JPSS Proving Ground and Risk Reduction Update
6 Jan 2014

Important Topics

- JPSS Program Status
- SNPP Initiatives of Interest
- JPSS Science Seminars
- Conferences and Meetings

JPSS Program Status

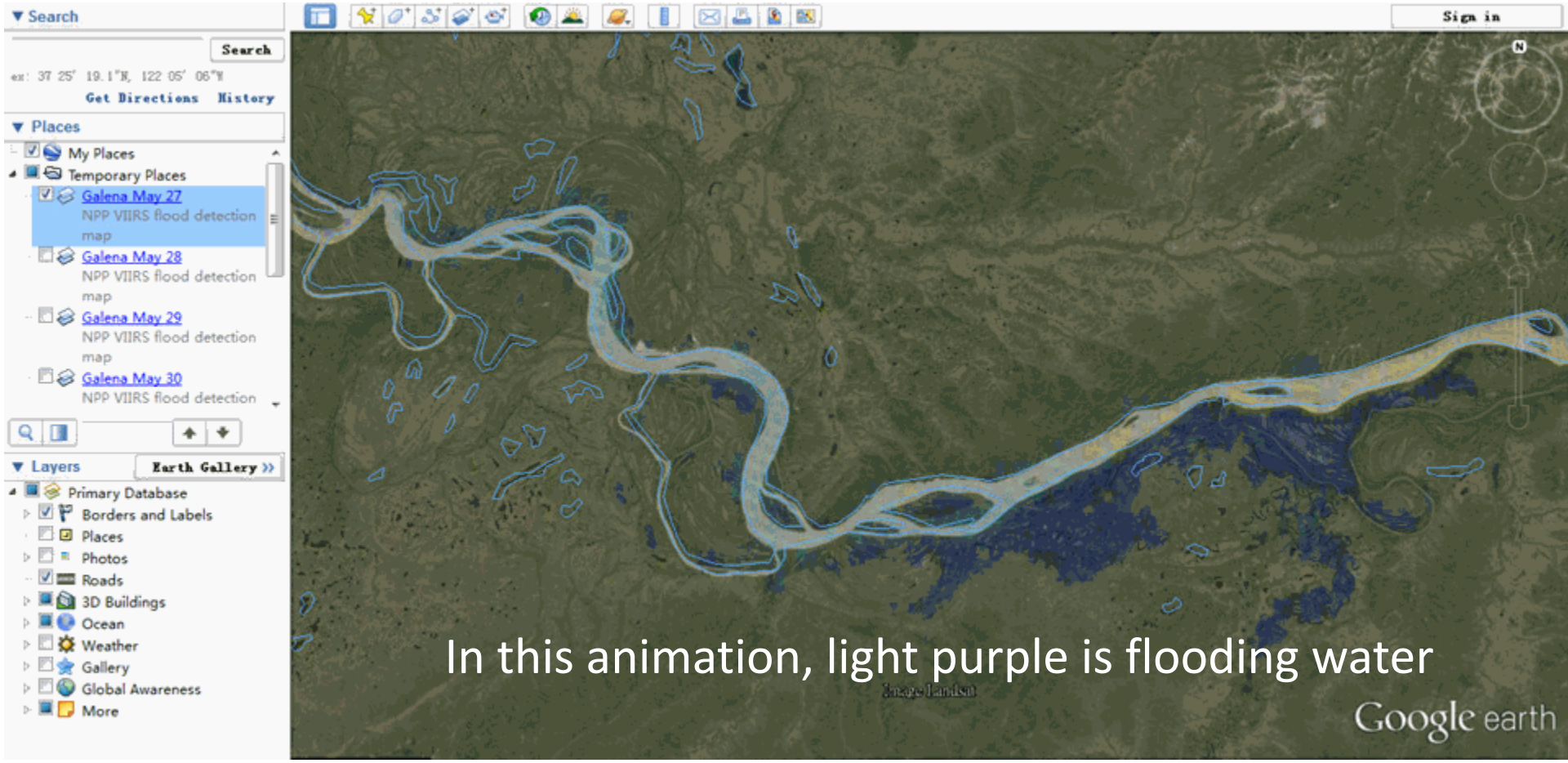
- SNPP operating nominally
- JPSS-1: instruments assembled and in test and bus in integration
- JPSS optimistic about receiving full funding for 2014
- NDE Update
  - The real-time AMSR-2 data flow from IDPS to NDE/PE1 was implemented and supported under 24/7 at ESPC on Oct 31, 2013
  - Algorithm Packages Updates Delivered: VIIRS Polar Winds, Microwave Tropical Cyclone Product, Green Vegetation Fraction, ACSPO SST
  - Generated 1 days worth of VIIRS imagery for NWS NCEP to develop new global ingest and display capability for AWIPS II
  - NUCAPS Phase 3 CDR held 2 Dec 2013
- Key Dates
  - Jan 13-17 - JPSS CGS Ground CDR JPSS
  - Feb 18-22 - Ground Project Block 2.0 CDR
  - April 22-25 - JPSS-1 Mission CDR
- Major Reviews
  - SNPP SDR Science and Products Review (18-20 Dec)
  - EDR Product Maturity Readiness Review (7-8 Jan)

