SST Products from GOES-R and JPSS: Algorithms, Cal/Val, Monitoring

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Major SST Sub-systems

NESDIS/STAR leads GOES-R and JPSS SST
Four major sub-systems have been developed

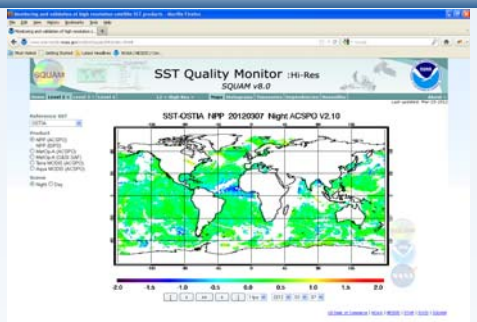
- ACSPO - Advanced Clear-Sky Processor for Oceans: End-to-end SST Retrieval system
- SQUAM - http://www.star.nesdis.noaa.gov/sod/sst/squam/ Near-real time online SST Quality Monitor
- MICROS - http://www.star.nesdis.noaa.gov/sod/sst/micros/ Near-real time online Monitoring of IR Clear-sky Radiances over Oceans for SST
- *i*Quam – http://www.star.nesdis.noaa.gov/sod/sst/iquam/ Near-real time online in situ Quality Monitor

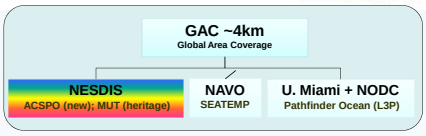
ACSPO

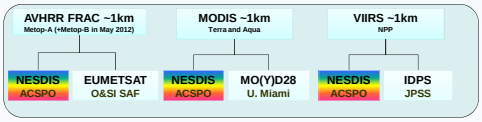
Major specifics of ACSPO

- Primary Product: Clear Sky Ocean Radiances
- Derived Products: SST (IR) and Aerosols (Solar bands)
- Consistent uniform processing of GEO and LEO
- Using fast Community Radiative Transfer Model (CRTM) in conjunction with first guess SST (Reynolds) and upper air (GFS) fields, to simulate TOA radiances for the use in
  - RTM-based cloud screening
  - RTM-based SST retrievals (hybrid SST Algorithm)
  - Val of satellite radiances, CRTM, first-guess input fields

SQUAM

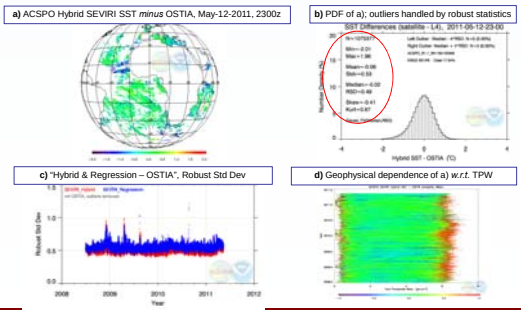




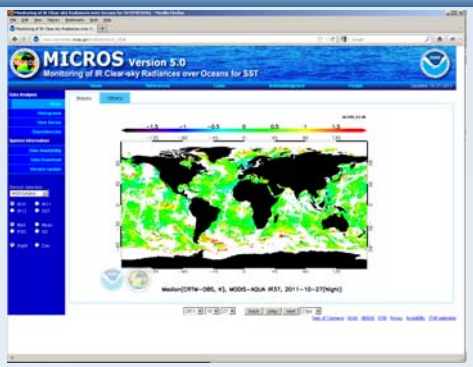


Major functions of SQUAM

- Monitor various SST products: L2 (LEO, GEO), L3, L4
- Analyze deviations $\Delta T_S = T_S - Ref$. Ref = L4, *in situ* (*i*Quam). Major premise: PDFs of ΔT_S are near-Gaussian
- Global Maps, Histograms, Time Series, Dependencies, Hovmöller plots of ΔT_S published ~24hr of data availability



MICROS



Major function of MICROS

- Monitor M (CRTM) minus O (Sensor) Biases, for stability & cross-platform consistency, to
  - Assist with resolving SST Anomalies
  - Ensure sensor stability & cross-platform consistency
  - Validate CRTM and first-guess input fields

*i*Quam

Major functions of *i*Quam

- Perform community consensus QC on *in situ* SST data
- Display QC'ed data on the web, in near real time
- Serve QC'ed data to outside users, and to SQUAM

Future work

- ❑ **Continue running and developing ACSPO, SQUAM, MICROS, *i*Quam**
- ❑ **Consolidate Polar-Geo ACSPO codes into one flexible system, modularize, and optimize**
- ❑ **SQUAM: Complete and Promote GEO module (SEVIRI, GOES, MTSAT) to main page**
- ❑ **MICROS: Complete and Promote GEO module (SEVIRI, GOES, MTSAT) to main page**

Acknowledgments & Disclaimer

This work was supported by GOES-R, JPSS, and NOAA PSDIS and ORS Funding. The views and findings are those of the authors and should not be construed as an official NOAA or US Government position, policy, or decision.

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