

DeSSC New-User Program: Data Management Overview

Vicki Ferrini & Tina Haskins

NDSF NATIONAL
DEEP SUBMERGENCE
FACILITY



Meet the Data Team

Vicki Ferrini, PhD

NDSF Associate Director for Data System Strategy
Director of MGDS



Tina Haskins

NDSF Associate Director for Data and
Science Operations



Hayley Drennon

Data Manager
Marine Geoscience Data System



Scott McCue

Lead *Jason* Data Engineer
NDSF



Catie Graver

SSSG & Data Engineer,
NDSF



Andrew Goodwillie, PhD,

Senior Data Manager
Marine Geoscience Data System



Joe Garcia

Lead *Alvin* Data Engineer
NDSF

Open Data Access

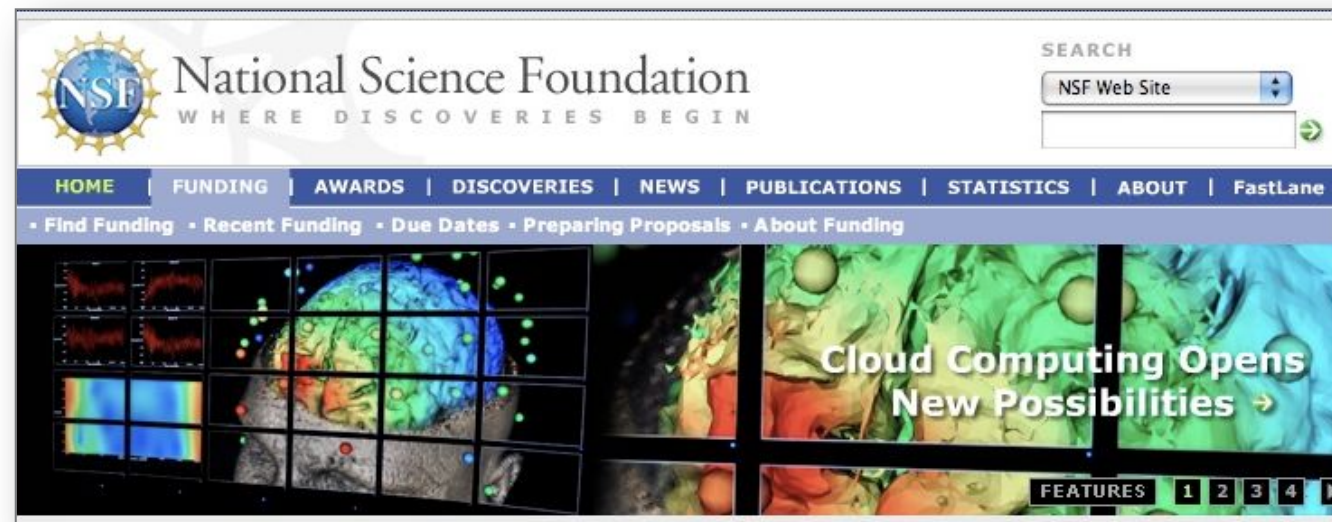
- Driven by:
 - Funding agency requirements
 - Journal requirements
 - Acquisition costs
- Enables New Opportunities:
 - Spatial & temporal change
 - Scientific reproducibility
 - Data synthesis
 - New possibilities for analysis

