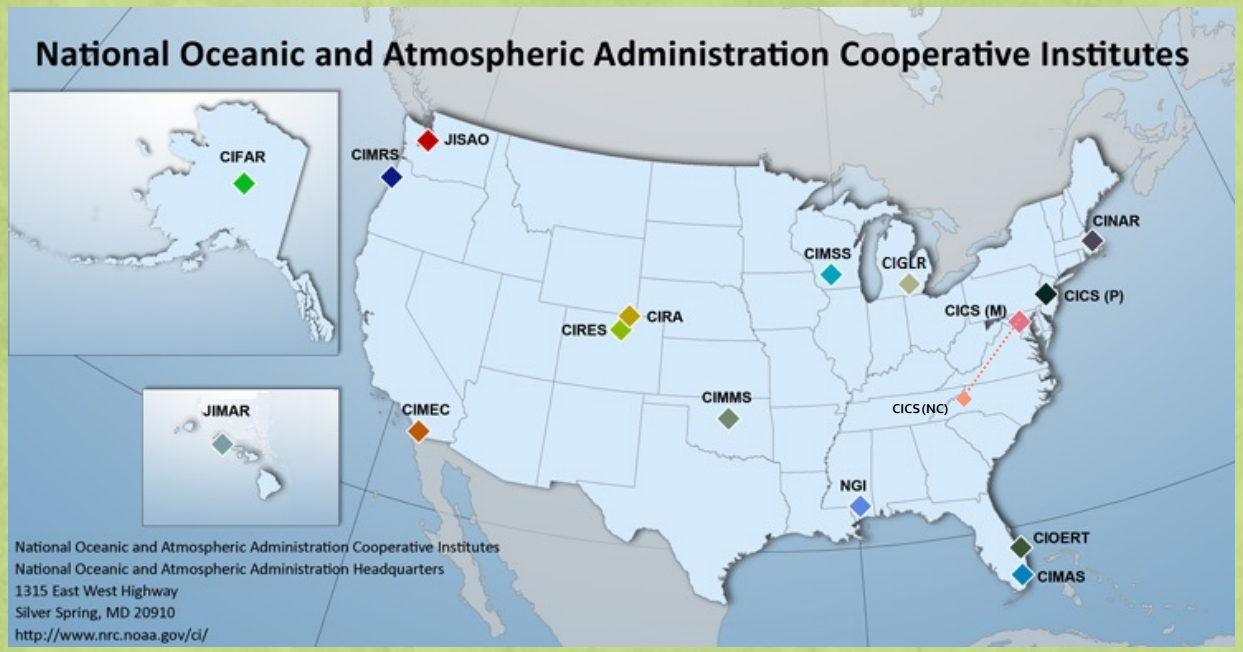
An Update from the Satellite Climate Studies Branch (SCSB)

Ralph Ferraro
Chief, Satellite Climate Studies Branch
NOAA/NESDIS/STAR/CoRP

CoRP and Federal Presence at CI's



Why?

- Promotes closer scientific engagement
- Leverages expertise of both groups
- Multidisciplinary problem solving
- Helps promote outreach
- Shapes NOAA's next generation of scientists!

