

MBON DATA PORTAL (v2.0)

Marine Biodiversity Observation Network BETA

The Marine Biodiversity Observation Network (MBON) is composed of regional networks of scientists, resource managers, and end-users working to integrate data from existing long-term programs to improve our understanding of changes and connections between marine biodiversity and ecosystem functions.

The MBON Data Portal is a data exploration tool with a customized public web interface that allows scientists, managers, and the general public to discover and access public data from many sources. The Portal provides real-time, delayed-mode, and historical data for in situ and remotely-sensed physical, chemical, and biological observations in both a Catalog and Map View. These data are focused on organisms from microbes to whales, including measures of biodiversity (presence and abundance), productivity, genomics, phenology, and other relevant ecological process measurements or indices. Also featured are habitat characterization and habitat diversity measures, including satellite data and added-value data derived from satellite observations (such as biogeographical seascapes classifications), and neural network model results. Featured in this portal are biodiversity indices that have been computed for key biological datasets within the MBON regions.

The data have been collected by MBON federal agency and regional partners, including academic institutions, IOOS Regional Associations, NOAA Fisheries Science Centers, National Marine Sanctuaries, NOAA Ocean and Atmospheric Research (OAR) laboratories, California Current Integrated Ecosystem Assessment, State resource management agencies, and marine wildlife institutions.

MBON is funded under the National Ocean Partnership Program (NOPP RFP NOAA-NOS-IOOS-2014-2003803) in partnership between NOAA (US IOOS, OAR/Ocean Exploration and Research, and NOAA Fisheries), BOEM, and NASA, with the US IOOS pioneering the implementation.

[Explore map](#)

[Release notes](#)

For best results, use the latest version of these browsers.
 Chrome Firefox

Featured data views

Alaska

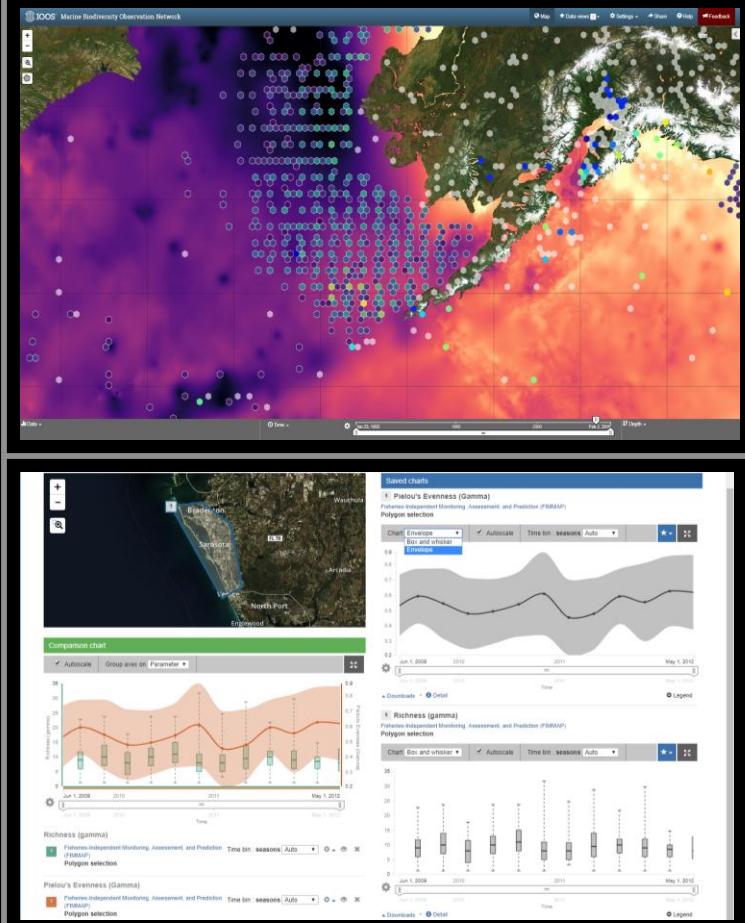
BASIS fish catch
★ Data view: Pacific Warming
★ Data view: Sea ice
Map view

California

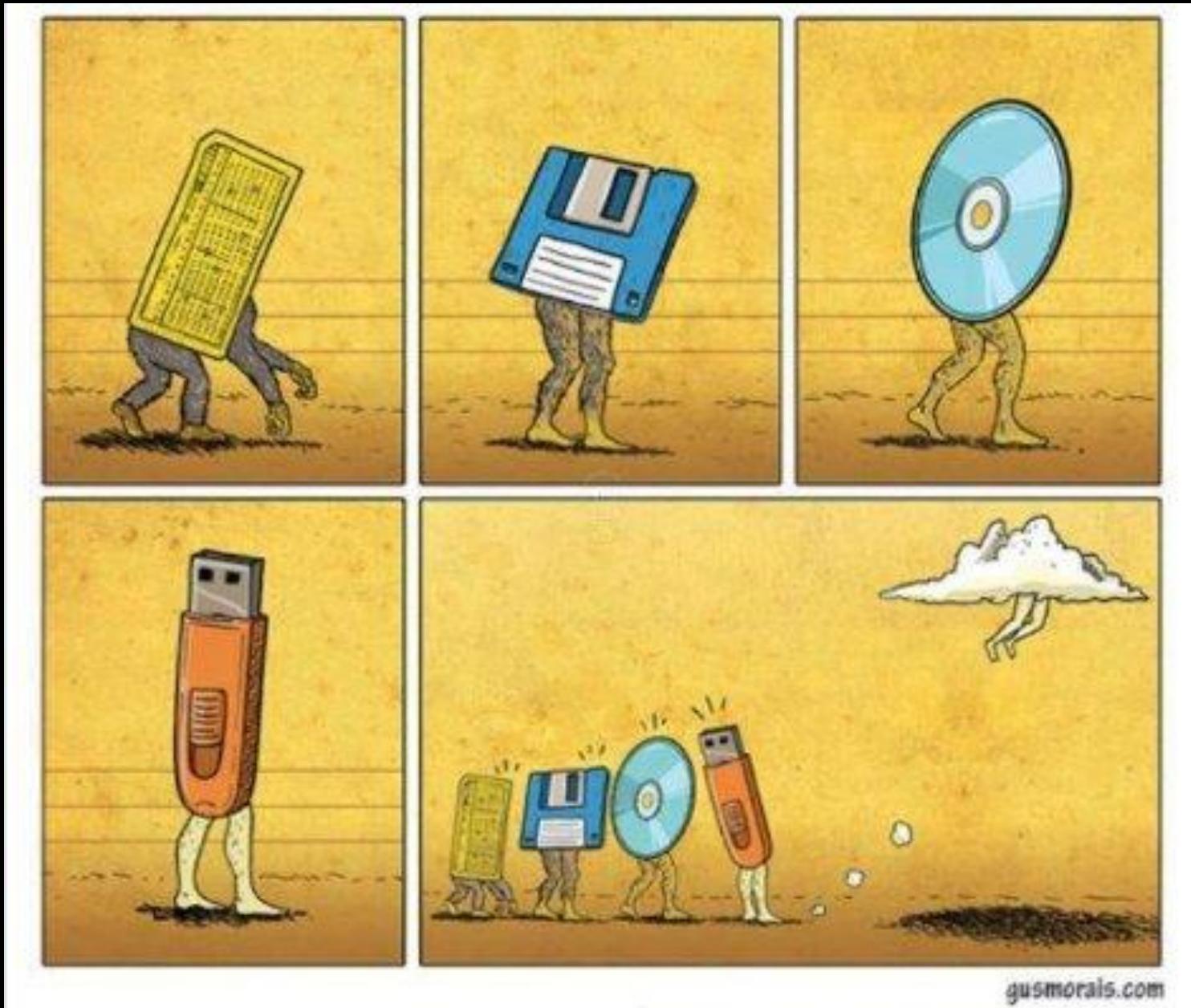
CALCOFI
★ Data view
Map view

Florida

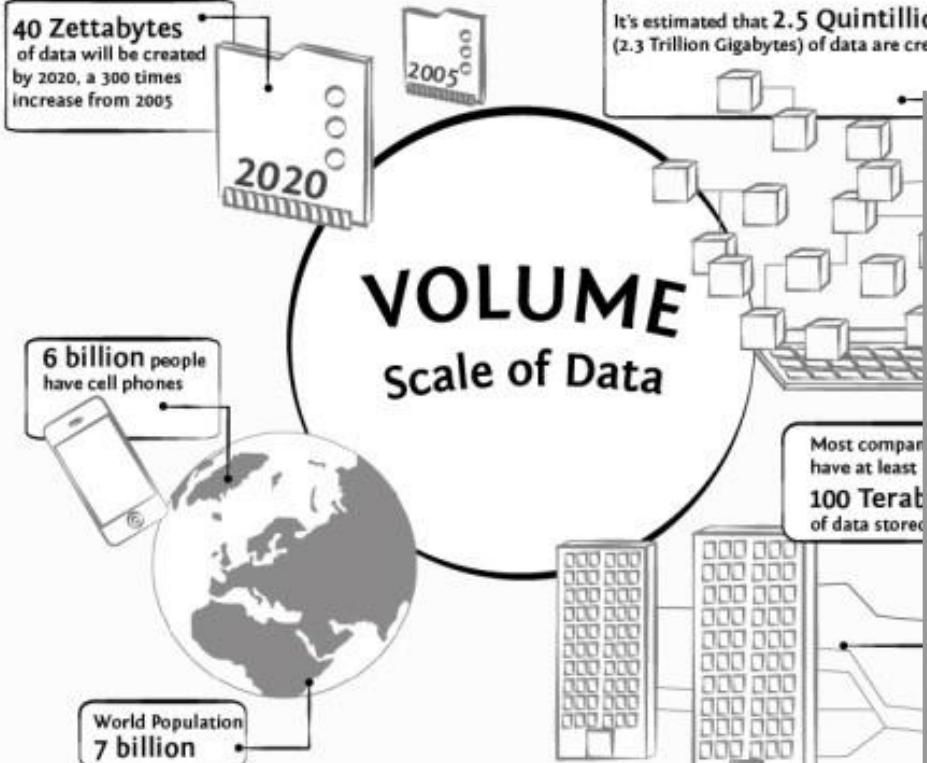
Manatee mortality and Sea Surface temperature
★ Data view
Map view



Stacey Buckelew, Axiom Data Science

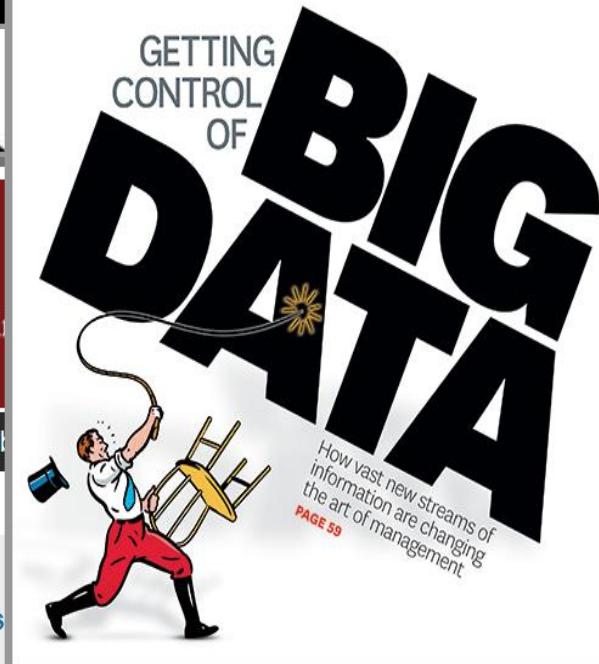


By the year 2020, the digital universe will reach 44 zettabytes – that's a 10-fold increase from 2013.



