

A Unique History: Long-Term Ecological Data at the FCE LTER Program

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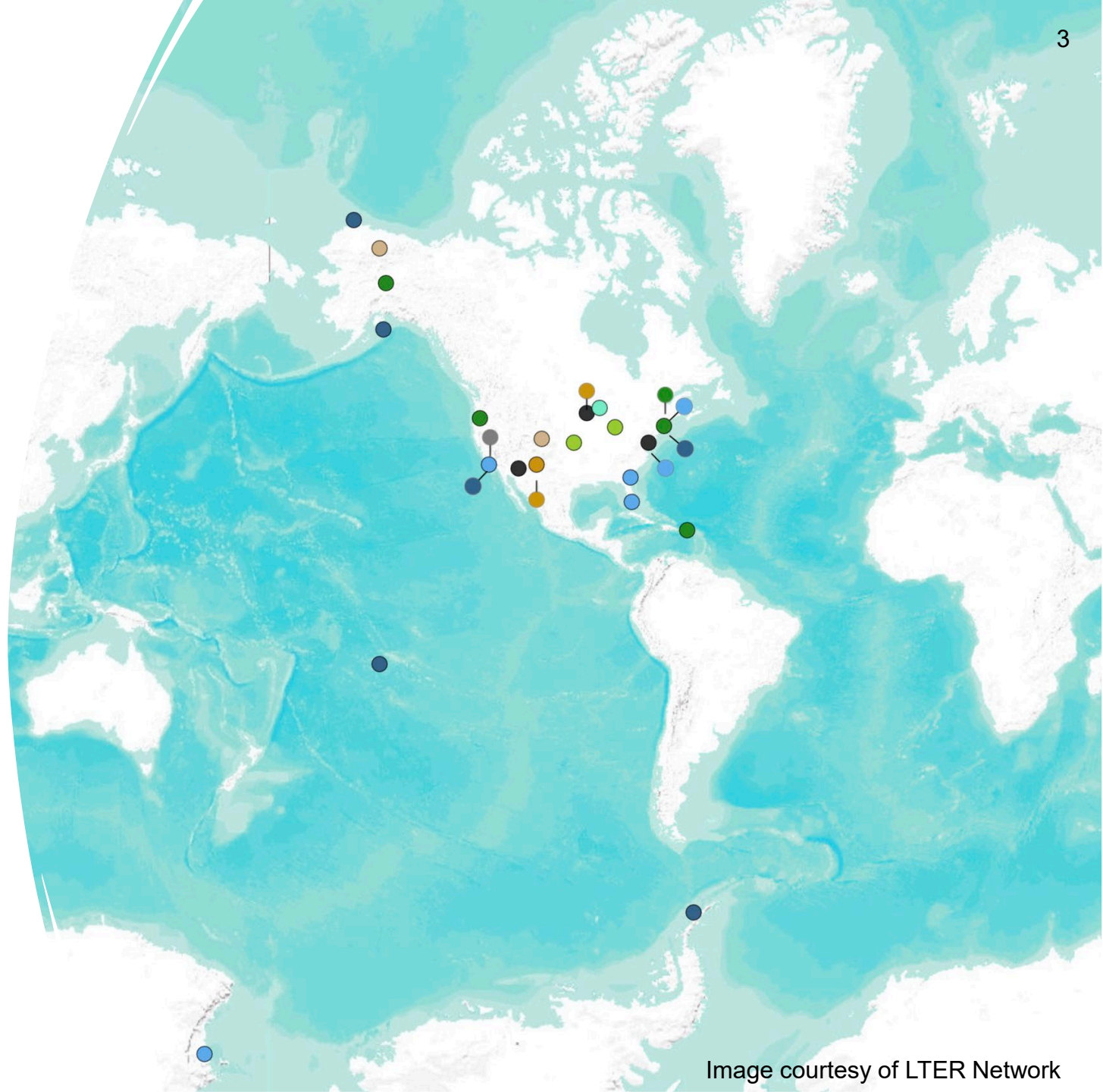
Outline

- Introduction
 - FCE and the LTER Network
 - Where we are with our data
 - How did we get here?
- FCE I (2000-2006)
- FCE II (2007-2012)
- FCE III (2013-2018)
- FCE IV (2019-2025)
- Future improvements



Introduction

- Florida Coastal Everglades Long Term Ecological Research (FCE LTER) Program began in 2000
- Part of the LTER Network



Introduction

- 14 FCE core sites in Everglades National Park along two major drainages and Florida Bay
- 3 habitat groups

