Assessment Information

CoreTrustSeal Requirements 2017–2019

Repository:	Woods Hole Open Access Server (WHOAS)
Website:	https://darchive.mblwhoilibrary.org/
Certification Date:	28 August 2019

This repository is owned by: **MBLWHOI Library**

Woods Hole Open Access Server (WHOAS)

Notes Before Completing the Application

We have read and understood the notes concerning our application submission.

True

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments:

CORE TRUSTWORTHY DATA REPOSITORIES REQUIREMENTS

Background & General Guidance

Glossary of Terms

BACKGROUND INFORMATION

Context

R0. Please provide context for your repository.

Repository Type. Select all relevant types from:

Institutional repository

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Comments

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments:

Brief Description of the Repository's Designated Community.

WHOAS is a publicly available collection of scholarly or research oriented digital work produced, submitted, or sponsored by staff and researchers at four Woods Hole, MA, USA, research institutions: the Marine Biological Laboratory (MBL), the Woods Hole Oceanographic Institution (WHOI), the USGS Woods Hole Coastal and Marine Science Center (USGS), and the SEA Education Association (SEA).

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Level of Curation Performed. Select all relevant types from:

A. Content distributed as deposited, B. Basic curation – e.g. brief checking; addition of basic metadata or documentation

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Comments

Content is distributed as deposited. Basic curation tasks include profile bitstream formats, check for required metadata and check item links in metadata.

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Outsource Partners. If applicable, please list them.

The Library contracts with Atmire, a DuraSpace registered service provider for DSpace upgrades and customization.

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Other Relevant Information.

WHOAS is listed in the Registry of Data Repositories (https://www.re3data.org/repository/r3d100010423) and indexed by the Web of Science Data Citation Index

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

ORGANIZATIONAL INFRASTRUCTURE

I. Mission/Scope

R1. The repository has an explicit mission to provide access to and preserve data in its domain.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

The mission of Woods Hole Open Access Server, WHOAS is to capture, store, preserve, and redistribute the intellectual output of the Woods Hole scientific community in digital form. WHOAS, an institutional repository (IR), is managed by the MBLCWHOI Library as a service to the Woods Hole scientific community.

WHOAS Mission Statement: http://www.mblwhoilibrary.org/services/whoas-repository-services

Preservation Policy: The MBLWHOI Library holds the right to migrate and transform the data into other formats as data and archive technologies become obsolete. The data housed in WHOAS will be preserved at the appropriate level for at least 10 years following acceptance with the expectation of perpetuity. To prevent a growing migration issue a biennial review of data objects and metadata has been implemented. We encourage researchers to use open analysis tools and formats, so that data can be reproduced from beginning to end.

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

II. Licenses

R2. The repository maintains all applicable licenses covering data access and use and monitors compliance.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

All Items in WHOAS are protected by original copyright, with all rights reserved, unless otherwise indicated. Contributors have the option to apply Creative Commons licenses for original content.

In contributing content to WHOAS, contributors grant to the MBLWHOI Library the non-exclusive right to reproduce, translate, and/or distribute submissions (including the abstract) worldwide in print and electronic format and in any current or future medium, including but not limited to audio or video. The MBLWHOI Library may, without changing the content, translate the submission to any medium or format for the purpose of preservation.

WHOAS works with the intellectual community throughout the curation process to ensure that the data is documented, preserved, and the appropriate credit is provided. The licensees suggest citation, and Creative Commons badge are listed on the appropriate pages.

WHOAS License Information: http://www.mblwhoilibrary.org/services/whoas-repository-services
Example Creative Commons badge: https://hdl.handl.net/1912/23929

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:

Accept.

A reference is still missing to the conditions of use and to measures in the case of non-compliance. However, this can be dealt with during the next certification of the repository.

III. Continuity of access

R3. The repository has a continuity plan to ensure ongoing access to and preservation of its holdings.

