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5-2019

# UX Report: DataONE Stakeholder Flyer Eye Tracking Study

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# DataONE Stakeholder Flyer Eye Tracking Study Usability & Assessment Working Group Meeting May 1 & 2 2019

Rachel Volentine, Mike Frame, Marcelo Morandini, & Leah Cannon

**Purpose**: This study examined the effectiveness of the DataONE flyers in portraying the benefits and purpose of DataONE for its four stakeholder groups (libraries, researchers, repositories, and funders).

**Methodology**: The study was completed with Tobii Glasses 2. Analysis was done in Tobii Pro Lab. We measured effectiveness by seeing which flyer and which areas of each flyer received the most attention. Attention was measured by number of fixation points, time to first fixation, and gaze path.

**Materials**: The study examined four stakeholder flyers developed by a 2017 summer intern. The flyers are attached to this report.

**Users:** The study was conducted at the Usability & Assessment working group meeting in Knoxville Tennessee on May 1<sup>st</sup> and 2<sup>nd</sup> 2019. Twelve members of the U&A group participated in the study. One participant had a poor calibration and her results were excluded from the analysis.

**Scenario**: The 12 participants were told to imagine they are no longer associated with the working group and are new users to DataONE. They were told, "You're attending the DataONE Community meeting and want to find out more information for your community. Take a few minutes to look at the flyers on the table. You can interact with them as you normally would." After they looked at the flyers we asked two questions.

- 1. What are your general impressions?
- 2. Do you see yourself getting involved based on what you just saw?

#### **Results:**

1. People follow a similar reading pattern on each brochure.

**Analysis** 



We looked at where users first looked on each flyer to see what grabbed the user's attention. The AOI Time to First Fixation measures the time it took the user to look (fixate) in the Area of Interest (AOI). For this analysis we created 5 AOIs on the front page of each flyer (see image above). We found that users followed the same pattern on all the flyers regardless of the content of each section. On average, the users first looked at the map graphic in the center of the flyer, then looked at the left-hand paragraph followed by the right-hand bulleted list. Only a few users looked at the stakeholders tab at the top of the page, and it had the longest time to first fixation (Figure 1). A detailed summary of the data for this figure and all others can be found in Appendix A at the end of this report.

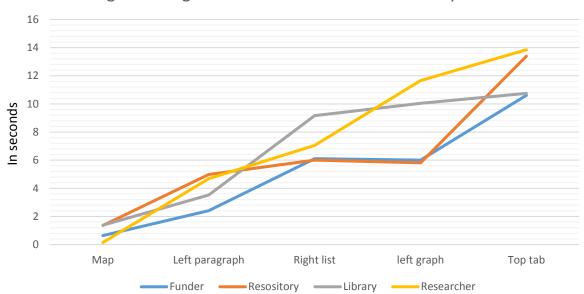


Figure 1. Avg. Time to First Fixation in AOI on Flyer Front

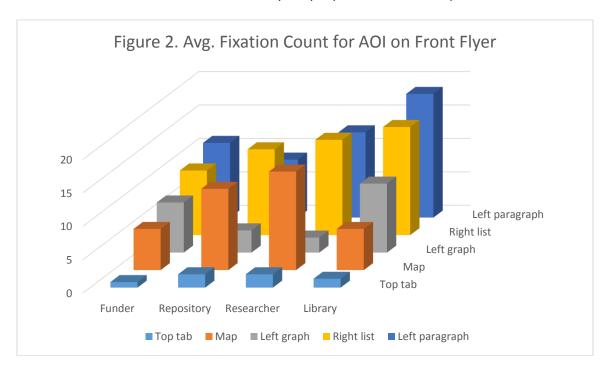
#### Take-Away:

The flyer's layout draws people's attention to certain areas regardless of the content. We can use this to our advantage by highlighting important information in certain areas.

### 2. Users paid attention to the map graphic on the front of the flyer.

#### **Analysis**

Looking at the same AOIs on the front of the flyers, we examined the number of fixations on each section. This examines how much attention was paid to each section. Overall, users fixated the most on the left paragraph and the right list, but the map on the repository and researcher flyers also received a lot of fixations. None of the flyers had a large number of fixations on the top tab that mentioned the stakeholder group. While you might expect a small number of fixations since there is less to read than in the main sections, we also found that only 1-3 people looked at the top tab.