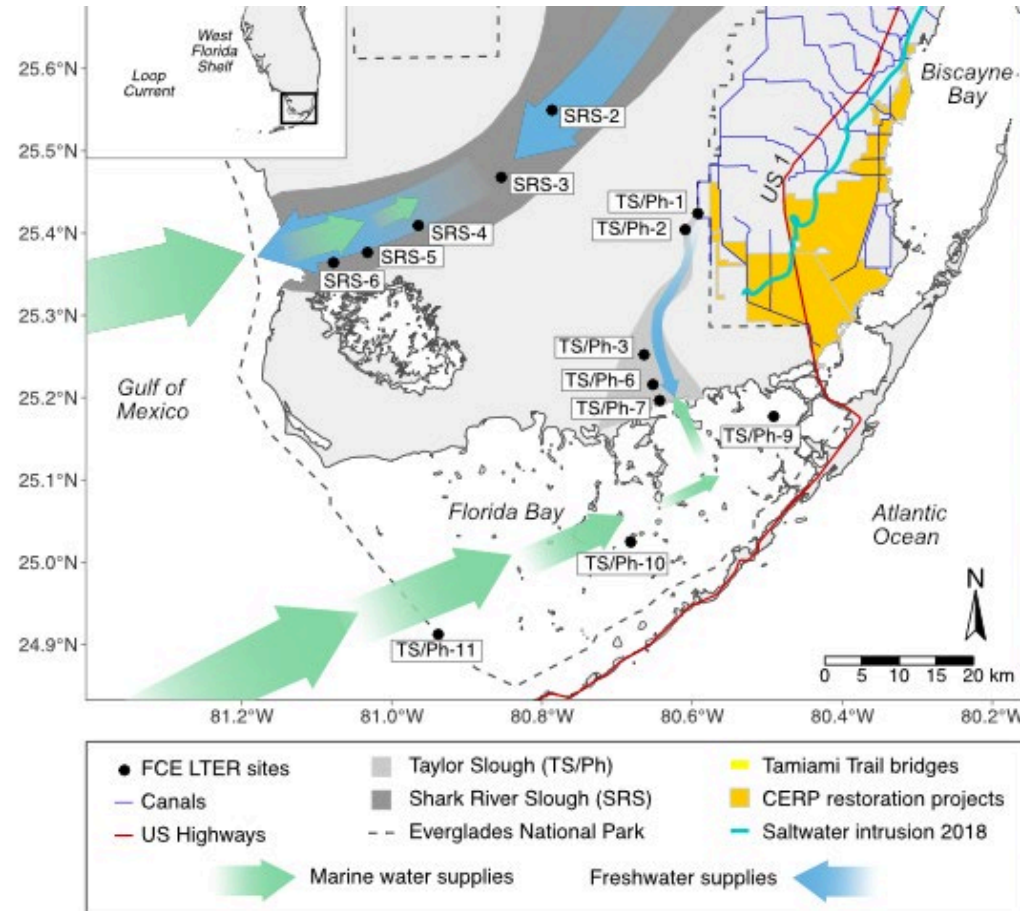


Image by Michael Rugge



Introduction

- >25 years of data
 - 221 datasets
 - >50 ongoing
 - 5 core research areas
 - Rich metadata
 - Publicly accessible
 - Contributes to informing Everglades restoration
- How did we get here?

FCE Data Catalog

Search FCE Datasets

Keywords

Originator

LTER Core Area
All core areas

Submit

20 km
 10 mi

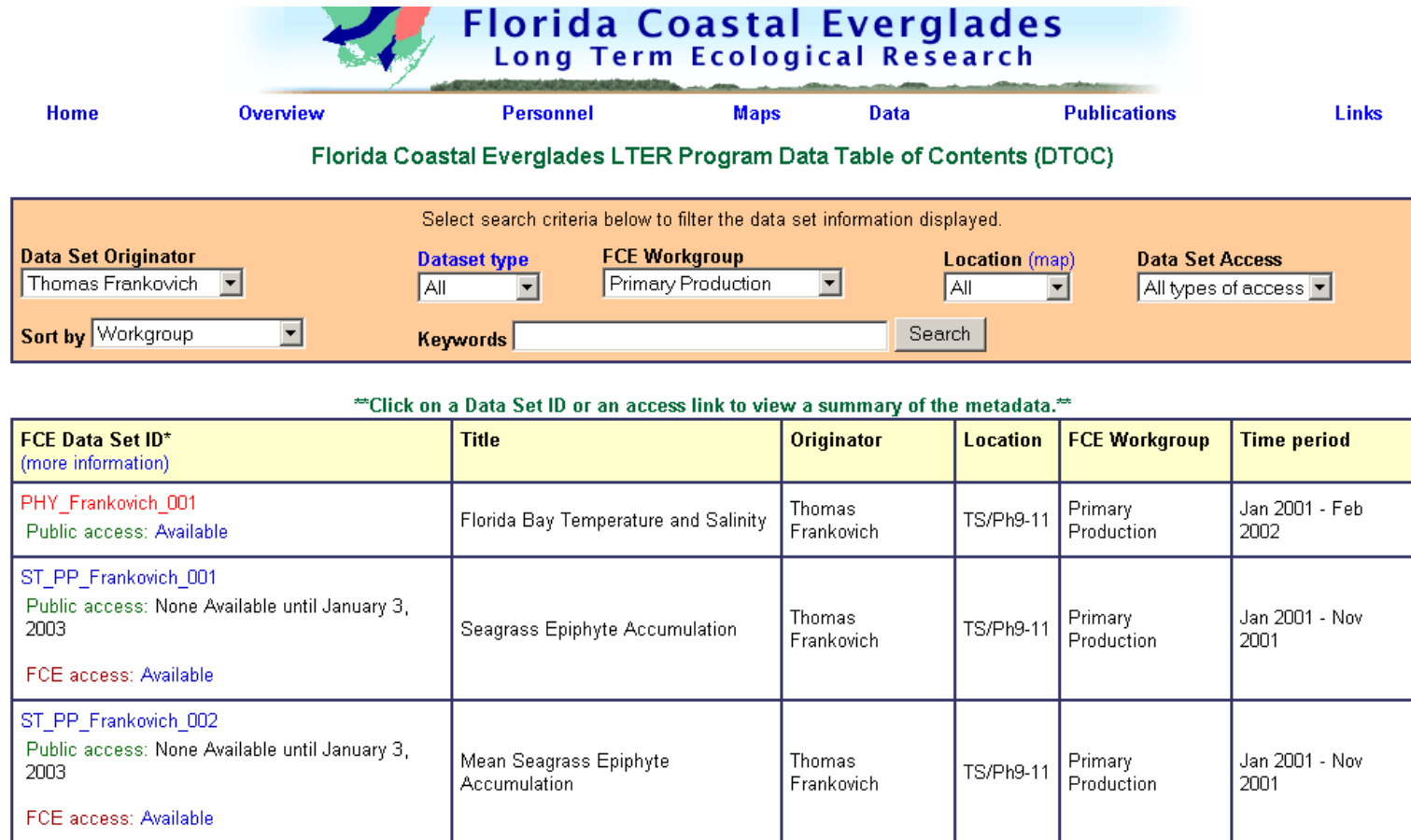
Leaflet | Powered by Esri | DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AE...

FCE Sites Satellite Sites

To search for data from specific FCE sites, zoom or pan the to change the area inside a fixed yellow box, which will be included in the search.

FCE I (2000-2006)

- 91 unique datasets
- Metadata submitted in Excel template
- Data and metadata hosted by FCE site



The screenshot shows the Florida Coastal Everglades LTER Program Data Table of Contents (DTOC) website. The header includes a logo and navigation links: Home, Overview, Personnel, Maps, Data, Publications, and Links. Below the header is the title "Florida Coastal Everglades LTER Program Data Table of Contents (DTOC)". A search filter section allows users to select search criteria: Data Set Originator (Thomas Frankovich), Dataset type (All), FCE Workgroup (Primary Production), Location (map) (All), and Data Set Access (All types of access). There is also a "Sort by" dropdown set to "Workgroup" and a "Keywords" search bar. Below the search section is a table of datasets with the following columns: FCE Data Set ID*, Title, Originator, Location, FCE Workgroup, and Time period. The table lists three datasets: PHY_Frankovich_001 (Florida Bay Temperature and Salinity), ST_PP_Frankovich_001 (Seagrass Epiphyte Accumulation), and ST_PP_Frankovich_002 (Mean Seagrass Epiphyte Accumulation). Each dataset entry includes public and FCE access status.

