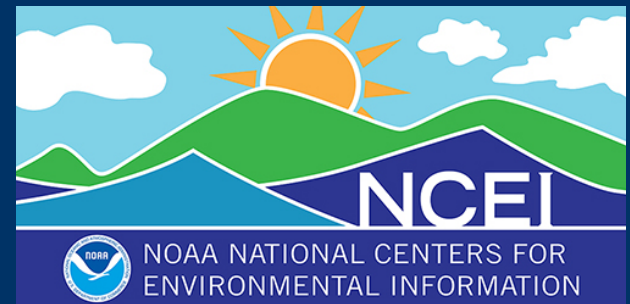


Data Management: If it's good enough for the government, it's good enough for you

Brian Beck



NOAA
CORAL REEF
CONSERVATION PROGRAM

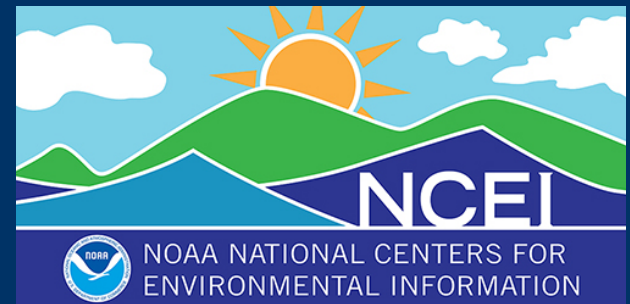


Will your data be useful after you are dead?

Brian Beck



NOAA
CORAL REEF
CONSERVATION PROGRAM



Take Home Message

- **Manage your data**
 - Make sure that someone can use your data without your involvement
- **Make your data accessible**
 - After a period of time (to be discussed later) make your data available to anyone who wants it

CRCP Mission and Focus

- **Mission: To support effective**
- **management and sound science**
- **to preserve, sustain, and restore**
- **valuable coral reef ecosystems**
- **for future generations**



We focus on the three biggest global threats:

- **CRCP Goals and Objectives**
- **Grants and Cooperative Agreement Programs**

Where We Work



NOS

NCCOS

- Atlantic Reef Monitoring
- Atlantic Mapping
- Water quality
- Coral Physiology

OCM

- Grants Management
- Management Liaisons
- Socio-Economic Program Coordination
- NCRMP Coordination
- LBSP Coordination
- Climate Coordination
- International Program
- NOAA/USAID IAA

ONMS

- Florida Keys NMS
- Flower Garden Banks NMS
- Fagatele Bay NMS
- Papahānaumokuākea MNM
- MPA Center

NMFS

PIFSC

- Pacific Reef Monitoring
- Pacific Reef Climate
- Pacific Mapping
- Socioeconomic Studies

SEFSC

- Atlantic Reef Monitoring
- Coral Biology
- Fisheries Science
- Socioeconomic Studies

PIRO

- Pacific Fishery Liaisons
- Watershed Restoration
- Local Capacity Building

SERO

- Atlantic Fishery Liaisons
- ESA species recovery
- Education & Outreach
- Local Capacity Building

OHC

- Program Coordination
- Coral & Watershed Restoration

OAR

AOML

- Atlantic Reef Climate
- Water Quality
- Coral Ecology and Fisheries Research

OAP

- Climate and Reef Monitoring

OER

- CRCP HQ Support

PMEL

- Ocean Monitoring

NESDIS

NCEI

- CRCP Data Management
- CRCP HQ Support
- Coral Reef Information System (CoRIS)

STAR

- Coral Reef Watch

Federal Data Policy

- **Public Access to Research Results (PARR)**



The Obama Administration is committed to the proposition that citizens deserve easy access to the results of research their tax dollars have paid for. That's why, in a policy memorandum released today, OSTP Director John Holdren has directed Federal agencies with more than \$100M in R&D expenditures to develop plans to make the results of federally funded research freely available to the public—generally within one year of publication.



