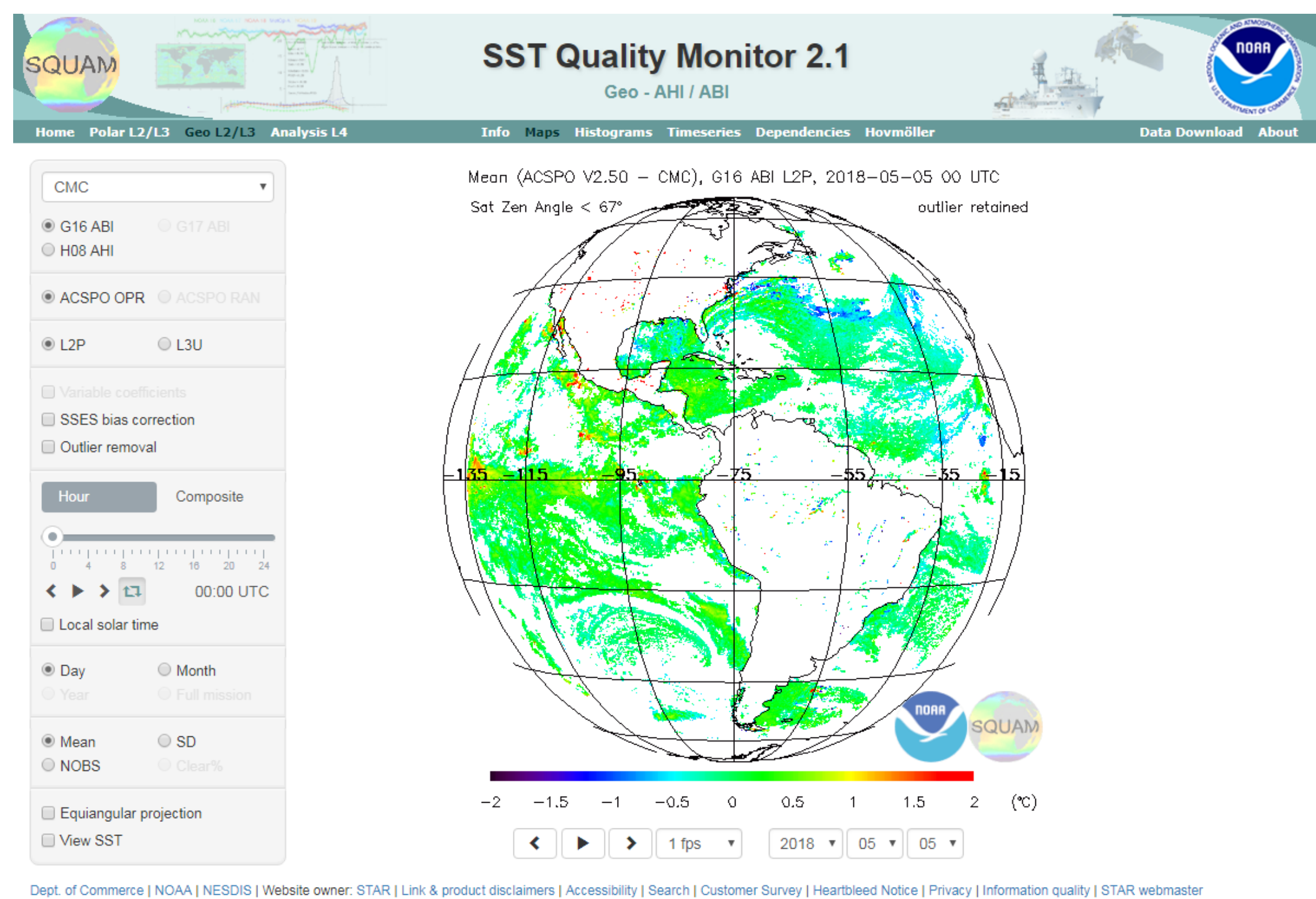


Update to SST Quality Monitor (SQUAM)



