

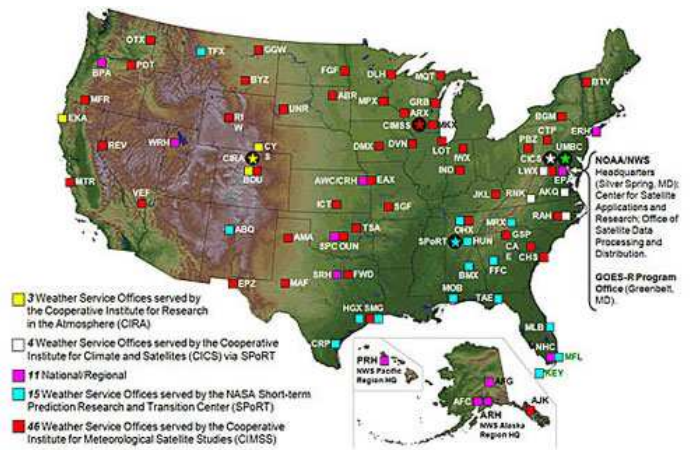


## The GOES-R Proving Ground

The Geostationary Operational Environmental Satellite R-Series (GOES-R) Proving Ground is a large-scale, sustained research to operations exercise between algorithm developers and operational meteorologists at National Weather Service (NWS) field offices across the country. The Proving Ground aims to demonstrate the expected capabilities of GOES-R prior to launch in order to maximize utilization on the first day of operations.

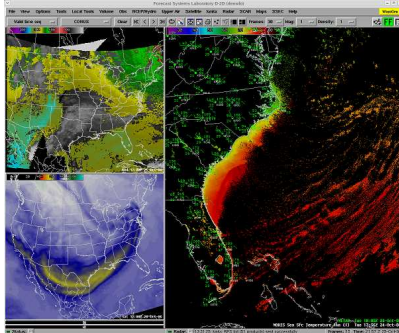
The objectives of the GOES-R Proving Ground are to employ current space-based resources and numerical weather prediction technologies to simulate anticipated GOES-R capabilities, develop an easy path for GOES-R products and techniques to reach the eyes of forecasters in the field, and ensure a consistent and coherent conversation between the research and operational sectors.

Training, user evaluation, and user feedback are thus paramount to the success of the GOES-R Proving Ground. The proving ground concept allows product developers and trainers at the Cooperative Institute for Meteorological Satellite Studies (CIMSS), the Cooperative Institute for Research in the Atmosphere (CIRA), and the Short-term Prediction Research and Transition center (SPoRT) a unique experience to leverage and extend their existing connections with the field to provide early and frequent attempts to meet forecaster expectations for future satellite imagery and products.



Aspects of the GOES-R Proving Ground include:

**AWIPS.** The Advanced Weather Interactive Processing System (AWIPS) is the current data storage structure and graphical front-end for NWS forecasters. The Proving Ground aims to deliver all newly developed products such that they can be stored and displayed in AWIPS. Furthermore, these products must be easily and seamlessly migrated to the new architecture that arrives with AWIPS Migration. CIMSS is the only external member of the National Core Local Applications Development Team (NCLADT), and also serves on the Governance Tiger Team with CIRA. CIMSS has identified data formats and performed initial testing to assure their Proving Ground activities will easily expand into the AWIPS Migration era.



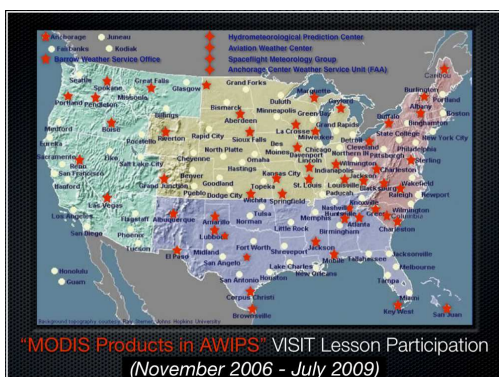
**Bandwidth.** All participants of the GOES-R Proving Ground are aware of the limitations of the Internet bandwidth at the field sites. This has become more important as the number of site participants as grown. CIMSS was the first to streamline product delivery through the Local Data Manager (LDM) to the regional headquarters. Since then, CIMSS has taken steps to minimize and partition the flow of large datasets without compromising the value and time sensitivity, and will soon employ compressed GRIdded Binary 2 (GRIB2) and GOES Ingest and NOAAPORT Interface (GINI) formats instead of the bulky legacy AWIPS network Common Data Format (netCDF), which will no longer be a viable solution for AWIPS Migration.