Our SCSB Family

NOAA Federal Employees

Ralph Ferraro
Satellite Hydrology

Chris Brown
Ocean Biology

Huan Meng
Snowfall/JPSS

Scott Rudlosky
Lightning/GOES-R

Tom Smith
Climate/Time Series

Additional "Family" Members

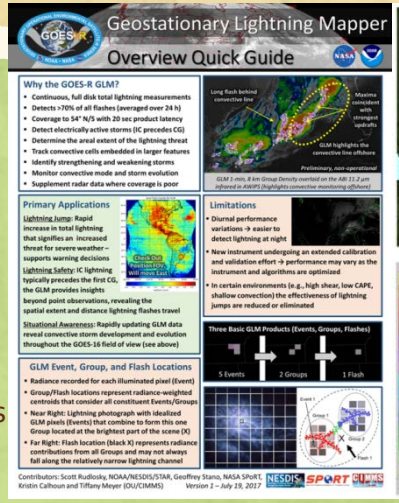
Deb Baker
Administration
CICS-MD

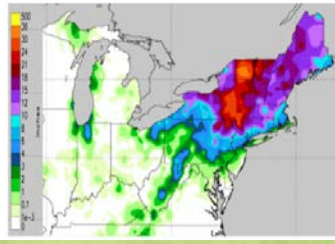
Ama Ba
NOAA/NWS

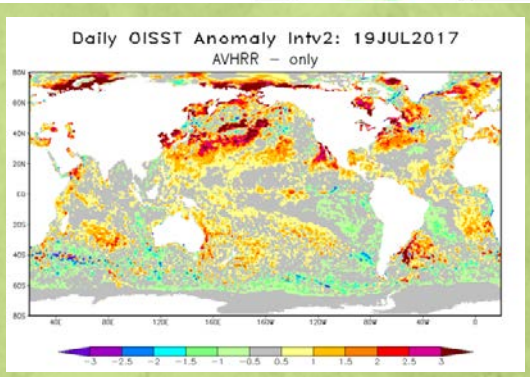
NRAP (1-year – completed 9/1/17)
CICS Proving Ground

SCSB Accomplishments Past Year – Many with our CICS Partners! (1/2)

- **GOES-16**
  - Launched on Nov. 19, 2016 ; new sensors – ABI and GLM
  - Becomes the "east" satellite at 75.2 W by Jan 2017 (replaces GOES-13)
  - Rudlosky + CICS heavily involved with GLM check-out, cal/val, new products
- **JPSS/POES**
  - JPSS-1 launch upcoming in a few days – Nov. 10, 2017
  - JAXA GCOM-W1 AMSR-2 used operationally at NESDIS
  - S-NPP, N-18, N-19, MOA, MOB, DMSP F-17, F-18 – all used in our product suites
  - Meng, Ferraro + CICS heavily involved with several activities
    - SFR, GCOM products, MiRS, blended products
- **Climate**
  - AMSU Hydrological CDR's – Ferraro, Meng, Smith + NCEI
  - Smith + CICS-NC - Developing improvements in NOAA satellite and in-situ blended SST
  - Smith + CICS-Consortium (SDSU) - Pursuing improvements in S2S precipitation forecasts
- **Ecosystems**
  - Brown - Developing system to automatically identify and count sea nettle jellyfish in Chesapeake Bay that will validate model guidance of sea nettle presence
  - Brown + CICS - Assess skill of assimilating JPSS VIIRS SST into NOAA's Chesapeake Bay Operational Forecast System