JPSS River Ice Flooding Product Initiative

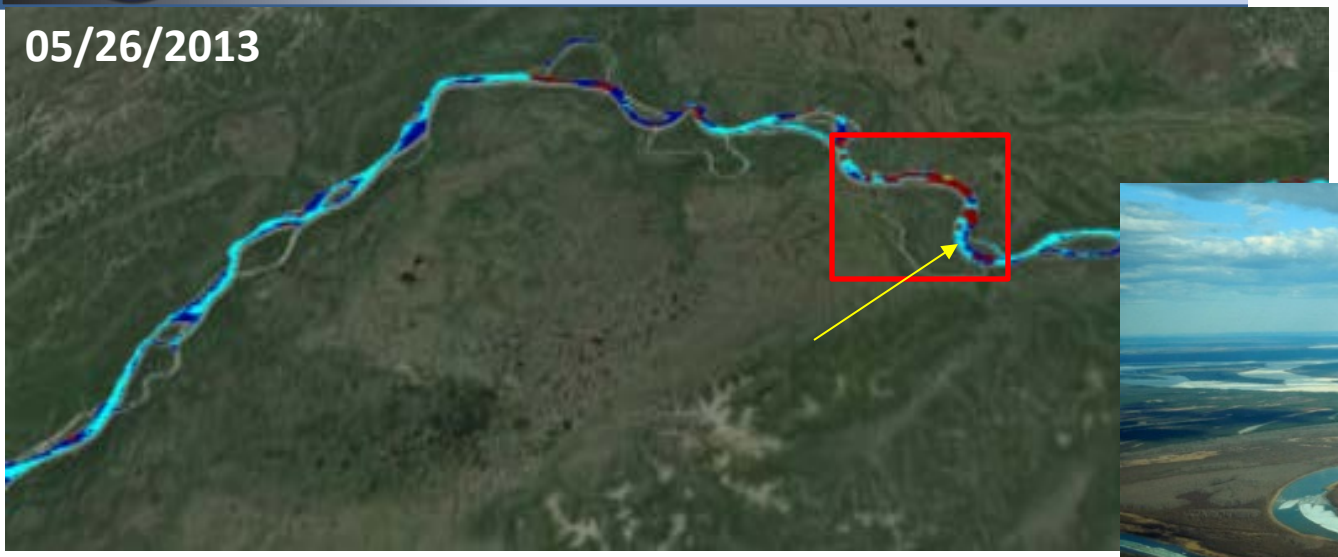
Background

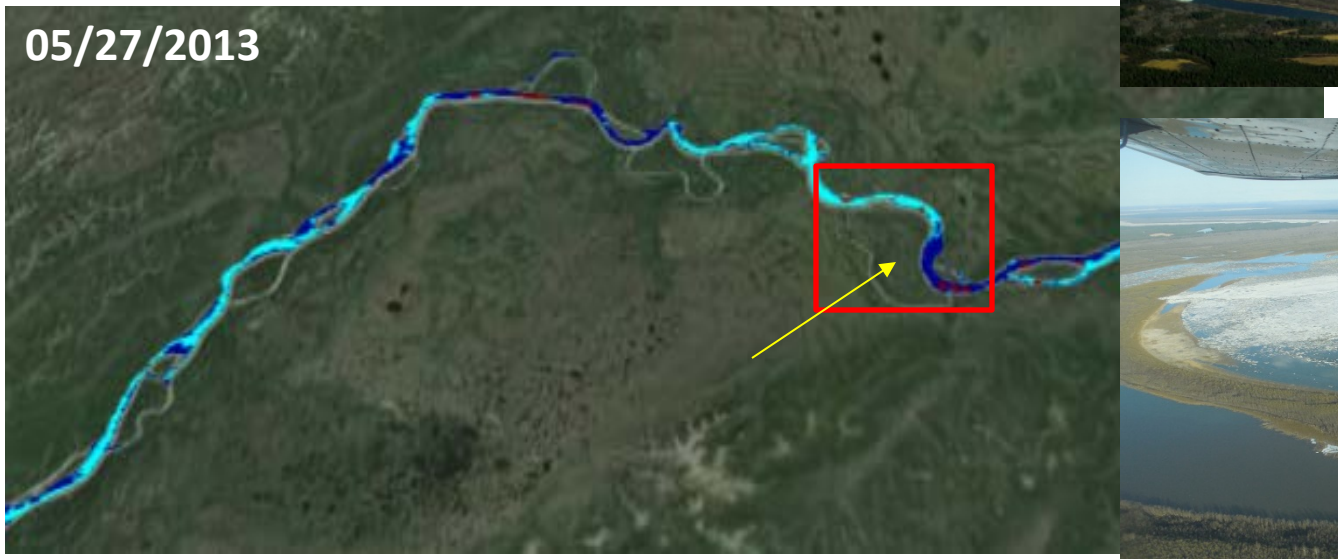
- Galena Flooding - May 2013
  - In late May 2013, Galena, Alaska, lost nearly 90 percent of its buildings in ice-jam flooding on the Yukon River.
  - On May 28th the waters began rising and quickly overwhelmed this 400-resident, mostly Native village.
  - Sewage and fuel spills, downed and falling trees, and loose power lines slowed this village's recovery.
  - The flooding left 194 homes in Galena uninhabitable.
- Telecons and Face-to-Face meeting with Alaska – expanded to North Central River Forecast Center
- Stakeholders
  - CCNY – River and Lake Ice Product
  - GMU – Flooding Product
  - CSPP – Direct Broadcast
  - GINA – Assistance in product application
  - NWS Alaska and Pacific River Forecast Center
  - NWS North Central River Forecast Center
- Preparation for 2014 Spring Flood
- Telecon on 29 Jan to discuss status

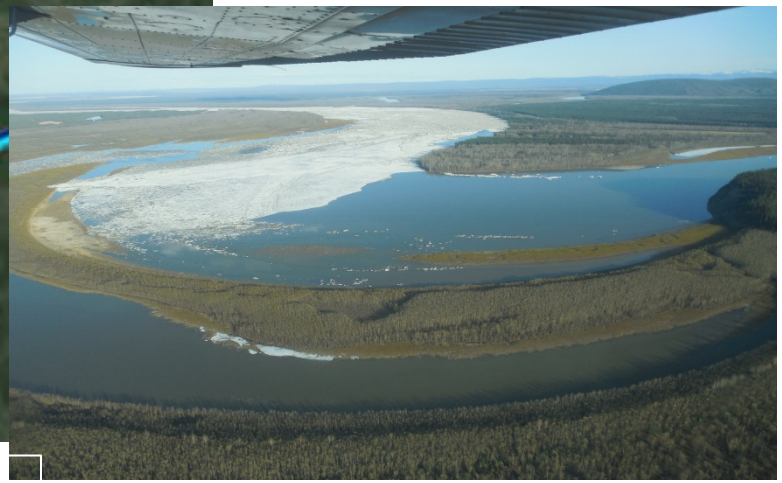
A close look on Galena Flood from May 27 to June 01, 2013