Harvard Business Review

HBR.ORG OCTOBER 2012
The Big Idea
The True Measures Of Success Michael J. Mauboussin
International Business
10 Rules for Managing Global Innovation Keeley Wilson and Yves L. Duz
Leadership
What Ever Happened To Accountability? Thomas E. Ricks



NEWS BLOG

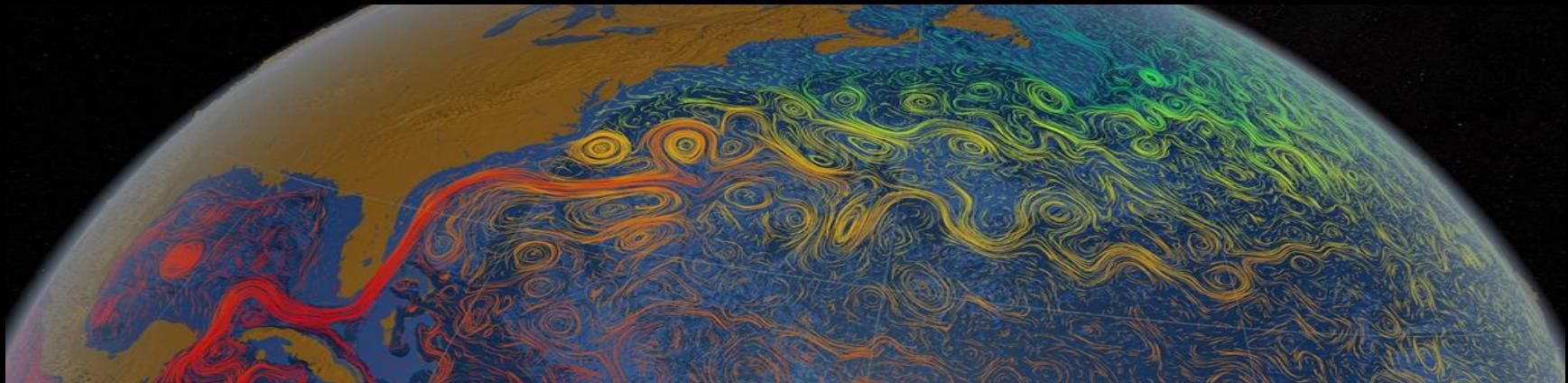
Global scientific output doubles every nine years

07 May 2014 | 16:46 BST | Posted by Richard Van Noorden | Category: Policy, Publishing

It's a common complaint among academics: today's researchers are publishing too much, too fast. But how fast is the mass of scientific output actually growing?

DATA MANAGEMENT CHANGES

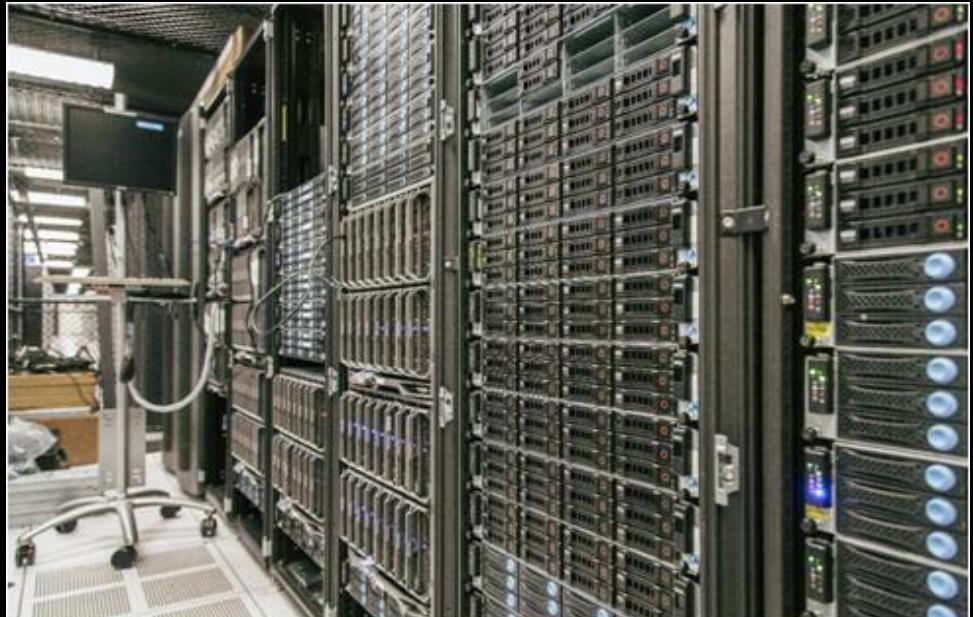
- Data explosion is reforming data management and governance
- Leveraging existing data systems in different ways- *architecture, storage, databases*
- Emphasis on open data as crucial to reliable science
- Integration, visualization, and dissemination are tools, not by-products



OCEAN DATA IS BIG DATA



- Shared cyberinfrastructure approach
 - Leverage applications, systems & hardware across partners
- Community developed software, standards and protocols
 - Standardize systems and interfaces across partners
- Scalable compute and storage infrastructure (HPC)
 - 5 petabytes storage; 3,000 processing cores





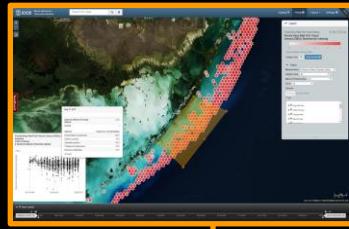
MBON DATA PORTAL (v2.0)

<https://mbon.ioos.us>

The screenshot shows the MBON Data Portal homepage. At the top, there's a header with the IOOS logo, the title "MBON DATA PORTAL (v2.0)", and the URL "https://mbon.ioos.us". Below the header is a main content area with the following sections:

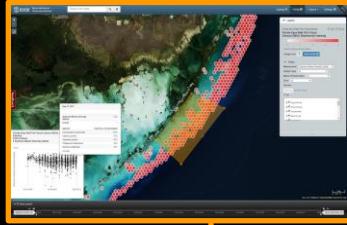
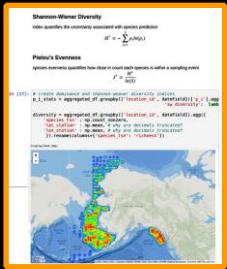
- Marine Biodiversity Observation Network BETA**: A brief description of the MBON network, mentioning its composition of regional networks of scientists, resource managers, and end-users working to integrate data from existing long-term programs to improve our understanding of changes and connections between marine biodiversity and ecosystem functions.
- Data**: A large image of a sea urchin on a coral reef.
- PARTNERS**: Logos for NASA, NOAA, IOOS, and BOEM.
- Explore map** (with a question mark icon): A button to explore the map view.
- Release notes**: A link to the release notes.
- For best results, use the latest version of these browsers**: Icons for Chrome and Firefox.
- Featured data views**: Three cards representing different regions:
 - Alaska**: Shows a bar chart for BASIS fish catch. Options include Data view, Map view, and a question mark icon.
 - California**: Shows a map of California with various data points. Options include Data view, Map view, and a question mark icon.
 - Florida**: Shows a line graph for Manatee mortality and Sea Surface temperature. Options include Data view, Map view, and a question mark icon.

Customizable data environment allowing scientists, managers, and the public others to discover, interact, and access biologically-relevant data from different sources