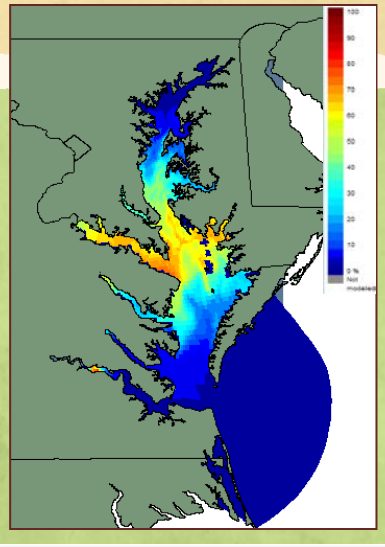


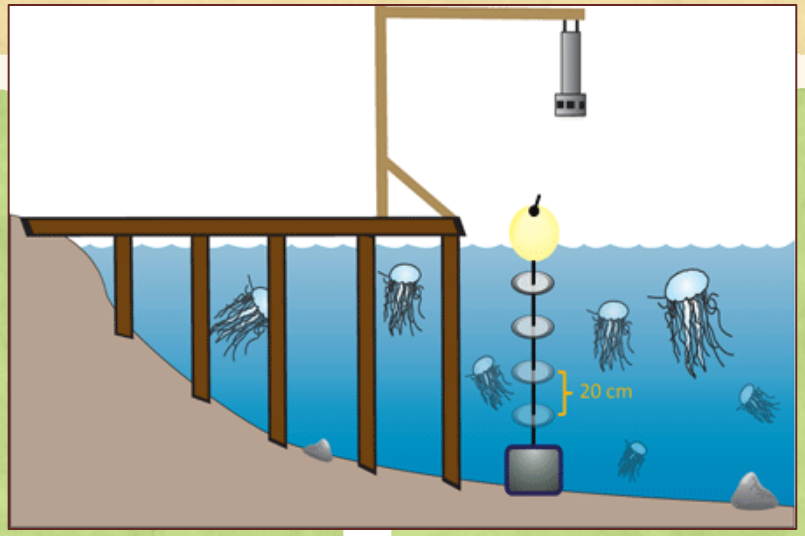




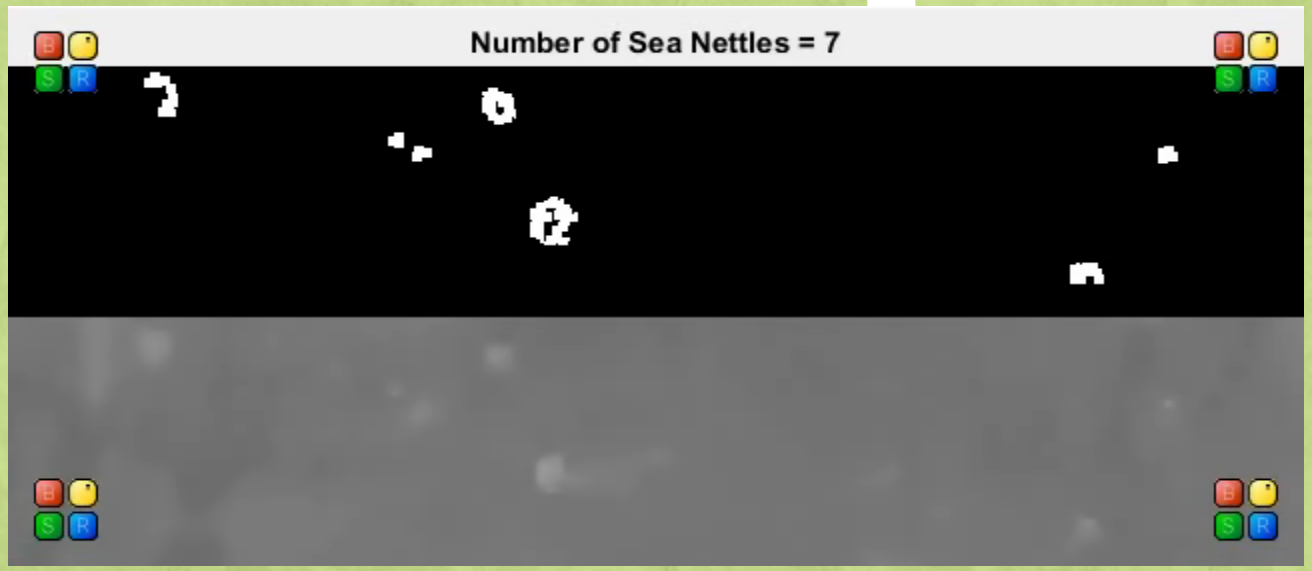
Unique Example – Joint SCSB and CICS Activity
Verifying Sea Nettle Predictions Using the JellyCam

Likelihood Of Presence Prediction





JellyCam Schematic



Automated Detection & Counting System

Chris Brown, SCSB

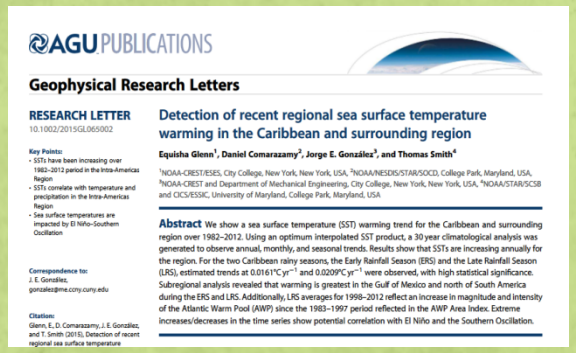
Deepika Regani, UMD EE M.S. student

SCSB Accomplishments Past Year – Many with our CICS Partners! (2/2)

- Satellite Proving Ground
  - Now functioning a full capability!