Validation: Aerial Photos







Ice free pixels

Mixed ice/water pixels

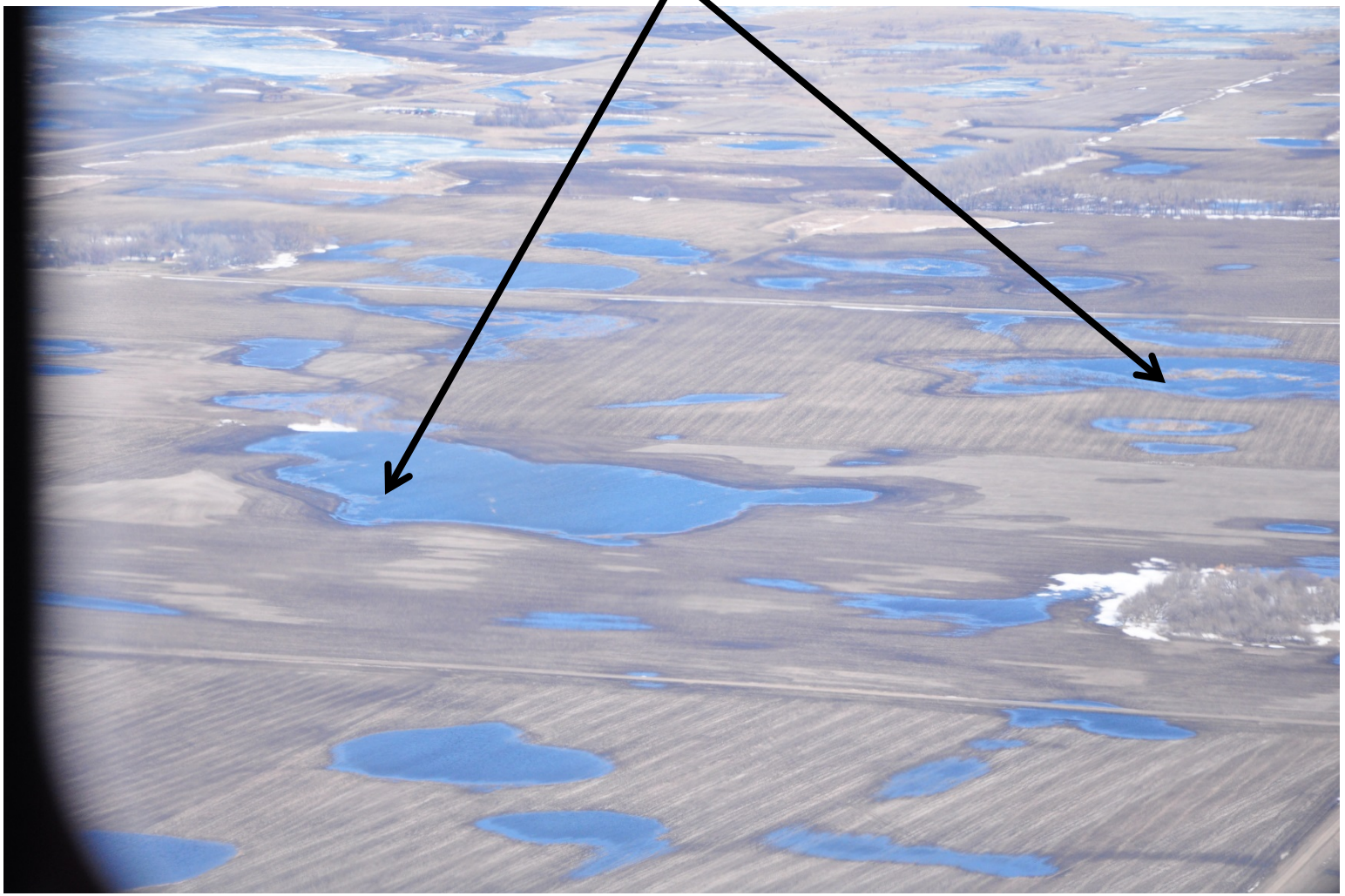