Compliance Level:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:
3 – The repository is in the implementation phase

Reviewer 2

Comments:
3 – The repository is in the implementation phase

Response:

WHOAS is supported by the MBLWHOI Library. The Library is supported by WHOI and MBL through a Memorandum of Understanding between the two institutions. Since its founding in 1930, WHOI (established 1930) and the MBL (established 1888) have funded and supported the joint library, its collections, and its services. The current Memorandum, dated 19 October 2017, has an effective term of ten (10) years. Under the Agreement, each organization employs library personnel to support their respective contributions to the library functions; the WHOAS Repository manager is the WHOI employee; maintenance/technical support licenses for WHOAS (e.g. Atmire) are a shared library expense; technical assistance for the WHOAS server is paid for by WHOI. MBL and WHOI provide overhead funding to the MBLWHOI Library. Additional financial support to the Library is provided by our affiliates: United States Geological Survey Woods Hole Coastal and Marine Science Center, Sea Education Association (SEA), and Woods Hole Research Center (WHRC).

The repository is a core service, which has been in place since 2004, and is backed up nightly. Upgrades and maintenance costs are budgeted annually, based on the 15 years of experience we have supporting this system. The content is maintained with common metadata standards and the DSpace infrastructure allows for easy export of all repository items, which can be imported into another DSpace system, or translated to fit another framework. Author contact information is available, should any significant changes arise.

Our institutions (WHOI and MBL), the Joint Users Committee (comprised of representatives from all affiliates) and

software development partners continue to invest in the longevity of this system and our user's scholarly output. As a library, we have invested in the preservation and discoverability of Woods Hole research at every stage and in every format. The challenges of serving this data over many decades have impressed upon the library and our institutions the importance of investing in this process. In addition to data objects, the repository also houses valuable digital objects for WHOI and MBL archives, so cross-training and support of this system is integral to maintenance and access of our archives collections and archives reference, and is used frequently by our two archivists.

In a scenario, where the decision is made to not maintain the repository system itself and that no other system would be substituted, the library staff would be able to migrate our repository items to our archives servers, located at the WHOI campus, preserving both the Handle and DOI access as well as all proper digital archival information. The Library has been serving digital archives for more than a decade and have thousands of digital objects. At that time, the Library would evaluate and implement the most appropriate discovery solution, and all of our material would continue to be indexed in CrossRef, DataCite, and Google Datasets.

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

IV. Confidentiality/Ethics

R4. The repository ensures, to the extent possible, that data are created, curated, accessed, and used in compliance with disciplinary and ethical norms.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

To the extent possible, WHOAS ensures that data are created, curated, accessed and used in compliance with disciplinary and ethical norms. Currently, the repository does not host, and does not expect to host, data with disclosure risk, as little or no research of that type is performed by our participating institutions.
All the researchers in our community are subject to the ethical requirements instituted by his or her institution, funder, and discipline. Should there be a question about the data collection or creation, the Library would be in touch with the researcher and institution's research review board.

MBL: http://www.mbl.edu/research/independent-review-board/
NEIB: http://www.neirb.com/about-us/
WHOI: http://www.whoi.edu/DoR/page.do?pid=15515
USGS: https://www2.usgs.gov/quality_integrity/

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

V. Organizational infrastructure

R5. The repository has adequate funding and sufficient numbers of qualified staff managed through a clear system of governance to effectively carry out the mission.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

WHOAS is supported by the MBLWHOI Library as a core library service. The MBLWHOI Library is in turn supported by WHOI and the MBL through a Memorandum of Agreement. The current Memorandum, dated 19 October 2017, has an effective term of ten (10) years. Under the Agreement, each organization employs library personnel to support their respective contributions to the library function; the WHOAS Repository Manager is a WHOI employee; maintenance/technical support license for WHOAS (e.g. Atmire) are a shared library expense; technical assistance for the WHOAS server is paid for by WHOI.

The IR is administered by a Repository Manager, under the supervision of the Co-Director MBLWHOI Library, Director of Library Services at WHOI. The Library maintains a highly skilled staff of 9 people.

In-house technical support is provided by the Data Librarian, and the Systems Librarian. The Library contracts with Atmire, a DuraSpace registered service provider for DSpace upgrades and customization.

The Repository Manager attends relevant repository management meetings, including SPARC and Open Repository and participates in consortium interest groups. Several staff members attend webinars throughout the year that inform data repository management.