**National Institutes of Health
Plan for Increasing Access to Scientific Publications and
Digital Scientific Data from NIH Funded Scientific Research**

February 2015

**Increasing Access to the Results of Research Funded by the
National Science Foundation**

National Science Foundation

March 18, 2015

ENERGY.GOV f t e Search Energy.gov

PUBLIC SERVICES | SCIENCE & INNOVATION | ENERGY SAVER | ABOUT ENERGY.GOV | OFFICES >

Home » U.S. Department of Energy Increases Access to Results of DOE-funded Scientific Research

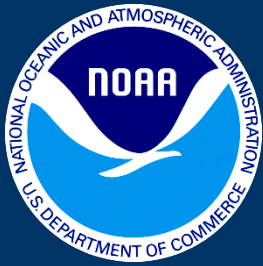
U.S. Department of Energy Increases Access to Results of DOE-funded Scientific Research

August 4, 2014 - 10:49am

**Public Access to Results of FDA-Funded
Scientific Research**

f SHARE t TWEET in LINKEDIN p PIN IT e EMAIL p PRINT





NOAA PARR Requirements

- **Data access**
 - All data must be made available one year after the time of collection and made accessible until deemed unusable
- **Data documentation**
 - Metadata and associated documentation
- **Data management plan**
 - All data should be covered by a data management plan
- **Publication policy**
 - All federally funded research publication will be made publicly available one year after publication