- Partnerships
  - Cooperative Institutes/Consortium
    - CIRA Visitor – Veljko Petkovic
    - CREST mentorships (CCNY, SDSU)
    - Autosnow reprocessing – Peter Romanov (CCNY)
    - CDR's – Olivier Prat (CICS-NC)
  - External Partners (domestic)
    - NASA/Global Precipitation Measurement (GPM) Mission
    - NASA/Geostationary Lightning Mapper (GLM)
  - External Partners (international)
    - WMO
    - JAXA – GCOM-W1 AMSR-2
    - EUMETSAT

- Recognition
  - NOAA Awards – Smith, NOAA EPP Mentorship Award
  - NESDIS Awards - Smith



AGU PUBLICATIONS

Geophysical Research Letters

RESEARCH LETTER

10.1002/2015GL065002

Detection of recent regional sea surface temperature warming in the Caribbean and surrounding region

Equisha Glenn[1], Daniel Comarazamy[2], Jorge E. González[3], and Thomas Smith[4]

[1]NOAA-CREST/ESES, City College, New York, New York, USA, [2]NOAA/NESDIS/STAR/SOCD, College Park, Maryland, USA, [3]NOAA-CREST and Department of Mechanical Engineering, City College, New York, New York, USA, [4]NOAA/STAR/SCSB and CICS/ESSIC, University of Maryland, College Park, Maryland, USA

Key Points:
- SSTs have been increasing over 1982–2012 period in the Intra-Americas Region
- SSTs correlate with temperature and precipitation in the Intra-Americas Region
- Sea surface temperatures are impacted by El Niño–Southern Oscillation

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Citation:
Glenn, E., D. Comarazamy, J. E. González, and T. Smith (2015), Detection of recent regional sea surface temperature

Abstract We show a sea surface temperature (SST) warming trend for the Caribbean and surrounding region over 1982–2012. Using an optimum interpolated SST product, a 30 year climatological analysis was generated to observe annual, monthly, and seasonal trends. Results show that SSTs are increasing annually for the region. For the two Caribbean rainy seasons, the Early Rainfall Season (ERS) and the Late Rainfall Season (LRS), estimated trends at 0.016°C yr^{-1} and 0.020°C yr^{-1} were observed, with high statistical significance. Subregional analysis revealed that warming is greatest in the Gulf of Mexico and north of South America during the ERS and LRS. Additionally, LRS averages for 1998–2012 reflect an increase in magnitude and intensity of the Atlantic Warm Pool (AWP) since the 1983–1997 period reflected in the AWP Area Index. Extreme increases/decreases in the time series show potential correlation with El Niño and the Southern Oscillation.

FY18 - Emerging Opportunities and SCSB Priorities

- GOES-R & JPSS-1
  - Exploit ABI and GLM to learn new things!
  - Sensor and product checkout
  - Enterprise solutions – GOES, JPSS and in-situ data fusion
- CICS-MD/SCSB Satellite Proving Ground/Training Center (PGTC)
  - Continue to build the capabilities
  - Enhance customer base
  - Use on a regular basis – training, seminars, weather discussions, etc.
- NOAA's National Water Initiative
  - Infuse satellite products into the National Water Model
    - Land surface forcings
    - Precipitation, including snowfall
  - Tailor AWIPS products for National Water Center use
- Satellite time series
  - Reprocessing
  - Exploitation of CDR's for Monitoring, assessments, seasonal prediction, scientific studies (water balance, etc.)