products Break-Out *[Kevin Turpie]*

16:10 Environmental & Human Impacts *[Jeff Luvall]*

16:20 Rapid Processing for Low Latency *[Dan Mandl]*

16:30 Instruments concept: impacts on higher level products from placing VSWIR & TIR instruments on separate platforms *[Rob Green & Simon Hook]*

16:40 Open Discussions

17:00 (W150) Summary and review of <u>report outline</u> [*Elizabeth Middleton & Petya Campbell*]

17:30 Adjourn

****** Aquatic breakout talks and discussion topics***

16:00 Parallel Discussion Session: Coastal/Inland Aquatic Products: issues, products & requirements, W150 [*Turpie, duration ≤2hrs*]

16:00 Aquatic studies with HyspIRI preparatory airborne campaign [*Sherry Palacios, UC Santa Cruz*]

16:20 HyspIRI aquatic data products report [*Kevin Turpie, UMBC*]

- *HyspIRI's potential contributions to wetland studies. [Kevin Turpie, UMBC]*
- *Potential applications of HyspIRI for land/water/ice Geomorphology. [Young-Heon Jo University of Delware]*
- *Detecting and quantifying water surface features using hyperspectral remote sensing: Strengths and limitations of HyspIRI. [Chuanmin Hu, University of South Florida]*
- *Water-column retrievals. [Emmanuel Devred, Université Laval]*
- *Bathymetry from hyperspectral remote sensing. [ZhongPing Lee, University of Massachusetts Boston]*
- *Benthic data products. [Eric Hochberg, BIOS]*

17:00 Aquatic data products discussion [Chair: *Kevin Turpie, UMBC*]

1. Discussion on candidate suite of data products.

2. Availability of data for product development (HICO, air campaign data, ISS HICO follow-on / HyspIRI concept instrument).

3. Seed questions regarding data product generation:

4. Potential issues regarding data product generation:

- *Atmospheric correction techniques: are further developments required for HyspIRI aquatic data products? (e.g., NO2)*
- *Spatial resolution changes from 60m to 1km for depth > 50m. Resolution can be commanded for an in situ study. Is this sufficient for observations such as water surface features or ice-edge phenomena?*
- *Separation of the VSWIR and Thermal instruments*