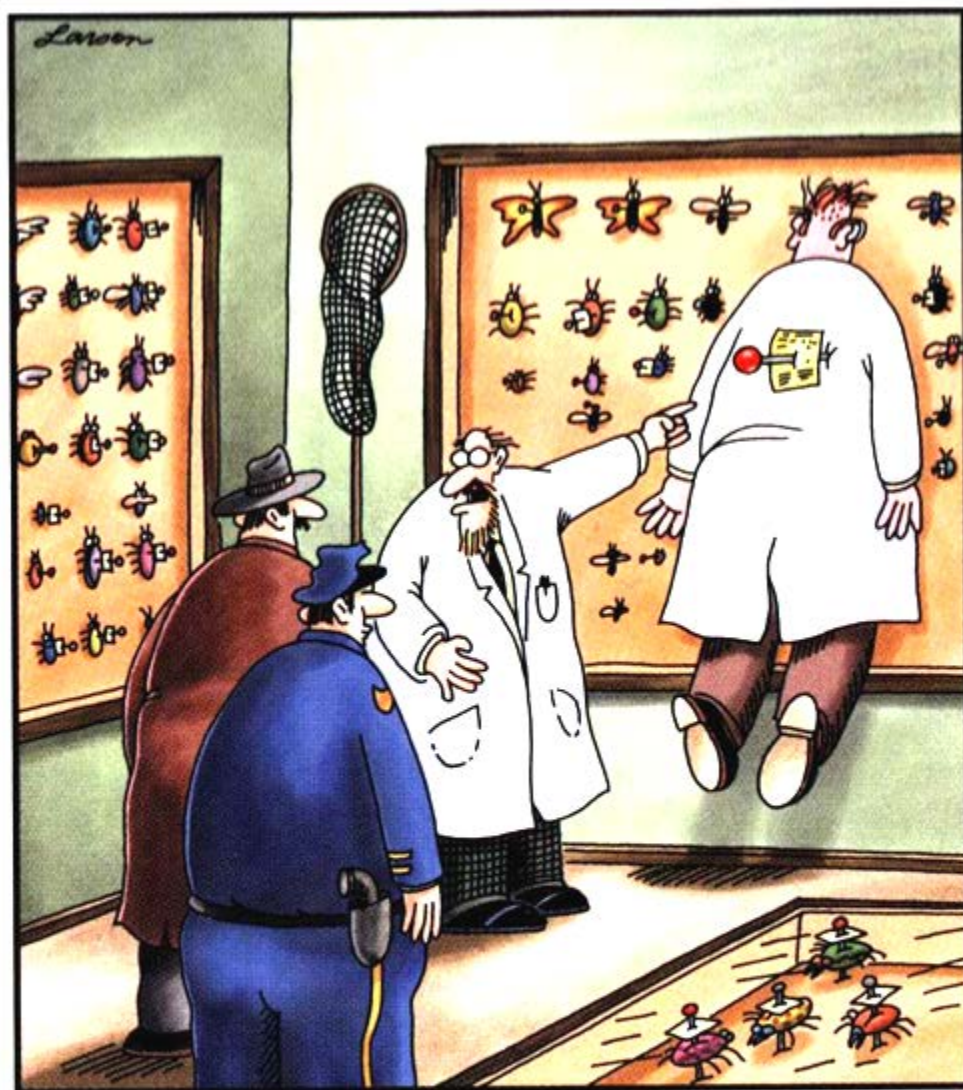


What this all means

- Data must be archived and made accessible in a timely manner



- Proper metadata and documentation is needed to make the data understandable.



"Professor LaVonne had many enemies in the entomological world, detective, but if you examine that data label, you'll find exactly when and where he was—shall we say—'collected.'"

Metadata

Well Written Metadata is Required:

- **Think of metadata as legacy information. Your data is meaningless without it.**
- **You need metadata:**
 - So you won't forget how you collected and processed your own data
 - So information won't be lost when an employee/student leaves
 - So the data can be used again in the future
- **When done properly metadata answers a wide range of questions about a dataset ensuring it's reliable and continued use over a span of years.**


Digital Object Identifiers (DOIs)

Create the ability to not only cite specific data sets, but also track the citations the same way you would a journal article

Example Citation:


Ignatov, Alexander; Stroup, John D.; Kihai, Yury; Petrenko, Boris; Dash, Prasanjit; Sapper, John F. (2015). GHR SST v2 Level 3U Global Skin Sea Surface Temperature from the Visible Infrared Imaging Radiometer Suite (VIIRS) on the Suomi NPP satellite created by the NOAA Advanced Clear-Sky Processor for Ocean (ACSPO) (GDS version 2). NOAA National Centers for Environmental Information. Dataset. doi:10.7289/V5KK98S8 [access date]


← → ↺ 📄 https://www.ncei.noaa.gov ☆ 🖨️ ▶

**NOAA** NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

DEPARTMENT OF COMMERCE
UNITED STATES OF AMERICA


Home About Contact





National Centers for Environmental Information (NCEI)

NOAA's National Centers for Environmental Information (NCEI) are responsible for hosting and providing public access to one of the most significant archives for environmental data on Earth with over 20 petabytes of comprehensive atmospheric, coastal, oceanic, and geophysical data. [Read more about NCEI »](#)



Center for Weather and Climate

NCEI's Center for Weather and Climate acquires, preserves, monitors, and assesses the Nation's treasure of climate and historical weather data and information.

[Weather and Climate](#)

Center for Coasts, Oceans, and Geophysics

NCEI's Center for Coasts, Oceans, and Geophysics acquires, preserves, monitors, and assesses the Nation's treasure of coastal, oceanographic, and geophysical data and information.

[Coasts](#) [Oceans](#) [Geophysics](#)

Find Data by Category

Access various data holdings from the Center for Weather and Climate and the Center for Coasts, Oceans, and Geophysics within NCEI.



NOAA

NATIONAL CENTERS FOR
ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



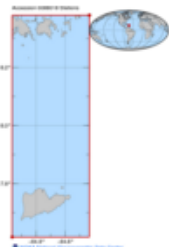
[Home](#) [Access Data](#) [Submit Data](#) [Public Outreach](#) [About](#)

Search NCEI Data



[Home](#) > [Data](#) > [Metadata](#) > gov.noaa.nodc:0088018

NOAA/NOS National Centers for Coastal Ocean Science (NCCOS) /Center for Coastal Ocean Science (CCMA) benthic habitat and fish community assessment, U.S. Virgin Islands, 2011-2012 (NODC Accession 0088018)