Select search criteria below to filter the data set information displayed.

Data Set Originator: Thomas Frankovich
Dataset type: All
FCE Workgroup: Primary Production
Location (map): All
Data Set Access: All types of access

Sort by: Workgroup
Keywords: Search

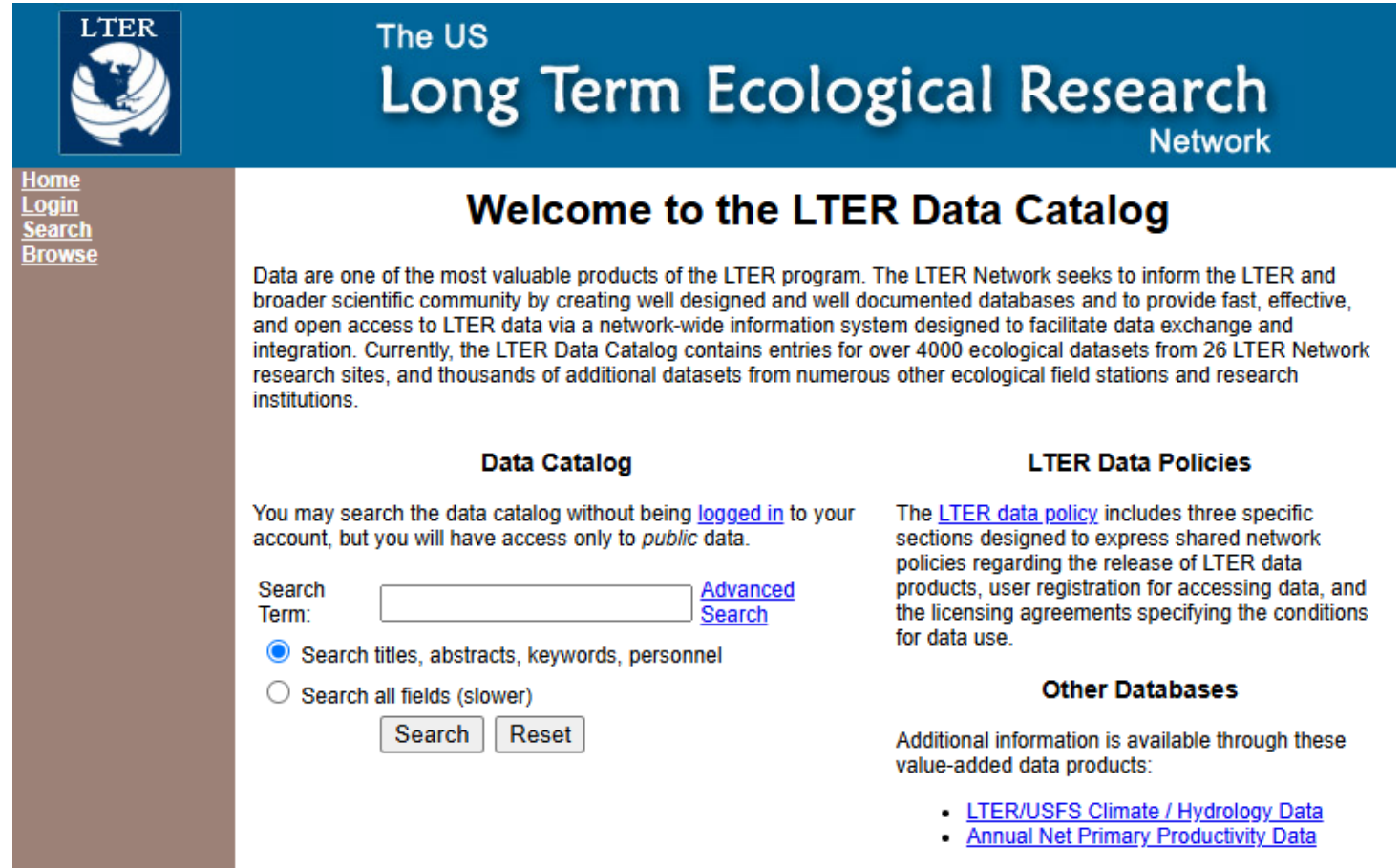
****Click on a Data Set ID or an access link to view a summary of the metadata.****

FCE Data Set ID* (more information)	Title	Originator	Location	FCE Workgroup	Time period
PHY_Frankovich_001 Public access: Available	Florida Bay Temperature and Salinity	Thomas Frankovich	TS/Ph9-11	Primary Production	Jan 2001 - Feb 2002
ST_PP_Frankovich_001 Public access: None Available until January 3, 2003 FCE access: Available	Seagrass Epiphyte Accumulation	Thomas Frankovich	TS/Ph9-11	Primary Production	Jan 2001 - Nov 2001
ST_PP_Frankovich_002 Public access: None Available until January 3, 2003 FCE access: Available	Mean Seagrass Epiphyte Accumulation	Thomas Frankovich	TS/Ph9-11	Primary Production	Jan 2001 - Nov 2001

Number of datasets = 3

FCE I (2000-2006)

- FCE metadata harvested by LTER Network Data Catalog



The screenshot shows the LTER Network Data Catalog homepage. The header features the LTER logo and the text "The US Long Term Ecological Research Network". A sidebar on the left contains links for Home, Login, Search, and Browse. The main content area is titled "Welcome to the LTER Data Catalog" and includes a paragraph about the catalog's purpose. Below this, there are sections for "Data Catalog" (with a search form and options) and "LTER Data Policies" (with a link to the policy document). A section for "Other Databases" lists links to "LTER/USFS Climate / Hydrology Data" and "Annual Net Primary Productivity Data".