JANUARY 11, 2023

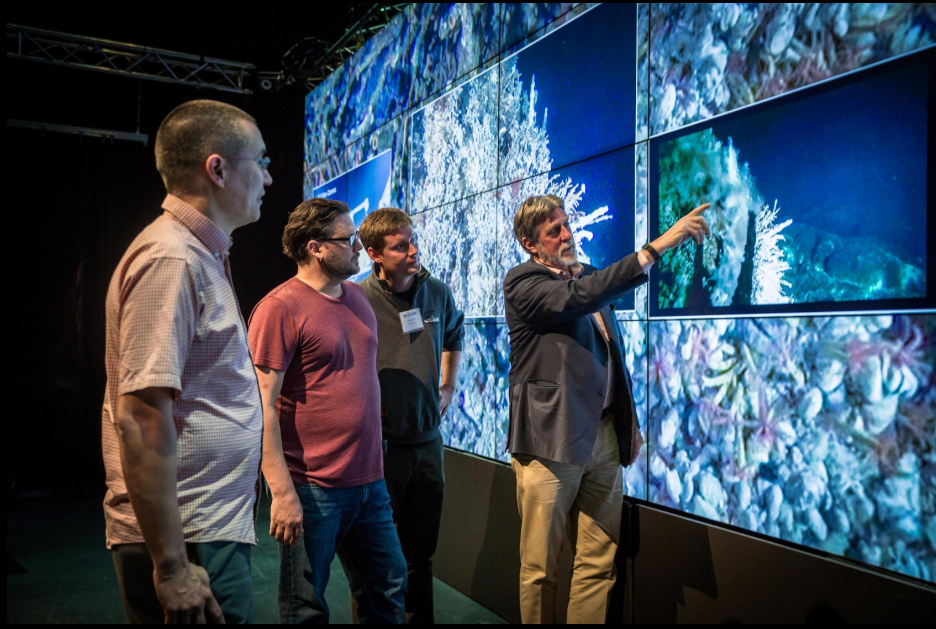
FACT SHEET: Biden-Harris Administration Announces New Actions to Advance Open and Equitable Research

 > [OSTP](#) > [BRIEFING ROOM](#) > [PRESS RELEASES](#)

OSTP launches Year of Open Science to advance national open science policies across the federal government in 2023



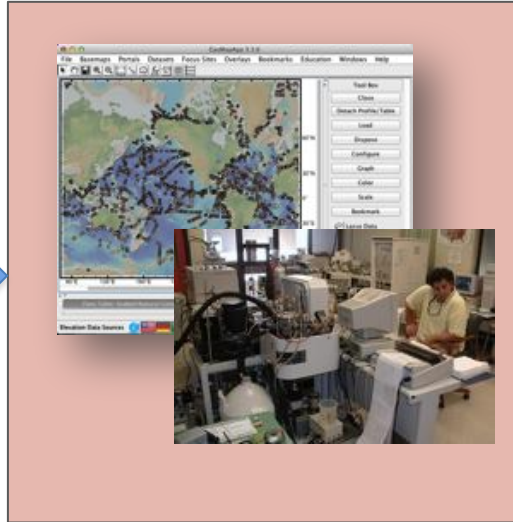
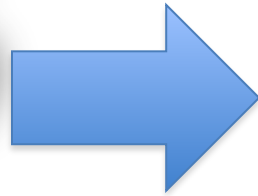
Beyond Analysis: *Experiencing* Data



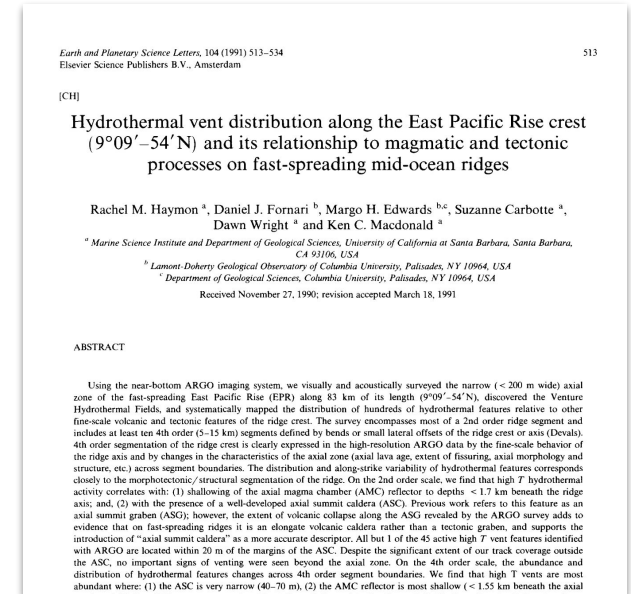
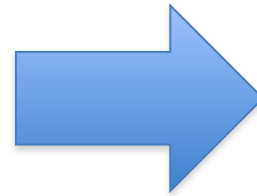
Historic Scientific Workflow