Preview graphic

These data were collected 2011-2012 from select locations on St. Thomas, St. Croix, and St. John (U.S. VI) in order to 1) to spatially characterize and monitor the distribution, abundance, and size of both reef fishes and macro-invertebrates (conch, lobster, Diadema); 2) to relate this information to in situ data collected on water quality and associated habitat parameters; 3) to use this information to establish the knowledge base necessary for enacting management decisions in a spatial setting; 4) to establish the efficacy of those management decisions; 5) to work with the National Coral Reef Monitoring Program to develop data collection standards and easily implemented methodologies for transference to other agencies and to work toward standardizing data collection throughout the U.S. states and territories; and to 6) conduct a baseline characterization of fish and benthic communities.

This work was variously conducted in collaboration with the Virgin Islands Department of Planning and Natural Resources, the Nature Conservancy, the University of Miami, the U.S. Department of Interior National Park Service and the University of the Virgin Islands.

These data include benthic habitat data (benthic coverage type, species, percent cover), reef fish survey data (habitat and species), and macroinvertebrate counts

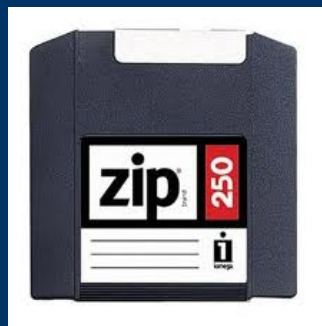
Dataset Citation

Cite as: Hile, S. and US DOC; NOAA; NOS; National Centers for Coastal Ocean Science; Center for Coastal Monitoring and Assessment (2013). NOAA/NOS National Centers for Coastal Ocean Science (NCCOS) /Center for Coastal Ocean Science (CCMA) benthic habitat and fish community assessment, U.S. Virgin Islands, 2011-2012 (NODC Accession 0088018). Version 1.1. National Oceanographic Data Center, NOAA. Dataset. [access date]

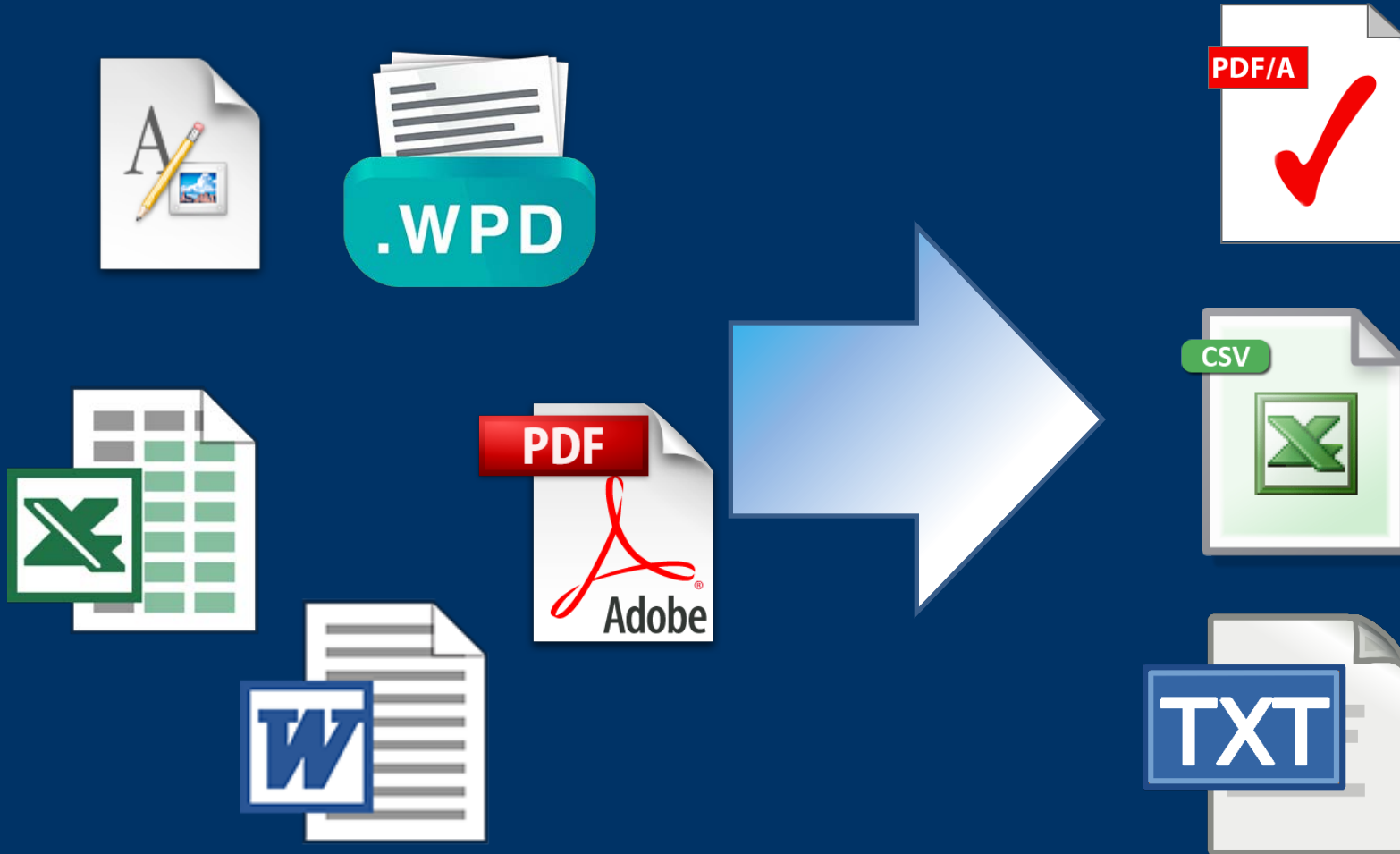
Dataset Identifier(s)