Kai He^{1,2}, Xinjia Zhou^{1,3}, Sasha Ignatov¹, Olafur Jonasson^{1,2}

1. NOAA/NESDIS/STAR 2. Global Science and Technology, Inc 3. Colorado State University/CIRA



SQUAM v2.1: <https://www.star.nesdis.noaa.gov/sod/sst/squam/>

SQUAM Background

- V1.0 was released in 2009
- SQUAM analyzes bias of global satellite L2/L3 SSTs w.r.t. 2 types of reference SSTs
 - (1) *in situ* (from the NOAA iQuam system); and (2) global gap-free L4 SST analyses.
 - L4 analyses offer global coverage ("instantaneous look") and greater uniformity in space & time
 - The global distributions of the ΔT s are expected to be centered at ~ 0 and close to Gaussian
- Plots: Maps, Histograms, Time Series, Dependencies, and Hovmöller Diagrams
- SQUAM is a GHRSSST resource for near real-time monitoring and validation of major global satellite & blended SST products produced by the SST community
- Updated to V2.0 in 2017
 - Focus on NOAA & partners products (can add other products by data users/ producers request)
 - Polar page: Selection of ACSP0 VIIRS, ACSP0 AVHRR GAC, and AVHRR FRAC (ACSP0 & OSI SAF)
 - New Geo page created: H08 AHI; option to display vs. GMT and Local Time
 - L4 page: reduced list of products (NOAA partners; most informative for SQUAM analyses)
 - New features: SSES bias correction, time aggregation, etc.
 - Interface redesign

What's new in v2.1

- Replaced the ACSP0 development products with operational products
- NOAA-20 provisioned (pending ACSP0 2.50 operational deployment)
- Added ACSP0 G16 ABI; G17 ABI provisioned (currently disabled)
- Full line of ACSP0 L3U provisioned (pending ACSP0 2.50 operational deployment)

