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 in Room W120B/ 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**

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]


13:40 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]**

*W150* Coastal/inland aquatic products: issues, products & requirements [Kevin Turpie] ***

*W120A* Ecological forecasting: products, requirements & issues [Susan Ustin]

*W305* Instruments concept (IC-2): discussing benefits and concerns from having VSWIR & TIR on separate platforms [Simon Hook & Rob Green]

**17:30 Adjourn**

**6:30pm Happy Hour & Dinner [Ruby Tuesday]**

***Aquatic breakout talks & discussion topics are listed on a separate page***
HyspIRI Products Symposium: *HyspIRI Products for Societal Benefit Areas (SBAs) and Aquatic Studies*

**Day 2, Thursday, May 30, 2012**

8:00 Registration/Posters in Room W120B/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 based on environmental suitability and poverty-related risk factors at the census tract level used for operational community-based intervention programs ([John B. Malone, Louisiana State University](#))
- 9:10 Volcanic CO₂ 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 report outline** ([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
[Dur, 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 Delaware]
• 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