Data Acquisition



Data Processing & Interpretation



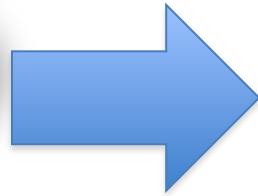
Publications



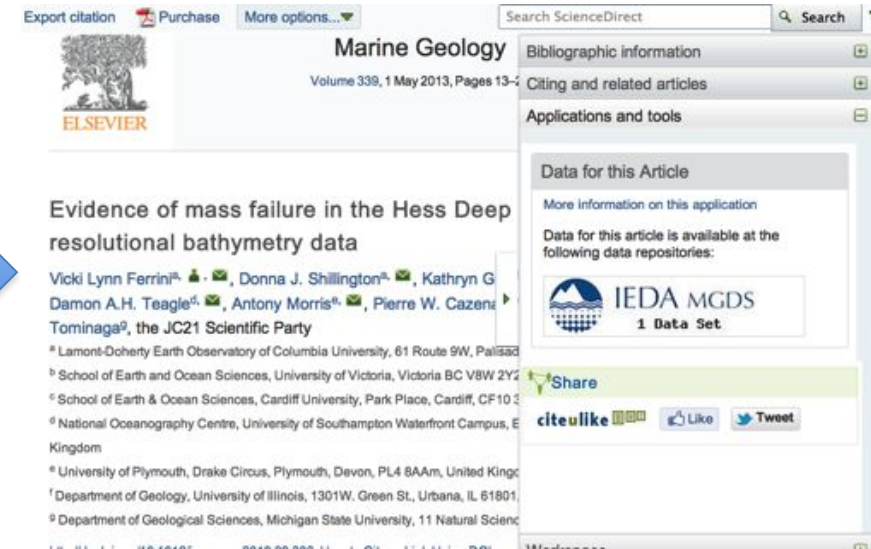
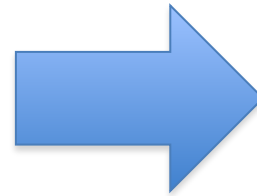
Modern Scientific Workflow