LTER
The US
Long Term Ecological Research
Network

[Home](#)
[Login](#)
[Search](#)
[Browse](#)

Welcome to the LTER Data Catalog

Data are one of the most valuable products of the LTER program. The LTER Network seeks to inform the LTER and broader scientific community by creating well designed and well documented databases and to provide fast, effective, and open access to LTER data via a network-wide information system designed to facilitate data exchange and integration. Currently, the LTER Data Catalog contains entries for over 4000 ecological datasets from 26 LTER Network research sites, and thousands of additional datasets from numerous other ecological field stations and research institutions.

Data Catalog

You may search the data catalog without being [logged in](#) to your account, but you will have access only to *public* data.

Search Term: [Advanced Search](#)

☒ Search titles, abstracts, keywords, personnel

☐ Search all fields (slower)

LTER Data Policies

The [LTER data policy](#) includes three specific sections designed to express shared network policies regarding the release of LTER data products, user registration for accessing data, and the licensing agreements specifying the conditions for data use.

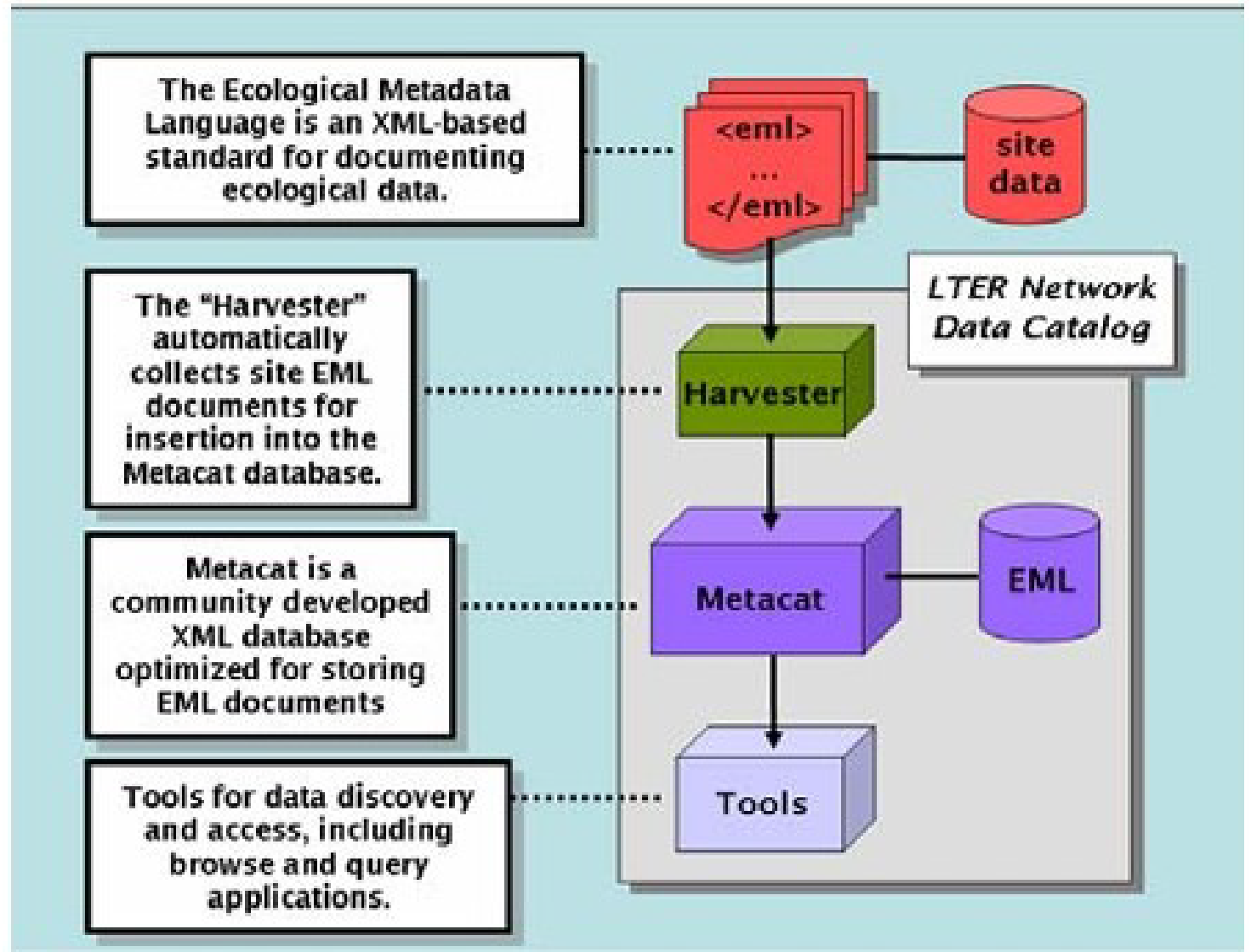
Other Databases

Additional information is available through these value-added data products:

- [LTER/USFS Climate / Hydrology Data](#)
- [Annual Net Primary Productivity Data](#)

FCE I (2000-2006)

- LTER Network adopts Ecological Metadata Language (EML) 2.0.0 as network exchange standard in 2003



U.S. Long Term Ecological Research Network (LTER). 2007.


FCE I Data Highlight

- FCE water quality data contribute to findings of Childers et al. 2006



Article |  Free Access

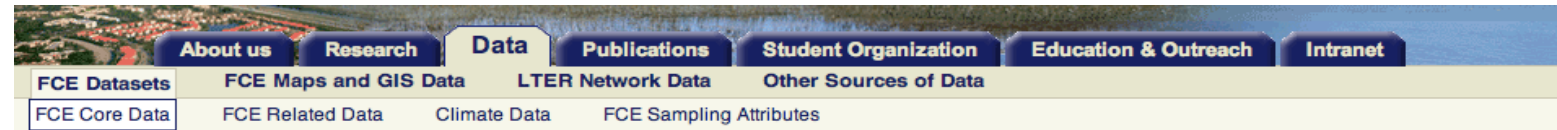
Relating precipitation and water management to nutrient concentrations in the oligotrophic “upside-down” estuaries of the Florida Everglades

Daniel L. Childers , Joseph N. Boyer, Stephen E. Davis, Christopher J. Madden, David T. Rudnick, Fred H. Sklar

First published: 26 January 2006 | https://doi.org/10.4319/lo.2006.51.1_part_2.0602 | Citations: 142

FCE II (2007-2012)

- 42 new datasets (135 total)
- FCE metadata upgrade to EML 2.1.0 begins
- FCE data and metadata prepared for migration to **centralized** LTER Network Information System (NIS) repository



FCE Core Data

FCE Core Data are long-term data sets that address FCE LTER objectives and hypotheses as outlined in LTER proposals for FCE I and FCE II and that are supported primarily by LTER funds. All data are provided with accompanying documentation called 'metadata', which is data about data. Metadata includes many detail about the data including how, when and by whom a particular set of data was collected, and details on the data format. By downloading and using data collected by FCE researchers, the user agrees to the terms of our Data User Agreement found in the [FCE LTER Program Data Management Policy](#) and accessed during the data download process.

