

Uses of Climate Data Records

Climate Data Records are created from the initial data collected by satellites. Examples include:

- atmospheric and sea surface temperatures
- snow and ice conditions
- atmospheric greenhouse gas concentrations

Climate Data Records reveal Earth's short- and longer-term environmental changes and variations, allowing scientists to better:

- understand the climate system
- assess the state of the climate on regional, national, and global scales
- project future climate states

Uses of Climate Information Records

Climate Information Records are created from Climate Data Records and provide specific information about environmental phenomena of particular importance to science and society. Examples include:

- hurricane trends
- Arctic sea ice coverage
- drought patterns

This information allows businesses, resource managers, decision makers, and the public to better:

- understand and adapt to climate changes and variability
- develop strategies to minimize risks and mitigate possible impacts on society

Our mission is to develop and implement a robust, sustainable, and scientifically defensible approach to producing and preserving climate records from satellite data.

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It is NOAA's vision that climate records extend from the start of the satellite era far into the future, and are trustworthy measures of climate change and variability.

NOAA's Climate Data Record Project



A Commitment to Comprehensive and Consistent Climate Records and Information



NOAA's Climate Data Record Project

NOAA's National Climatic Data Center (NCDC) has begun a Climate Data Record Project to lead NOAA's new initiative to develop climate records for the atmosphere, oceans, and land surface.

Why is the Project important?

The United States has made tremendous investments in Earth-observing satellites over the past five decades. Despite remarkable success, great potential remains in the Nation's archived measurements for climate change applications.

NOAA's new Climate Data Record Project promises to unleash the potential of these data to address critical climate questions. The answers will benefit society by helping scientists, decision makers, and stakeholders develop strategies that could improve the Nation's resilience to climate change and variability, maintain our economic viability, and improve the security and well-being of the public.

What is the purpose of the Project?

Satellites remotely measure different properties from space. Over time, satellite sensors degrade and new satellites—sometimes with improved designs—are launched to continue the measurements. Direct measurements made by other observing systems help bridge gaps in the satellite data.

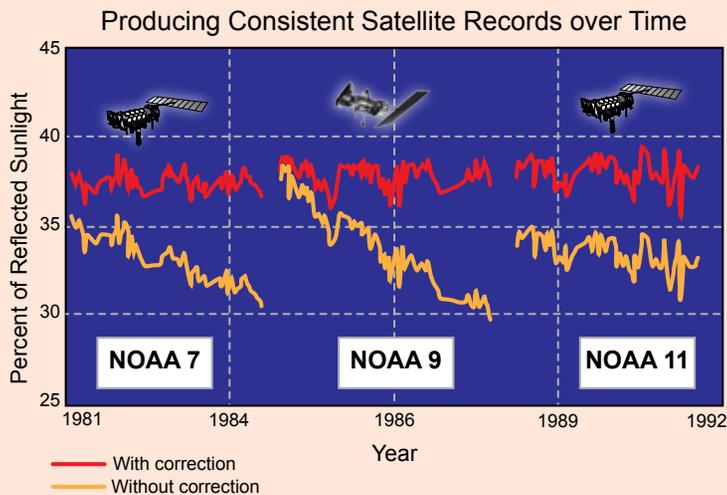
In order to accurately detect subtle climate changes and variations, it is vital that the measurements from different satellites be merged together and analyzed using proven scientific techniques. The succession of satellites, with different designs and changing performance qualities, makes combining all past and current observations into consistent long-term records a major challenge. This Project addresses that challenge.

How does the Project operate?

Key components of the Project include competitive grants, contracts, and interagency coordination.

Following the principles outlined by the U.S. National Research Council and other organizations, NOAA's Climate Data Record Project is:

- **Systematic** because it progressively develops Climate Data Records using a consistent and well-defined set of improvement milestones.
- **Comprehensive** because it encompasses a wide variety of both current and potential Climate Data Records. It also fully addresses management and preservation of these records.
- **Sustainable** because it supports continuous record updates and can incorporate improved techniques as they become available.



Reflected sunlight measurements corrected using direct measurements made over a barren desert location (Source: Rao and Chen, Int. J. Remote Sens., 1995).

Producing climate data records with global satellite data

Satellite data that are part of Climate Data Records can be accurately calibrated by measuring a well understood and slowly changing target, such as a barren desert, or by comparing these measurements with those made at the same time by other observing systems, including satellites. These scientific corrections help create consistent and complete data records. Without proper corrections, false trends in the data may be observed, caused by the observing system rather than the environment.