**REUSE &
TRANSFORMATION**

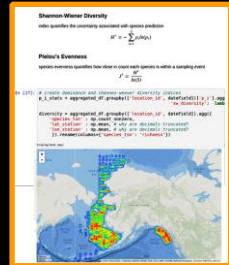
*Jupyter Notebook & data
analyses*



**REUSE &
TRANSFORMATION**
*Jupyter Notebook & data
analyses*

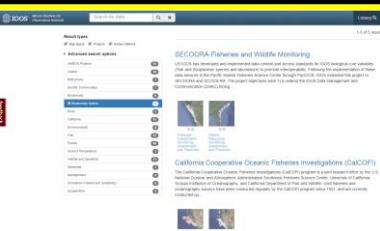
REUSE & TRANSFORMATION

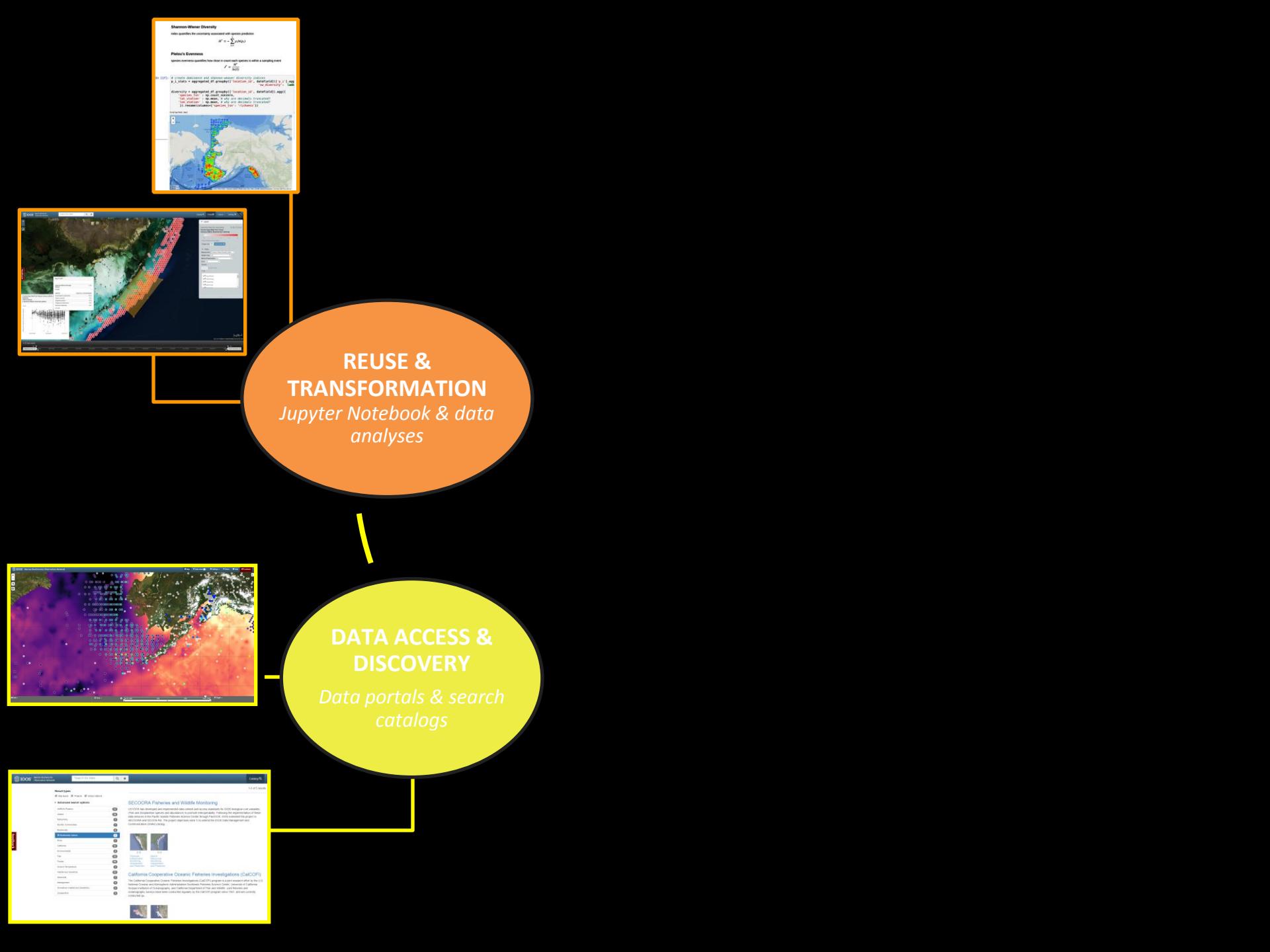
*Jupyter Notebook & data
analyses*



DATA ACCESS & DISCOVERY

*Data portals & search
catalogs*

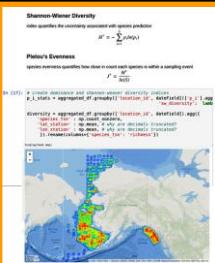




Data Lifecycle

DATA CREATION & QUALITY CONTROL

Scientists or Ingestion



DATA STORAGE

Workspace

DATA DESCRIPTION

Metadata Editor

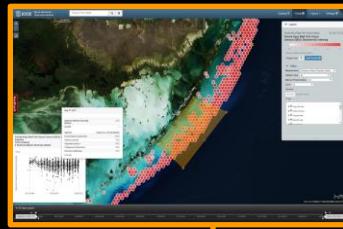


ARCHIVE & PRESERVATION

Repository submission pathway

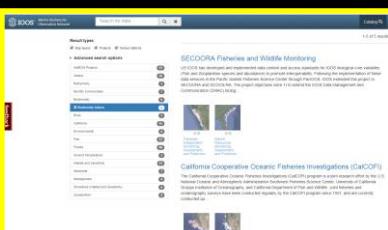
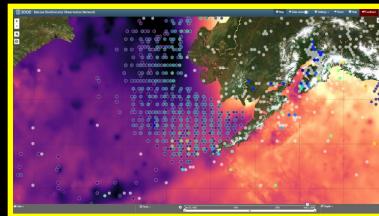
REUSE & TRANSFORMATION

Jupyter Notebook & data analyses



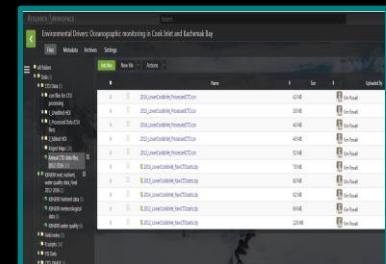
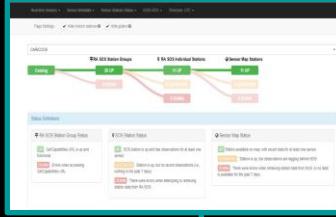
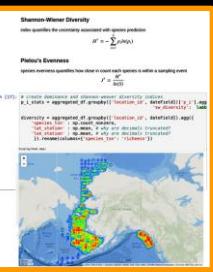
DATA ACCESS & DISCOVERY

Data portals & search catalogs



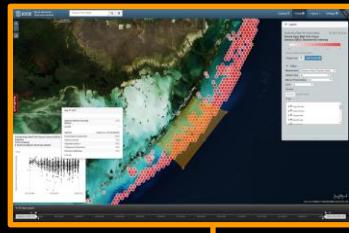
DATA CREATION & QUALITY CONTROL

Scientists or Ingestion



REUSE & TRANSFORMATION

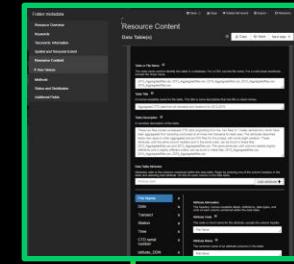
Jupyter Notebook & data analyses



Data Lifecycle

DATA STORAGE

Workspace



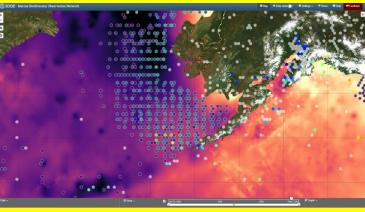
DATA DESCRIPTION

Metadata Editor



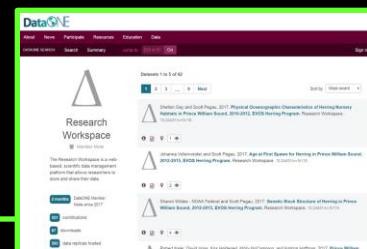
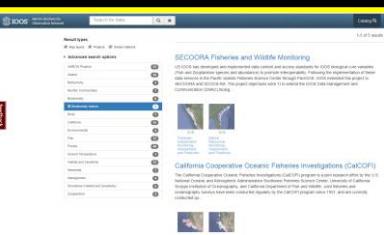
DATA ACCESS & DISCOVERY