WHOAS Mission Statement: http://www.mblwhoilibrary.org/services/whoas-repository-services

The Budget Narrative describes and outlines the funding for WHOI. The Budget Narrative for 2019: https://www.whoi.edu/page.do?pid=23017

Partners of the Woods Hole Oceanographic Institution are attracted here by the creative, can-do environment we maintain in the lab and at sea. This not only fosters breakthrough discovery, but it also supports further innovation and spurs entrepreneurial growth well beyond the Institution. WHOI also provides our partners with connections in the worlds of research, engineering, and education that only a global leader in scientific research and ocean exploration can provide. A list of recent WHOI partners and sponsors: http://www.whoi.edu/main/partners-sponsors

The MBL Annual Report summarizes and presents the financial statements for MBL. The Annual Reports: https://www.mbl.edu/publications/annual-report/

On July 1, 2013, the MBL formally affiliated with the University of Chicago. The affiliation strengthens both institutions' missions of leadership and innovation in scientific research and education. It also builds on shared values and historical ties between Chicago and the MBL, which was led by University of Chicago faculty members for the first four decades of its existence. MBL – UChicago Affiliation: https://www.mbl.edu/uc-affiliation/.

Reviewer Entry

Reviewer 1

Comments:

Accept

Reviewer 2

Comments:
Accept

VI. Expert guidance

R6. The repository adopts mechanism(s) to secure ongoing expert guidance and feedback (either inhouse or external, including scientific guidance, if relevant).

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

The Co-Director MBLWHOI Library, Director of Library Services at WHOI is a member of the WHOI Information Services Advisory Team (ISAT). The ISAT advises on fundamental, long-term issues associated with computing, communications, scientific data management and related matters affecting every aspect of the scientific use of information technologies at the Institution. The WHOI Co-Director is also an active member of the Research Data Alliance and the WHOI Ocean Informatics Group. WHOI is an institution member of Federation of Earth Science Information Partners (ESIP) and the library staff participates in their meetings.

The Data Librarian is part of the Data Librarian interest group with librarians in the North East.

The Library holds semi annual meetings with representatives of the library community and solicits feedback about repository services. Since the Library acts as a long term archive for the Biological and Chemical Oceanography Data Management Office (BCO-DMO), the Library has regular meetings with their representatives to makes sure the repository is meeting the needs of its users.

RDA Involvement: https://www.rd-alliance.org/users/lisa-raymond

Library Users Committee: http://www.mblwhoilibrary.org/about-library/library-users-committee-members

WHOI Ocean Informatics: http://www.whoi.edu/DoR/special-projects/ocean-informatics-working-group

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

DIGITAL OBJECT MANAGEMENT

VII. Data integrity and authenticity

R7. The repository guarantees the integrity and authenticity of the data.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

WHOAS is hosted on the DSpace platform which is based on the OAIS model for tracking the integrity and authenticity of digital objects housed in the system. WHOAS (via DSpace) tracks provenance and issues a checksum for each digital object on ingest and can validate the checksums.

Upon acceptance in WHOAS, DSpace records a provenance metadata record, user submission credentials, contact information, timestamps, and checksums. This information is updated upon modification to the record. Provenance is

described in the dc.description.provenance, which is not shown on the public end. All users must be approved by the administrator. All data submissions are created by the Repository Librarian, working with the researcher to provide required metadata, or by the BCO-DMO using agreed upon metadata standards, generated by staff members trained in data curation.

README files are required for data sets with adequate descriptions of the nature and processing of the data for the purpose of reuse.

As appropriate, DOIs are deposited with either DataCite or CrossRef, and dc.identifier.doi field is populated. WHOAS supports versioning for content. New versions are subject to the same appraisal/interview process as the original contribution. New versions retain the DOI and Handle as the original, with linkages provided from the new version(s) to older version(s). Access to all versions is retained.

All WHOAS metadata are exposed for OAI-PMH harvest.