#### Take-away:

The map draws people's attention and holds it. This is valuable real estate, and could be better utilized. We recommend placing important and stakeholder specific information here.

### 3. People don't notice the stakeholder tab at the top of the page.



### Analysis:

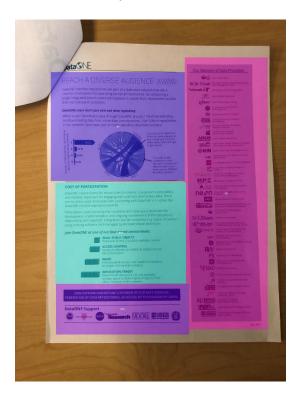
We looked at how many people looked at the stakeholder icon when the flyers were laid out on the table. Earlier, we looked at the time to first fixation when the user was looking at one flyer in particular (either holding it or moving it on the table), and we saw that most users did not fixate on it.

For this analysis we looked at the data from when they were scanning the flyers while they were on the table. The first thing we noticed was that most people are not looking at the stakeholder icon. Only 4 of 11 people looked at the funders, researcher, and repository icons, while 5 people looked at the library icon.

#### Take-Away:

Users do not seem to pay attention to the top tab. We saw that users first looked at the map graphic in the center of the page. This could be an ideal location for providing this information.

#### 4. Users paid little attention to the DataONE Sponsors.



### Analysis

At the bottom of the second page of each flyer was a section about "DataONE Support" and a call for action such as, "Visit DataONE and Discover the data you need for your next research project." We divided the back page of each flyer into four sections (the top and middle information sections, the lower section with the support and call to action, and the side section with the list of our data providers). We looked at the number of fixations inside each AOI. This gives us an idea of how much attention was put on each section. For all flyers, the sponsor section received fewer than 8 fixations, compared to the top section which received over 20 fixations on every flyer (figure 3).

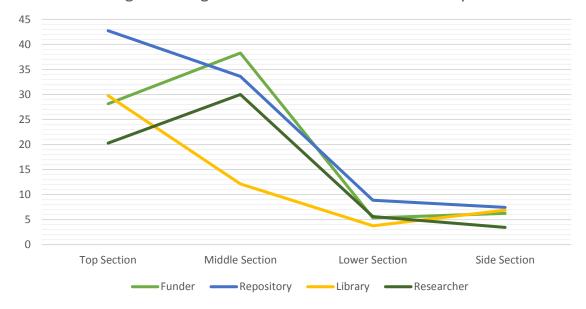
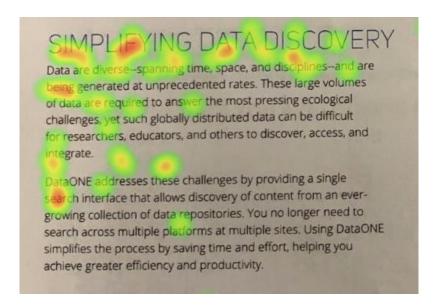


Figure 3. Avg. AOI Fixation Count on Back of Flyer

### Take-away:

This is not a high-traffic area of the flyers. If the purpose of the flyer is to get people involved in DataONE then the call to action should probably be moved higher on the page.

#### 5. People read but tend to stop after 1-2 sentences.



#### Analysis:

While the users paid attention to the left-hand paragraphs, we can see that people's attention faded after reading the first 1-2 sentences. You can see in the above image (from the Researcher's flyer) that people stopped reading after the first sentence of the "Simplifying Data Discovery". When we compared the number of fixations from the first two lines of the paragraph to the number of fixations on the last two lines, we found that the second half of the paragraph had, on average, half of the number of fixations as the first two lines.

#### Take-Away:

Numerous studies show that users skim and they do not read. The most important information should be placed at the top of the first paragraph. Using bulleted lists, like the one on the right-hand side of the flyer, can help get information across.