Data portals & search catalogs



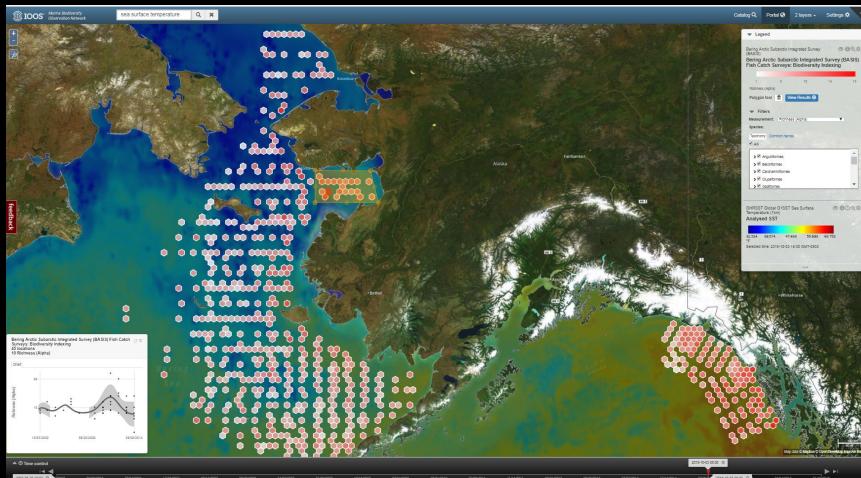
ARCHIVE & PRESERVATION

Repository submission pathway



Map

Integrate & visualize data from many sources



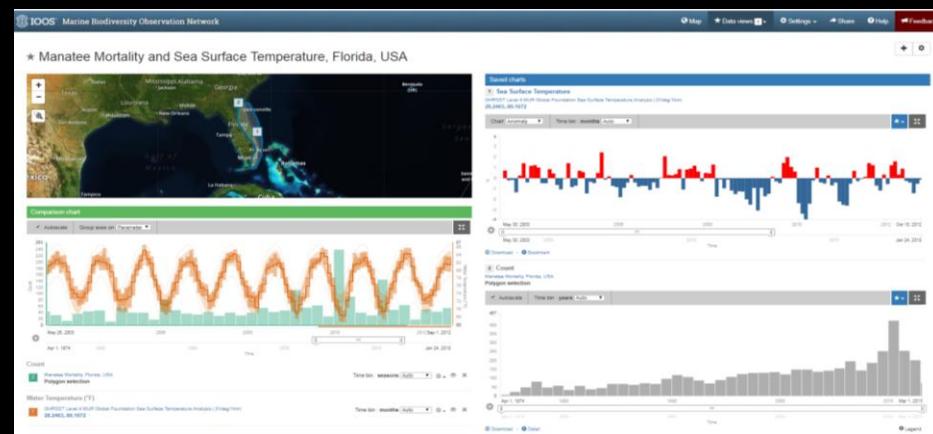
Catalog

Search , metadata, & data download

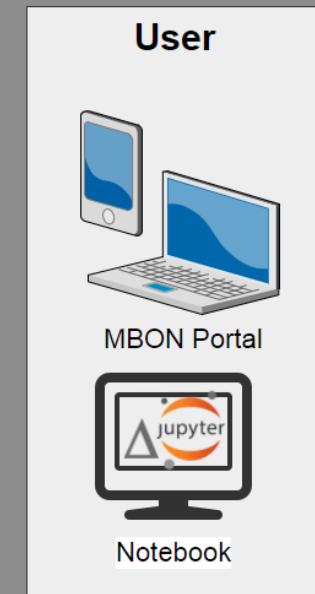
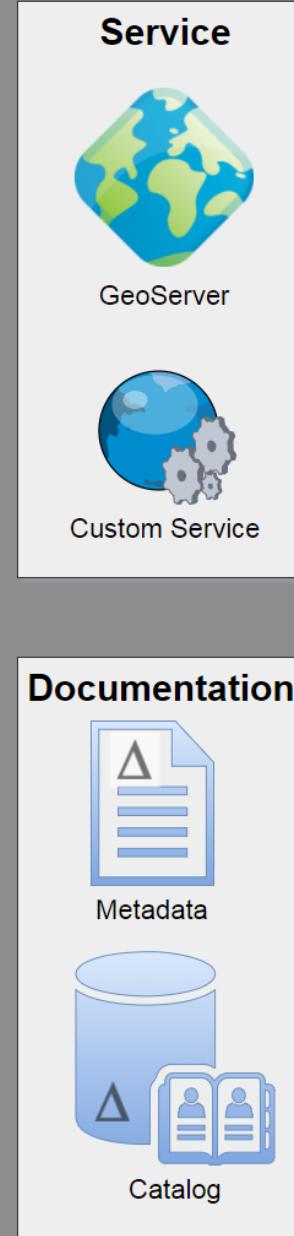
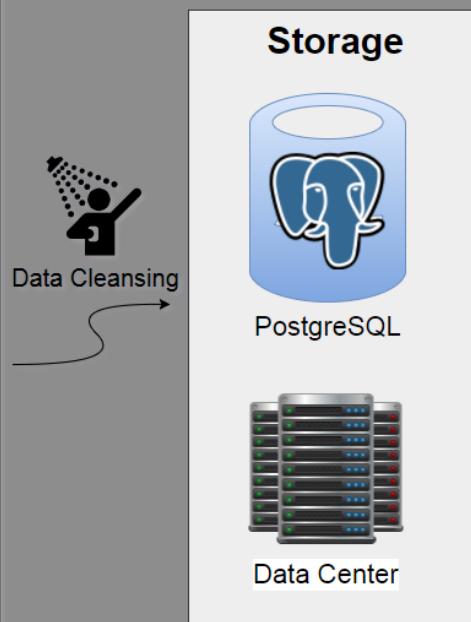
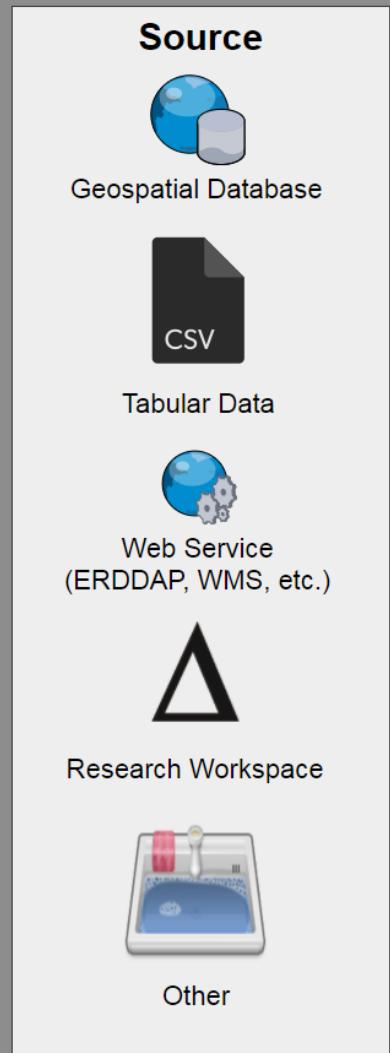


Data Views

Rapidly assimilate & compare different data streams



MBON Data Pipeline

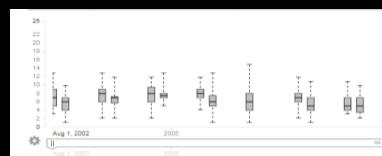


△ = Research Workspace Pipeline

Data Types

Biodiversity

count, richness, diversity indices



Platforms

moorings, shore stations



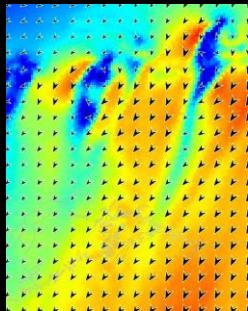
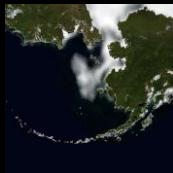
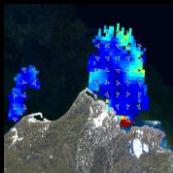
Products

skill assessment, shoreline change, etc.



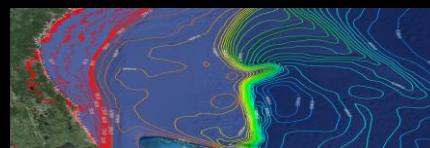
Grids

models, satellite, radar



GIS

Habitat types, bathymetry,
fishing zones, etc.



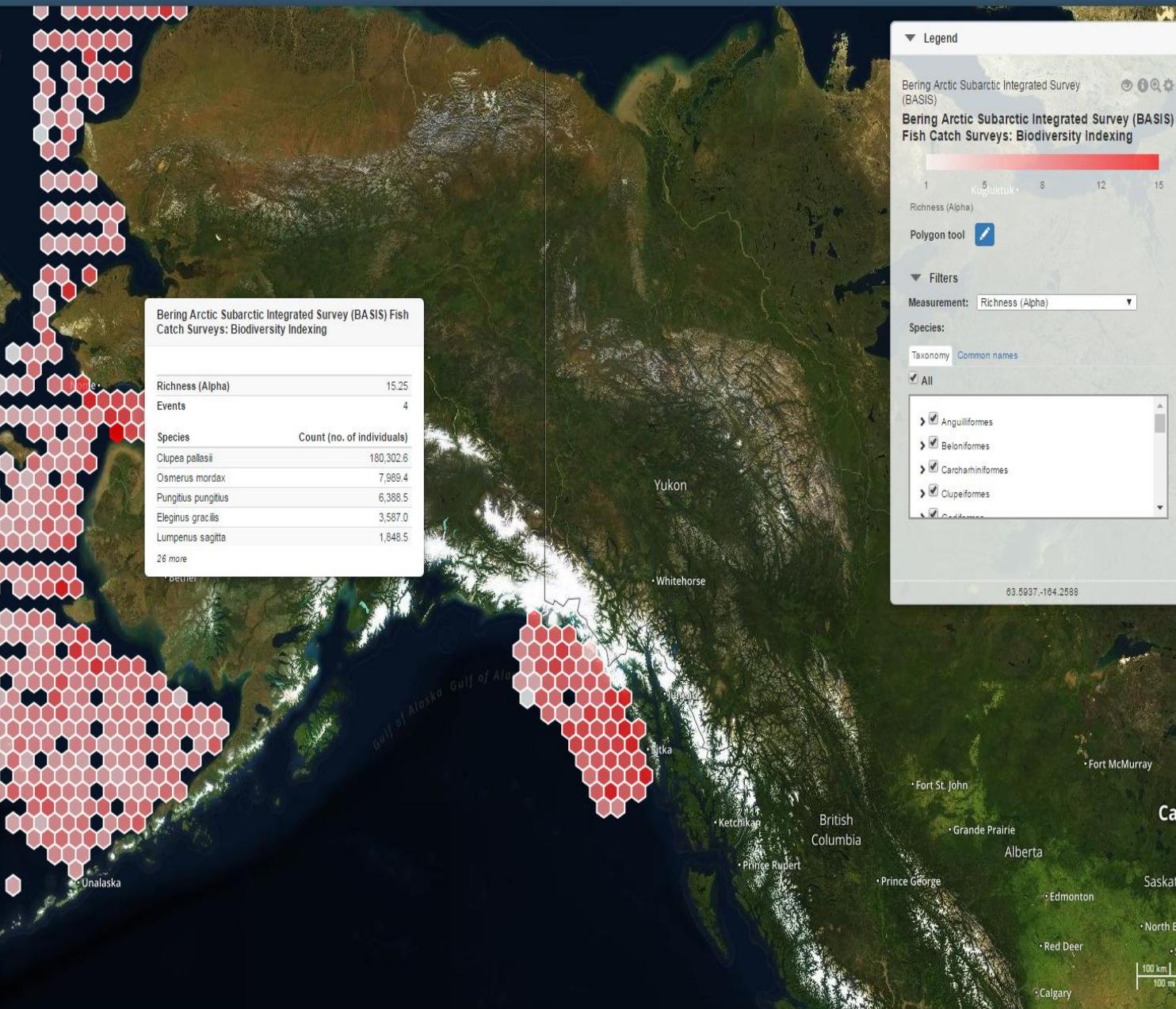
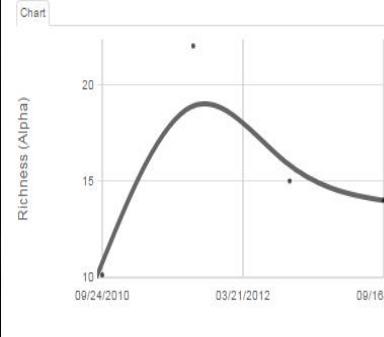
RESEARCH A WORKSPACE

AMBON - Chlorophyll-A and Nutrient from CTD	
Data / Final data, 2015	Back to Search Results Project Overview Project Data (16)
AMBON 2015 bottle file new_ Station locations and depths.xls (5.7 MB)	File Metadata
AMBON 2015 bottle file new_Nutrients_chlorophyll bottles.xls (46.0 kB)	File Metadata
Preliminary Data Plots	
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AMBON15_EDDA_Arbitrarily.png (493.9 kB)	File Metadata
AMBON15_Ou_Arbitrarily.png (539.5 kB)	File Metadata
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bottom water AMBON_Nitratebottles.png (275.1 kB)	File Metadata
AMBON15_Mu_Arbitrarily.png (405.2 kB)	File Metadata
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○