ISO 19115-2 Metadata

Avoiding Obsolescence



Avoiding Digital Obsolescence



File format recommendations

archives.gov/records-mgmt/policy/transfer-guidance-tables.html

NATIONAL ARCHIVES

Search Archives.gov GO

Research Our Records | Veterans Service Records | Teachers' Resources | Our Locations | Shop Online

Records Managers

Home > Records Management > Policy > Appendix A: Tables of File Formats

NARA 2014-04: Appendix A, Revised Format Guidance for the Transfer of Permanent Electronic Records – Tables of File Formats

Quick Links

1. Computer Aided Design	2. Digital Audio	3. Digital Moving Images
3.1 Digital Cinema	3.2 Digital Video	4. Digital Still Images
4.1 Digital Photographs	4.2 Scanned Text	4.3 Digital Posters
5. Geospatial Formats	6. Presentation Formats	7. Textual Data
8. Structured Data Formats	9. Email	10. Web Records

Symbol Key

Preferred Formats

Acceptable Formats

Acceptable for Imminent Transfer Formats

1. Computer Aided Design (CAD)

National Archives

www.digitalpreservation.gov/formats/fdd/descriptions.shtml

Sustainability of Digital Formats Planning for Library of Congress Collections

Introduction | Sustainability Factors | Content Categories | Format Descriptions | Contact

Format Descriptions >> Format Description Categories >> [Browse Alphabetical List](#) >> [Format Descriptions as XML](#)

Format Descriptions

Still Image <ul style="list-style-type: none">• SVG 1.1• TIFF 6• All still image format descriptions	Sound <ul style="list-style-type: none">• WAVE• MP3_FF• All sound format descriptions	Moving Image <ul style="list-style-type: none">• MPEG-4_FF_2• AVI• All moving image format descriptions
Textual <ul style="list-style-type: none">• PDF/A• DOCX/OOXML_2012• All text format descriptions	Web Archive <ul style="list-style-type: none">• ARC_IA• WARC• All Web archive format descriptions	Datasets <ul style="list-style-type: none">• DBF• HDF5• All dataset format descriptions
Geospatial <ul style="list-style-type: none">• ESRI shape• GeoPDF_2.2• All geospatial format descriptions	Generic <ul style="list-style-type: none">• ASF• RIFF• All generic format descriptions	

About the format descriptions

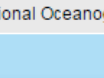
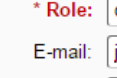
The digital content format descriptions accessible here provide specific information about individual formats and their characteristics. Each description provides inclusion are a wide variety of formats: file formats, file-format classes, bitstream structures and encodings, and the mechanisms used to compress files or bitstreams. The format is preferred or acceptable for Library of Congress collections. Although presented here in HTML format, the descriptions are created in XML, and info [here](#).