**Partnerships with NOAA.** The GOES-R Proving Ground is administered by the GOES-R Program Office (GRPO). A fundamental aspect of successful Proving Ground efforts at CIMSS and CIRA is the collocation of NOAA National Environmental Satellite, Data, and Information Service (NESDIS) branches:





the Advanced Satellite Products Branch (ASPB) and the Regional and Mesoscale Meteorology Branch (RAMMB), respectively. All of the Proving Ground partners (CIMSS, CIRA, and SPoRT) maintain an exceptionally strong working relationship with their nearest NWS Weather Forecast Office (WFO) and regional headquarters.



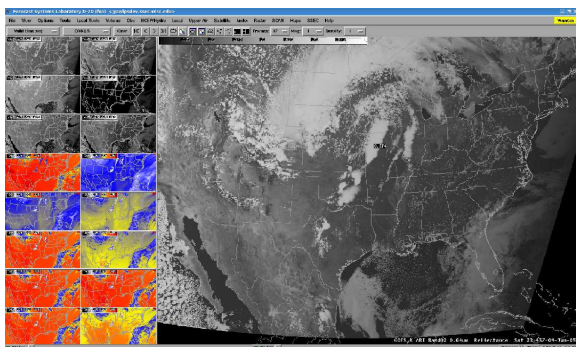
**Training.** The Virtual Institute for Satellite Integration Training (VISIT) program is responsible for educating operational meteorologists with the latest in satellite and remote sensing data and product analysis techniques using a distance training platform. VISIT is a joint effort involving CIMSS, CIRA, NESDIS, and NWS. The CIMSS “MODIS Products in AWIPS” distance training was one of the first modules to give now 230 NWS forecasters a look at satellite imagery and applications with some of the same spectral and spatial resolutions as the GOES-R Advanced Baseline Imager (ABI). Since 2003, several VISITview modules on the ABI have been built.

**WES.** CIMSS has created a Weather Event Simulator (WES) case with simulated GOES-R bands produced from output obtained using the Weather Research and Forecast (WRF) Model for several events, including a convective outbreak and Hurricane Katrina. The case is currently being reviewed and tested at partner WFOs.

**Blogs.** For “just-in-time” training, the Proving Ground partners each have blogs which showcase operational uses for current and future satellite imagery and products as interesting cases occur. The blogs have excellent examples of how additional satellite observations and products can assist the daily analysis and forecast process:

- CIMSS Satellite Blog (<http://cimss.ssec.wisc.edu/goes/blog/>)
- CIRA Meteorological Interpretation Blog (<http://rammb.cira.colostate.edu/visit/blog/>)
- The Wide World of SPoRT (<http://www.nsstc.uah.edu/sportblog/>)

**Consistency and Reliability.** When it comes to product development and delivery, the mantra of the GOES-R Proving Ground is “consistency and reliability”, an emphasis instilled on Proving Ground partners early in its development by former Milwaukee/Sullivan Meteorologist-In-Charge Ken Rizzo. As the amount of data in front of forecasters continues to grow, it is inevitable that current methods of developing products will need to change to support the invocation blended decision aids. This is where the Proving Ground is critical. But in order for a forecaster to gain confidence in any experimental product, and thus evaluate it, there is a reasonable expectation that it be available on time, reasonably easy to interpret, without error or misrepresentation, and never absent due to outages within control.



**Computing Resources.** Taking Ken’s words to heart, CIMSS has invested in a tertiary failover system with quality controls to assure data flows continue in case a single server failure. With live access to over a dozen space-based observing systems, CIMSS also has a dedicated workforce behind their data service, which has frequently been able to respond to problems at night and during weekends, even though not required to. CIMSS and CIRA are working together with emerging Internet technologies to develop a “help desk” which best responds to the growing WFO customer base.

**Evaluation.** Surveying of forecasters currently occurs online at the discretion of Science Operations Officers, and during site visits and participation in experiments, such as the Hazardous Weather Testbed. After all, the crux of any successful research to operations efforts is to assure the existence of the reverse: operations to research.



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For more information on the GOES-R Proving Ground, visit <http://goes-r.gov/users/provingground.html>

