

Development and Evolution of NASA Satellite Remote Sensing for Ecology

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Documentation Revision Date: 2023-09-22

Dataset Version: 1

Summary

This dataset provides a presentation that highlights the role NASA research and researchers played in developing a wide range of significant, quantitative ecological applications of satellite data. The presentation by Dr Diane E. Wickland, former NASA Terrestrial Ecology Program Manager and Lead for NASA Carbon Cycle and Ecosystems Focus Area, provides a top-level overview from her perspective of the development and evolution of the program. Dr Wickland joined NASA in 1985 to manage a newly formed Terrestrial Ecosystems Program. Along with other NASA program managers, she was charged with reorienting the program to be less empirical and have a greater focus on first principles, and to prepare for a next generation of earth-observing satellites. As an ecologist, she thought that focusing on important ecological questions and recruiting practicing ecologists to the program would facilitate such a change in directions. The presentation emphasizes the early years of U.S. satellite remote sensing and covers a few highlights after 2005.

There is one file in Portable Document Format (.pdf) in this dataset.



Figure 1. NASA logo.

Citation

Wickland, D.E. 2023. Development and Evolution of NASA Satellite Remote Sensing for Ecology. ORNL DAAC, Oak Ridge, Tennessee, USA. <https://doi.org/10.3334/ORNLDAAC/2293>

Table of Contents

1. [Dataset Overview](#)
2. [Data Characteristics](#)
3. [Application and Derivation](#)
4. [Quality Assessment](#)
5. [Data Acquisition, Materials, and Methods](#)
6. [Data Access](#)
7. [References](#)

1. Dataset Overview

This presentation, from the perspective of Dr. Diane Wickland, former NASA Terrestrial Ecology Program Manager and Lead for NASA Carbon Cycle and Ecosystems Focus Area, highlights the role that NASA research and researchers played in developing a wide range of significant, quantitative ecological applications of satellite data, with an emphasis on the early years of U.S. satellite remote sensing and a few highlights after 2005. These applications ranged from early empirical studies focused on agriculture to a host of highly quantitative analyses of land cover change, vegetation productivity, and the impacts of climate changes.

Related publication

Wickland, D.E. 2023. Development and Evolution of NASA Satellite Remote Sensing for Ecology: 1980's to Present. 2023 ESA Annual Meeting, Portland, OR, Aug 6-11, 2023.

2. Data Characteristics

There is one file in Portable Document Format (.pdf) in this dataset.

Wickland_ESA_NASA_RemoteSensingProgram_2023.pdf: A presentation from the perspective of Dr. Diane E. Wickland, Retired (former NASA

Terrestrial Ecology Program Manager and Lead for NASA Carbon Cycle and Ecosystems Focus Area), titled "Development and Evolution of NASA Satellite Remote Sensing for Ecology: 1980's to Present". The presentation provides a top-level overview of the development and evolution of the satellite program and the role NASA research and researchers played in developing a wide range of significant, quantitative ecological applications of satellite data.

3. Application and Derivation

The presentation provides a top-level overview of the development and evolution of the satellite program and the role NASA research and researchers played in developing a wide range of significant, quantitative ecological applications of satellite data.

4. Quality Assessment

N/A

5. Data Acquisition, Materials, and Methods

With the advent of Landsat in 1972 and later the Advanced Very High Resolution Radiometer (AVHRR) on NOAA polar orbiters, digital imagery with broad-band spectral measurements sensitive to land cover and vegetation attributes became available. These two sensors were the workhorses for conducting U.S. ecological research until the launch of the first Earth Observing System (EOS) satellite in 1999.

This presentation highlights the role that NASA research and researchers played in developing a wide range of significant, quantitative ecological applications of satellite data, with an emphasis on the early years of U.S. satellite remote sensing and a few highlights after 2005. These applications ranged from early empirical studies focused on agriculture to a host of highly quantitative analyses of land cover change, vegetation productivity, and the impacts of climate changes.

The topics include:

- NASA Remote Sensing Environment: 1970's - Early 1980's
- Evolution of NASA Ecology: 1980's
- NASA: Overarching Ecological Research Questions
- Evolution of NASA Ecology: Late 1980's-2000
- Evolution of NASA Ecology: 2000-2005
- Evolution of NASA Ecology: 2005-2014 Highlights

The summary highlights the Influence of Ecology and Ecologists.

6. Data Access

These data are available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC).

[Development and Evolution of NASA Satellite Remote Sensing for Ecology](#)

Contact for Data Center Access Information:

- E-mail: uso@daac.ornl.gov
- Telephone: +1 (865) 241-3952

7. References

Wickland, D.E. 2023. Development and Evolution of NASA Satellite Remote Sensing for Ecology: 1980's to Present. 2023 ESA Annual Meeting, Portland, OR, Aug 6-11, 2023.



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Data Use and Citation
Policy
User Working Group
Partners

Get Data

Science Themes
NASA Projects
All Datasets

Submit Data

Submit Data Form
Data Scope and
Acceptance
Data Authorship Policy
Data Publication Timeline
Detailed Submission
Guidelines

Tools

TESViS
THREDDS
SDAT
Daymet
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Resources

Learning
Data Management
News

Help

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