WHOAS Collection Policy:http://www.mblwhoilibrary.org/services/whoas-repository-services
WHOAS Submission Instruction:
http://www.mblwhoilibrary.org/sites/default/files/WHOAS_Submission_Instructions_rev.pdf

ISO 14721: https://www.iso.org/standard/57284.html
DSpace Checksum Functionality: https://wiki.duraspace.org/display/DSDOC5x/Validating+CheckSums+of+Bitstreams
DSpace Versioning Functionality: https://wiki.duraspace.org/display/DSDOC5x/Item+Level+Versioning
DSpace access policy structure:
https://wiki.duraspace.org/display/DSDOC5x/Business+Logic+Layer#BusinessLogicLayer-E-person/Groupmanager

Examples of data entries with README info:
https://hdl.handle.net/1912/8048
https://hdl.handle.net/1912/7630

Example of versioned data:
https://hdl.handle.net/1912/8928

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

VIII. Appraisal

R8. The repository accepts data and metadata based on defined criteria to ensure relevance and understandability for data users.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

Contributors to WHOAS participate in an “ingest interview.” The purpose of the interview is to determine the peer-review status, accessibility of files, completeness of the metadata, and that sufficient documentation is provided. This information is reflected in the metadata and in README files included in the record. README-type files or description fields are required for data sets.

Library staff collect metadata (e.g. Author, Title, Subject heading, coverage spatial/temporal, funding) during the initial interview and depositors are requested to provide documentation files (e.g. README) and incorporate information about methodology in the metadata fields Abstract and Description.

Submissions undergo review before acceptance into WHOAS and the repository manager appraises the metadata to determine if it is complete. If not complete, additional metadata is requested.

Persistent identifiers (Handles) are provided for each metadata record (via DSpace). The MBLWHOI Library has been a member of CrossRef a DOI registration agency since 2005, and deposits DOIs for datasets and original content upon request.

While WHOAS supports a number of known data file formats, which are widely used in a user’s domain, including: Microsoft Excel, and MATLAB, users are strongly encouraged to convert data sets to open source, non-proprietary formats such as NetCDF and CSV prior to WHOAS ingest.

Ingest interview questions include but are not limited to:
What is the project?

What is the time span?

What type of data is being produced?

What type of data would you like to deposit into WHOAS?

List the metadata fields of data.

How big is the data?

Is raw data being included?

WHOAS Formats Statement: http://www.mblwhoilibrary.org/services/whoas-repository-services

Examples of data entries with README info: https://hdl.handle.net/1912/8048

https://hdl.handle.net/1912/7630

Large data: https://hdl.handle.net/1912/6867

Dynamic data: https://hdl.handle.net/10.1575/1912/7341

Curated data from BCO-DMO: https://darchive.mblwhoilibrary.org/handle/1912/4135

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

IX. Documented storage procedures

R9. The repository applies documented processes and procedures in managing archival storage of the data.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:

4 – The guideline has been fully implemented in the repository

Response:

WHOAS has the ability to implement simple and scalable backup and restore procedures. DSpace provides the documentation of all processes that items undergo, including ingest, versioning, and metadata updates. DSpace performs the fixity checks for files on the server.

The repository server is located on a virtual machine. The repository server was recently moved to a virtual machine because the server was coming to the end of life and the virtual machine allows flexibility to allocate additional resources as needed. Security is centrally managed by WHOI Information Services.

Server snapshots maintain integrity in case of failed updates. “The storage arrays are configured to take user-accessible-point-in-time snapshots on the following schedule:
• Hourly snapshots taken at 5 min past the hour. 24 hourly snapshots are retained.
• Daily snapshots taken at 10 min past midnight. 7 daily snapshots are retained.
• Weekly snapshots taken at 15 min past midnight. 12 weekly snapshots are retained.”

Virtual Servers: https://whoi-it.whoi.edu/virtual-servers/

Centrally Managed Data Storage (NetApp): https://whoi-it.whoi.edu/central-data-storage/

DSpace Checksum Functionality: https://wiki.duraspace.org/display/DSDOC5x/Validating+CheckSums+of+Bitstreams

WHOAS Preservation Policy: http://www.mblwhoilibrary.org/services/whoas-repository-services

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

X. Preservation plan

R10. The repository assumes responsibility for long-term preservation and manages this function in a planned and documented way.