Data Acquisition



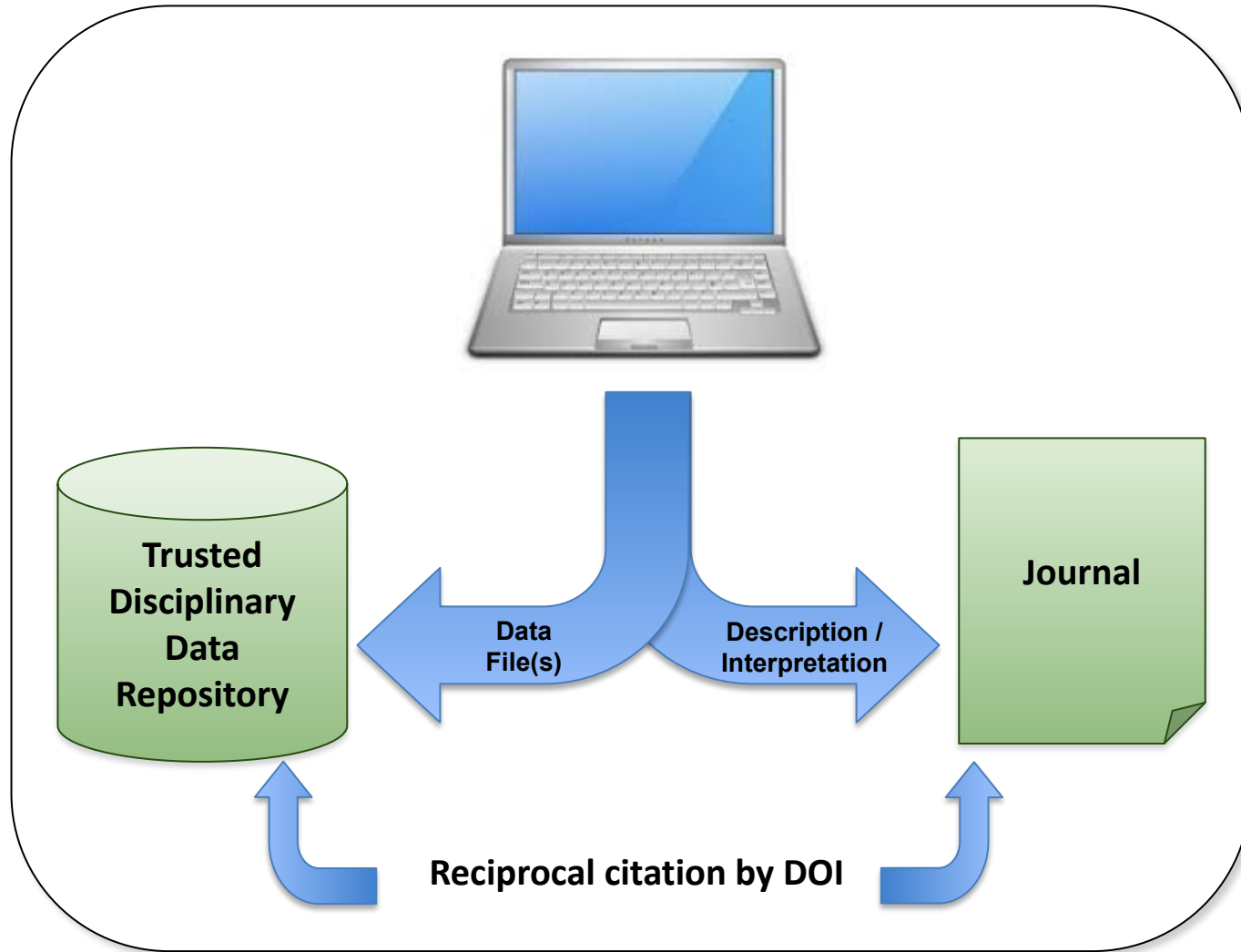
Data Processing
& Interpretation



Publications



“Best Practice”



What's in it for you?

- Scientific integrity & reproducibility
- Collaboration
- Increase research impact
- Data citation
- Compliance with data policies
- Outreach & Engagement
- Preserve data for your own future use

Marine Geology
Volume 339, 1 May 2013, Pages 13-21

Evidence of mass failure in the Hess Deep Rift from multi-resolutional bathymetry data

Vicki Lynn Ferrini^a, Donna J. Shillington^a, Kathryn Gillis^b, Christopher J. MacLeod^c, Damon A.H. Teagle^d, Antony Morris^e, Pierre W. Cazenave^d, Stephen Hurst^f, Masako Tominaga^g, the JC21 Scientific Party

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<https://doi.org/10.1016/j.margeo.2013.03.006> Get rights and content

Research data for this article

IEDA

Marine geoscience data
Data associated with the article:
Processed Swath Bathymetry Grids (NetCDF-GMT format) derived from ship-based Multibeam Sonar Data from the Hess Deep Rift acquired during the James Cook expedition JC21 (2008)
Near-bottom bathymetry data (2m resolution) from the Hess Deep Rift

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THE DATA CITATION INDEX™

CONNECTING THE DATA TO THE RESEARCH IT INFORMS

What is it? VIEW VIDEO

“The coolest thing to do with your data will be thought of by someone else.”

Rufus Pollock

Cambridge University and Open Knowledge Foundation

Data Management Planning



- Concept/Proposal Development
 - Are existing data available?
- Data Acquisition Plan
 - Sensor Calibration
 - Survey Plans
 - Data Analysis + Reduction
 - Data Documentation
- Data Management Plan (DMP)
 - Required in NSF Proposals
 - How will you preserve & document

ezDMP helps you build the Data Management Plans for your NSF Grant Applications.