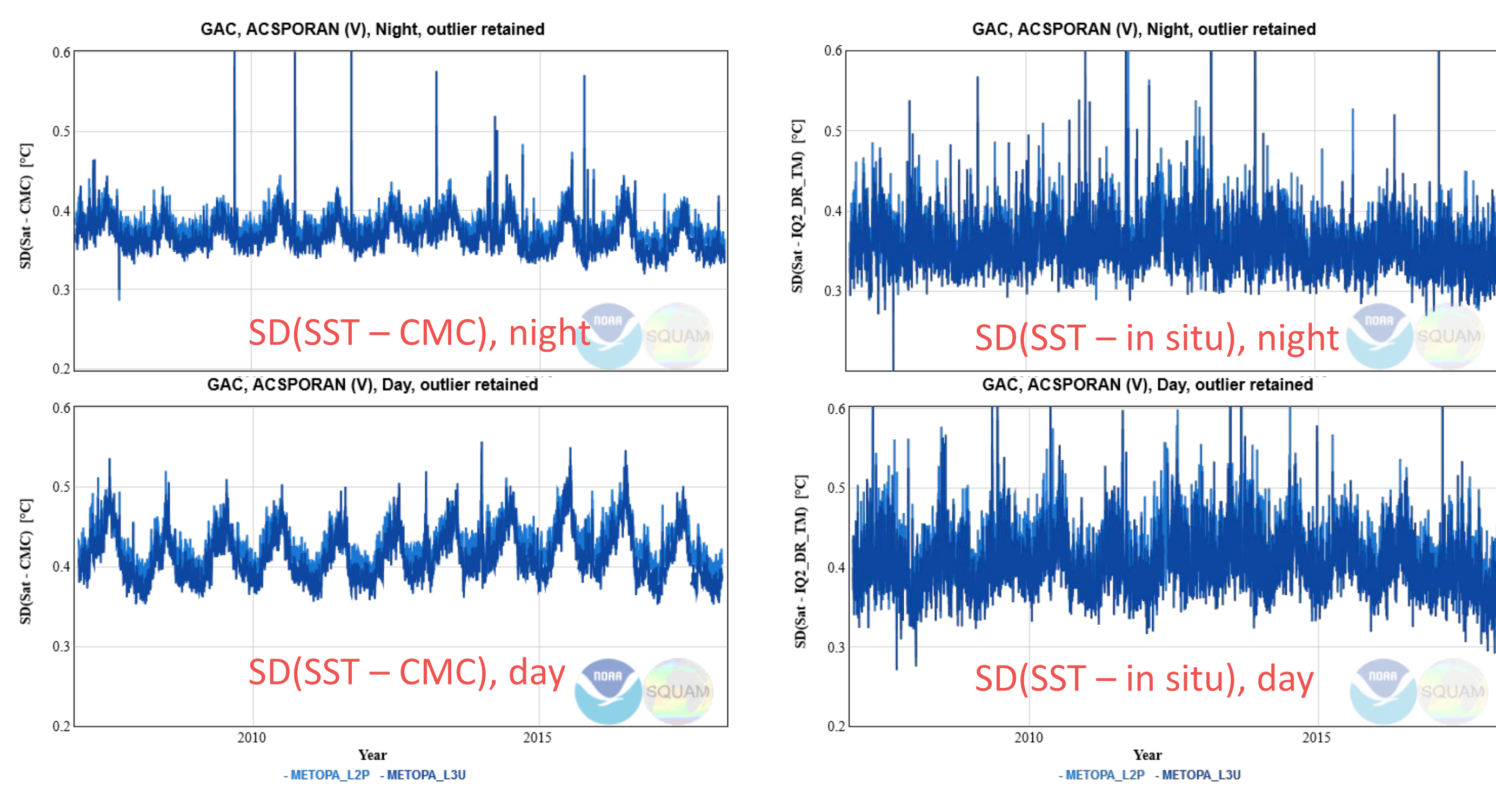
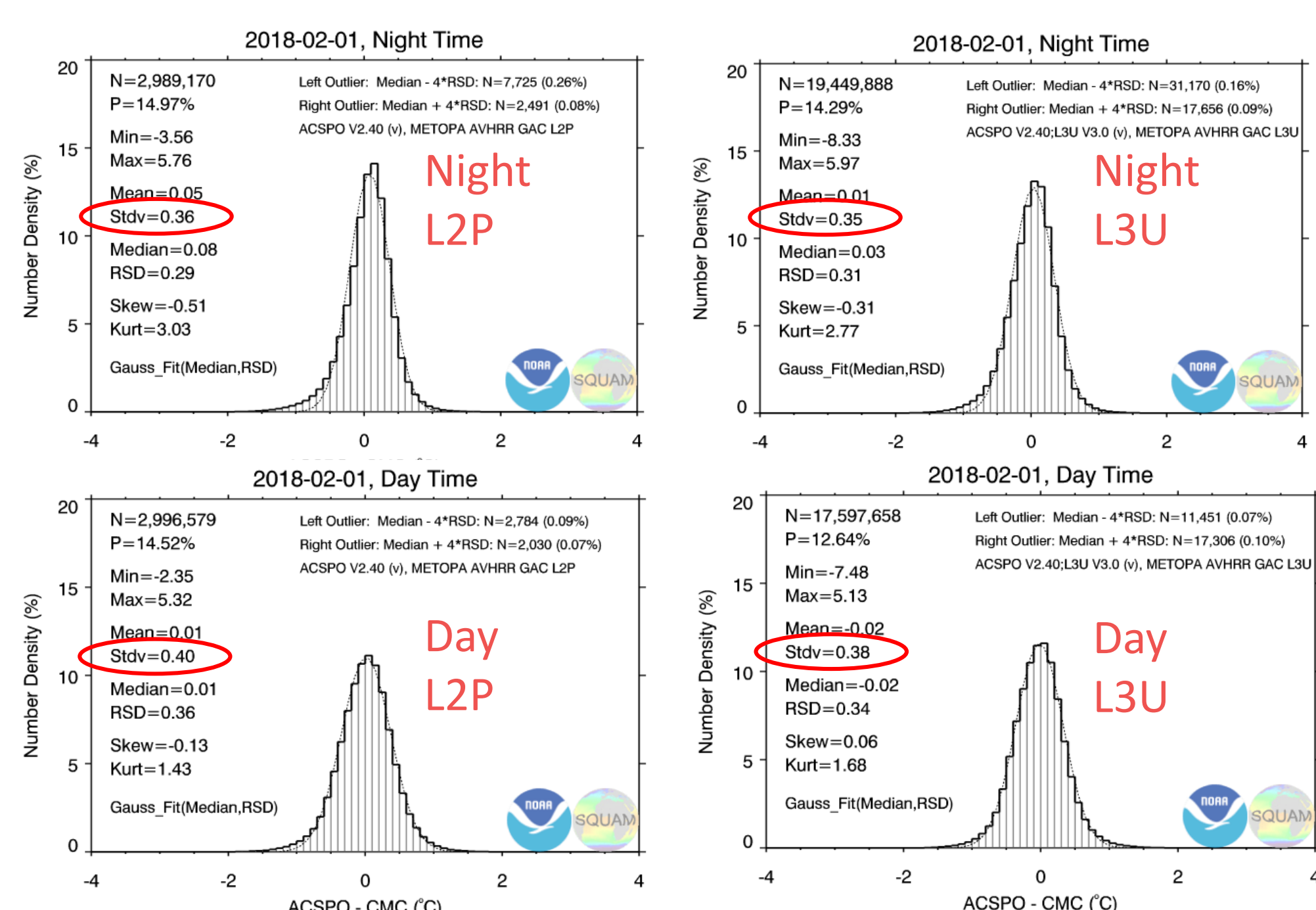
Structure (Newly added)

