BCO-DMO
Biological & Chemical Oceanography Data Management Office

http://bco-dmo.org

Are the Data Really Available?
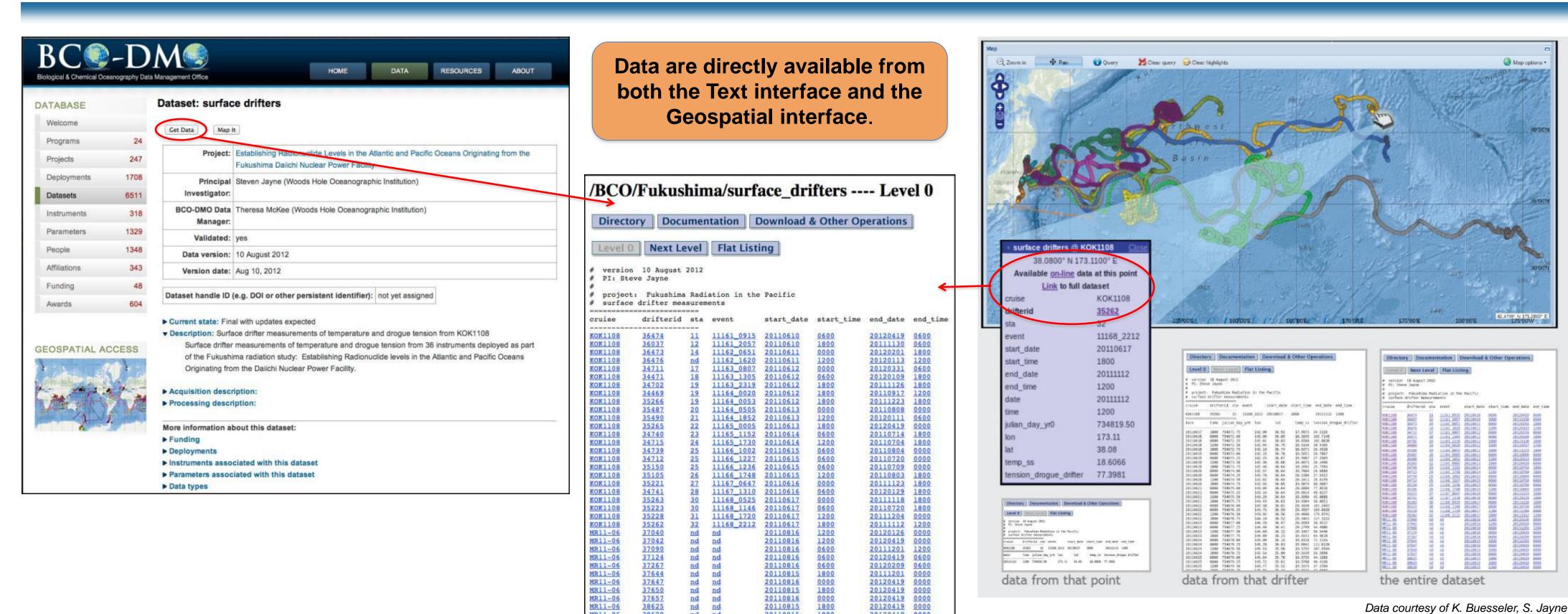
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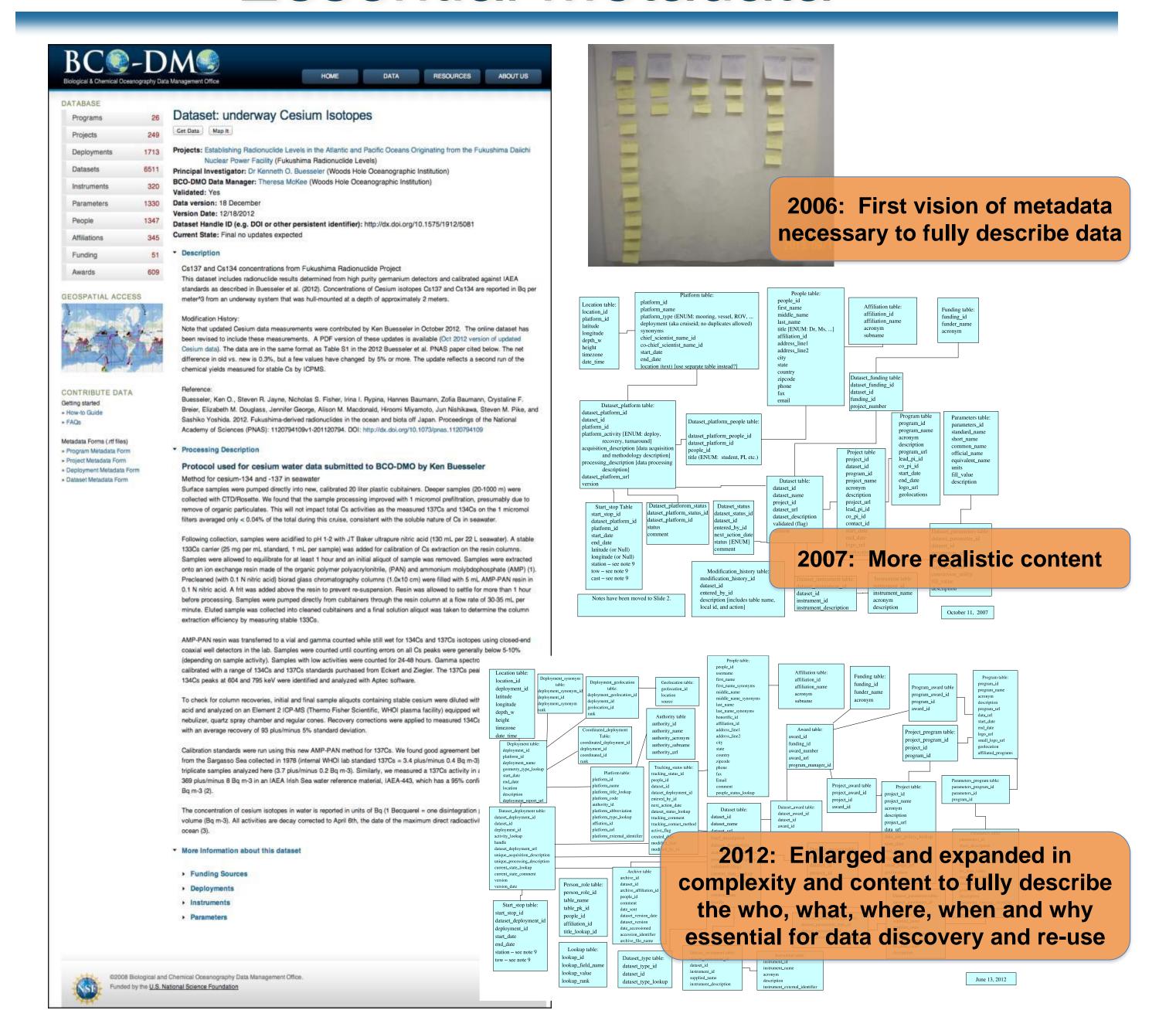
Shannon Rauch

