This presentation targets where we are going and how we plan to get there. Challenging the goal of data interoperability, there is still much to accomplish. While BCO-DMO’s data management model addresses many of the obstacles, organism and ecosystem program at the U.S. National Science Foundation. Geospatial Oceanography Sections and the Division of Polar Programs Antarctic Organizations & Ecosystems Program at the U.S. National Science Foundation. While BCO-DMO’s data management model addresses many of the obstacles challenging the goal of data interoperability, there is still much to accomplish. This presentation targets where we are going and how we plan to get there.

You: Why is this still so complicated?
Computer: Not because data aren’t federated. Where should I look for the data?
You: No. Only use data from trusted, authoritative sources.
Computer: But are temp1, air temperature and mytemp data comparable?
You: No. Only use data from trusted, authoritative sources.
Computer: Show me the data that compares favorably with my MANTL version 7 model run from last night.
You: Assess fitness for purpose
Computer: More widespread use of Digital Object Identifier (DOI)
You: More data quality checking – range and bounds checking
Computer: Continue one-to-one interactions for the entire data life cycle
You: Monitoring, from proposal to collection to analysis to publication
Computer: More support in preparation of Data Management Plan
You: Improve data searching
Computer: More data quality checking – range and bounds checking
You: More support in preparation of Data Management Plan
Computer: Linked Data – start of federated data
You: Interoperability of distributed systems – combining Linked Data and Semantic Web technology
Computer: Geospatial searching supported by faceted search option
You: Access data and metadata
Computer: Use of ontologies to help find data using common or similar terminology
You: Assess fitness for purpose
Computer: Linked Data – start of federated data
You: Interoperability of distributed systems – combining Linked Data and Semantic Web technology
You: Geospatial searching supported by faceted search option
Computer: Improve data searching
You: Assess fitness for purpose
Computer: More data quality checking – range and bounds checking
You: More support in preparation of Data Management Plan

Abstract
Data are needed for analysis, synthesis, initial conditions and verifying model output, and advancing new theories on how the world works. The data need to be of high quality, collected and processed by established and community accepted standards, discoverable, and accessible. There has been progress recently towards making data discoverable and accessible because of a combination of government requirements and higher expectations, but there is still much to do. The Biological and Chemical Oceanography Data Management Office (BCO-DMO) works in partnership with ocean science investigators to serve data from research projects funded by the Biological and Chemical Oceanography Sections and the Division of Polar Programs Antarctic Organizations & Ecosystems Program at the U.S. National Science Foundation.

Support investigators
- More support in preparation of Data Management Plan
- More data quality checking – range and bounds checking
- More widespread use of Digital Object Identifier (DOI)
- Data citation

Improve data searching
- Use of ontologies to help find data using common or similar terminology
- Linked Data – start of federated data
- Interoperability of distributed systems – combining Linked Data and Semantic Web technology
- Geospatial searching supported by faceted search option

Assess fitness for purpose
- New instruments necessitate new ways to look at data
- New data visualizations will be needed

Access data and metadata
- Add Open-source Project for a Network Data Access Protocol (OpenNDAP)
- Support International Standards Organization’s ISO19115-2 metadata standard
- Download multiple datasets: ASCII tab or comma separated; MATLAB; Network Common Data Form (netCDF); Ocean Data View (ODV), and Keyhole Markup Language (KML)

References

Acknowledgments
BCO-DMO is funded by the National Science Foundation. We acknowledge the work done by all of the investigators who contribute their data to BCO-DMO. The user interfaces to the BCO-DMO data system were developed in collaboration with Julie Allen and Katherine Joyce (WHOI). The geospatial interface to the BCO-DMO data system was developed in collaboration with Chariton Galvarino (Second Creek Consulting, LLC).