#### 6. We discovered two misspelled words on the Funder flyer.



### Analysis:

Several users found misspelled words on the flyers. On the second page of the funder flyer, the last section, "Consistant Growth" is misspelled. Also there is a misspelling on the 2<sup>nd</sup> page of Funder flyer in the sentence "67% believe lack of data access is a major impedemnent to science progress."

#### Take-Away:

This shows the importance of usability testing. We recommend before publication you have several users, not involved in the design and content, review the flyers. This can help with grammar, spelling, and also provide user feedback on the design and content of the flyer.

## 7. Participants had positive impressions of the flyers.

In the follow-up questions, people, in general had positive feedback. They liked the color scheme, and felt there was a lot of useful information on the flyers. Nine of the participants said they would want to be involved in DataONE based on the flyers. Three participants said they were interested in DataONE but would still need to talk to someone further to get more detailed information.

# Appendix A Figure Data Tables

Figure 1. Time to First Fixation in AOI on Flyer Front

funders flyer front

Time To First	Left	Тор			Left	Total Recording
Fixation	paragraph	tab	Right list	map	graph	Duration
Recording001	0.39		2.44	0.24	0.94	60.86
Recording002						46.52
Recording003						54.50
Recording004						270.80
Recording006	2.11	10.61	7.98	0.44	5.56	164.99
Recording007	1.17		0.43	1.27	0.15	208.57
Recording008						132.00
Recording009	3.28		19.64	0.16	16.75	347.03
Recording010	2.40		1.79	1.64	5.80	127.87
Recording011	5.11		4.42	0.12	6.89	158.27
Recording012						172.85
Average	2.41	10.61	6.11	0.64	6.01	158.57

libraries flyer front

Time To First	Left	Right		Left		Total Recording
Fixation	paragraph	list	Top tab	graph	Мар	Duration
Recording001	0.94	0.26			2.21	60.86
Recording002	0.30	0.68		4.55	0.13	46.52
Recording003						54.50
Recording004						270.80
Recording006	3.95	14.09	0.00	11.24	3.53	164.99
Recording007						208.57
Recording008	3.46	2.98		14.25	0.13	132.00
Recording009	6.40	31.58		13.36	0.13	347.03
Recording010						127.87
Recording011	6.10	5.46		6.82	2.18	158.27
Recording012						172.85
Average	3.52	9.17	0.00	10.04	1.38	158.57

# repositories flyer

front

Time To First			Left	Right	Тор	Total Recording
Fixation	Left graph	Map	paragraph	list	tab	Duration
Recording001	1.44		0.14	0.74		60.86
Recording002						46.52
Recording003						54.50
Recording004						270.80

Recording006	7.07	4.01	4.31	8.04	0.64	164.99
Recording007						208.57
Recording008	6.49	2.24	8.31	3.03		132.00
Recording009	8.26	0.15	5.27	16.38	30.00	347.03
Recording010		0.38	2.80	0.11	9.51	127.87
Recording011		0.00	9.06	7.73		158.27
Recording012						172.85
Average	5.81	1.36	4.98	6.00	13.39	158.57

# researchers flyer front

Time To First	Left	Right			Тор	Total Recording
Fixation	paragraph	list	Left graph	map	tab	Duration
Recording001	0.62	1.55		0.05		60.86
Recording002						46.52
Recording003						54.50
Recording004						270.80
Recording006	4.41	7.61	6.91	0.12	1.30	164.99
Recording007						208.57
Recording008						132.00
Recording009	8.53	13.04	16.41	0.06	26.40	347.03
Recording010						127.87
Recording011	5.22	5.99		0.37		158.27
Recording012						172.85
Average	4.69	7.05	11.66	0.15	13.85	158.57