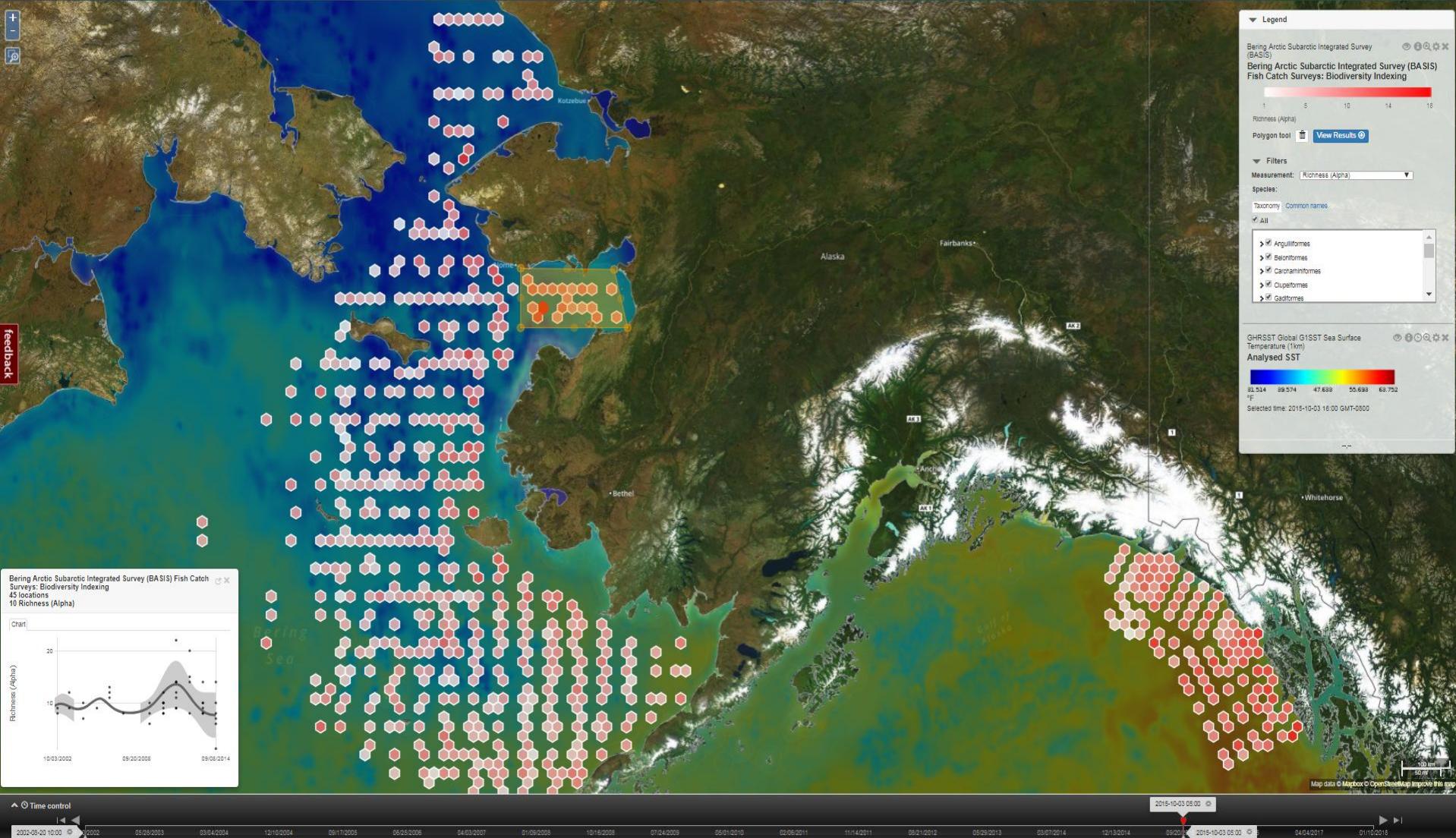
Feedback

Bering Arctic Subarctic Integrated Survey (BASIS) Fish Catch Surveys: Biodiversity Indexing
4 locations
15 Richness (Alpha)

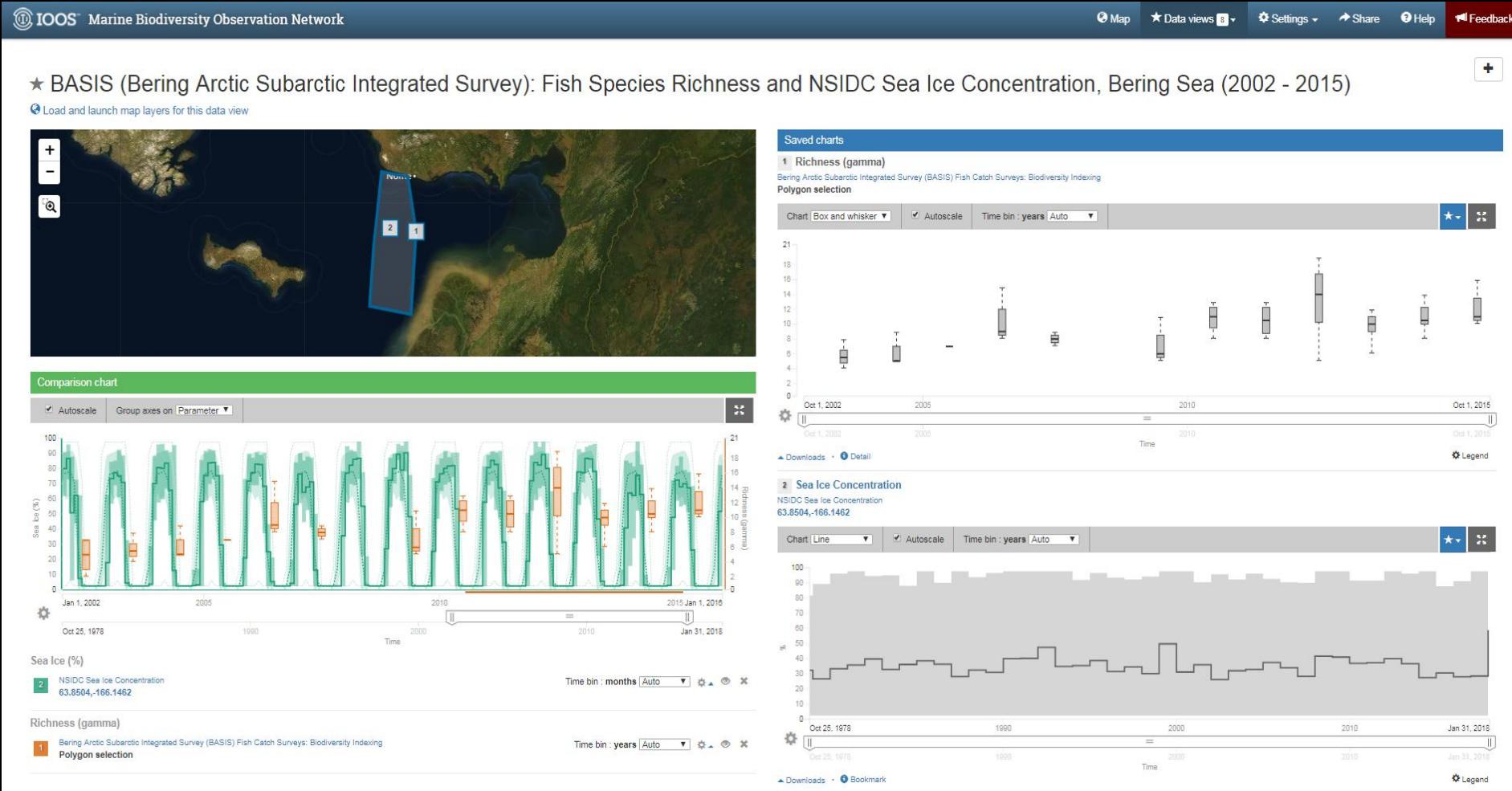


Time control

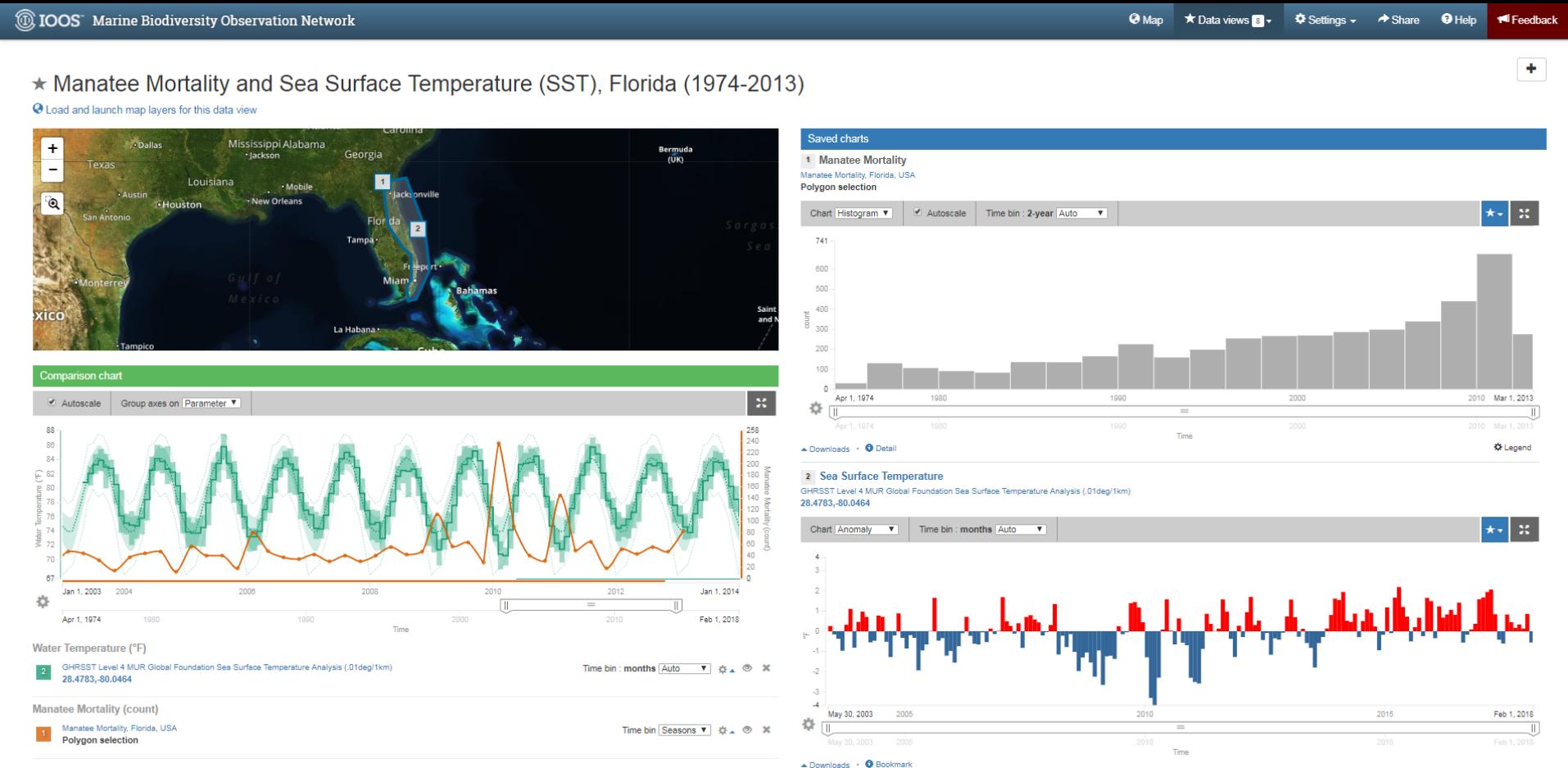
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Custom Data Views ('dashboards')

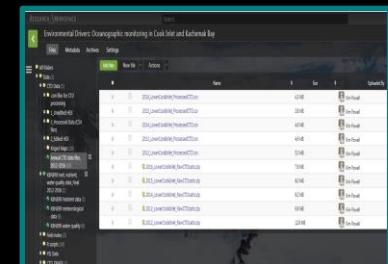
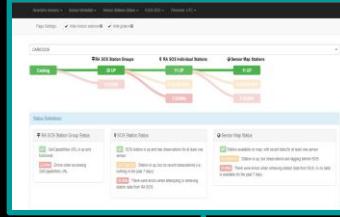
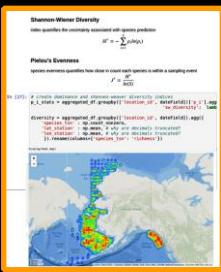


Custom Data Views ('dashboards')



