Poster# 291

New Developments in NOAA's Comprehensive Large Array-Data Stewardship System

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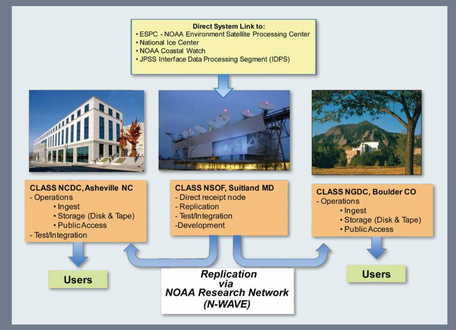
The Comprehensive Large Array-data Stewardship System (CLASS) is a centerpiece of NOAA's mission focusing on building and sustaining of key observational assets and data archives critical to maintaining the global environmental record.

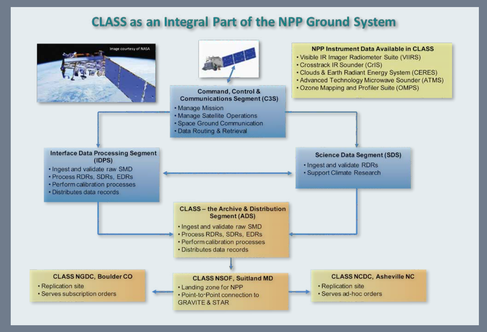
CLASS Configuration

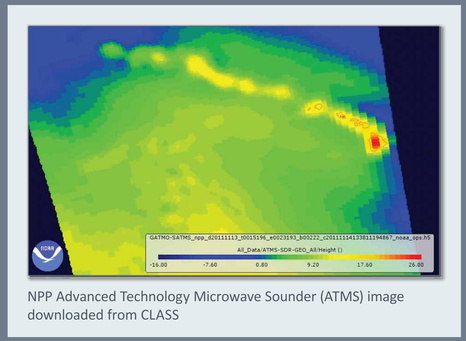
The CLASS operational environment is comprised of three distinct instances or 'nodes'. These nodes are located at NGDC in Boulder, Colorado; NCDC in Asheville, North Carolina; and NSOF in Suitland, Maryland. The NSOF node has system link to direct satellite processing of GOES, POES and as of Oct 2011 NPP data in addition to sea and ice measurements. From Suitland, data is replicated to the nodes at NCDC and NGDC via N-WAVE, a high-speed network built by NOAA with its State and academic partners. The CLASS user community is serviced from both NCDC and NGDC.



NPOESS (National Polar-Orbiting Operational Environmental Satellite System) Preparatory Project

The launch of NPP on October 28th, 2011 represents a major advance in remote sensing by serving as the bridge between NASA's current Earth Observing System (EOS) satellites and future Joint Polar Satellite System (JPSS) satellites. CLASS is the dedicated Archive Data Segment (ADS) of the NPP Ground Segment. As the ADS, CLASS receives raw data records in addition to derived sensor and environmental data records for archival and distribution to the broad user community. CLASS interfaces with principle users like NASA's NPP Science Data Segment (SDS) and NOAA's Center for Satellite Applications and Research (STAR) through dedicated and direct point-to-point connections that maintain strict data integrity. For users without dedicated connections to CLASS, data can be obtained through subscription or ad hoc ordering services.

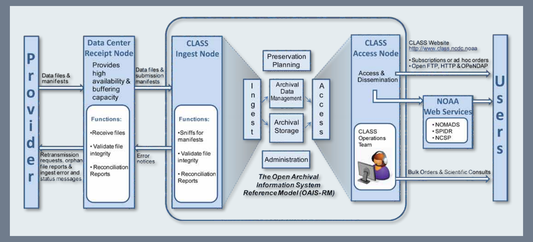




NPP Advanced Technology Microwave Sounder (ATMS) image downloaded from CLASS

CLASS Data Integrity and Accessibility

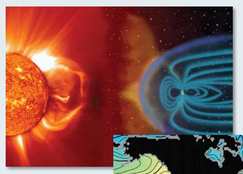
In accordance with NOAA mandate, CLASS adheres to the Open Archival Information System Reference Model (OAIS-RM) in all major areas to include ingest and access. Whether data comes directly from providers or via a Data Center receipt node, ensuring file integrity is central to the CLASS ingest process. Through the use of manifests and reconciliation reports, CLASS conforms to the OAIS construct and gives both producers and users the assurance of data integrity. As for access, CLASS provides this through several means that include direct access through either the CLASS website (http://www.class.ncdc.noaa.gov) or other NOAA web services like the National Operational Model Archive and Distribution System (NOMADS), the Space Physics Interactive Data Resource (SPIDR) and the NOAA Climate Services Portal (NCSP).



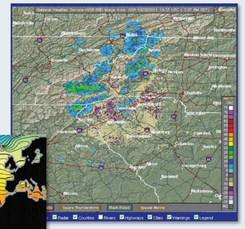
Legacy Data Migration

In March of 2011, NOAA endorsed a plan to migrate by the end of 2015 from NCDC, NGDC and NODC all archive holdings into CLASS while retiring various disparate legacy data storage systems residing at these Data Centers. The plan includes the migration of all historical environmental data holdings as well as all near real-time operational data streams currently being received by the Data Centers. Examples of operational data streams include Next-Generation Radar (NEXRAD), in-situ observations like METARs as well as various geophysical and ocean datasets.

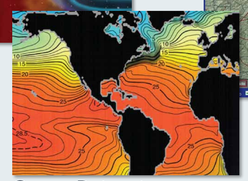
Geophysical Datasets



NEXRAD



Ocean Datasets



In-Situ Observations

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CLASS Future Growth to 2030

CLASS currently holds approximately 1.5 Petabytes (PB) of remote sensing and climate model data. This volume is expected to increase significantly to almost 250 PB by 2030 as new satellite systems in the GOES and JPSS family series are launched and the NOAA Data Centers retire various legacy archive systems.