Abstract

Making data available for re-use/re-purposing has recently become a driving force of data management. However, simply having data deposited into an archive or repository does not guarantee the data will be usable. Data not only need to be discoverable but they must also have robust metadata in order to be understandable and usable. Data repositories often strive to design effective user interfaces and data access systems that foster successful discovery and comprehension of data, while also achieving interoperability through standards adherence and vocabulary control. As data curators, how do we know if the available data and metadata in our repositories are being used? How do we know if our efforts to improve data discovery and usability are effective? The Biological and Chemical Oceanography Data Management Office (BCO-DMO) was created to serve data from research projects funded by the Biological and Chemical Oceanography Sections and the Division of Polar Programs Antarctic Organisms and Ecosystems Program of the US National Science Foundation (NSF). The BCO-DMO data system provides open access to data and uses the public domain MapServer software (originally developed at the University of Minnesota) for its geospatial interface. Since 2006, BCO-DMO has made many improvements to its data system to make the data more discoverable and usable by both human and machine clients. User feedback is essential to evaluating the effectiveness of these efforts at improving data availability and usability.

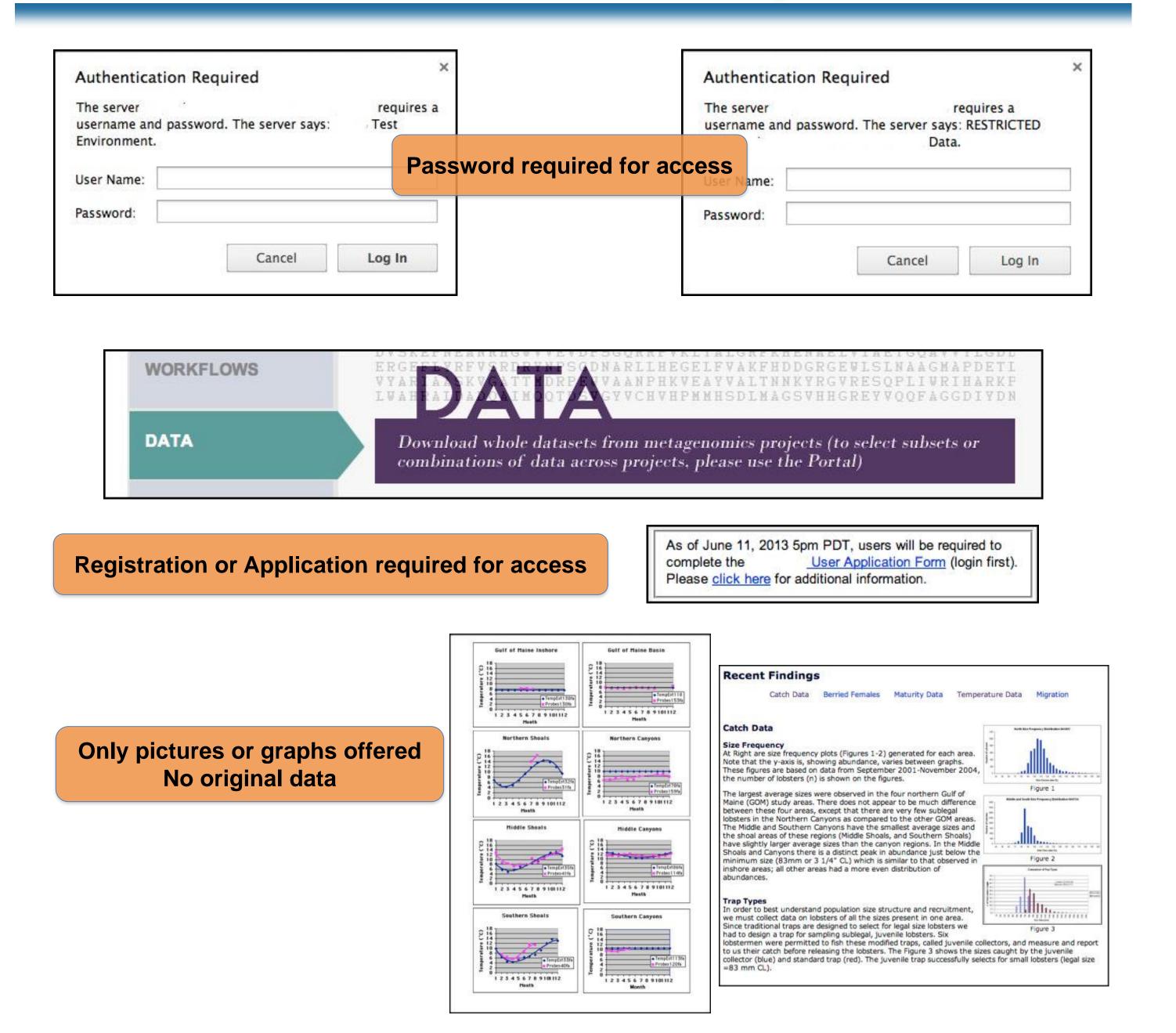## Yes, the Data are EASILY available

Data are directly available from both the Text interface and the Geospatial interface.

Data courtesy of K. Buesseler, S. Jayne

data from that point   data from that drifter   the entire dataset

Essential Metadata

2006: First vision of metadata necessary to fully describe data

2007: More realistic content

2012: Enlarged and expanded in complexity and content to fully describe the who, what, where, when and why essential for data discovery and re-use

No, the Data are not really available