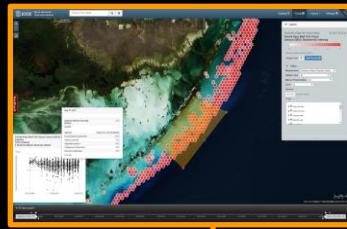
DATA CREATION & QUALITY CONTROL

Scientists or Ingestion



REUSE & TRANSFORMATION

Jupyter Notebook & data analyses



DATA STORAGE

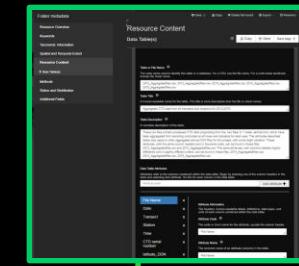
Workspace

Data Lifecycle



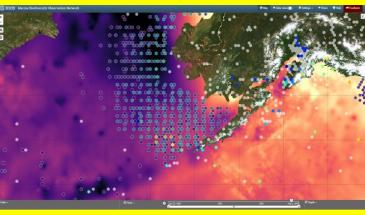
DATA DESCRIPTION

Metadata Editor



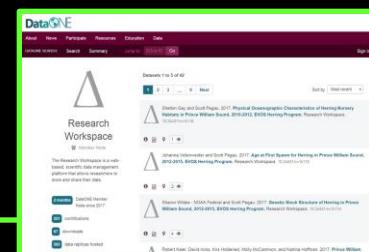
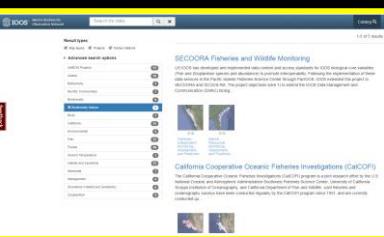
DATA ACCESS & DISCOVERY

Data portals & search catalogs



ARCHIVE & PRESERVATION

Repository submission pathway



MBON Data Catalog

IOOS™ Marine Biodiversity Observation Network

Search for data

Result types Map layers Projects Sensor stations

Advanced search options

AMBON Projects	13
Alaska	18
Bathymetry	1
Benthic Communities	7
Biodiversity	9
Biodiversity Indices	5
Birds	7
California	15
Environmental	4
Fish	13
Florida	48
Ground Temperature	1
Habitat and Sensitivity	11
Mammals	7
Management	4
Shorelines (Habitat and Sensitivity)	5
Zooplankton	4

1-5 of 5 results

SECOORA Fisheries and Wildlife Monitoring

US IOOS has developed and implemented data content and access standards for IOOS biological core variables (Fish and Zooplankton species and abundance) to promote interoperability. Following the implementation of these data services in the Pacific Islands Fisheries Science Center through PacIOOS, IOOS extended this project to SECOORA and GCOOS-RA. The project objectives were 1) to extend the IOOS Data Management and Communication (DMAC) biolog...

Fisheries-Independent Monitoring, Assessment, and Prediction

Marine Resources Monitoring, Assessment, and Prediction

California Cooperative Oceanic Fisheries Investigations (CalCOFI)

The California Cooperative Oceanic Fisheries Investigations (CalCOFI) program is a joint research effort by the U.S. National Oceanic and Atmospheric Administration Southwest Fisheries Science Center, University of California Scripps Institution of Oceanography, and California Department of Fish and Wildlife. Joint fisheries and oceanography surveys have been conducted regularly by the CalCOFI program since 1951, and are currently conducted qu...

Fish Counts

Egg Counts

feedback

[MBON Portal \(<http://mbon.ioos.us>\)](http://mbon.ioos.us)

 Axiom
DATA SCIENCE

Data Catalog

Content Pages

- Summary
- Data availability
- License / usage
- Variable / layer preview
- Contact information
- Original-source link

[Back to Search Results](#)

Rockfish Recruitment and Ecosystem Assessment Survey

The Fisheries Ecology Division (FED), of the Southwest Fisheries Science Center (SWFSC) has conducted a midwater trawl survey off central California since 1983 with the primary goal of developing pre-recruit indices for young-of-the-year (YOY) rockfish (*Sebastodes* spp.). The survey also samples numerous other components of the epipelagic micronekton, including other YOY groundfish (such as Pacific hake, *Merluccius productus*, and sanddab, *Citharichthys* spp.), coastal pelagic fishes (such as Pacific sardine, *Sardinops sagax*, and northern anchovy, *Engraulis mordax*) and other forage species.

[Download](#) [Portal](#) [+](#)

Rockfish Recruitment and Ecosystem Assessment Survey

- Metadata URL: <http://oceandiscovery.pfeg.noaa.gov/erddap/in...>
- Date Range: 05/13/1990 11:52 - 08/12/2015 19:27

The Fisheries Ecology Division (FED), of the Southwest Fisheries Science Center (SWFSC) has conducted a midwater trawl survey off central California since 1983 with the primary goal of developing pre-recruit indices for young-of-the-year (YOY) rockfish (*Sebastodes* spp.). The survey also samples numerous other components of the epipelagic micronekton, including other YOY groundfish (such as Pacific hake, *Merluccius productus*, and sanddab, *Oithichthys* spp.), coastal pelagic fishes (such as Pacific sardine, *Sardinops sagax*, and northern anchovy, *Engraulis mordax*) and other forage species.

Additional details regarding the survey methods and results are described in Ralston et al. (2015) and Sakuma et al. Ralston, S., J.C. Field and K.S. Sakuma. 2015. Longterm variation in a central California pelagic forage assemblage. Journal of Marine Systems 148: 28-37, <http://dx.doi.org/10.1016/j.jmarsys.2014.06.013>. Sakuma, K.M., J.C. Field, B.B. Marinovic, C.N. Carrion, N.J. Mantua and S. Ralston. In revision. Anomalous epipelagic micronekton assemblage patterns in the neritic waters of the California Current in spring 2015 during a period of extreme ocean conditions. CalCOFI Reports.

Filter options: *Biodiversity indexes are not normalized!*

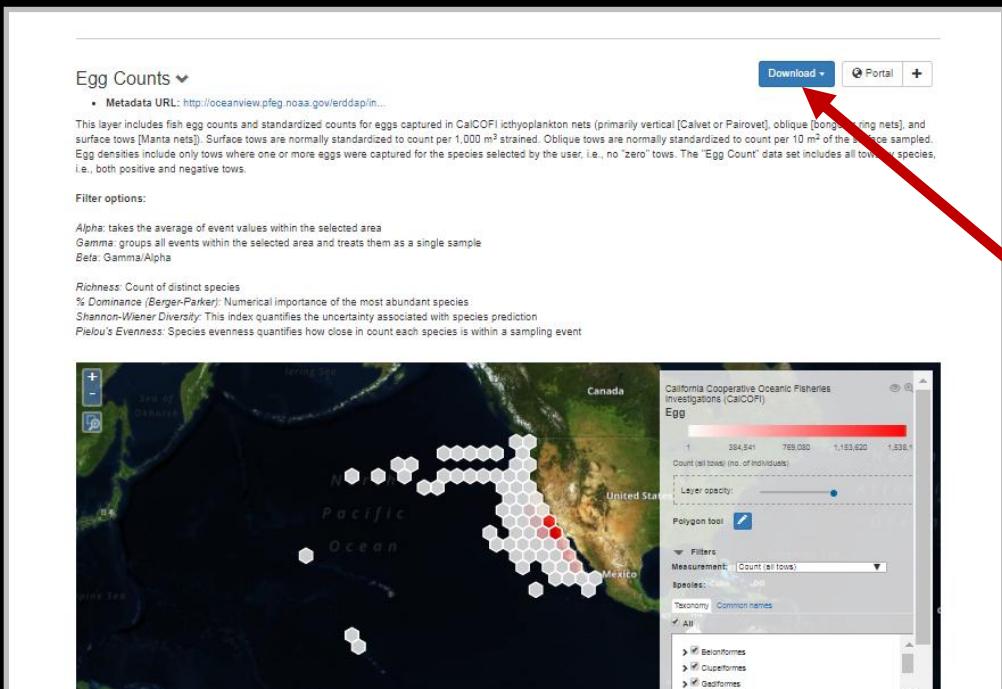
Alpha: Average of event values within the selected area
Gamma: Group all events within the selected area and treat them as a single sample
Beta: Gamma/Alpha ratio

Richness: Count of distinct species
% Dominance (Berger-Parker): Numerical importance of the most abundant species
Shannon-Wiener Diversity: This index quantifies the uncertainty associated with species prediction
Pielou's Evenness: Species evenness quantifies how close in count each species is within a sampling event

Usage notes
The data may be used and redistributed for free but is not intended for legal use, since it may contain inaccuracies. Neither the data Contributor, ERD, NOAA, nor the United States Government, nor any of their employees or contractors, makes any warranty, express or implied, including warranties of merchantability and fitness for a particular purpose, or assumes any legal liability for the accuracy, completeness, or usefulness, of this information.

Map data © Mapbox © OpenStreetMap Improve this map

Downloads Using Interoperability



Richness (gamma)

Bering Arctic Subarctic Integrated Survey (BASIS) Fish Catch Surveys: Biodiversity Indexing

Polynon selection

Calculated data

Binned years

Raw data

CSV https://data.axds.co/gs/wfs?service=WFS&version=1.0.0&request=GetFeature&typename=BASIS_FISH_CATCH_SURVEYS_BIODIVERSITY_INDEXING&outputFormat=application%2Fvnd.ogc-wfs-typename&bbox=-180,60,180,80&time=2011-11-01T00:00:00Z&time=2011-11-01T00:00:00Z

Shape file https://data.axds.co/gs/wfs?service=WFS&version=1.0.0&request=GetFeature&typename=BASIS_FISH_CATCH_SURVEYS_BIODIVERSITY_INDEXING&outputFormat=application%2Fvnd.ogc-wfs-shapefile&bbox=-180,60,180,80&time=2011-11-01T00:00:00Z&time=2011-11-01T00:00:00Z

JSON https://data.axds.co/gs/wfs?service=WFS&version=1.0.0&request=GetFeature&typename=BASIS_FISH_CATCH_SURVEYS_BIODIVERSITY_INDEXING&outputFormat=application%2Fvnd.ogc-wfs-json&bbox=-180,60,180,80&time=2011-11-01T00:00:00Z&time=2011-11-01T00:00:00Z