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GeoMapApp 2.3

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INTEGRATED EARTH DATA APPLICATIONS
iedadata.org

Data Management Plan

Primary Investigator: John Morton
Institution: Lamont Doherty Earth Observatory of Columbia University
Project: Reactivation of the Passive Margin of Eastern Laurentia
NSF Division: OCE **Solicitation Info:** Marine Geology and Geophysics **Submission Date:** 01/16/2013

Overview: Our project will use active source seismology on the Marcus G. Langseth to image the oceanic crust on the continental shelf of the Eastern U.S. after the Dec. 21, 2012 earthquake.

Data description: The proposed research will result in several new seismic transects along and across the new active margin.

Data analysis summary: CMP stacking and migration will be performed using the open source seismic utilities package Seismic Unix. Gravity data will be processed using the open source R2R_Gravity data processing tools. Multibeam bathymetry will be processed using MBSYSTEM.

Includes field work? Yes
Description of field work: Active source seismology, multibeam bathymetry, and gravimetry (BGM-3) data will be collected.

Expected data product #1
Data type: Observational, Analytical
Responsible investigator: John Morton
Product description: .seg files from seismic transits.
Intended repository: IRIS
Timeline for data release: Immediate Release

Expected data product #2
Data type: Observational
Responsible investigator: John Morton
Product description: Processed free-air anomaly data in MGD77-T format
Intended repository: NGDC
Timeline for data release: Immediate Release

Expected data product #3
Data type: Observational
Responsible investigator: Vicki L. Ferrini
Product description: Multibeam bathymetry data
Intended repository: MGDS
Timeline for data release: Immediate Release

Field Data

- Facility-Managed Data
 - Ship (R2R)
 - Raw sensor data
 - Vehicle Data (WHOI + MGDS)
 - Raw sensor data
 - First-order at-sea products
- PI-Managed Data
 - Documentation
 - Cruise report
 - Sample metadata
 - Processing metadata
 - Physical samples
 - Science party instrumentation



Sealog AT42-22 > J2-1245 > Replay
 FREE_FORM turning on ICL2 guest @ 2020-02-02T01:40:55.814Z

Navigation **Home** Original Nav Data

Time	2020-02-02T01:40:55.814Z	Depth	-4959.399 meters	Latitude	18.5462163 ddeg
Latitude	18.54639364 ddeg	Altitude	13.0 meters	Longitude	-81.7182232 ddeg
Longitude	-81.71827559 ddeg	Heading	45.732 deg	Heading	45.68 deg
Local X	3355.76 meters	Pitch	-14.7 deg	Depth	4963.30 meters
Local Y	5115.24 meters	Roll	3.3 deg	Altitude	7.09 meters

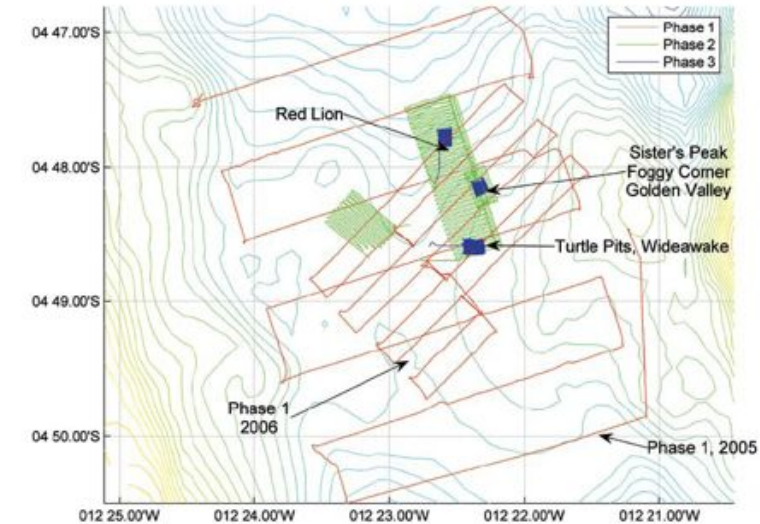
2020-02-01T22:13:04.416Z 2020-02-02T07:18:11.577Z