FCE Core Data Table of Contents (DTC)

The FCE Core Data Table of Contents (DTC) is a searchable catalog of FCE Core data sets which includes links to metadata and data (if available). The Thematic search lets you search by themes and keywords. The Advanced Search has more options, including searching by originator, working group, keywords, themes, and spatial queries.

Thematic Search

Select a Theme:

- + Atmospheric Carbon Flux
- + Climate
- + Consumer Biomass & Composition
- + Consumer Movements
- + Dissolved Organic Carbon
- + Human Dimensions
- + Hydrology
- + Landscape Patterns
- + Microbial Production & Composition
- + Organic Matter Characterization
- + Plant Nutrients & Isotopes
- + Producer Biomass
- + Producer Composition
- + Producer Productivity**
- + Sea Level & Encroachment

Select a Region:

— Marsh

+ Mangrove/ECOTONE

+ Marine

Select a Type:

- Algae
- Bacteria
- Emergent Plants
- Mangroves
- Periphyton
- Phytoplankton

Advanced Search
Display All Current FCE Datasets
FCE Sampling Attributes

FCE II Data Highlight

- FCE eddy flux tower data contribute to findings of Saha et al. 2012


[Home](#) > [Estuaries and Coasts](#) > [Article](#)

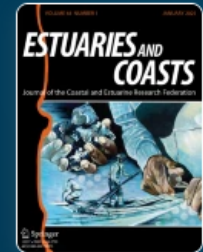
A Hydrological Budget (2002–2008) for a Large Subtropical Wetland Ecosystem Indicates Marine Groundwater Discharge Accompanies Diminished Freshwater Flow

Published: 09 December 2011

Volume 35, pages 459–474, (2012) [Cite this article](#)

[Download PDF](#) 


 Access provided by State University System of Florida



[Estuaries and Coasts](#)

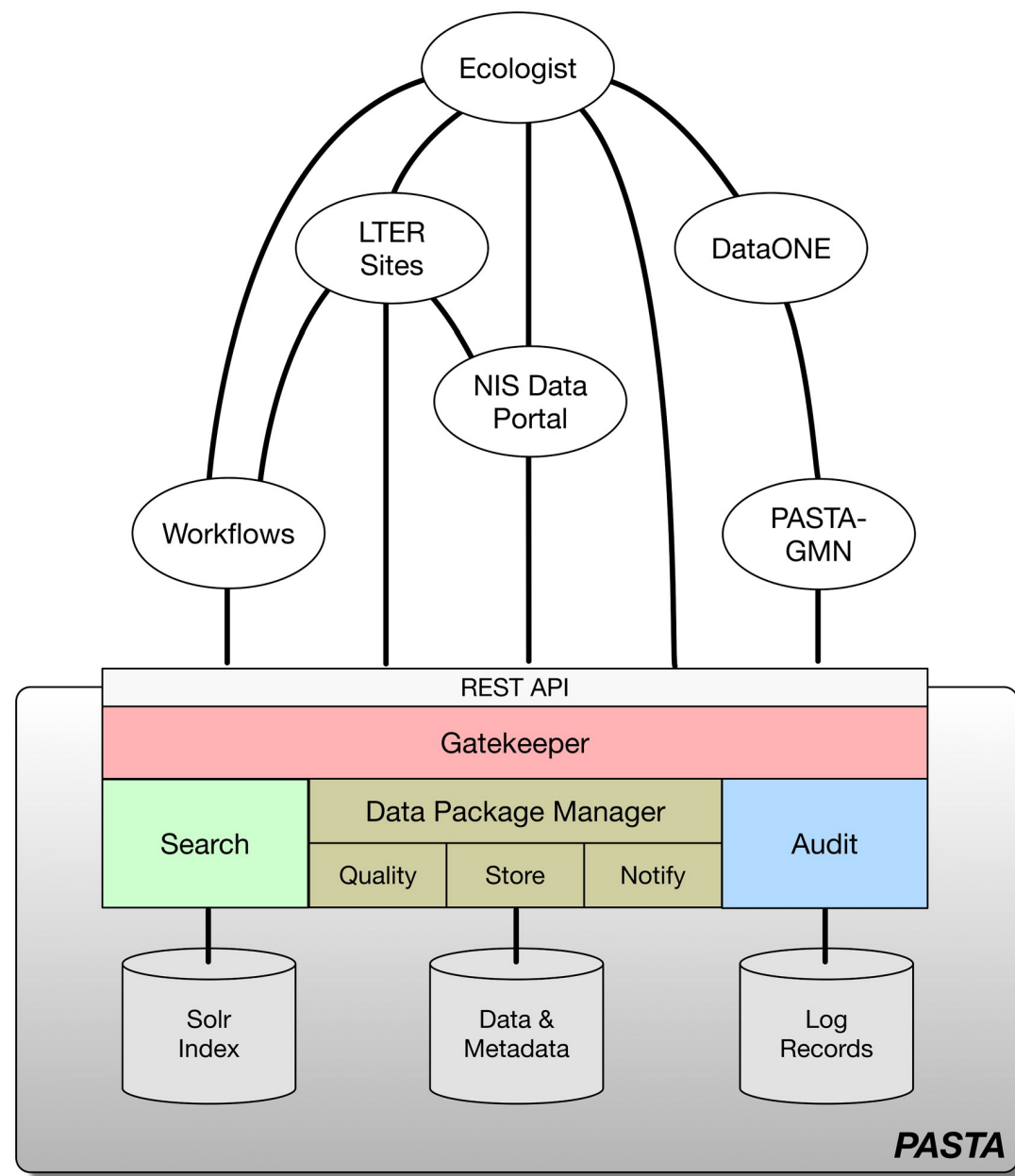
[Aims and scope](#) →

[Submit manuscript](#) →

[Amartya K. Saha](#) , [Christopher S. Moses](#), [René M. Price](#), [Victor Engel](#), [Thomas J. Smith III](#) & [Gordon Anderson](#)