Figure 2. Avg. Fixation Count in AOI on Front Flyer

funders flyer front

Fixation Count (include	Left	Тор			Left	Total Recording
zeroes)	paragraph	tab	Right list	Map	graph	Duration
Recording001	6	0	8	1	5	60.86
Recording002						46.52
Recording003						54.50
Recording004						270.80
Recording006	12	5	7	9	7	164.99
Recording007	9	0	2	7	9	208.57
Recording008						132.00
Recording009	33	0	28	2	7	347.03
Recording010	6	0	8	11	13	127.87
Recording011	1	0	5	7	4	158.27
Recording012						172.85
Average	11.17	0.83	9.67	6.17	7.50	158.57
Percentage Fixated (%)	100.00	16.67	100.00	100.00	100.00	

libraries flyer front

Fixation Count (include	Left	Right		Left		Total Recording
zeroes)	paragraph	list	Top tab	graph	Map	Duration
Recording001	4	8	0	0	1	60.86
Recording002	7	11	0	13	1	46.52
Recording003						54.50
Recording004						270.80
Recording006	29	23	8	10	2	164.99
Recording007						208.57
Recording008	6	31	0	14	12	132.00
Recording009	61	18	0	23	12	347.03
Recording010						127.87
Recording011	4	6	0	2	9	158.27
Recording012						172.85
Average	18.50	16.17	1.33	10.33	6.17	158.57
Percentage Fixated (%)	100.00	100.00	16.67	83.33	100.00	

# repositories flyer front

Fixation Count (include			Left	Right	Тор	Total Recording
zeroes)	Left graph	Map	paragraph	list	tab	Duration
Recording001	2	0	3	3	0	60.86
Recording002						46.52
Recording003						54.50
Recording004						270.80
Recording006	1	13	10	21	10	164.99
Recording007						208.57
Recording008	5	6	4	10	0	132.00
Recording009	12	18	23	27	1	347.03
Recording010	0	14	5	12	1	127.87
Recording011	0	22	7	4	0	158.27
Recording012						172.85
Average	3.33	12.17	8.67	12.83	2.00	158.57
Percentage Fixated (%)	66.67	83.33	100.00	100.00	50.00	

### researchers flyer front

Fixation Count (include	Left	Right			Тор	Total Recording
zeroes)	paragraph	list	Left graph	Map	tab	Duration
Recording001	10	4	0	3	0	60.86
Recording002						46.52
Recording003						54.50
Recording004						270.80
Recording006	10	21	2	23	4	164.99
Recording007						208.57
Recording008						132.00
Recording009	29	24	7	19	4	347.03
Recording010						127.87
Recording011	2	8	0	14	0	158.27
Recording012						172.85
Average	12.75	14.25	2.25	14.75	2.00	158.57
Percentage Fixated (%)	100.00	100.00	50.00	100.00	50.00	

Figure 3. AOI Fixation Count on Back of Flyers

Funders flyer back

	Lower	Side	Middle	Тор		Total Recording
Fixation Count	Section	Section	Section	Section	Sum	Duration
Recording001		5	9	1	15	60.86
Recording002						46.52
Recording003						54.50
Recording004	2	3	43	29	77	270.80
Recording006		4			4	164.99
Recording007	4	2	57	37	100	208.57
Recording008						132.00
Recording009	6	3	70	44	123	347.03
Recording010	13	10	19	24	66	127.87
Recording011	2	4	24	29	59	158.27
Recording012	5	19	46	33	103	172.85
Average	5.33	6.25	38.29	28.14	68.38	158.57
Percentage						
Fixated (%)	75.00	100.00	87.50	87.50		

libraries flyer back

	Lower	Side	Middle	Тор		Total Recording
Fixation Count	Section	Section	Section	Section	Sum	Duration
Recording001		1	1	2	4	60.86
Recording002		3	3	9	15	46.52
Recording003						54.50
Recording004	1	2	5	28	36	270.80
Recording006	1	20	7	50	78	164.99
Recording007		7	22	28	57	208.57
Recording008	12	18	25	54	109	132.00
Recording009		1	30	80	111	347.03
Recording010						127.87
Recording011		3	11	13	27	158.27
Recording012	1		5	4	10	172.85
Average	3.75	6.88	12.11	29.78	49.67	158.57
Percentage						
Fixated (%)	44.44	88.89	100.00	100.00		

repositories flyer back

	Side	Middle	Lower	Тор		Total Recording
Fixation Count	Section	Section	Section	Section	Sum	Duration
Recording001						60.86
Recording002						46.52
Recording003						54.50
Recording004	11	22	8	69	110	270.80
Recording006	4	16	3	41	64	164.99
Recording007	2	64	7	54	127	208.57
Recording008	5	17	13	45	80	132.00
Recording009		49		67	116	347.03
Recording010	22	16	6	29	73	127.87
Recording011	3	33	5	23	64	158.27
Recording012	5	52	20	14	91	172.85
Average	7.43	33.63	8.86	42.75	90.63	158.57
Percentage						
Fixated (%)	87.50	100.00	87.50	100.00		

