

**2016 Mayagüez Puerto Rico Polar Orbiter Workshop: Satellite Direct Broadcast in Support of Real-Time Environmental Applications**

**Location: Location: University of Puerto Rico at Mayagüez**

**Date: 26-29 April 2016**

**Workshop Agenda**

**Day One Polar Orbiter Sensors - including MODIS and VIIRS imagers  
26 April 2016 Liam Gumley**

**9:00 AM – Noon Lecture:** Introduction to Polar-Orbiting Satellites and Sensors

- Properties of Polar-Orbiting Satellite sensors
- Bowtie effects and data aggregation
- SDR and Level 1B products and formats
- Software for visualization of SDRs and Level 1B files
- Overview of DB system at Mayagüez
- Overview of Software for SDR and L1B file generation
- CSPP – Community Satellite Processing Package

**Noon – 1:00 PM Lunch on Site**

**1:00 PM – 5:00 PM Lab Session:** Exploring MODIS and VIIRS L1B data in Hydra

- Learning Hydra
- Exploring S-NPP SDR and MODIS L1B using direct broadcast data

**Day Two Level 2 Polar Orbiter Products and Applications  
27 April 2016 Kathleen Strabala**

**9:00 AM – Noon Lecture:** MODIS Level 2 and VIIRS EDR algorithms and products

- MODIS and VIIRS Atmosphere Products and Applications including identification of severe weather signatures and atmospheric turbulence.
- MODIS and VIIRS Land Products and Applications including fire detection.
- MODIS and VIIRS Ocean Products and Applications.
- VIIRS Day/Night Band Applications.

**Noon – 1:00 PM Lunch on Site**

**1:00 PM – 5:00 PM Lab Session:** MODIS and VIIRS data and product applications

- Exploring MODIS and VIIRS Cloud Composition and Severe Weather Detection Capabilities.
- Exploring MODIS and VIIRS Fire Detection capabilities.
- Exploring Ocean Features in MODIS and VIIRS data.
- Exploring VIIRS Day/Night Band Capabilities.

**Day Three      Level 2 Polar Orbiter Products and Applications Continued**  
**28 April 2016      Kathleen Strabala**

**9:00 AM – 10:00 AM Lecture:** MODIS and VIIRS data and product applications

- MODIS and VIIRS Aerosol Detection and Applications.

**10:00 AM – Noon Lab Session:** MODIS and VIIRS data and product applications.

- Exploring MODIS and VIIRS Dust Detection capabilities.
- Exploring MODIS and VIIRS Ocean Color product capabilities.

**Noon – 1:00 PM Lunch on Site**

**1:00 PM – 5:00 PM Lab Session:** Students in groups of three will choose a topic to investigate. They will explore the data from a case study or from recent Mayagüez antenna data, and present the results of their investigation to the class on Friday.

**Day Four              Participant Presentations**  
**29 April 2016**

**9:00 AM – 12:00 PM:** Student presentations – 15 minutes each

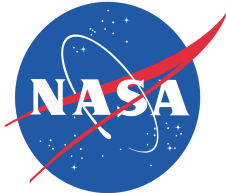
**General Notes:**

- The workshop will be held in the University of Puerto Rico at Mayagüez Virtual Classroom, Department of Mathematical Sciences, Luis C. Monzón Building, Room M-107.
- Lunch will be provided daily by the University of Wisconsin.
- Breaks will be included in both morning and afternoon sessions.
- Lab sessions will consist of students working together in groups of 3. The free tool we will use for lab investigations is called HYDRA, and can be installed on most Apple, Windows, and Linux laptops. It was developed specifically at the University of Wisconsin as a remote sensing teaching tool.
- Lecturers are not experts in the fields of Oceanography, or Geology, but we hope to provide students with the information they need to understand how the data can be useful to them in their own area of interest.
- It is optimal that students be able to attend the entire workshop, as the daily teaching and exercises build upon each other. However, we understand that work and school schedules may not permit this. Electronic copies of lectures and labs will be made available to everyone during the workshop, and at the end of the course a workshop website will be created containing all of the course materials

## Sponsors:



National Oceanic and Atmospheric Administration  
(NOAA)



National Aeronautics and Space Administration (NASA)



University of Wisconsin-Madison Space Science and  
Engineering Center (SSEC)



University of Puerto Rico at Mayagüez

## Lecturers:

**Liam Gumley** joined the Space Science and Engineering Center (SSEC) in 1994, where he has played a key role in the NASA MODIS and JPSS S-NPP Atmosphere Science Teams for the past 20 years. He has played a major role in providing software for Direct Broadcast (DB) data processing to the global community via the International MODIS/AIRS Processing Package (IMAPP) and now the Community Satellite Processing Package (CSPP). He is the manager of the EOS DB facility at the University of Wisconsin-Madison, and architect of the SSEC real-time automated processing system for Suomi-NPP, Aqua, Terra, MetOP, NOAA-POES, FY-3, etc. He is the author of "Practical IDL Programming" (Morgan Kaufmann Publishers, 2001), a widely used guide to programming and data analysis in Interactive Data Language (IDL).

**Kathy Strabala** has been a Scientist at the Cooperative Institute for Meteorological Satellite Studies for over 20 years. She received a masters degree in Meteorology from the University of Wisconsin-Madison, USA in 1991. She worked as a Senior Forecaster at Kavouras, Inc., in Minneapolis, Minnesota, USA for 3 years prior to receiving her degree. She has worked primarily on cloud detection and cloud

composition as determined from polar orbiters, and has worked extensively on delivery and use of direct broadcast satellite products by the National Weather Service (NWS). Kathy is the project manager for the International MODIS/AIRS Processing Package (IMAPP) which provides software to create science data products from direct broadcast reception of Aqua and Terra data.

**Jessica Braun** rejoined the Space Science and Engineering Center (SSEC) in 2014 as an Assistant Researcher. She received a master's degree in Atmospheric and Oceanic Science from the University of Wisconsin-Madison in 2007. From 2007-2010, she worked with the Man computer Interactive Data Access System (McIDAS) Users Group at SSEC as a lead trainer and tester. In 2010, she joined Science Systems and Applications (SSAI) Inc. as a programmer for the NOAA Operations and Maintenance Contract. While at SSAI, she was the Team Lead for the Atmospheric Physics Group at the Office of Satellite and Product Operations (OSPO), working on geostationary ingest, processing, and distribution of operational products to the National Weather Service (NWS). Jessica currently works with the Community Satellite Processing Package (CSPP) and CSPP Geo groups at SSEC.