ice covered pixels

cloudy pixels

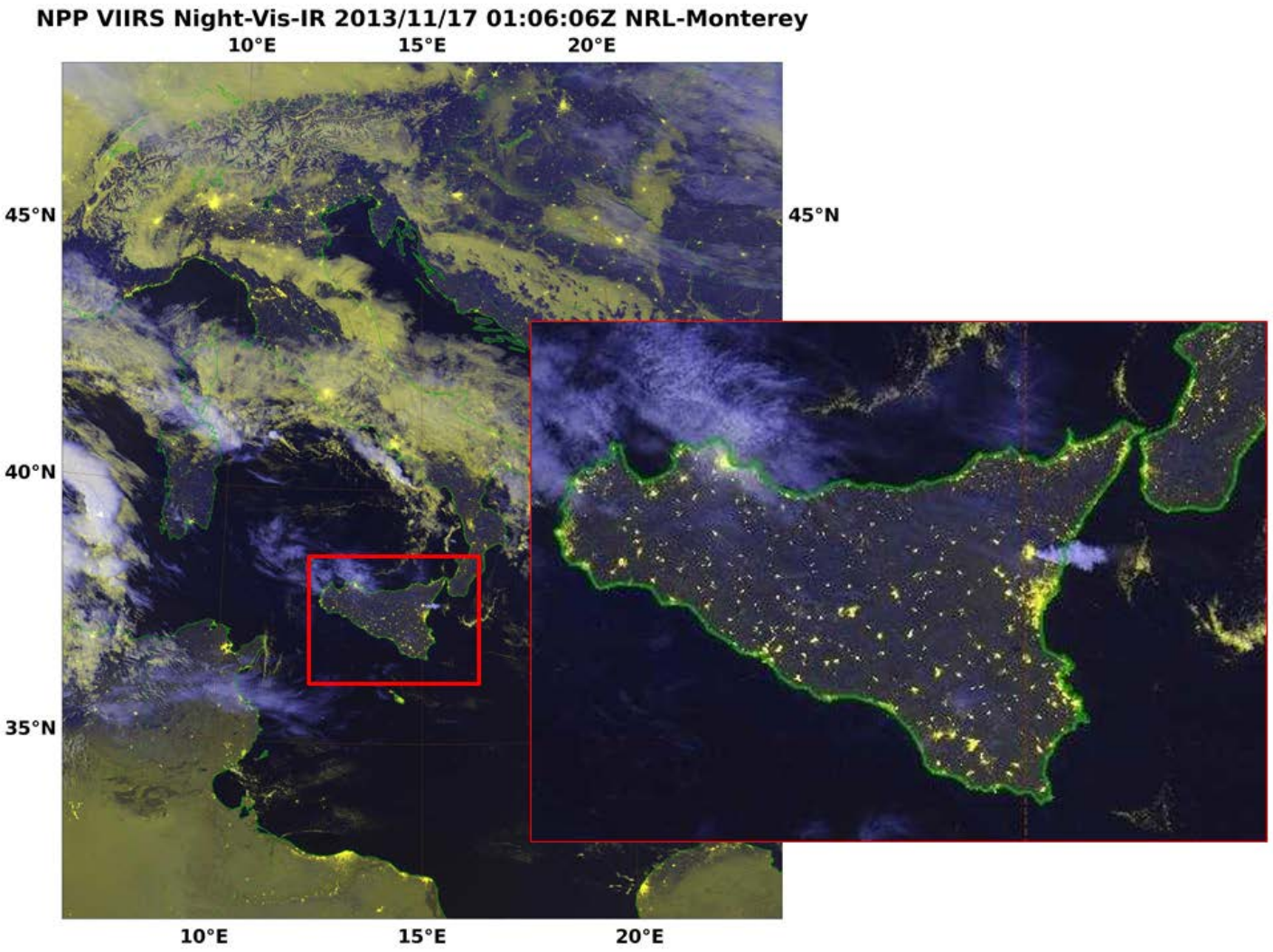
North Central River Forecast Center (NCRFC)

