

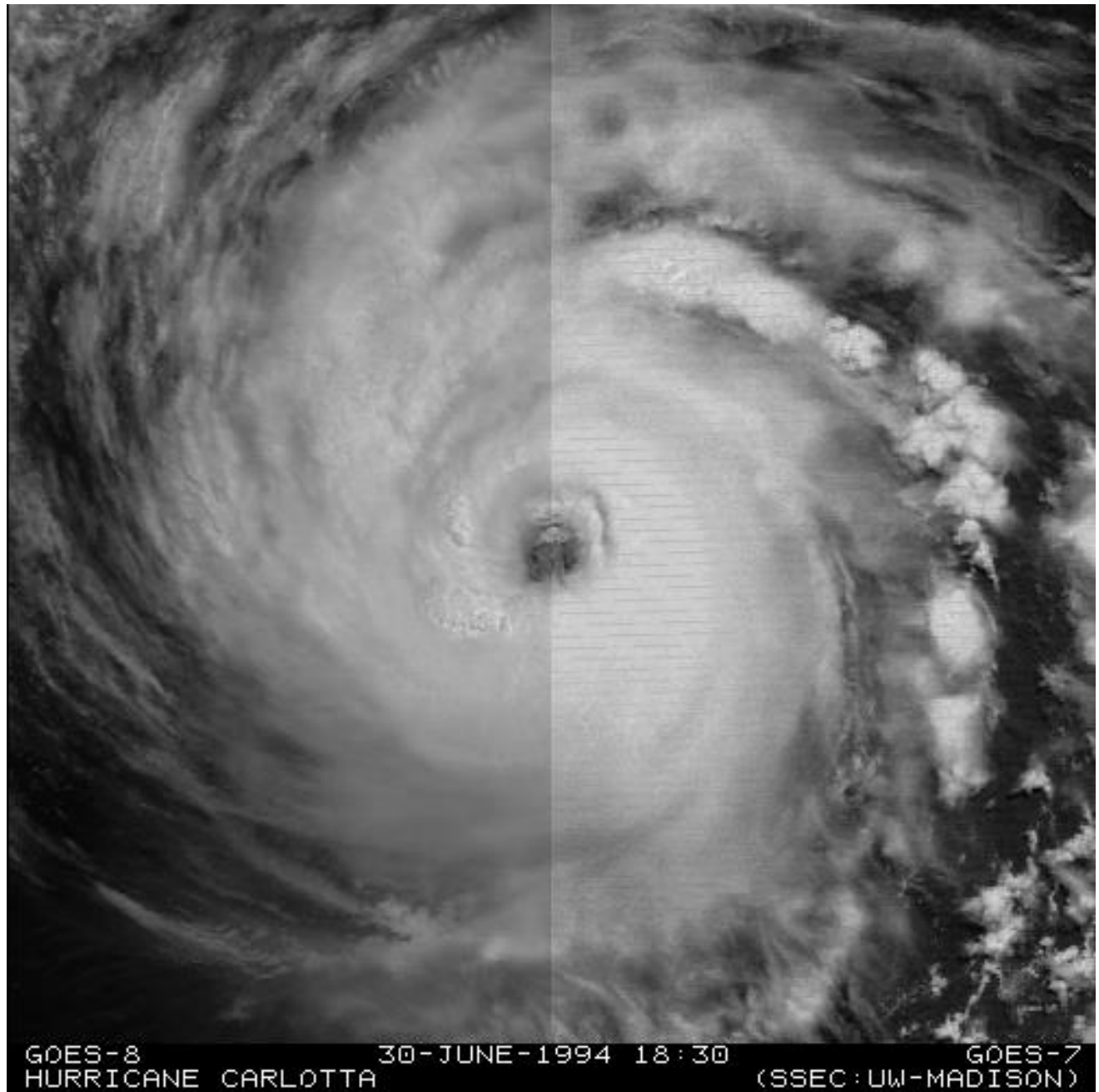
History of Geostationary Sea Surface Temperatures

Eileen Maturi

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Jon Mittaz, Prabhat Koner, Ziaofang Zhu,
Robert Grumbine, Gang Liu

NWS launched the GOES Series

- Cloud detection
- Improved weather forecasting
- Monitoring of the oceans was never considered



GOES-8

30-JUNE-1994 18:30

GOES-7

HURRICANE CARLOTTA

(SSEC:UW-MADISON)