Compliance Level:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:
3 – The repository is in the implementation phase

Reviewer 2

Comments:
3 – The repository is in the implementation phase

Response:

The WHOAS repository was one of the first DSpace repositories to be implemented more than 13 years ago. Our joint library, which was established nearly 90 years ago, considers this to be one of our core services.

The Library reserves the right to transfer ownership or migrate the records. During the “ingest interview", users are informed of the rights and responsibilities that the library holds for the data deposited and of the library's intention to preserve access to the data. This information is also included on our repository page.

The current Memorandum, dated 19 October 2017, has an effective term of ten (10) years. Under the Agreement, each organization employs library personnel to support their respective contributions to the library functions; the WHOAS Repository manager is the WHOI employee; maintenance/technical support licenses for WHOAS (e.g. Atmire) are a shared library expense; technical assistance for the WHOAS server is paid for by WHOI.

WHOAS Preservation Policy: http://www.mblwhoilibrary.org/services/whoas-repository-services

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

XI. Data quality

R11. The repository has appropriate expertise to address technical data and metadata quality and ensures that sufficient information is available for end users to make quality-related evaluations.

Compliance Level:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:
3 – The repository is in the implementation phase

Reviewer 2

Comments:
3 – The repository is in the implementation phase

Response:

Generally, WHOAS accessions are limited to about two per day. This allows our Repository Librarian to conduct in-person or phone-based interviews with most of the data creators, who are all working researchers in the Woods Hole area. Most are leaders in their field. During our interviews, we discuss the types of data being submitted, create metadata for the record, and help the users create read me files and data dictionary to document all aspects of data quality and provenance.

About half of our data deposits are created by BCO-DMO, which employs trained data curators for all submissions, thus assessing the data for consistency, and quality.

Quality check list includes:
Data set and its contents are clearly described in the ReadMe file
ReadMe files include known issues and limitations
Verify files to assure data accuracy and reusability
Codes or scripts included if necessary
Publication information
Data collection and methods information

WHOAS Collection Policy: http://www.mblwhoilibrary.org/services/whoas-repository-services

About BCO-DMO: https://www.bco-dmo.org/about-us

BCO-DMO Data Management Model: https://www.bco-dmo.org/bco-dmo-data-management-model

Example Data Description: https://darchive.mblwhoilibrary.org/bitstream/handle/1912/23932/Dataset_description.pdf

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

XII. Workflows

R12. Archiving takes place according to defined workflows from ingest to dissemination.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

Contributors to WHOAS participate in an “ingest interview.” The purpose of which is to determine the peer-review status, accessibility of files, and that sufficient documentation is provided. The ingest workflow is via the DSpace submission user interface, which records a provenance metadata record, user submission credentials, contact information, timestamps, and checksums. This information is updated upon modification to the record. Provenance is described in the dc.description.provenance, which is not shown on the public end.

Content is submitted to WHOAS via the DSpace user interface. The content submitter is taken through a series of questions/text boxes in which they are requested to provide Author(s), Title, Date of Issue, language, Embargo Date (when appropriate), keywords, Abstract, Description, Sponsors, and Creative Commons License (when appropriate). The process concludes with the uploading of the related files and acceptance of the Distribution License, which permits the Library to distribute and preserve the contribution.

Upon completion of the submission, and before acceptance into WHOAS, the editor has the option to either accept the submission and ingest it into WHOAS, or return the submission for additional metadata and/or files.

Upon acceptance in WHOAS, DSpace records a provenance metadata record user submission credentials, contact information, timestamps, and checksums. This information is updated upon modification to the record. Provenance is described in the dc.description.provenance, which is not shown on the public end. All users must be approved by the administrator. All data submissions are created by the Repository Librarian, working with the researcher to provide required metadata, or by the BCO-DMO using agreed upon metadata standards, generated by staff members trained in data curation.

WHOAS Workflow:

Data Ingestion --> Data Deposit --> Data Linking --> Data Archiving --> Data Re-use ---> Data Ingestion

Data Ingestion:
Contributor requests a deposit into the repository.
The repository manager conducts an “ingest interview”. The ingest interview questions include but are not limited to:
• What is the project?
• What is the time span?
• What type of data is being produced?
• What data formats would you like to deposit into WHOAS?
• List the metadata fields of data.
• How big is the data?
• Is raw data being included?