Downloads Detail

ncWMS
Shapefile
CSV
THREDDS
netCDF
OPenDAP
ERDDAP

Downloads Using Interoperability

IOOS® Marine Biodiversity Observation Network

Bering Sea

Calculated data

Richness (gamma): Binned years

Download

Start date	End date	Standard deviation	Mean	Median	Min	Max	25th Percentile	75th Percentile	Records (count)
2002-01-01T09:00:00Z	2003-01-01T09:00:00Z	2.170574210909016	7.15	7	3	13	6	9	80
2003-01-01T09:00:00Z	2004-01-01T09:00:00Z	1.9184774055368905	8.402777777777779	9	4	12	7	10	72
2004-01-01T09:00:00Z	2004-12-31T09:00:00Z	2.105904421084265	7.338983050847458	7	2	11	6	9	59
2005-01-01T09:00:00Z	2006-01-01T09:00:00Z	1.8770370566693648	8.403225806451612	8	6	12	7	9	62
2006-01-01T09:00:00Z	2007-01-01T09:00:00Z	2.2355280166167617	6.211267605633803	6	1	12	5	8	71
2007-01-01T09:00:00Z	2008-01-01T09:00:00Z	2.1591146826494776	6.763888888888889	6.5	3	12	5.75	8	72
2008-01-01T09:00:00Z	2008-12-31T09:00:00Z	2.2228757209048458	5.294117647058823	5	2	11	3.25	6.75	34
2009-01-01T09:00:00Z	2010-01-01T09:00:00Z	2.326488559956365	4.784313725490196	5	1	10	3	6	51
2010-01-01T09:00:00Z	2011-01-01T09:00:00Z	2.056893853588457	4.766666666666666667	4.5	1	12	3	6	120
2011-01-01T09:00:00Z	2012-01-01T09:00:00Z	1.9327476835915351	4.397058823529412	4	1	9	3	6	68
2012-01-01T09:00:00Z	2012-12-31T09:00:00Z	2.4841259528915027	6.441558441558442	6	2	14	5	8	77
2014-01-01T09:00:00Z	2015-01-01T09:00:00Z	3.1831927446170645	8.641975308641975	8	3	16	6	11	81

Showing 1 to 13 of 13 entries

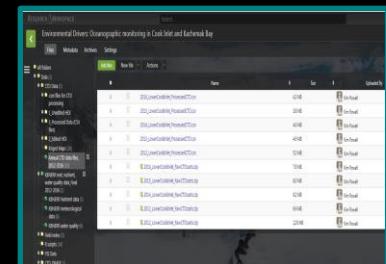
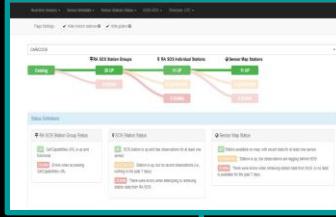
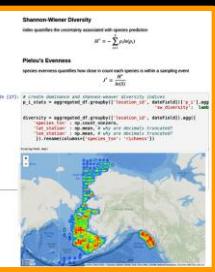
NOAA Center for Operational Oceanographic Products and Services (CO-OPS)
Village Cove, St. Paul Island

Chart Anomaly Time bin: months Auto



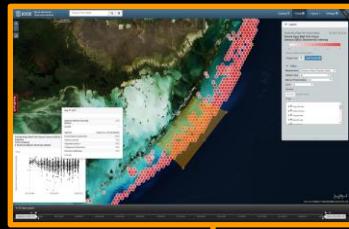
DATA CREATION & QUALITY CONTROL

Scientists or Ingestion



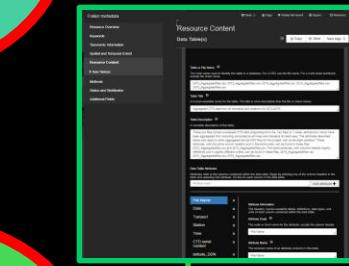
REUSE & TRANSFORMATION

Jupyter Notebook & data analyses



DATA STORAGE

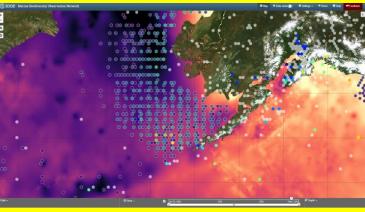
Workspace



Data Lifecycle

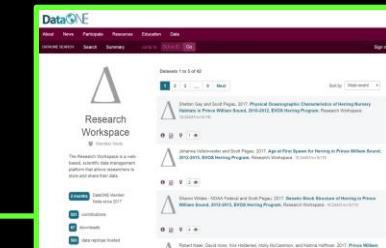
DATA ACCESS & DISCOVERY

Data portals & search catalogs



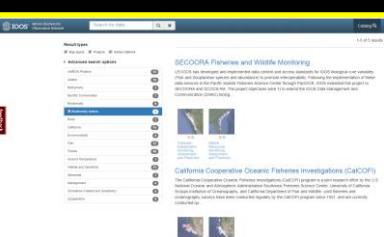
DATA DESCRIPTION

Metadata Editor



ARCHIVE & PRESERVATION

Repository submission pathway



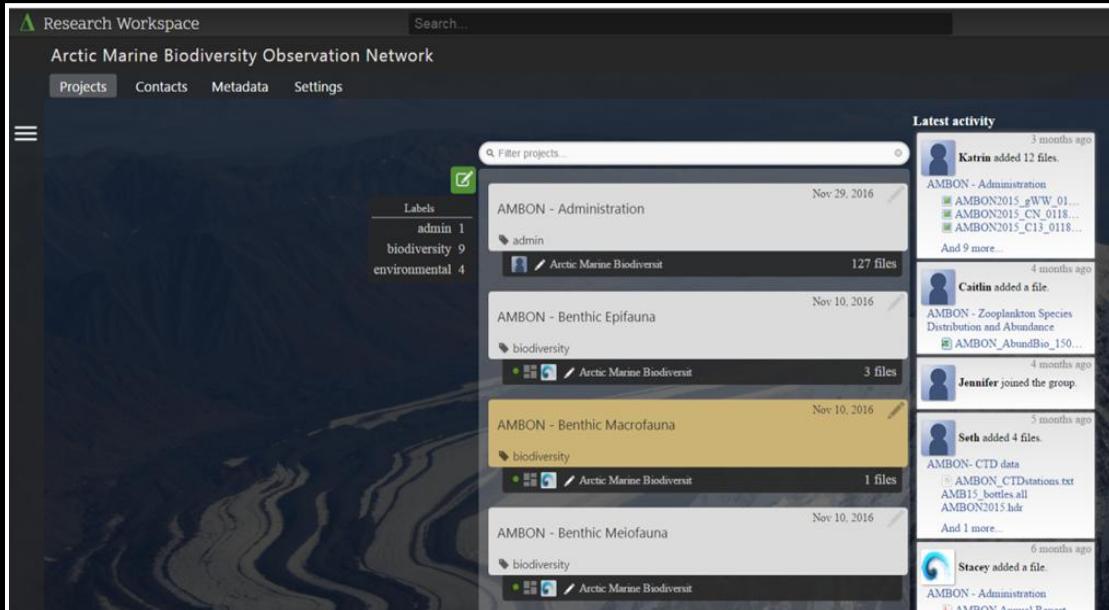
RESEARCH△WORKSPACE

~web-based platform for collaboratively managing science projects through the entire data lifecycle~

Share
Analyze
Preserve

RESEARCH△WORKSPACE

- Organize into projects, research campaigns and organizations
- Coordinate data exchange across networks, groups, programs
- ISO 19110/19115-2 standards metadata editor
- Execute server side R and Python numeric workflows (Jupyter) on uploaded data AND any data in Axiom CI stack
- Archive pathway to DataONE & Datacite DOI minting



RESEARCH WORKSPACE : Metadata

- Integrated ISO 19110/19115-2 standards metadata editor
- Author metadata alongside data
- Implement labor-saving tools

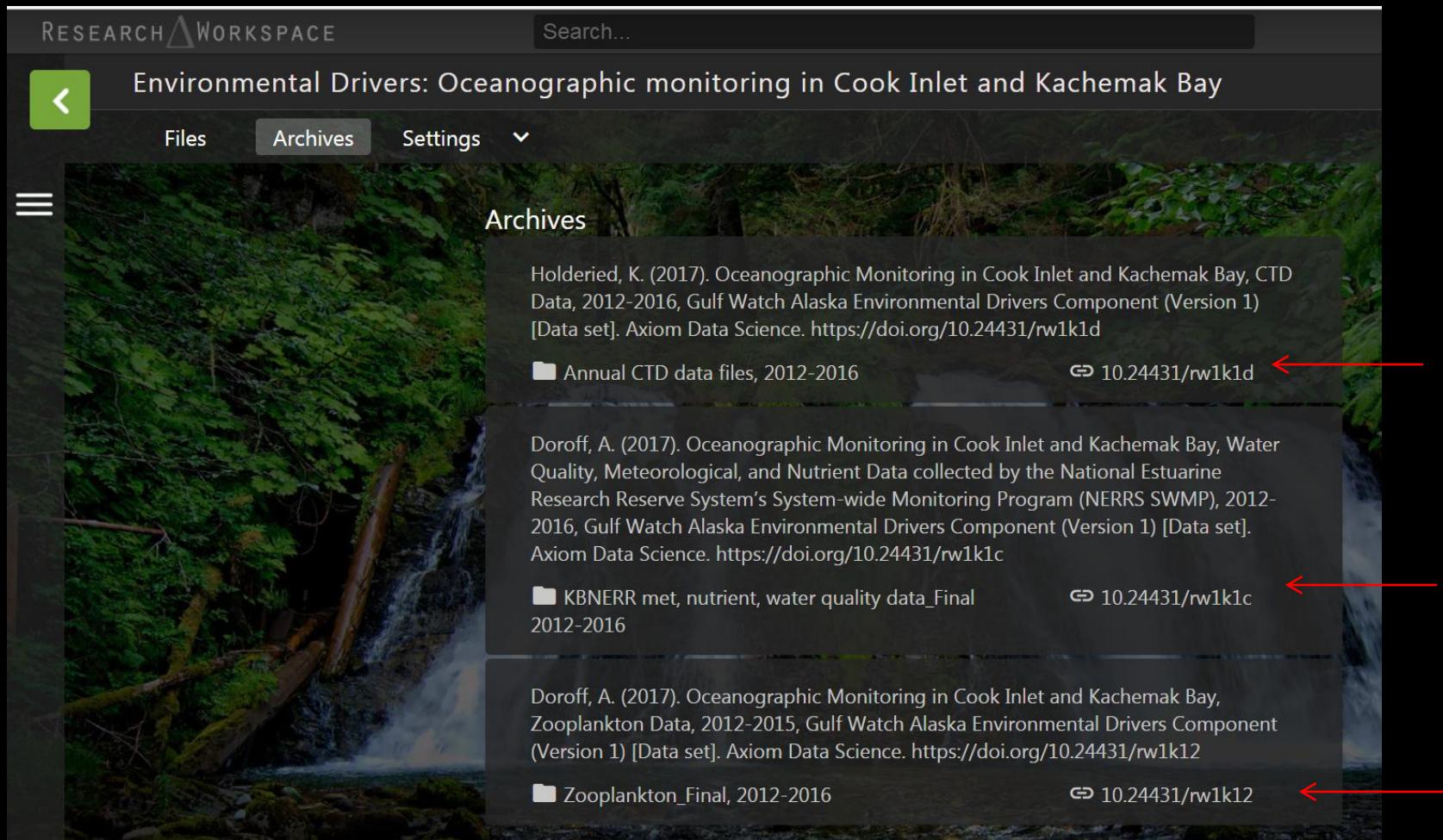
The screenshot shows the 'Resource Overview' page of the Research Workspace. At the top, there's a navigation bar with 'Save', 'Copy', 'Delete full record', 'Export', and 'Revisions' buttons. Below the navigation is a 'Basic Overview' section with a 'Copy' button. The main content area is titled 'Resource Overview' and contains sections for 'Basic Overview', 'Keywords', 'Taxonomic Information', 'Spatial and Temporal Extent', 'Resource Content', 'Methods', 'Status and Distribution', and 'Additional Fields'. The 'Basic Overview' section includes fields for 'Resource Title' (containing 'Assessing abundance of beluga whales in Bristol Bay using genetic mark-recapture methods, 2002-2011'), 'Abstract' (containing a detailed description of the project), and 'Purpose' (containing a statement about the intention of the dataset). On the left, a sidebar titled 'Folder metadata' lists various categories like 'Resource Overview', 'Basic Overview', 'Contacts', 'Category and Form', 'Keywords', 'Taxonomic Information', 'Spatial and Temporal Extent', 'Resource Content', 'Methods', 'Status and Distribution', and 'Additional Fields'. The 'Basic Overview' category is currently selected.