Descriptions are drafted and added to the site individually rather than on a scheduled basis. The compilers encourage persons with specialized knowledge to [form to provide comments](#).

These descriptions will not only serve as a resource for selection and acquisition at the Library but will also support the preservation of digital content as a resource element of the [Open Archival Information System](#) (OAIS) reference model.

Library of Congress



NOAA

NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

formerly the National Oceanographic Data Center (NODC)... [more on NCEI](#)

[Home](#)
[Access Data](#)
[Submit Data](#)
[Public Outreach](#)
[About](#)

NOAA Satellite and Information Service
☐ This Site
☐ All of NOAA

You are here: [Home](#) > [Submit Data](#) > New Submission Package

Send2NCEI:
[My Submission Packages](#) | [Edit Profile](#) | [Help](#)

Logged in as: [Log out](#)

New Submission Package

Reference ID: GDUB1Y [Review](#)

[People & Projects](#)
[Dates & Locations](#)
[Data Types](#)
[Package Description](#)
[Upload & Submit](#)

Responsible Persons:

principal investigator: Doe, John [edit](#) | [remove](#)

*** First Name:**

Middle Name:

*** Last Name:**

*** Role:**

E-mail:

Institution:

[Discard this entry](#)

** Required fields are in red*

Please click "Save Person" to add a person to your Submission Package. You can add multiple persons who should be recognized for their contribution to this data collection.

Related Funding Agencies:

US DOC; NOAA; NOS; Coral Reef Conservation Program (Coral Reef Conservation Program - CRCP)

[edit](#) | [remove](#)

Coral Reef Conservation Program (CRCRP) Data


← → ↻ 🏠 coralreef.noaa.gov

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

NOAA CORAL REEF CONSERVATION PROGRAM


ABOUT US ▾ CORAL THREATS ▾ CONSERVATION APPROACH ▾ EDUCATION ▾ MULTIMEDIA ▾

The **Coral Reef Conservation Program** is a partnership between the NOAA Line Offices that work on coral reef issues. We bring together expertise from across NOAA for a multidisciplinary approach to understanding and conserving coral reef ecosystems.




