



NOAA Sensor Science and Cross-Cutting Technology

Project Highlights

Science Support

- Integrated Cal/Val System (ICVS)
- Instrument Calibration & Validation for:
 - LEO Satellites
 - GOES-R series
 - MetOp
 - Radio Occultation
 - Non-NOAA Sensors
- Community Radiative Transfer Model (CRTM)

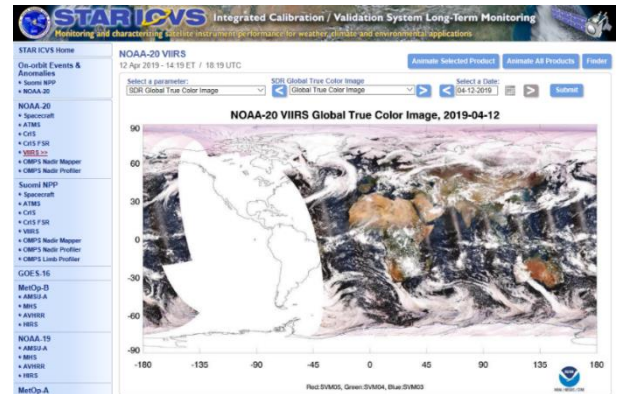
Program Support

- Systems Engineering
- Program Management
- Requirements Management
- Risk Management

GST Support for NOAA Sensors

GST supported NOAA's Center for Satellite Applications and Research (STAR) with scientific and programmatic services focused primarily on instrument calibration and validation of operational sensors from multiple Earth observation satellites. GST worked with STAR to ensure that NOAA's operational satellite sensor data were high quality and met product requirements and user needs. We accomplished this via calibration/validation, scientific/technical research on sensor performance, characterization, anomaly resolution, re-calibration, and independent product validation. GST also provided program management, systems engineering, and requirements management throughout multiple levels at STAR and across divisions and coordinated with science teams to transition remote sensing algorithms to NESDIS operations.

Science Support: Through near-real-time monitoring of satellite instrument performance, including sustainment of NOAA's Integrated Calibration and Validation System (ICVS), GST analyzed trends in the instrument itself and the quality of the satellite data as they were mapped onto Earth's surface. GST scientists transformed raw digital data received from satellites into meaningful environmental data images and products used by NOAA for everything from weather forecasting to monitoring fisheries.



GST scientists developed, tested, and implemented data algorithms and capabilities with partners in the Algorithm Management Project (AMP), the Suomi NPP Data Exploitation (NDE) project, and Office of Satellite and Product Operations (OSPO). GST supported the calibration/validation of emerging environmental sensing techniques such as radio occultation. Working with STAR's partners in the environmental remote sensing community, GST also provided support for the Community Radiative Transfer Model (CRTM) development and satellite data assimilation.

GST supported pre-launch assessment and subsequent on-orbit characterization of NOAA-20, NOAA-21, GOES-16, GOES-17, GOES-18, GOES-19, and JPSS-3 & 4 as NOAA evolved into the operational JPSS and GOES-R era. GST personnel have been the first to identify sensor anomalies and provide the critical assessments that enable timely mitigation. GST defined and executed systems engineering processes for formulating, developing, testing, and delivering new and modified data products to operations. The result of GST's contributions is the operational viability of NOAA's satellite data, which supports NOAA's overarching mission to the nation. GST modernized legacy code after each launch to incorporate advancements and transferred software for cloud-based deployment through OSPO and via cloud-based IDPS.

Program Support: GST provided programmatic expertise to the STAR organization. GST supported the STAR External Review conducted in May 2023 and implemented recommended improvements, including enhancements to the product prioritization process. GST's System Engineering team co-developed the STAR System Engineering Plan, CM Plan, and Risk Management Plan, and supported the risk process by managing updates to the STAR risk repository and facilitating review meetings. GST provided product life cycle management by supporting updates to the NESDIS IPL and to the NRDD. These efforts helped ensure that NESDIS management had full visibility into product requirements and prioritization, leading to better decision-making processes.