# researchers flyer back

	Side	Middle	Lower	Тор		Total Recording
Fixation Count	Section	Section	Section	Section	Sum	Duration
Recording001	6	9		3	18	60.86
Recording002						46.52
Recording003						54.50
Recording004	1	60	3	8	72	270.80
Recording006	4	37	7	17	65	164.99
Recording007	1	28		27	56	208.57
Recording008						132.00
Recording009	6	53	8	75	142	347.03
Recording010						127.87
Recording011	2	8	8	8	26	158.27
Recording012	4	15	2	4	25	172.85
Average	3.43	30.00	5.60	20.29	57.71	158.57
Percentage						
Fixated (%)	100.00	100.00	71.43	100.00		





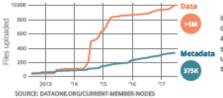


## SIMPLIFYING DATA DISCOVERY

Data are diverse--spanning time, space, and disciplines--and are being generated at unprecedented rates. These large volumes of data are required to answer the most pressing ecological challenges, yet such globally distributed data can be difficult for researchers, educators, and others to discover, access, and integrate.

DataONE addresses these challenges by providing a single search interface that allows discovery of content from an evergrowing collection of data repositories. You no longer need to search across multiple platforms at multiple sites. Using DataONE simplifies the process by saving time and effort, helping you achieve greater efficiency and productivity.

#### DATA DISCOVERABLE THROUGH DATAONE



Increasing quantities of data and metadata are available for search and access using the DataONE search tool



Find data held in global repositories through our simple and effective search



#### **EDUCATION RESOURCES**

Access training and guidance when developing your data management plan



#### USAGE METRICS

View your user profile of shared data and usage metrics



#### TOOLKIT

Use the Investigator Toolkit to connect data found through DataONE directly to your analysis software

#### Discover and access data

Visit DataONE.org to search for data across repositories around the world and access educational resources and materials on data management.





Our Network of Data Providers Arctic Data Center



# 

Researchers want easily accessible data and are also willing to share their own, but few share all their data because technical and other barriers still exist.

83% of researchers

In an international survey of the data practices of 1300 scientists:

# 

67% believe lack of data access is a major impedemnent to science progress

would use other scientists' datasets if easily accessible

36% of the researcher's report that their own data is easily accessible

SOURCE: TENOPIR ET AL. 2011 PLOS ONE

#### DATA MANAGEMENT EDUCATION RESOURCES

DataONE has high quality resources for training in data management to improve researcher's methods for data sharing and management.



Best Practices Database







User Stories

Using DataONE's education tools, researchers will be better able to:

- Access and analyze data for critical science needs
- Create metadata that meets repositories' standards
- Convert and prepare datasets for long-term storage
- Develop data management plans to increase funding opportunities

### WE HAVE THE DATA YOU ARE LOOKING FOR



Data searched for at DataONE

Data accessible at DataONE

VISIT DATAONE AND DISCOVER THE DATA YOU NEED

#### DataONE Support











July 2017







## 

Data are diverse--spanning time, space, and disciplines--and are being generated at unprecedented rates. These large volumes of data are required to answer some of the most pressing ecological challenges, yet such globally distributed data can be difficult for researchers, educators, and others to discover, access, and integrate.

DataONE addresses these challenges by providing a single search interface that allows discovery of content from an ever-growing collection of data repositories. Similar to WorldCat.org, DataONE provides librarians and educators with an easy tool to help patrons search, discover and access environmental data.