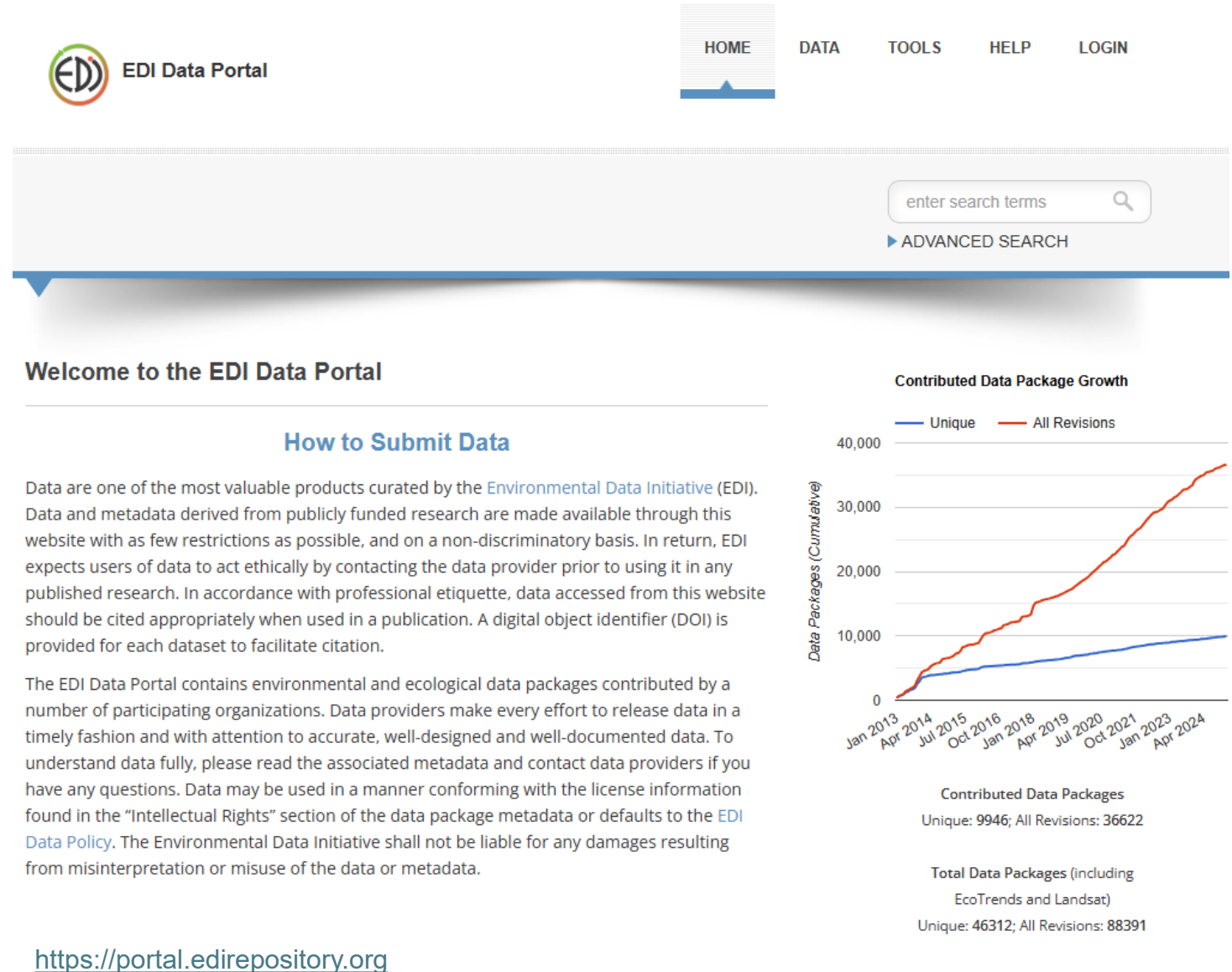
FCE III (2013-2018)

- 39 new datasets (172 total)
- LTER Network adopts Provenance Aware Synthesis Tracking Architecture (PASTA) in 2013 to serve as **centralized** NIS metadata and data repository
 - Congruency checks
 - Data provenance
 - Digital Object Identifiers (DOIs)
 - DataONE node



FCE III (2013-2018)

- Inception of Environmental Data Initiative (EDI) in 2016
- LTER NIS and PASTA superseded by EDI Data Portal and PASTA+
- EDI supports **LTER and non-LTER** data packages



HYDROLOGIC RESTORATION

FCE III Data Highlight

- Long-term monitoring data contribute to findings of Troxler et al. 2014
- Data from Peat Collapse-Saltwater Intrusion Field Experiment contribute to findings of Wilson et al. 2018



Drivers of Decadal-Scale Change in Southern Everglades Wetland Macrophyte Communities of the Coastal Ecotone

Tiffany G. Troxler • Daniel L. Childers •
Christopher J. Madden

ECOLOGICAL
APPLICATIONS
ECOLOGICAL SOCIETY OF AMERICA

Article |  Full Access

Salinity pulses interact with seasonal dry-down to increase ecosystem carbon loss in marshes of the Florida Everglades

