NOAA/NODC Interoperable Archive of Ocean Climate Data and Information

Opening its doors in 1961, the NOAA National Oceanographic Data Center (NODC) recently celebrated its Fiftieth anniversary of acquiring, archiving, assessing, and providing access to ocean data and information. The NODC archive has evolved over the years from a disparate collection of databases to a unified Archive Management System, and most recently has begun incorporating a wide range of internationally accepted interoperable data tools and services. These standards-based services include discovery services like the OGC Catalog Service for the Web (CSW) and the Search and Retrieval by URL (SRU) profile of ISO 23950.

Data access and use services like OPeNDAP's Data Access Protocol (DAP) and the OGC Web Mapping Service (WMS) and Web Coverage Service (WCS) are also supported, and the entire framework is supported by FGDC metadata and increasingly metadata conformant with ISO 19115. Online browse, visualization and analysis systems like the Live Access Server (LAS) and an ArcGIS Server have recently joined the list of supported tools and services, as has a Geoportal Server to support human and machine based queries.

NODC *Archive* Paradigm

Human and machine interfaces to

Preserve, Discover, Understand, and Use

NODC Archive Holdings

AIP AIP AIP AIP AIP

The NODC Ocean Archive

The Open Archival Information System (OAIS) Reference Model, the ISO standard for digital archives, identifies key functions of a "Capital A" Archive. NODC strives to conform to the OAIS concepts and provide services for people and their machine clients.

In OAIS terminology, an archive preserves Archival Information Packages (AIP). NODC refers to these AIPs as "Accessions".

Discovery

Discovery

Human to Machine Interfaces

Google   Data.gov   GOS
OAS   Geoportal Server Web App

Machine to Machine Interfaces

CSW   Geoportal Server REST API
OpenSearch   SRU/ISO23950

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The NODC Ocean Archive

Discovery is enabled through numerous interfaces designed for both humans and their machine clients. (OAS = Ocean Archive System)

Human-to-machine interfaces include government-mandated generalized portals like Data.gov and Geospatial One-Stop (GOS).

Discovery services are available for ALL of the NODC Archive holdings, but better metadata supports better discovery!

Understand and Preserve

Understand and *Preserve*

Metadata and Transformations

FGDC   ISO   Ad hoc docs
Other standards
Provenance   Checksums   Manifests
Multiple Views

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The NODC Ocean Archive

Understanding and *Preservation* are enabled through a focus on standardized descriptions of "contents", their "containers", and where they have been.

As with Preservation, better documentation enables better understanding and long term preservation.

Access and Use

LAS, GIS, KML →
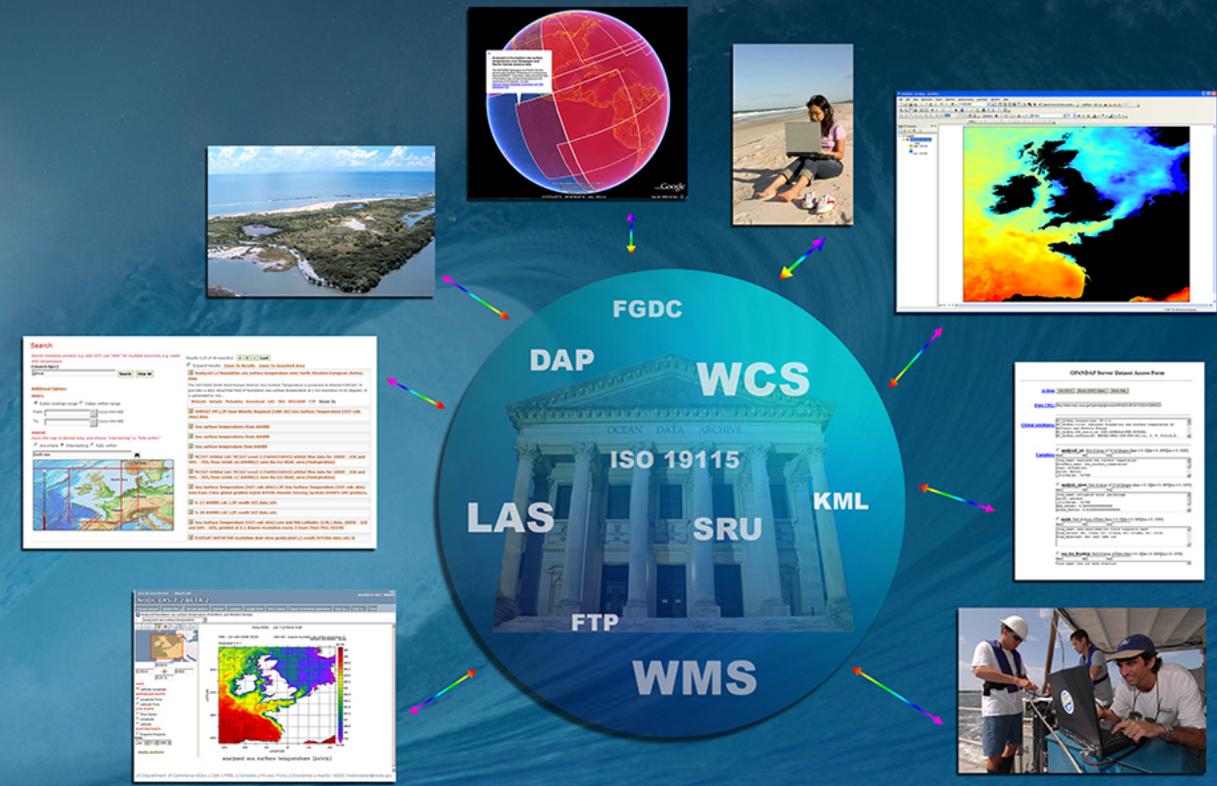WCS, WMS, SOS →
DAP →
FTP and HTTP →

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The NODC Ocean Archive

Enhanced online access, visualization, and analysis tools: These capabilities require more structured metadata and standardized file formats, so are available to the fewest archive holdings.

Distributed Access Protocol (DAP): Requires standard file formats so is available to fewer archive holdings.

Basic FTP/HTTP access for all Archival Information Packages (AIP) in the NODC Ocean Archive: These distribution methods have no format or metadata requirements so they work for all archive holdings, but they provide only basic download capability.

FGDC   DAP   WCS
ISO 19115
LAS   SRU   KML
FTP
WMS

Preserve. Discover. Access. Use.