The screenshot shows the DataONE search interface. On the left, there is a sidebar with a search bar, filter options (Data attribute, Data files, Member Node, Creator, Year, Identifier, Taxon), and location filters. The main area displays a list of datasets (1 to 25 of 348,377) with details like title, authors, and year. To the right, there is a map of North America with numerical data overlays.

Row	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9
1	249	141	6	6	7	2	7		
2	4843	95	14	11	6	15	16		
3	2707	246	5	19	2	10	5		
4	968	618	103	7	15	12	4		
5	204	296	241	17	270	93	12		
6	69	114	2072	1116	389	5240	1523		
7	+/-	63	9688	5018	3809	974			
8	57	124	536	40701	12493	2868	3730		
9	53	149	246	4969	17280	1290	6443		
10	122	240	28	66	89	552	7931		
11	718	33	13	40	117	311	350		
12	17	24	14	34	84	112	150		

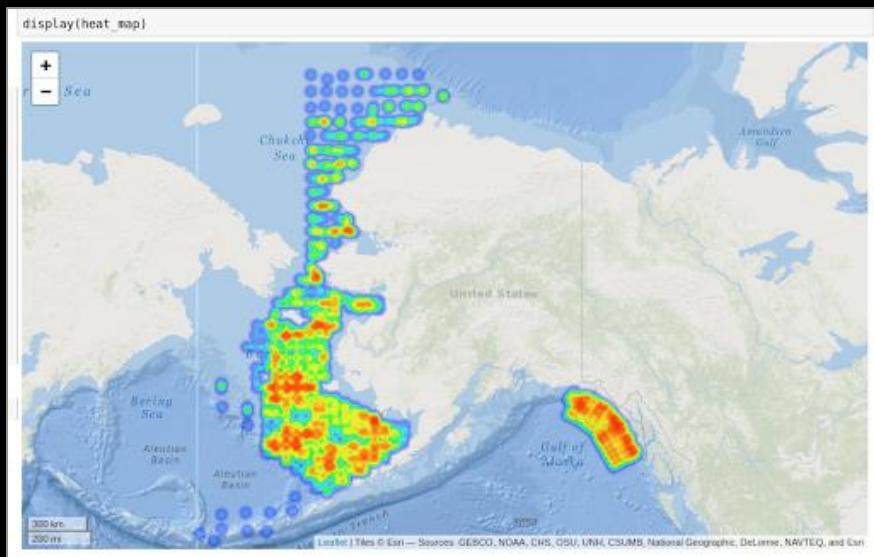
- Locate, identify and cite research data



The screenshot shows the Research Workspace interface. At the top, there is a navigation bar with 'RESEARCH△WORKSPACE' on the left and a search bar on the right. Below the navigation bar, the title 'Environmental Drivers: Oceanographic monitoring in Cook Inlet and Kachemak Bay' is displayed. The main content area is titled 'Archives' and features three data entries:

- Hoderied, K. (2017). Oceanographic Monitoring in Cook Inlet and Kachemak Bay, CTD Data, 2012-2016, Gulf Watch Alaska Environmental Drivers Component (Version 1) [Data set]. Axiom Data Science.** <https://doi.org/10.24431/rw1k1d> ↗
- Doroff, A. (2017). Oceanographic Monitoring in Cook Inlet and Kachemak Bay, Water Quality, Meteorological, and Nutrient Data collected by the National Estuarine Research Reserve System's System-wide Monitoring Program (NERRS SWMP), 2012-2016, Gulf Watch Alaska Environmental Drivers Component (Version 1) [Data set]. Axiom Data Science.** <https://doi.org/10.24431/rw1k1c> ↗
- Doroff, A. (2017). Oceanographic Monitoring in Cook Inlet and Kachemak Bay, Zooplankton Data, 2012-2015, Gulf Watch Alaska Environmental Drivers Component (Version 1) [Data set]. Axiom Data Science.** <https://doi.org/10.24431/rw1k12> ↗

- Create and share documents that contain code, equations, and visualizations
- Reproducible numerical simulations and statistical modeling
- Access uploaded data stored in the Workspace



Richness
the number of distinct species found in a sample
$$S = \sum(p_i > 0)$$

% Dominance (Berger-Parker)
the ratio between the number of individuals belonging to the most abundant species and the total number of individuals in the sample
$$\text{Dominance} = \max(p_i)$$

Shannon-Wiener Diversity
index quantifies the uncertainty associated with species prediction
$$H' = - \sum_{i=1}^n p_i \ln(p_i)$$

Pielou's Evenness
species evenness quantifies how close in count each species is within a sampling event
$$J' = \frac{H'}{\ln(S)}$$

```
In [17]: # create dominance and shannon-weaver diversity indices
p_i_stats = aggregated_df.groupby(['location_id', dateField])['p_i'].agg({'sw_diversity': lamb

diversity = aggregated_df.groupby(['location_id', dateField]).agg({
    'species_tsn' : np.count_nonzero,
    'lat_station' : np.mean, # why are decimals truncated?
    'lon_station' : np.mean, # why are decimals truncated?
}).rename(columns={'species_tsn': 'richness'})

diversity = diversity.merge(p_i_stats, left_index=True, right_index=True

# add Pielou's Evenness Index
diversity['evenness'] = diversity['sw_diversity']/np.log(diversity['richness'])

diversity = diversity.reset_index(level=[dateField, 'location_id'])
diversity
```

Richness

the number of distinct species found in a sample

$$S = \sum (p_i > 0)$$

% Dominance (Berger-Parker)

the ratio between the number of individuals belonging to the most abundant species and the total number of individuals in the sample

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```
In [17]: # create dominance and shannon-weaver diversity indices
p_i_stats = aggregated_df.groupby(['location_id', dateField])['p_i'].agg(
    'sw_diversity': lambda x: np.log(x).sum() / np.log(len(x)).sum())

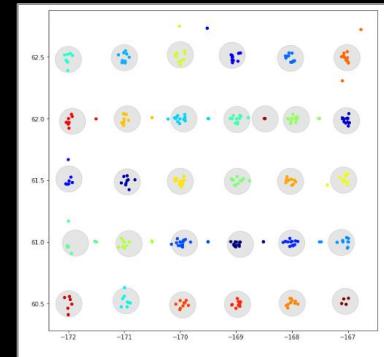
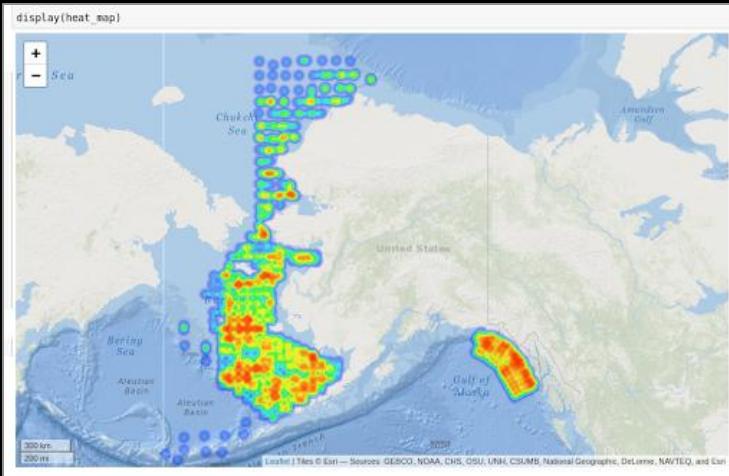
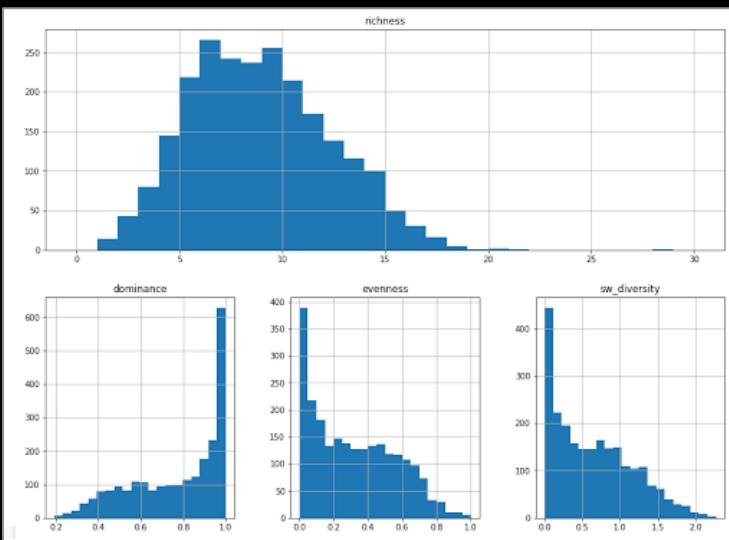
diversity = aggregated_df.groupby(['location_id', dateField]).agg({
    'species_tsn' : np.count_nonzero,
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diversity['evenness'] = diversity['sw_diversity'] / np.log(diversity['richness'])

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diversity
```

Out[17]:	location_id	start_date	lat_station	richness	lon_station	sw_diversity	dominance	evenness
0	1	2002-09-19 18:30:00	51.295745	4	-178.344080	1.036659	0.587719	0.74
1	4	2002-09-12 20:08:00	51.718330	4	-179.724165	0.352634	0.920635	0.25
2	5	2002-09-20 00:00:00	51.807745	2	-179.810500	0.660010	0.761005	0.66



Live Demo

<http://mbon.ioos.us/>