#### DATA DISCOVERABLE THROUGH DATAONE



Increasing quantities of data and metadata are available for search and access using the DataONE search tool



#### SEARCH

Find data held in global repositories through our simple and effective search



#### **EDUCATION RESOURCES**

Access training and support for assisting with data mangement



#### CONNECT

Connect to an ever-growing collection of data providers



#### DATA MANAGEMENT PLAN

Develop quality data management plans using the DMPTool for guidance

#### Discover and access data

Visit DataONE.org to search data repositories around the world and access educational resources and materials on data management.



www.DataONE.org





# 

Researchers have limited training or practice in data management, and few have the tools or technical support to improve their current methods. Educators and librarians are needed for researchers to overcome existing barriers.

In an international survey of scientists' data practices, 1300 researchers responded:



The researcher uses no metadata standard or a local home grown metadata approach



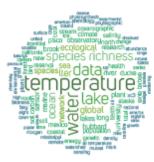
Their organization does not provided training on best practices for data management



Their organization has no formal process or tools/ technical-support for storing data long term

SOURCE: TENOPIR ET AL. 2011 PLOS ONE

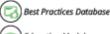
Most common search terms used when searching for data through DataONE:



#### DATA MANAGEMENT TRAINING RESOURCES

DataONE has high quality resources for helping educators and librarians with training in data management, including teaching materials, webinars and a database of best-practices to improve methods for data sharing and management. All are accessible through a tailored librarian outreach kit.











User Stories

Using DataONE education tools, librarians and educators will be better able to:

- Assist in quality metadata creation
- Help with conversion and preparation of datasets
- Aid in discovery of and access to pertinent data

VISIT DATAONE FOR ACCESS TO DATA AND RESOURCES

#### DataONE Support



















# SUPPORTING DATA REUSE /////.

Agencies and foundations are investing in new research, including the collection and storage of an explosion of environmental data. These large volumes of globally distributed data are required to answer some of the most pressing ecological challenges, yet such data can be difficult for researchers, educators and others to discover, access, and integrate.

DataONE addresses these challenges by providing a single search interface that allows discovery of content from an ever-growing collection of data repositories. Researchers no longer need to search across multiple repositories, saving time and effort, and achieving greater efficiency and productivity.

#### LARGEST NETWORK OF EARTH AND ENVIRONMENTAL DATA



DATA

METADATA



#### INCREASED VISIBILITY

Increase visibility and access to data through a network of member repositories



#### FIND REPOSITORIES

Guide scientists to data repositories that upload and store persistent open-access data



#### DATA NETWORK

Connect users to an ever-growing collection of data that is readily citable using a DOI



#### TRACK YOUR INVESTMENT

Track the reach and impact of your investment through DataONE reporting services

#### The future of data management

Visit DataONE.org to learn more about DataONE's potential to shape the future of data management.





# **Data** SNE

# LEADERS IN DATA MANAGEMENT/////

The future of open-access data is ripe for development and DataONE has demonstrated leadership in this area, shaping the future of data management through the creation of common standards. With high quality resources for training in data management including teaching materials, webinars, and a database of best-practices to improve researcher's methods for data sharing, DataONE enables researchers to meet funder requirements.

In an international survey of the data practices of 1300 scientists:







SOURCE: TENOPIR ET AL 2011 PLOS ONE

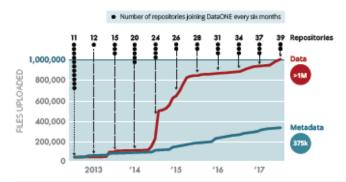
#### OUR COMMUNITY



14.000 USERS/MONTH 57,000 CONTRIBUTORS 3.000+ USERS TRAINED

#### CONSISTANT GROWTH

DataONE continues to connect researchers to increasing quantities of data and metadata through the DataONE search tool. DataONE has experienced consistant growth in our network of repositories, since our launch in 2012.



ENHANCE SCIENTIFIC DISCOVERY: SUPPORT DATAONE'S MISSION TO INCREASE OPEN, REPRODUCIBLE SCIENCE AND DATA RE-USE

#### DataONE Support

















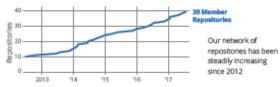


# 

The amount of data researchers are generating is exploding. Repositories managing these data are positioned to become leaders in scientific knowledge and the creation of data stewardship. However, these data are scattered across the globe, challenging researchers, educators and others to find the specific data they need.