Non-river flooding problems

open land flooding from snow melt on frozen lands

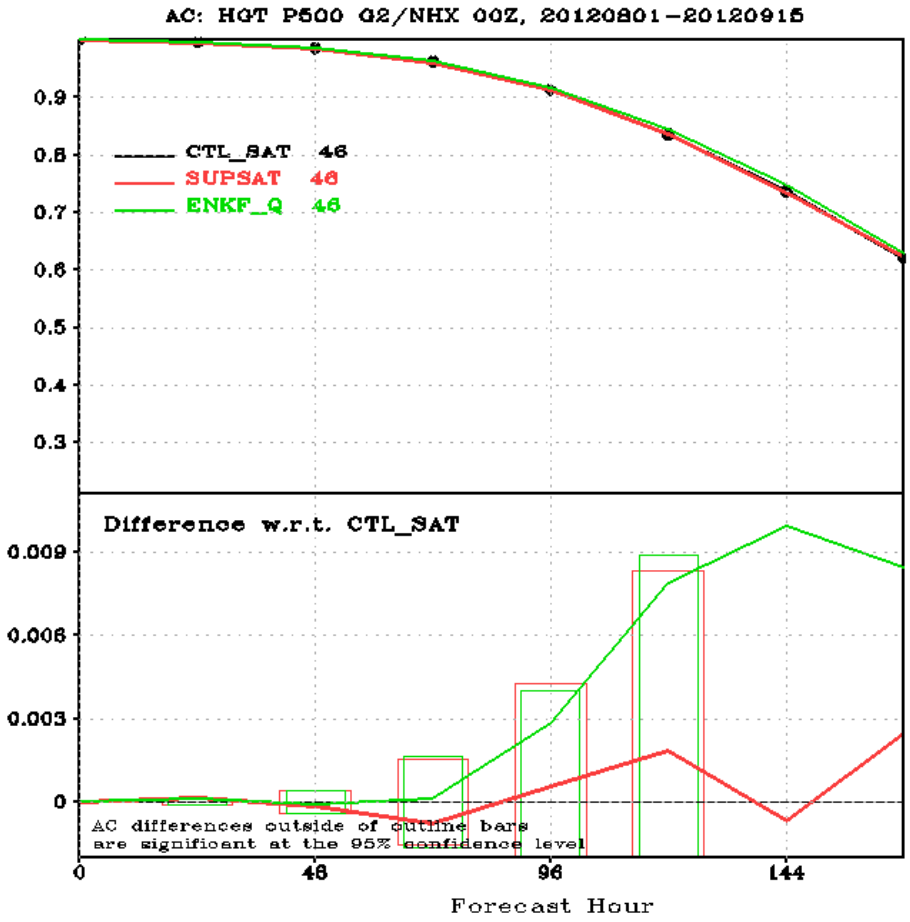


NCRFC: Non-River Flooding Problems



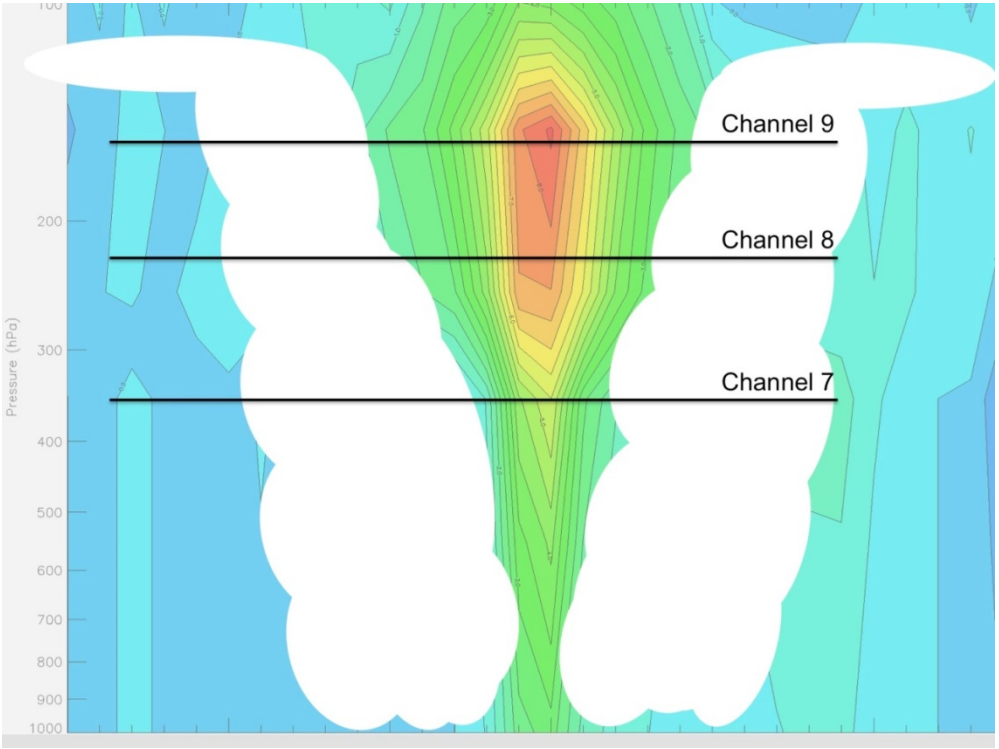
17 Nov 2013 Eruption of Mt. Etna
VIIRS DNB with IR enhancement under nighttime moonlit conditions

Implementation of Advanced Satellite Data Assimilation Techniques



The 500 hPa anomaly correlations in the northern hemisphere. The control (ctl_sat) is the baseline for comparison. The red curve is the supersaturation modifications experiment using relative humidity (supsat). The green curve is the supersaturation modifications experiment using specific humidity (enkf_q). There are minimal improvements in anomaly correlation scores (forecast skill) from using relative humidity (red). There are consistent improvements in anomaly correlation scores (forecast skill) from using specific humidity (green).

Development and Testing of CIMSS ATMS Hurricane Intensity Estimation Algorithm

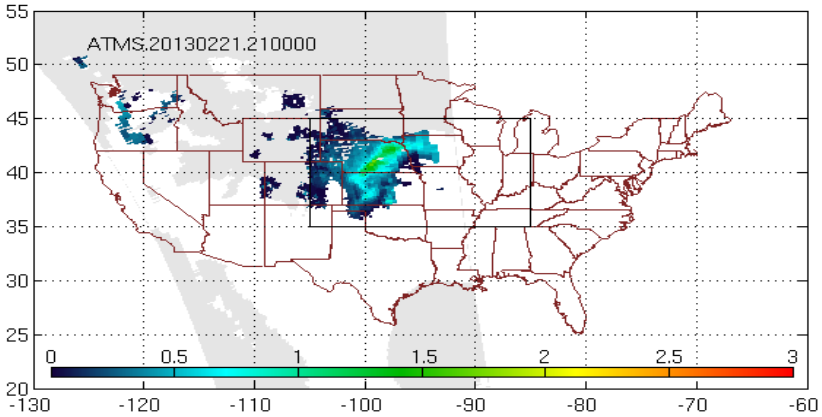


ATMS radiance contribution peaks, relative to an idealized TC warm core and eyewall