Data Deposit:
The repository manager reviews the files to ensure data integrity.
The deposit is submitted into the repository.
A DOI is created if requested by depositor.

Data Linking:
The deposit is linked to related materials.

WHOAS links to Symplectic Elements, Schema.org applications, and ArchivesSpace.

Symplectic Elements, a research information management system, which the Library uses to detail the publications, funding, projects, equipment, and professional activities of our researchers and faculty members at the MBL, WHOI, WHRC, SEA, and USGS Woods Hole.

Schema.org is a collaborative, community activity with a mission to create, maintain, and promote schemas for structured data on the Internet, on web pages, in email messages, and beyond. WHOAS uses the shared vocabulary to structure

metadata to help search engines understand the published content.

ArchivesSpace, a web-based open source application for managing archives information. ArchivesSpace holds a diverse collection of administrative records, photographs, scientists' personal papers, film and video, historical instruments, cruise data, ship logbooks, diaries, blueprints and oral histories.

Data Archiving:
For long term management, the MBLWHOI library holds the right to migrate and transform the data into other formats as data and archive technologies become obsolete. The data housed in WHOAS will be preserved at the appropriate level for at least 10 years following acceptance with the expectation of perpetuity. In effort to prevent a growing migration issue a biennial review of data objects and metadata has been implemented. We encourage researchers to use open analysis tools and formats, so that data can be preproduced from beginning to end.

Data Re-use:
The deposit is searchable, accessible, and available for use by other researchers. The software platform of WHOAS is DSpace, an open source system developed jointly by MIT Libraries and Hewlett-Packard (HP). DSpace complies with many standard protocols for access, ingest, and export. The standards DSpace supports included: Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), Open Archives Initiative Object Reuse and Exchange (OAI-ORE), Simple Web-service Offering Repository Deposit (SWORD), Web Distributed Authoring and Versioning (WebDAV), OpenSearch, OpenURL, RSS, and ATOM. DSpace can manage and preserve all types of digital content. The Library contracts with an outside vendor for DSpace upgrades and customization.

Provenance Description: http://www.dublincore.org/usage/meetings/2004/03/Provenance/

WHOAS Collection Policy:
http://www.mblwhoilibrary.org/services/whoas-repository-services

DSpace Checksum Functionality: https://wiki.duraspace.org/display/DSDOC5x/Validating+CheckSums+of+Bitstreams

DSpace access policy structure:
https://wiki.duraspace.org/display/DSDOC5x/Business+Logic+Layer#BusinessLogicLayer-E-person/GroupManager

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

XIII. Data discovery and identification

R13. The repository enables users to discover the data and refer to them in a persistent way through proper citation.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

WHOAS metadata can be harvested via OAI-PMH, and is optimized for search engine discoverability. All metadata records contain a citable URI (Handle) and a suggested citation.

DOIs are deposited with CrossRef and Datacite for datasets and original content upon request.

The repository is also fully searchable. WHOAS is listed in the Registry of Data Repositories

(https://www.re3data.org/repository/r3d100010423) and indexed by the Web of Science Data Citation Index.

Registry of Resources: https://www.re3data.org/repository/r3d100010423

OIA-PMH: https://wiki.duraspace.org/display/DSDOC5x/OAI

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

XIV. Data reuse

R14. The repository enables reuse of the data over time, ensuring that appropriate metadata are available to support the understanding and use of the data.

Compliance Level:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:
3 – The repository is in the implementation phase

Reviewer 2

Comments:
3 – The repository is in the implementation phase

Response:

When accessioning new data, the Repository Librarian conducts an interview about the data's provenance and use. MBLWHOI Library personnel indicate that non-proprietary formats are preferred, but ask that all data be provided in widely used, accessible, and established formats within their disciplines.

A README-type file is required and it details the contents of the package, necessary data or metadata descriptions (sometimes provided in a data dictionary), and a description of how to use the data.