	Polar L2/L3	Geo L2/L3	Analysis L4
High Resolution	S-NPP VIIRS (N20 coming soon) ACSP0 L2P/L3U AVHRR FRAC ACSP0 L2P OSISAF L2P	H08 AHI ACSP0 L2P/L3U G16 ABI ACSP0 L2P/L3U	MUR (JPL)
Low Resolution	AVHRR GAC ACSP0 OPR L2P ACSP0 RAN L2P/L3U		CMC (Environment Canada) OSTIA (Met Office) OSTIA RAN (Met Office) GMPE (Met Office) Geo Polar Blended (NOAA) Reynolds (NOAA) GAMSSA (BoM)

Polar: GAC L2P vs. L3U

Comparison between Metop-A GAC L2P and L3U

- Global statistics are comparable between L2P and L3U

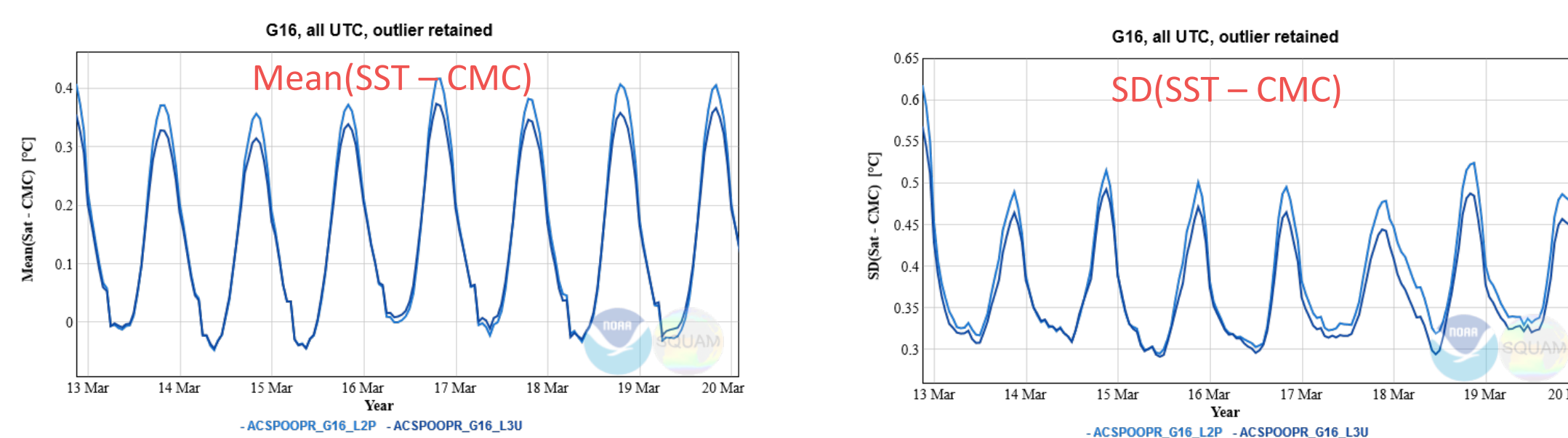


Geo: G16

- Operational product (ACSP0 2.50)
- L2P/3U
 - Subsampled to 1 image per hour
 - Planning to move to L2C/3C (hourly collated)
- UTC based (default)
 - For monitoring sensor performance
- Local solar time based
 - For scientific analysis, such as diurnal cycle effect

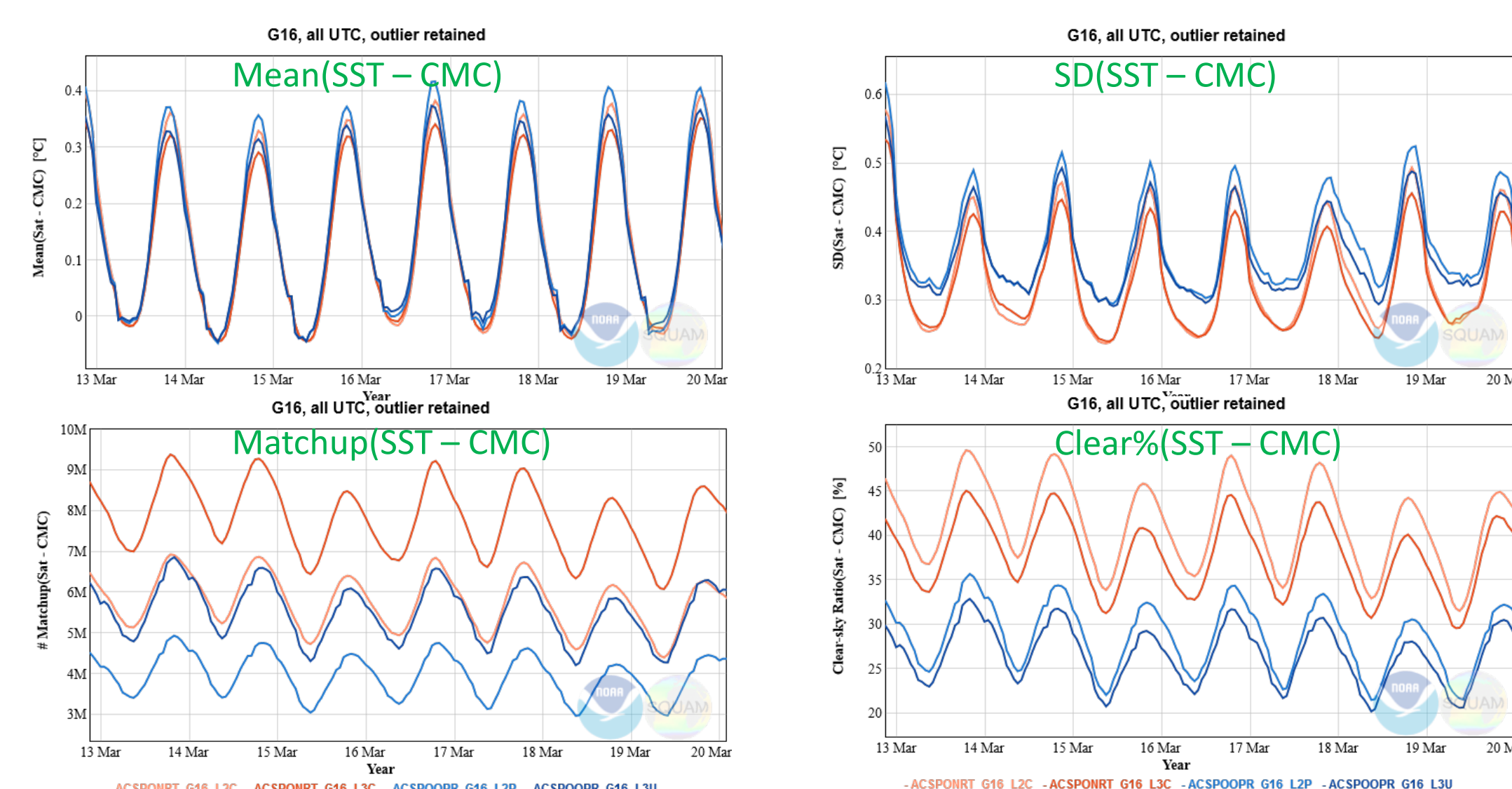
G16 ABI: L2P vs. L3U

- Mean and SD Statistics of (ABI SST - CMC) are comparable between L2P and L3U



G16 ABI: L2C & L3C

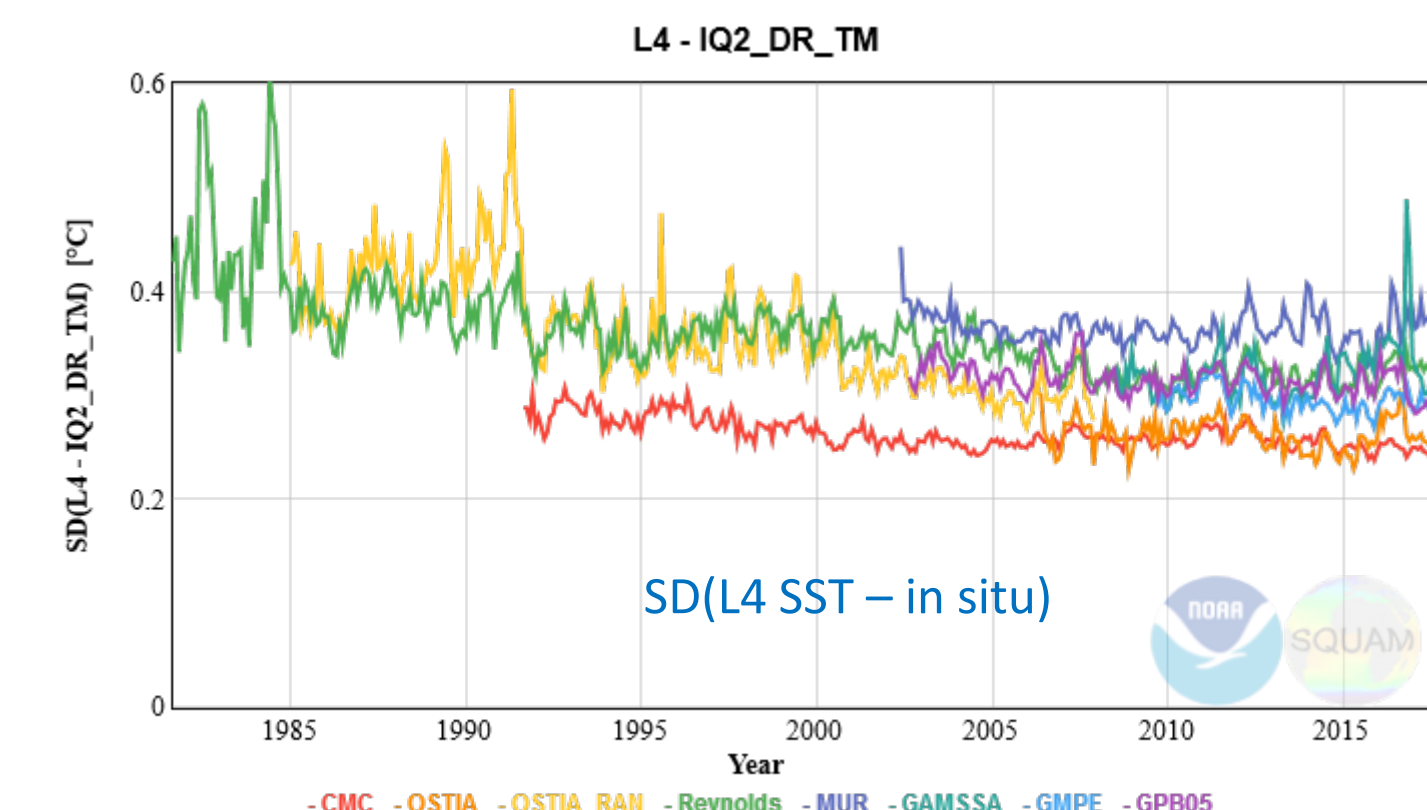
- SD reduced by up to $\sim 0.3K$ (in RMS sense) in L2C/3C
- NOBS and clear-sky ratio remarkably boosted ($\sim 2M$ more valid SSTs)



L4 Analyses

L4 SSTs: CMC, OSTIA, GMPE, Reynolds, GAMSSA, MUR, OSTIA RAN, GPB

- Added by Request of the NOAA Coral Reef Watch Team
- OSTIA Reanalysis (RAN): Jan 1985 - Dec 2007
- NOAA Geo-Polar Blended (GPB): Sep 2002 - present



Summary

- SQUAM v2.1 has been expanded to include several new products
 - ACSP0 G16 ABI
 - OSTIA RAN and GPB L4
 - A consistent line of L3U
 - G17 and N20 buttons provisioned
 - Only operational products are now displayed in SQUAM
 - Back-end processing has been rewritten and highly optimized
 - Data access page is added
- Future work
- Add N20 VIIRS and G17 ABI
 - Two ACSP0 lines: OPR + RAN
 - For ABI/AHI, switch from L2P/3U to L2/3C
 - Add Metop-C SST when launched in Sep 2018

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- The views, opinions, and findings in this report are those of the authors and should not be construed as an official NOAA or U.S. government position or policy