Bridging Science to Policy: 13th International Coral Reef Symposium


● ○ ○ ○ ○




Funding Opportunities




Coral Reef Information System




Coral Threats



Corals in the News



Coral FAQs



Deep Sea Corals

Featured Data

Reef Manager's Guide to Fostering Community Stewardship

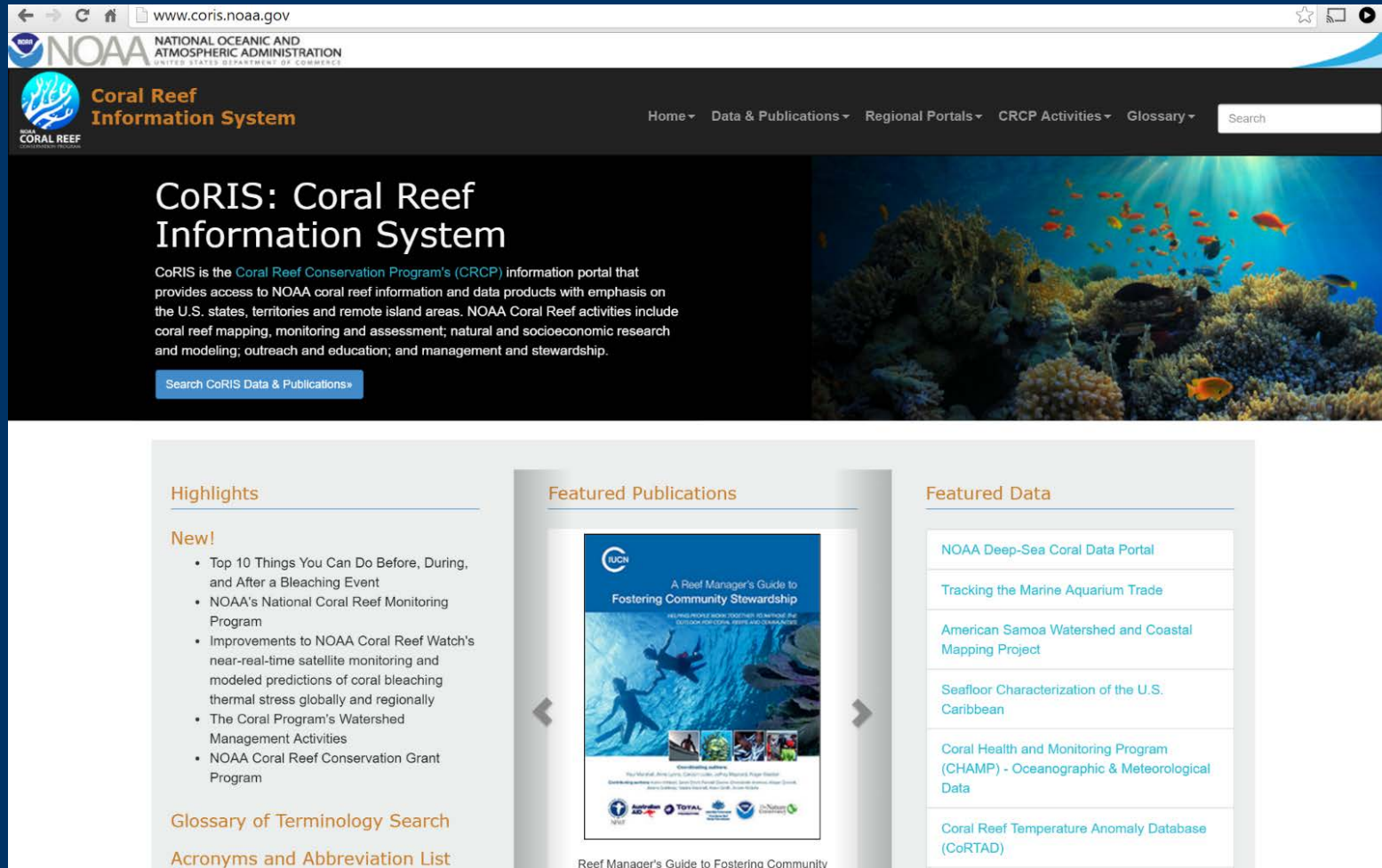
Spotlight on Coral Reefs

Podcast: Connecting the Dots Between Corals and Humans (Episode 135)

Other Highlights

Earth Is Blue—What is coral bleaching and what can you do to help?

Coral Reef Information Systems (CoRIS)



www.coris.noaa.gov

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION UNITED STATES DEPARTMENT OF COMMERCE


Coral Reef Information System

Home ▾ Data & Publications ▾ Regional Portals ▾ CRCP Activities ▾ Glossary ▾ Search

CoRIS: Coral Reef Information System

CoRIS is the Coral Reef Conservation Program's (CRCP) information portal that provides access to NOAA coral reef information and data products with emphasis on the U.S. states, territories and remote island areas. NOAA Coral Reef activities include coral reef mapping, monitoring and assessment; natural and socioeconomic research and modeling; outreach and education; and management and stewardship.

[Search CoRIS Data & Publications](#)



Highlights

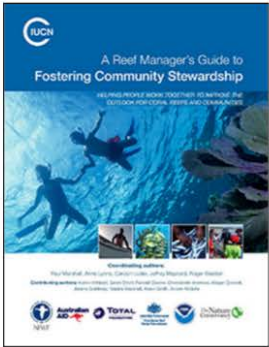
New!

