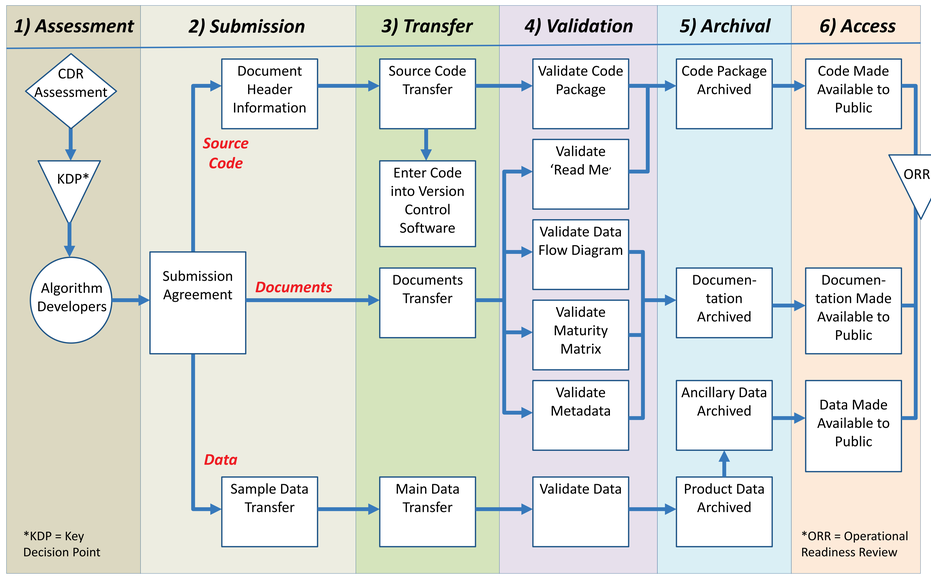
A Systematic Approach to Building and Maintaining NOAA's Climate Data Records (CDRs)

Daniel Wunder and Candace Hutchins– Global Science and Technology, Inc. ■ Walter Glance and Xuepeng Zhao –National Centers for Environmental Information, Asheville, NC

NOAA's Climate Data Record Program has transitioned 28 CDRs from research to initial operational capability (IOC), a major milestone characterized by the archiving and public release of the CDR data, source code, and documentation and a commitment to sustained product generation. This poster outlines the core processes (Research-to-Operations, Operations and Maintenance, and Climate Applications) involved in CDR life-cycle management.

Steps → CDR Research to Operations



Step 1: Assessment
Determine if a candidate research CDR is sufficiently mature for transition to IOC.

Step 2: Submission
Identify the CDR package (code, documents, and data) in a formal Submission Agreement, such that NOAA can plan for archive and access of the materials.

Step 3: Transfer
Transfer the complete dataset, source code, and documentation materials to NCEI for Validation.

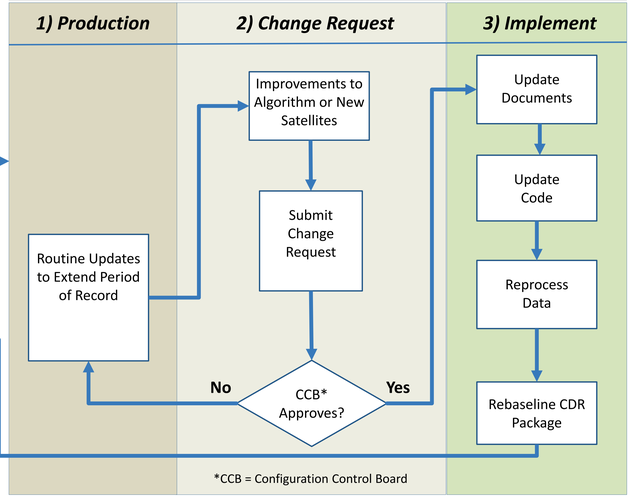
Step 4: Validation
NOAA ensures the CDR source code, documentation, and data are consistent with the CDR Program's coding and metadata standards.