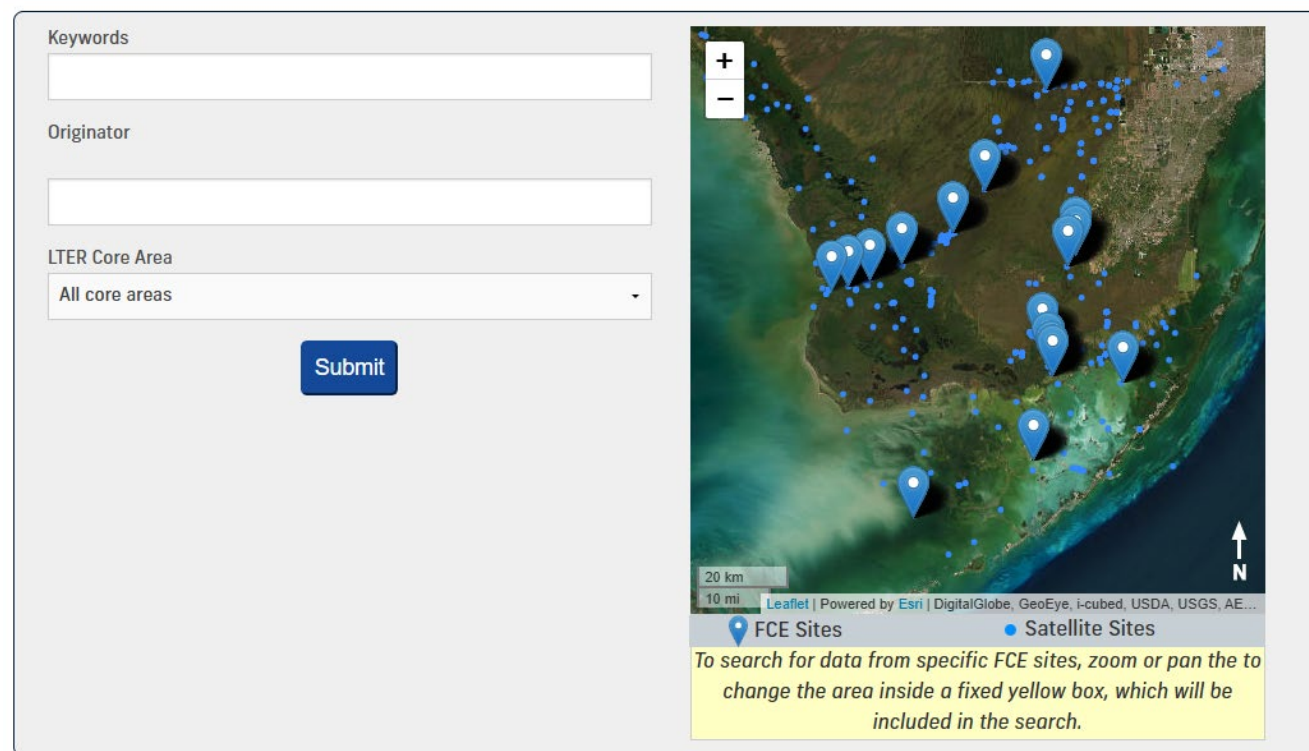
Benjamin J. Wilson , Shelby Servais, Viviana Mazzei, John S. Kominoski, Minjie Hu, Stephen E. Davis, Evelyn Gaiser, Fred Sklar, Laura Bauman, Stephen Kelly, Christopher Madden ... See all authors 

First published: 30 October 2018 | <https://doi.org/10.1002/eap.1798> | Citations: 40

FCE IV (2019-2025)

- 49 new datasets (221 total)
- Local FCE Data Catalog populated from EDI via PASTA+ REST API
- EDI provides enhanced discovery
 - DataONE
 - Google Dataset Search

FCE Data Catalog Search FCE Datasets



Keywords

Originator

LTER Core Area

All core areas

Submit

20 km
10 mi

Leaflet | Powered by Esri | DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AE...

FCE Sites

Satellite Sites


To search for data from specific FCE sites, zoom or pan the to change the area inside a fixed yellow box, which will be included in the search.

Total number of data sets found = 221

<https://fce-lter.fiu.edu/data/core/>

FCE IV (2019-2025)

- FCE begins upgrade to EML 2.2.0
- FCE begins transition from Excel2EML workflow to EDI's ezEML webtool

 ezEML
 EML Documents ▾
 Import/Export ▾
 EDI Info ▾
 User Guide
 About
 News
 Logout

Welcome Back **Gabriel Kamener**
 Active EML Document: **FCE1253_Kominoski_WaterQuality**

Contents ?

Title
 Data Tables
 Creators
 Contacts
 Associated Parties
 Metadata Providers
 Abstract
 Keywords
 Intellectual Rights
 Geographic Coverage
 Temporal Coverage
 Taxonomic Coverage
 Maintenance
 Publisher
 Publication Info
 Methods
 Project
 Other Entities
 Data Package ID

Title

Enter a title for the data package:

Title *

Water Quality Data (Rainfall-driven autosampler) from the Shark River Slough, Everglades National Park (FCE LTER), Florida, USA, June 2003 - ongoing

Save and Continue
 Reset Changes ?

Check Metadata ●
 Check Data Tables ●


FCE IV Data Highlight

- FCE and National Audubon Society data in FCE Data Catalog contribute to findings of Kominoski et al. 2020