Password required for access

Registration or Application required for access

Only pictures or graphs offered
No original data

Controlled Vocabulary

Use of a controlled vocabulary clarifies the meaning of terms and concepts. An ontology formally defines the relationships between terms and concepts. The use of both facilitates interoperability, and improves data discovery and interpretation by humans and machines.

Parameter Mapping Examples

Original data sets	BCO-DMO	SeaDataNet http://vocab.nerc.ac.uk/collection
T090C CTD T (ºC)	temp	Temperature (ITS-90) of the water body /P01/current/TEMPP901/
Sal00 CTD Salt	sal	Practical salinity of the water body by CTD and computation using UNESCO 1983 algorithm /P01/current/PSALST01/
DepSM Actual Depth (m)	depth	Depth below surface of the water body by profiling pressure sensor and converted to seawater depth using UNESCO algorithm /P01/current/DEPHPR01/

local ————————————→ global

Data Management is a Partnership

"Well that is just the coolest!!! Thanks so much. I could spend days just tootling around looking for neat patterns, and I'm really excited to see what happens as the datasets grow and overlap!" – from a Benthic Ecologist

"This is one of the coolest things I've seen in a long, long time. Wow. I'll have a more detailed look, but so far, they look great. Is it OK if I let my colleagues from the cruise have a look too?" – from a Biogeochemist

Satisfied Data Contributors

"Thanks for taking care of all this and for spotting the errors." – from a Microbiologist

"Thank you so much for your expertise and making the dataset more accessible to future users." – from a Phytoplankton Biologist

"We've had a chance to look over the data you posted and everything looks good. We liked the 'alternate view' better because it displayed the column headings and concentration units directly on the page. Thank you for all of your hard work!" – from a Chemist

"You deserve an award for patience in working with me. I think you now have what I should have given you in the first place." – from a Chemist

Acknowledgments