Join DataONE to increase visibility and exposure of your data. DataONE simplifies search by providing a single, integrated interface across a network of repositories, enabling researchers to quickly discover relevant data.

#### INCREASING NETWORK OF DATA REPOSITORIES





#### INCREASE DATA ACCESS

Offer persistent and uninterrupted access to users even when your repository is down or undergoing service



#### USAGE METRICS

Understand users access to your repository through DataONE



### REPLICATE CONTENT

Replicate your content across DataONE's geographically distributed network



#### RETAIN OWNERSHIP

Increase your usage metrics: DataONE harvests repositories' metadata, not data; downloads come directly from you

#### Discover and access data

Visit DataONE.org to find out how your repository can enhance visibility and accessibility by joining our expanding network of data repositories.







Our Network of Data Providers

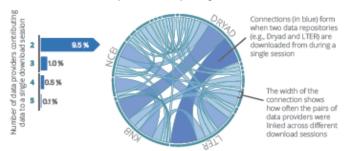


# REACH A DIVERSE AUDIENCE '//////////

DataONE member repositories are part of a federated network that use a common mechanism for searching across all repositories. By conducting a single integrated search, users are exposed to results from repositories outside their normal search practices.

#### DataONE users don't just visit one data repository

When a user downloads data through DataONE, around 11% of the time they are downloading data from more than one repository. Over 50% of repositories in our network have been part of multi-repository download sessions.



#### COST OF PARTICIPATION

DataONE makes it easy for repositories to commit to long-term sustainability and visibility; important for engaging with scientists and funders alike. There are no direct costs associated with partnering with DataONE or to utilize the DataONE content replication services.

Participation costs borne by the repository are those associated with the development, implementation, and ongoing maintenance of the repository's relationship with DataONE. Integration can be completed in a matter of weeks if using existing software and managed by an experienced technician.

#### Join DataONE at one of our four-tiered service levels:



#### READ, PUBLIC OBJECTS

Read-only access to publicly available content



#### ACCESS CONTROL

Access to objects controlled via access control list authorization



#### WRITE

Provides write access. Use DataONE interfaces to create and maintains objects



#### REPLICATION TARGET

DataONE infrastructure can use available storage space to store copies of objects from other members of the network

JOIN DATAONE AND BECOME A MEMBER OF OUR FAST GROWING FEDERATION OF DATA REPOSITORIES, ACCESSED BY THOUSANDS OF USERS

#### DataONE Support









# Arctic Data Center BCO-DMO Biological and Chemical Oceanography Data Management Office The Cornell Lab of Omithology eBird Dryad Digital Repository EDAC Earth Data Analysis Center Environmental Data for the Oak Ridge Area Environmental Data Initiative Escal Ecological Society of America Data Resistry Europe Long-Term Ecosystem Research Network Global Lake Ecological Observatory Network AOOS Gulf of Alaska Data Portal Gulf of New Mesico Research Initiative Information & Data Cooperative Idaho Northwest Knowledge Network International Arctic Research Center Data Archive kmb Knowledge Network for Biocomplexity Long-Term Ecosystem Research Network Merritt University of California Curation MPC Minnesota Population Center Montana Institute on Ecosystems Data Gateway National Ecological Observatory Nevada Research Data Center New Mexico New Mexico's Established Program to Stimulate Competative Research NOAA NCEI Oceanographic Data Archive SIEShare ONEShare Repository Oak Ridge National Laboratory Distributed Active Archive Center PISCO Partnership for Interdisciplinary Studies of Coastal Oceans Programa de Pesquisa em Biodiversidade Regional and Global Biogeochemical Dynamics Data Research Workspace Rolling Deck to Repository

University of Illinois, Chicago KU INSTITUTE University of Kansas Biodiversity Institute

South African National Parks Data Repository

Taiwan Forestry Research Institute

Terrestrial Ecosystem Research

the Digital Archaeological Record

SEAD SEAD Virtual Archive

INDIO USA National Phenology Network

■ USGS United States Geological Service