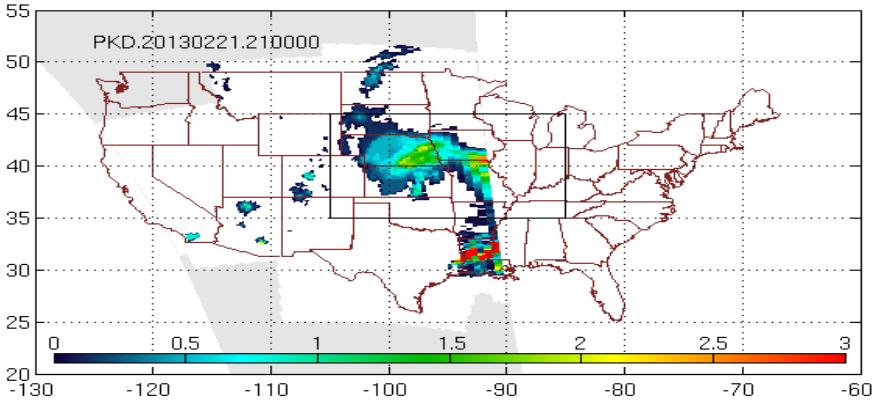
ATMS Derived Snowfall Rates to Support Weather Forecasting

Limited evaluation of the ATMS Snowfall Rate (SFR) algorithm against both Stage IV and in-situ data

(a) ATMS SFR



(b) Stage IV Hourly Precipitation Analyses



(a) ATMS SFR on February 21, 2013 at 20Z; (b) corresponding Stage IV hourly precipitation analyses data. Note that Stage IV includes both rainfall and snowfall estimates while ATMS SFR only includes snowfall rate retrievals. The grey areas in the ATMS SFR image are flagged for various reasons and indicate 'no retrievals', while they represent 'no data' in the Stage IV image.

- NASA has funded a ROSES proposal entitled 'Transition and Enhancement of ATMS Snowfall Rate Product and its Fusion with Weather Radar Data.' The review board's decision was partly based on the support from the JPSS PGRR Program in the development of the ATMS SFR product.
- PGRR Team has an ongoing project with Environment Canada on snowfall study.