Step 5: Archival
The complete CDR package (data, code, and documentation) is put under version control and submitted to NCEI 's archive system. This initiates NCEI stewardship for a minimum of 20 years.

Step 6: Access
Conduct an ORR*, then provide a fully transparent and scientifically defensible CDR to the public.
Available at:
www.ncdc.noaa.gov/cdr/operationalcdrs.html

IOC CDR

Operations and Maintenance

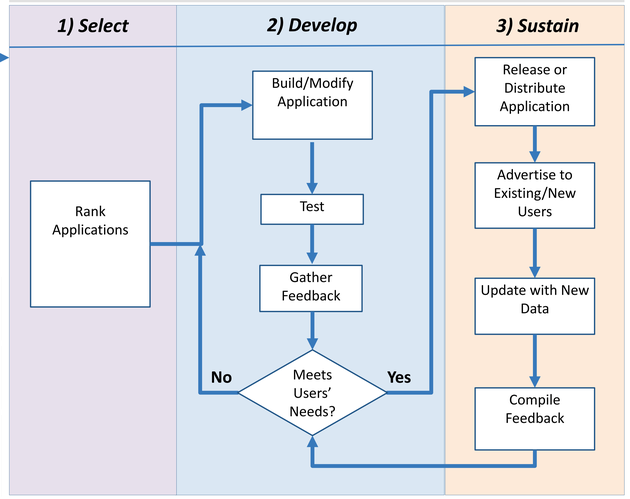


Step 1: Production
The systematic sustainment of an operational CDR. Records may be extended daily, monthly, or less frequently.

Step 2: Change Request
Any improvements to the algorithm, calibrations, or the inclusion of next generation sensors initiate a baseline change request, which is approved/rejected by the CCB*.

Step 3: Implement
Update the CDR package (code, documents, data). Involves a complete reprocessing of the data to ensure climate-quality data. Notify users of improvements in new version of CDR.

Applications



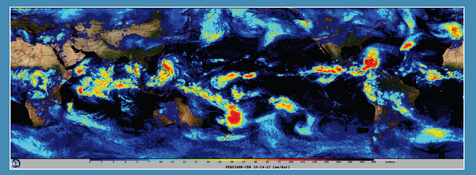
Step 1: Select
Rank potential applications based on users' needs, resources available, and sustainability. Select application to prototype.

Step 2: Develop
Build the prototype application and modify it through spiral development based on user feedback and resources available.

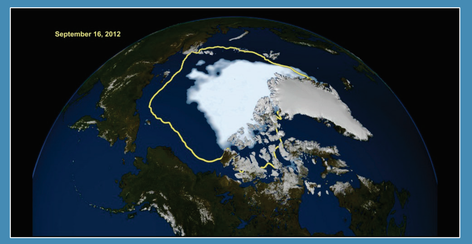
Step 3: Sustain
Release application and notify users. Keep the application updated with the most current data available while soliciting user feedback for future enhancements.

Example CDR Products and Applications

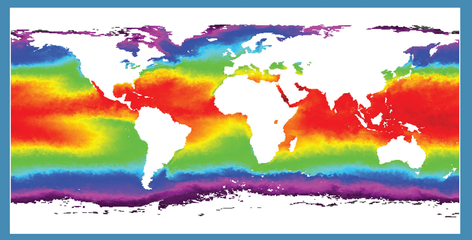
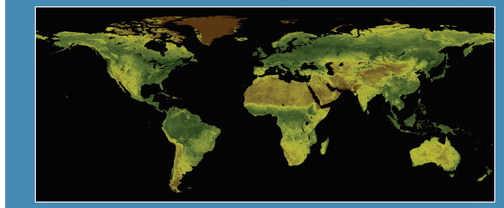
Precipitation



Sea Ice



Sea Surface Temperature (SST)



Normalized Difference Vegetation Index (NDVI)