- Top 10 Things You Can Do Before, During, and After a Bleaching Event
- NOAA's National Coral Reef Monitoring Program
- Improvements to NOAA Coral Reef Watch's near-real-time satellite monitoring and modeled predictions of coral bleaching thermal stress globally and regionally
- The Coral Program's Watershed Management Activities
- NOAA Coral Reef Conservation Grant Program

[Glossary of Terminology Search](#)

[Acronyms and Abbreviation List](#)

Featured Publications



Reef Manager's Guide to Fostering Community

Featured Data

- [NOAA Deep-Sea Coral Data Portal](#)
- [Tracking the Marine Aquarium Trade](#)
- [American Samoa Watershed and Coastal Mapping Project](#)
- [Seafloor Characterization of the U.S. Caribbean](#)
- [Coral Health and Monitoring Program \(CHAMP\) - Oceanographic & Meteorological Data](#)
- [Coral Reef Temperature Anomaly Database \(CoRTAD\)](#)

Old Ways vs New Ways

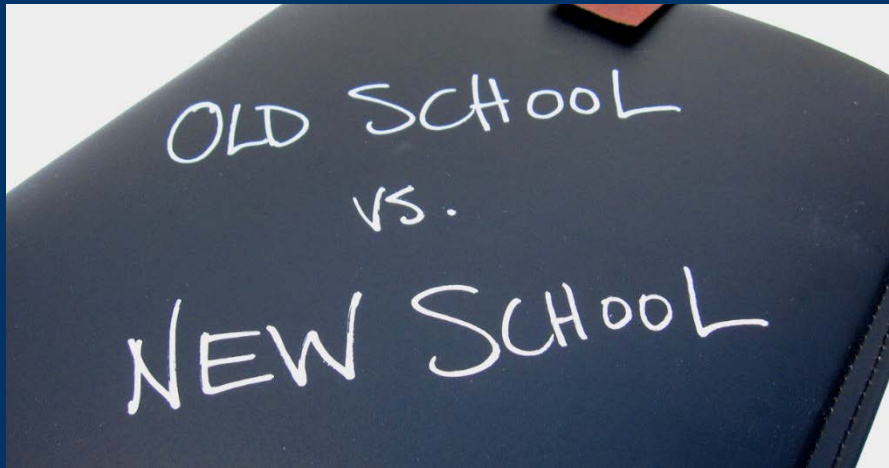
Come gather 'round people
Wherever you roam
And admit that the waters
Around you have grown
And accept it that soon
You'll be drenched to the bone
If your time to you is worth savin'
Then you better start swimmin' or you'll
sink like a stone
For the times they are a-changin'

-Bob Dylan



Publish vs Perish

- Hold onto your data and publish papers or your career will perish



- Publish your data or your paper will perish.

Open Access in the News

“Biden unveiling public database for clinical data on cancer”

Washington Post - June 6, 2016



“Increasing the pool of researchers who can access data and decreasing the time it takes for them to review and find new patterns in that data is critical to speeding up development of lifesaving treatments for patients,”

-Joe Biden

The New York Times

AUSTRALIA

Great Barrier Reef Hit by Worst Coral Die-Off on Record, Scientists Say

By MICHELLE INNIS NOV. 29, 2016

The Washington Post



Energy and Environment

Why the death of coral reefs could be devastating for millions of humans



ALJAZEERA

SCIENCE & TECHNOLOGY

Coral catastrophe: The fight to save our dying reefs



ESSIC Science Seminar



Ideal World

- All students should be taught basic data management before starting any graduate degree
- Researchers make data available within a reasonable amount of time after collection (no more than 2 years)
- Open Access long term storage of coral reef monitoring data with stable funding and simplified submission guidelines.

More Palatable Recommendations

- **Manage your data!**
 - Metadata
 - File names that make sense
 - What is needed to use the data in the future
- **Make all of your data available with as few hoops to jump through as possible.**

Thank You