GOES-8

Sea Surface Temperatures

There was a discussion with the following scientists and a plan was devised to generate SSTs

- Eileen Maturi-requested this capability
- Paul Menzel- agreed-supplied the Graduate Student to develop the algorithm (Fred Wu)
- Dick Reynolds- NWS user-presented the format and frequency of data required
- Kent Hughes- CoastWatch user requested CW areas
- Don Gray-funded the effort

GOES SST Validation Working Group

- Eileen Maturi established a working group for evaluating the GOES-SST product for operational use.
- 6-8 Months of GOES-SST data was generated
- Both National and international scientists were asked to evaluate the GOES-SST data and present their results at a Workshop

GOES-SST Validation Workshop

- The first GOES-SST Validation Workshop was held on 1-2 November 1999 in Beaufort, North Carolina, to evaluate the GOES-SST algorithms based on buoy matchups for operational readiness.
- The workshop was convened to present the findings of the GOES-SST validation working group and determine whether the GOES-SST algorithms for GOES-8 and -10 are ready for operational implementation.
- Fifteen scientists attended the workshop. There were presentations from eight national organizations along with England and France.

GOES-SST Validation Workshop

- A summary of the workshop presentations and recommendations are provided with an update of the current status of the NESDIS-SST algorithm (see references).
- Directions for future research would pursue the use of a physical retrieval methodology, which would employ a forward model of atmospheric radiative transfer.

Operational GOES-SSTS

December 2000

- GOES-8 (GOES-East) and GOES-10 (GOES-WEST) SSTs were generated. GOES-9 failed
- The following binary data files were generated at NOAA/NESDIS on a routine basis:
 - 3-hourly SST imagery covering the region between 60°N–60°S and 60°W–180°
 - 1-hourly SST regional imagery including the
 - CoastWatch Regions: Northeast, Southeast, Gulf of Mexico, Great Lakes, West Coast, Alaska, Hawaii, and the Caribbean

Assimilation Workshop

Andy Harris and Eileen Maturi

- Directed by Marie Colton to organize and run an assimilation workshop
 - Experts nationally and internationally were invited
 - Chris Merchant presented GOES-8 SST with a better validation than our operation GOES-8 SST
 - Chris was employed to improve our algorithms

Key Personnel

- Andy Harris
- Chris Merchant
- Jon Mittaz
- Prabhat Koner

Algorithms

Andy Harris Talk

- The initial geostationary sea surface temperature algorithms were developed at CIMSS by Dr. Xiangqian (Fred) Wu and Dr. Paul Menzel in the late 1990's and later transferred to the Office of Research and Applications (now STAR) for validation and operational implementation.
- Since this time, the algorithms have undergone many improvements and accuracies now approach those of AVHRR. Sea surface temperature operational products are being generated from NOAA GOES-9, 10 and 12.
- The latest algorithm approach will also be applied to data from foreign geostationary satellites to provide near-global coverage of sea surface temperatures. These will include the European Meteosat Second Generation (MSG) series of satellites, the Japanese MTSAT-1R, and the Chinese FY-2C.
- The algorithms will also be applied in retrospect to data from the GOES-Imager archive.

ALL SENSORS ARE NOT EQUAL

Jonathan Mittaz talk on Calibration

- IMPORTANT TO UNDERSTAND WHAT THE CAPABILITIES of the sensor and the satellite
 - What is the current state of our knowledge base (sensor systems/data streams)/
- Was there a consistent strategy to manage the life of the satellite and the sensor
 - Some things you can improve and some things you cannot
 - Sensor and calibration platform knowledge
 - Can actual improvements be made?
 - Platform Navigation

What are the Important Parameters
described by the GEOS?

Chelle Gentemann and Gary Wick

– How good is your SST as a function of Time?

User Perspective

Robert Grumbine and Gang Liu

- How can we use this data to improve the environmental monitoring of the oceans?

References

- <http://journals.ametsoc.org/doi/pdf/10.1175/1520-0477%282001%29082%3C0473%3AMSGSVW%3E2.3.CO%3B2> (GOES-SST Validation Workshop)
- <http://journals.ametsoc.org/doi/abs/10.1175/2008BAMS2528.1> (NOAA's Sea Surface Temperature Products From Operational Geostationary Satellites)
- <http://journals.ametsoc.org/doi/abs/10.1175/2008JTECHO596.1> (*Sea Surface Temperature Estimation from the Geostationary Operational Environmental Satellite-12 (GOES-12)*)
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