



• **USE STANDARDS FOR YOUR DATA WHETHER YOU SHARE THEM OR NOT BECAUSE IT WILL HELP FUTURE-YOU UNDERSTAND YOUR DATA BETTER** •

BIOLOGICAL OBSERVATION DATA STANDARDIZATION



A primer for data managers

USING STANDARDS FOR YOUR BIOLOGICAL OBSERVATION DATA MEANS WE CAN UNDERSTAND PATTERNS AT SCALES GREATER THAN ONE PROJECT, RESEARCH GROUP, OR ORGANIZATION

Do you want to...

PROVIDE CONTEXT AND UNDERSTANDABILITY TO YOUR DATA?

Ensures your data are *reusable* so that yourself and others understand how the data were collected and who to contact for more information.

Then use...

METADATA STANDARDS: EML, ISO-19115, FGDC-CSDGM, MIXS

Example places accepting these standards: EDI, DataONE member nodes, NCEI, Data.gov, ScienceBase, NASA DAACs, Planet Microbe

INTEGRATE YOUR DATA WITH OTHER DATA?

Ensures your data *can be combined* with other datasets from other organizations and researchers and makes the data easier to reuse. Also, you will *benefit from community developed* tools.

DATA STANDARDS: DARWIN CORE, CLIMATE AND FORECAST

Example places accepting data using these standards: GBIF, OBIS, IOOS

MAKE YOUR DATA INTEROPERABLE?

Ensures your data *can be used* and *understood* in the context of other datasets from other organizations and researchers and makes the data easier to reuse, especially for machine-to-machine operations.

CONTROLLED VOCABULARIES: NERC, ENVO

TAXONOMIC AUTHORITIES: WORMS, ITIS

HABITAT CLASSIFICATION: CMECS, NVCS, NWCS



SHARE YOUR DATA ON THE WEB?

Ensures your data are findable and accessible to the public. Your data are also programmatically accessible.

WEB-ENABLED STANDARDS: DUBLIN CORE, DATACITE, SCHEMA.ORG

EXAMPLE PLACES ACCEPTING THESE STANDARDS: ZENODO, PANGAEA, FIGSHARE, DRYAD, UNIVERSITY OR ORGANIZATION SYSTEM

EXAMPLE WEB SERVICES: ERDDAP, THREDDS, MAP SERVICES

MAKE YOUR DATA SOFTWARE READY?

Ensures your data are easily imported to computing software and analyzed.

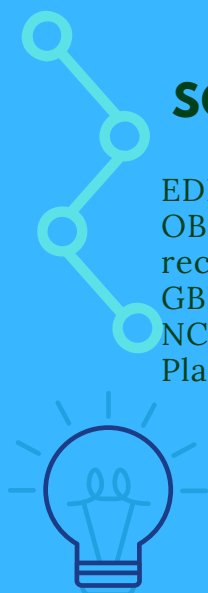
- Use non-proprietary formats
- Data in long format
- Follow ISO 8601 for dates
- Match scientific names to a taxonomic authority
- Record latitude and longitude in decimal degrees in WGS84
- Use globally unique identifiers

MIX AND MATCH BUT WATCH OUT FOR REQUIREMENTS!

You can use metadata standards, data standards, and controlled vocabularies in any combination with each other. Some places may require certain combinations for your data to be included in their repository. Use of standards will result in data that are more closely aligned to the FAIR principles.

REQUIRED STANDARDS FOR SOME EXAMPLE REPOSITORIES

EDI: EML
OBIS: Darwin Core, EML, and WoRMS , NERC recommended
GBIF: Darwin Core and EML
NCEI: ISO
Planet Microbe: MIxS and ENVO



Visit https://wiki.esipfed.org/Biological_Data_Standards_Cluster to get involved

<https://fairsharing.org/standards/?q=biological>