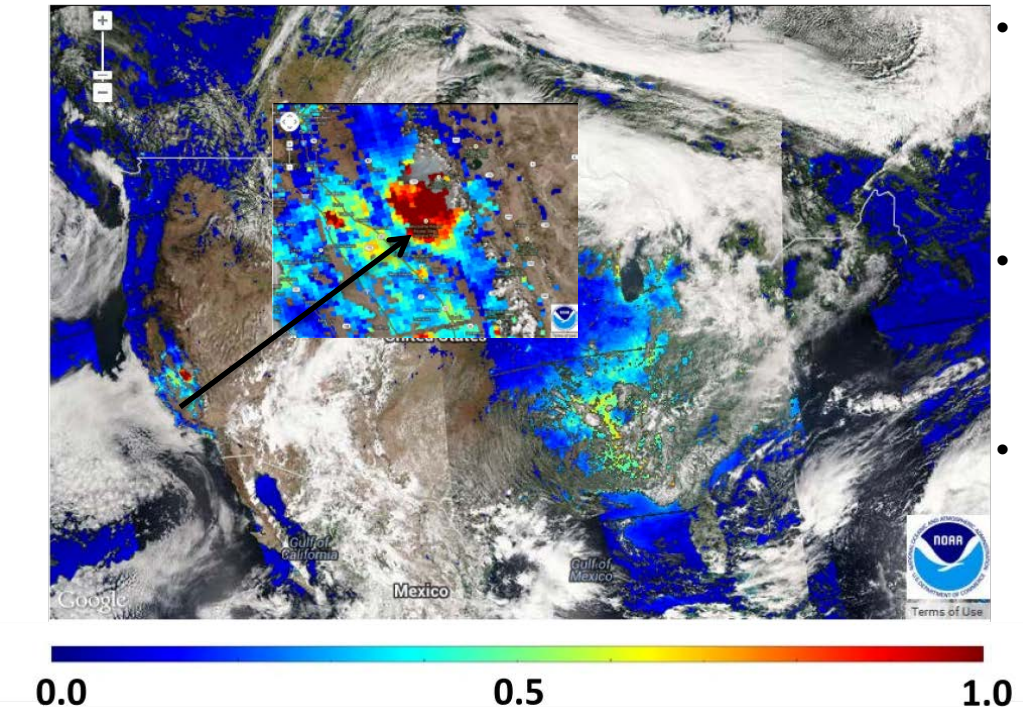
JPSS Science Seminars - Past

Date	Presenters	Topic
January 29, 2013	Carven Scott (NWS) Eric Stevens (GINA)	Use of SNPP Data to Support Alaska Missions
February 19, 2013	Gary Jedlovec (SPoRT)	Support to NWS WFOs and Alaska
March 27, 2013	Fuzhong Weng (STAR)	SNPP Data Assimilation into TC Models
April 30, 2013	Mike Folmer (NCEP)	SNPP Data use in NCEP HPC, OPC, and NHC
May 29, 2013	Jim Jung (JCSDA)	ATMS/CrIS Data Assimilation into Models
June 26, 2013	Kent Hughes (STAR)	CoastWatch/OceanWatch Proving Ground: VIIRS Ocean Color. User Engagement, Quality Assessment, Product Development, Data Distribution Portal, and Chesapeake Bay Ecosystem Modeling
July 22, 2013	Elisabeth Weisz Bill Smith (CIMSS)	SNPP Soundings in AK Region
August 19, 2013	Steve Miller (CIRA)	'Seeing the Light': Exploiting VIIRS Day/Night Band Low Light Visible Measurements in the Arctic
September 16, 2013	Chris Elvidge	VIIRS Nightfire and Nighttime Lights
October 21, 2013		No seminar due to Govt Shutdown
November 18, 2013	Mark DeMaria et al.	Joint JPSS-GOES-R Tropical Cyclone Satellite Data Assimilation Discussion
December 16, 2013	**Arunas Kuciauska and Jeff Hawkins**	**NexSat JPSS Demonstration Project NRL-MRY VIIRS Data and Cal-Val Work**

JPSS Science Seminars - Future

Date	Presenters	Topic
January 27, 2014	**Cara Wilson**	**Facilitating end-user access to VIIRS data**
February 24, 2014	**Walter Wolf**	**Uniform Multi-Sensor Algorithms for Consistent Products**
March 17, 2014	**Alex Gilerson**	**Development of Neural Network algorithms for retrieval of chlorophyll-a in the Chesapeake Bay and other coastal waters based on JPSS-VIIRS bands**
April 21, 2014	**Active Fire Team**	**Joint JPSS-GOES-R Fire Products Supporting 2013 Fire Outbreaks**
May 19, 2014	**Amy Huff** **Shobha Kondragunta**	**VIIRS Aerosol Products for Air Quality Applications**
June 16, 2014		
July 21, 2014		
August 18, 2014		
September 15, 2014		
October 20, 2014	**SPORT, Mike Pavolonis**	**Joint JPSS/GOES-R Low Cloud and Fog**
November 17, 2014		
December 15, 2014		

SNPP VIIRS Aerosol Science and User Workshop



- STAR held a two-day Suomi NPP aerosol science and operational user workshop on November 21-22, 2013 that was attended by 65 participants from NASA, NWS, NRL, EPA, state and local air quality forecasters, and different universities.
- Goal of the workshop was to present to the science and operational users the status of VIIRS aerosol products and facilitate the operational evaluation.
- Conducted hands-on case study analysis of VIIRS aerosol products and did live demos of various visualization tools developed by STAR.

•Users requested reprocessing capabilities, repackaging of data to meet data assimilation needs, and distribute tools developed by STAR

Figure above shows aerosol optical thickness for September 9, 2013. High values are due to smoke from Rim fire in California.

Courtesy of Kondragunta (STAR), Laszlo (STAR), Zhang (IMSG), Liu (IMSG), and Huang (IMSG)

Sponsored by the NOAA JPSS Office.

Upcoming Conferences/Workshops

- **AMS Annual Conference (2-6 Feb 2014, Atlanta GA)**
  - "Extreme Weather—Climate and the Built Environment: New Perspectives Opportunities, and Tools."
  - Goldberg, Sjoberg, Shontz and PGRR Projects have oral/poster presentations
- **Satellite Science Week (10-14 Mar 2014, Virtual)**
  - Meeting Topic Areas
    - Numerical Weather Prediction/Data Assimilation
    - Exploitation of Satellites for Data Sparse Regions
    - Hydrology & Precipitation/QPE
    - High Impact Weather
    - Terrestrial and Ocean Surface
    - Atmospheric Structure and Composition
- **Satellite Proving Ground/Training Meeting (2-5 Jun 2014, Kansas City MO)**
  - Meeting Objectives
    - Review GOES-R/JPSS program status (including PG) and discuss areas of synergy
    - Explain and clarify Path(s) to Operations (including NWS Operations PG) (Mike/Carven to write, talk w/ Brian re: scope concern)
    - Review current and discuss future PG training needs (Wendy, Tony discuss and report back, Nov 6-7 Satellite mtg...)
    - Highlight specific Proving Ground activities through presentations by WFO and National Centers SOOs/forecasters, and Satellite Liaisons
    - Explain AWIPS and data delivery and utilization strategies
    - Evaluate effectiveness of communicating PG activities (seminars, articles, conference participation)