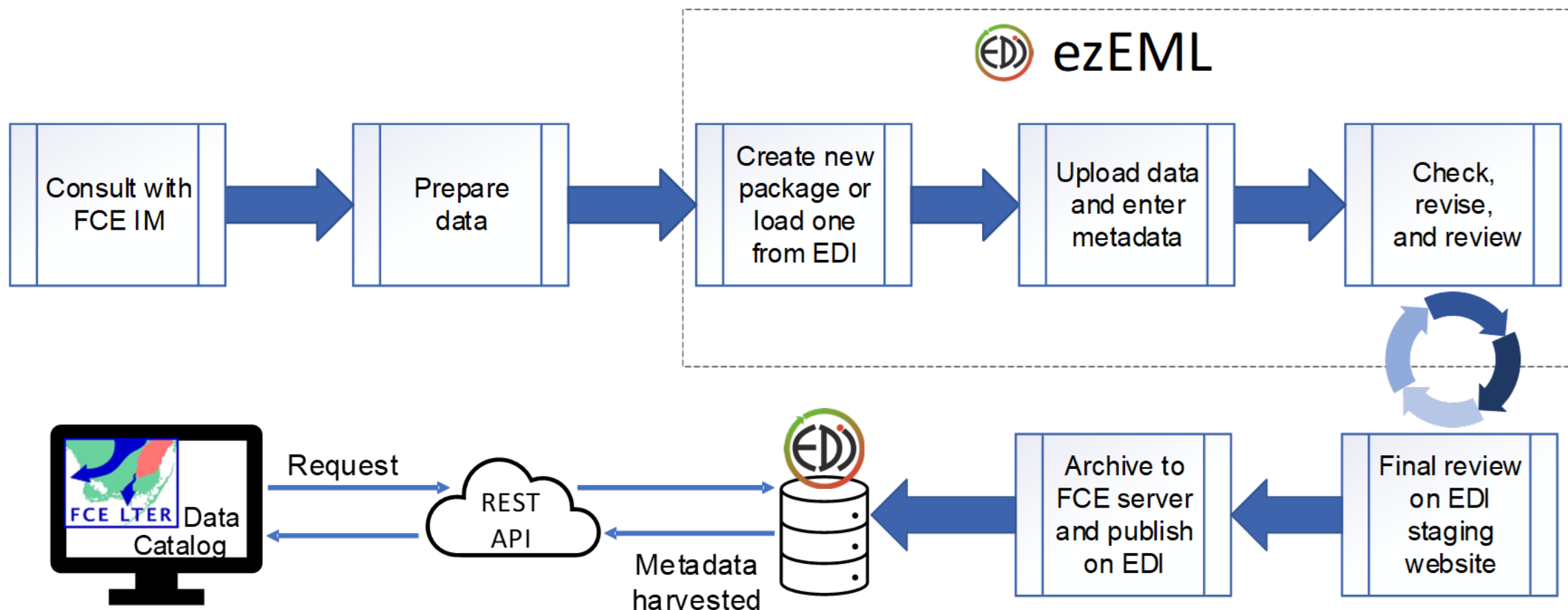
Articles | [Open Access](#) | 

Disturbance legacies increase and synchronize nutrient concentrations and bacterial productivity in coastal ecosystems

John S. Kominoski , Evelyn E. Gaiser, Edward Castañeda-Moya, Stephen E. Davis, Shimelis B. Dessu, Paul Julian II, Dong Yoon Lee, Luca Marazzi, Victor H. Rivera-Monroy, Andres Sola ... [See all authors](#) ▾

First published: 20 January 2020 | <https://doi.org/10.1002/ecy.2988> | Citations: 20

Present Data Publishing Workflow



Future improvements

- Update metadata for **all datasets** to EML 2.2.0
- Taxonomic authority IDs
- Structured funding information
- Semantic annotations
- Persistent digital identifiers

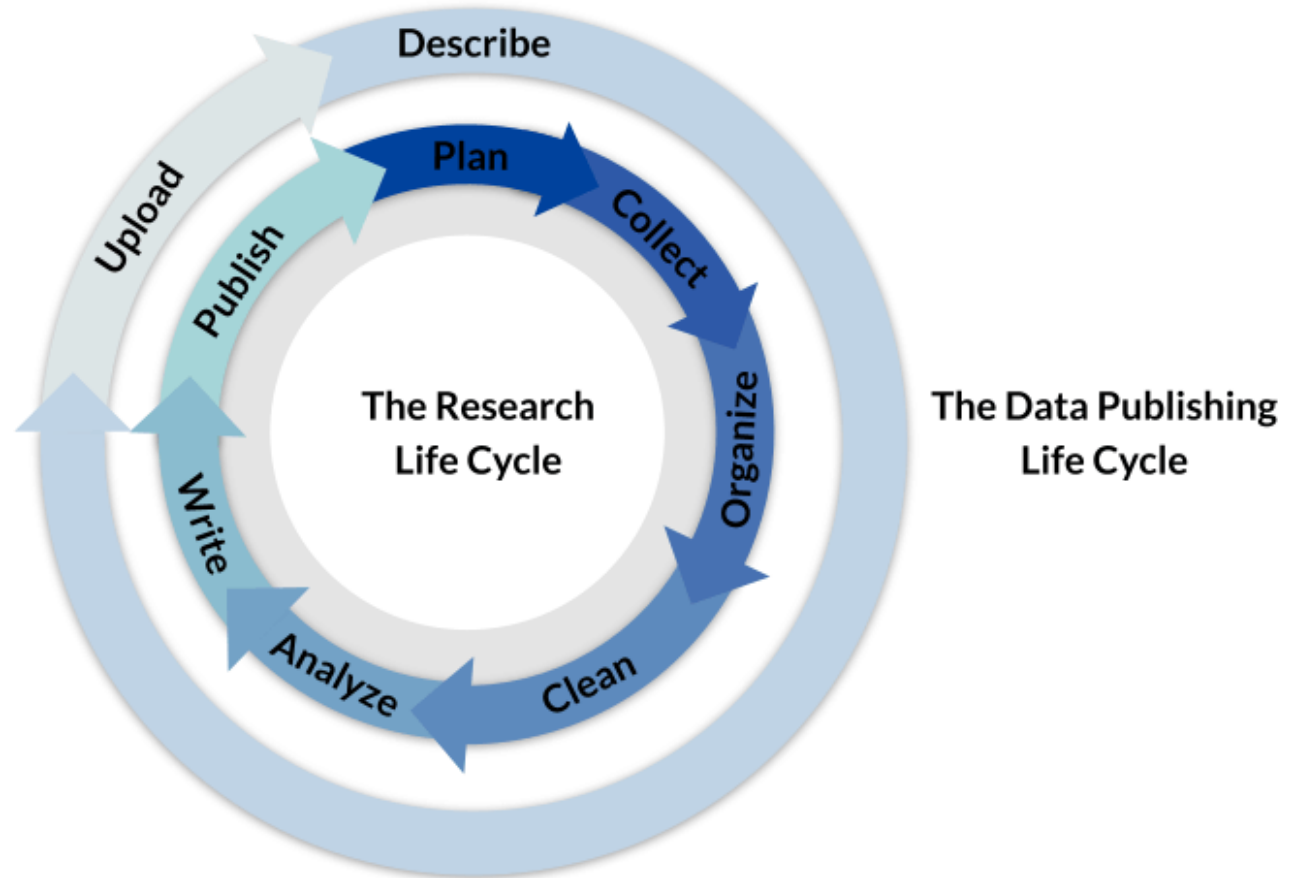


Image courtesy of Environmental data Initiative

Acknowledgements

- Former FCE IMs (Linda Powell and Kristin Vanderbilt)
- Michael Rugge
- John Kominoski
- All the researchers who have contributed data and metadata over the years!



Photo by Michael Rugge



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A wide-angle photograph of a vast, flat landscape. The foreground is dominated by tall, dense grasses, some of which are partially submerged in a shallow body of water. The water reflects the clear blue sky. In the distance, a flat horizon line separates the land from a clear, bright blue sky with a few small, wispy clouds. The overall scene is serene and expansive.

Questions?

References

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