The Library holds the right to migrate and transform the data into other formats. At this time, there are no records that are at imminent risk of obsolescence, though we expect to implement stronger open format expectations in the next 12 months in an effort to prevent a growing migration issue in the future, collaborating with data curators at BCO-DMO and utilizing resources from international data organizations, such as DataOne, Research Data Alliance (RDA), and Federation of Earth Science Information Partners (ESIP). We have begun to do a complete review of data records created or deposited before 2017 to ensure appropriate metadata is readily available. We will be implementing a biennial review of data objects and metadata.

The proprietary formats in use at this time, such as MATLAB (analysis scripts and visualization) and Seasoft files create by proprietary instruments are in common use in the oceanographic discipline. Both of these formats are human readable. We are working to encourage researchers to use open analysis tools, so that data can be reproduced from beginning to end, without expensive resources. We are closely following open format and open lab trends in ocean science.

WHOAS Collection Policy and Format Support: http://www.mblwhoilibrary.org/services/whoas-repository-services

Example Dataset:

https://hdl.handle.net/1912/8519

Example Data Description:

https://darchive.mblwhoilibrary.org/bitstream/handle/1912/23932/Dataset_description.pdf

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

TECHNOLOGY

XV. Technical infrastructure

R15. The repository functions on well-supported operating systems and other core infrastructural software and is using hardware and software technologies appropriate to the services it provides to its Designated Community.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

The WHOAS system uses DSpace which is one of the leading open-source repository systems in the world. It is a Java-based application which is tested on Linux, Windows, and Mac OSX.

The DSpace community is large, with over 1,000 organizations world-wide, a network of registered service providers, and an active development community. It is very well documented and maintained. Dublin Core is the default metadata schema for DSpace and our primary schema.

The system runs on a Linux machine which has 16G RAM, 14 TB HDD, 4 Core Intel Xeon 5148. Our machine and operating system are supported and maintained by our IS department, including all system updates and security standards.

DSpace Information: http://www.dspace.org/techspecs http://www.dspace.org/service-providers/ http://registry.duraspace.org/registry/dspace

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

XVI. Security

R16. The technical infrastructure of the repository provides for protection of the facility and its data, products, services, and users.

Compliance Level:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:
3 – The repository is in the implementation phase

Reviewer 2

Comments:
3 – The repository is in the implementation phase

Response:

The Library evaluates the risk of this system, as well as all our systems continuously. This information, which is updated as changes occur, is documented internally. We review all technical documentation often to identify any out of date information. The information about this machine is maintained by our Repository Librarian, Systems Librarian, and Data Librarian.

Our repository server is physically located in a secured facility managed by our IS department and is backed up incrementally to tape locally. Our campus is transitioning to a cluster-based server system, and as this server reaches end-of-life, we will transition to that model. At that time, we will retain both a local and remote backup copy of the virtual machine. In the meantime, we are in discussions with our IS department to implement a virtual server backup that can be deployed most quickly in case of outage and maintenance work.

Our IS department also monitors unusual activity and server access. The IS department “ensures that all WHOI systems are protected by a multi-layer defense strategy, while safely allowing outside access to public services.” IS ensure compliance with Defense Federal Acquisition Regulation (DFAR) and National Institute of Standards and Technology (NIST) guidelines.

Access and security maintenance of the DSpace application is performed by Atmire, a DuraSpace registered service provider. We maintain emergency response services as part of our contract.

Only authorized users are permitted to deposit data into WHOAS. Authorized users are assigned to deposit data to a specific collection(s), and/or community(s). Authorized users can have administration access to allow the user submit data and to perform certain administration functions.

There are different levels of access to WHOAS, admin.

Information Services Security provides several functions, including managing firewalls, analyzing network traffic, providing network level antivirus and vulnerability protection, and identity and password management. Our main goal is to ensure that all WHOI systems are protected by a multi-layered defense strategy, while safely allowing outside access to public services. Additional features of this service include on demand Vulnerability Assessments and SSL/Client certificate issuance.

Reviewer Entry

Reviewer 1

Comments:
Accept.

This is an area for expansion during recertification.

Reviewer 2

Comments:

Accept

APPLICANT FEEDBACK

Comments/feedback

These requirements are not seen as final, and we value your input to improve the core certification procedure. To this end, please leave any comments you wish to make on both the quality of the Catalogue and its relevance to your organization, as well as any other related thoughts.

Response:

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments: