Introduction to GSICS (GSICS 101)

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Disclaimer

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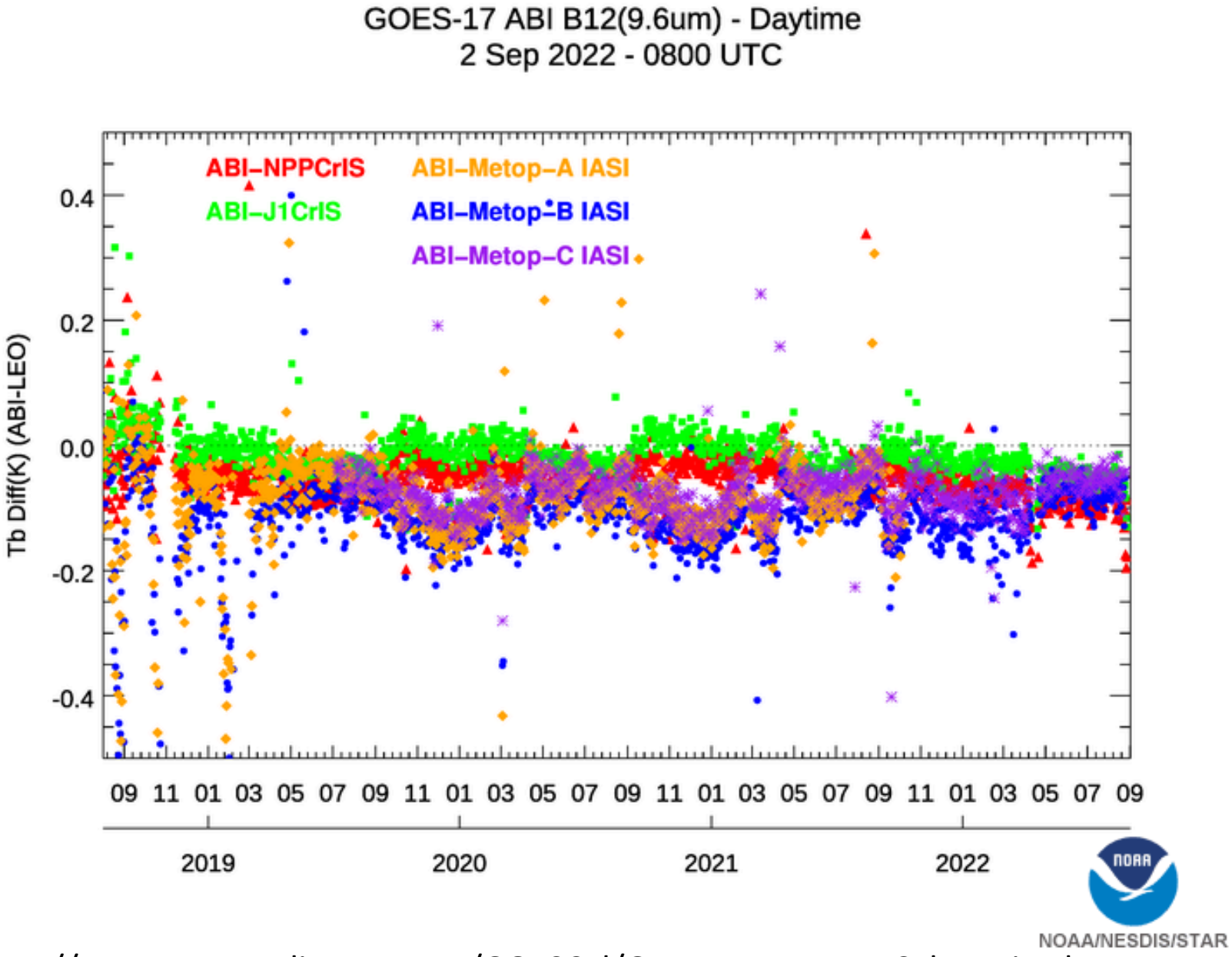
Talking Points

- GSICS Organization
  - GSICS Research Working Group (GRWG)
    - Annual and Monthly Meetings
    - Five groups – IR, MW, Vis/NIR, UV/Vis/NIR Spectrometer, Space Weather
  - GSIC Data Working Group (GDWG)
  - GSICS Processing and Research Centers (GPRCs) at each agency
  - GSICS Coordination Center (GCC) Wiki, Messages, Quarterly, Meetings
- GSICS Reference Instruments
  - Vis/NIR: MODIS and VIIRS
  - IR: AIRS, IASI and CrIS
  - MW: MW FCDR
  - UVN Spectrometers – CLARREO Pathfinder is coming (350 to 2300 nm)
  - TSIS-1 HSRS is recommended as the reference solar spectrum
  - Working with WMO OSCAR on Spectral Response Function Datasets
- GSICS Methods and Products
  - Simultaneous Nadir Overpass (SNO)
  - LEO under-flights of GEO (with or without Ray tracing)
  - Deep Convective Clouds (DCCs) as targets
  - Lunar views
  - Pseudo-Invariant Calibration Sites (PICS) not used yet to make products

Websites

- Annual Meeting for 2023
  - http://gsics.atmos.umd.edu/bin/view/Development/Gsicsannualmeeting2023
- WMO
  - https://gsics.wmo.int/en/welcome
  - https://gsics.wmo.int/en/objectives
  - https://gsics.wmo.int/en/structure
  - https://gsics.wmo.int/en/focal-points
  - https://gsics.wmo.int/en/product-services-and-technical-information
- GSICS Coordination Center
  - https://www.star.nesdis.noaa.gov/smcd/GCC/index.php
  - https://www.star.nesdis.noaa.gov/smcd/GCC/ProductCatalog.php
  - http://gsics.atmos.umd.edu/wiki/Home
  - http://gsics.atmos.umd.edu/bin/view/Development/MeetingsAndConferences
- GSICS Processing and Research Centers, one example
  - https://ds.data.jma.go.jp/mscweb/data/monitoring/calibration.html

Monitoring the GOES-17 Advanced Baseline Imager



NOAA uses GSICS inter-calibration methods to track the performance of the GOES ABI instruments. The figure to the left shows brightness temperature biases from daily matchup statistics for the 9.6 µm channel against five reference instrument, the S-NPP and NOAA-20 Cross-track Infrared Sounders (CrIS) and Metop-A, -B, and –C Infrared Atmospheric Sounding Interferometers (IASI). The bias are consistent at the 0.2 K level and show improved behavior over time.

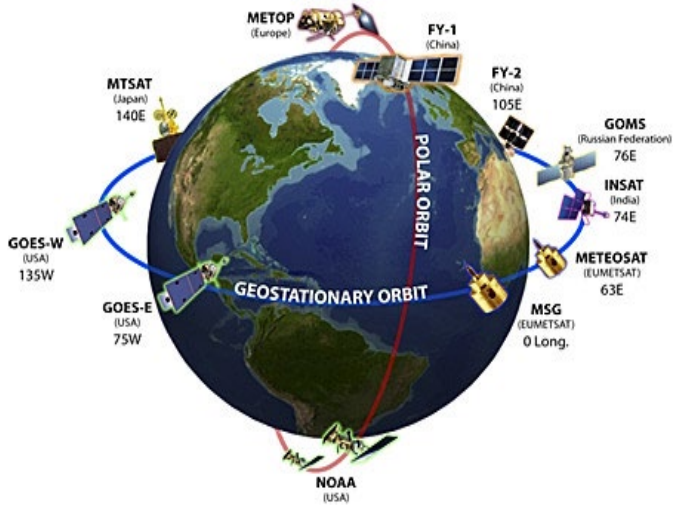
https://www.star.nesdis.noaa.gov/GOESCal/G17_ABI_IR_InterCal_static.php

GSICS Introduction http://gsics.wmo.int/

The Global Space Based Inter-calibration System (GSICS) is an international collaborative effort initiated in 2005 by WMO and CGMS to monitor, improve and harmonize the quality of observations from operational weather and environmental satellites of the Global Observing System (GOS).

This is achieved through a comprehensive calibration strategy which involves processes to

- Monitor instrument performances.
- Inter-calibrate operational satellite instruments.
- Tie measurements to absolute references and standards.
- Improve consistency between instruments.
- Reduce bias in Level 1 and 2 products.
- Provide traceability of measurements.
- Retrospectively re-calibrate archive data.
- Better specify future instruments.



GSICS delivers calibration products and corrections needed for accurately integrating data from multiple observing systems into products, applications and services.