Filtered Events Show ASNAP

- 2020-02-02T01:40:55.814Z <guest> "turning on ICL2"
- 2020-02-02T01:53:42.483Z <guest> sample types: "IGT Fluid", "taking J-1245-IGT3 at Beebe Woods max temperature 348 C"
- 2020-02-02T01:55:15.760Z <guest> "temperature very stable at 348 C"
- 2020-02-02T01:56:14.081Z <guest> "holstering IGT3"
- 2020-02-02T01:57:43.565Z <guest> "heading for lung snack"
- 2020-02-02T02:01:01.894Z <guest> "lung snack found"
- 2020-02-02T02:02:25.460Z <guest> "landed at lung snack preparing to sample starting with IGT1"
- 2020-02-02T02:05:37.118Z <guest> sample types: "IGT Fluid", "taking J-1245-IGT1 at Lung Snack max temperature 280 C"
- 2020-02-02T02:08:21.850Z <guest> "stowing IGT1"
- 2020-02-02T02:08:28.355Z <guest> "stowing IGT1"

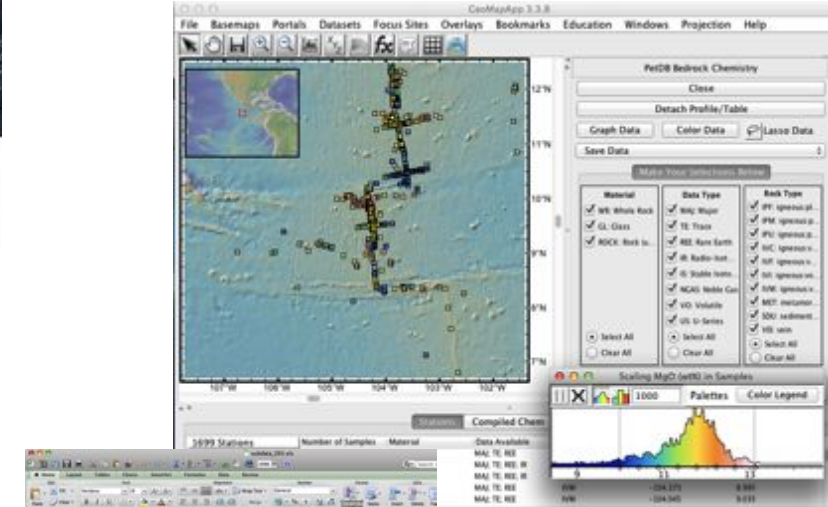
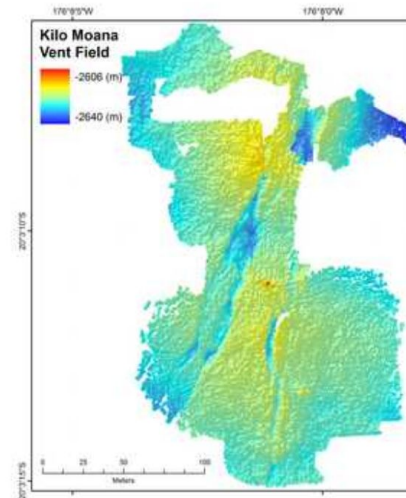
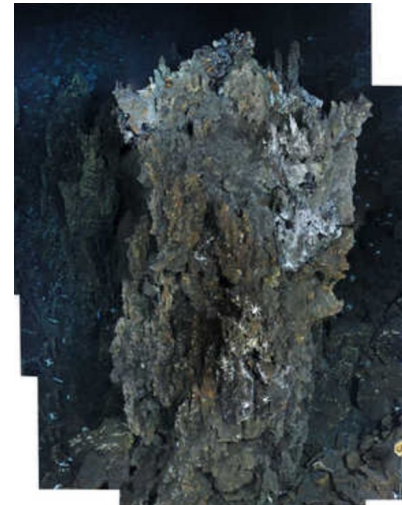
Search: e.g., fish
 Author: e.g., jamith
 Start Date/Time (UTC):
 Stop Date/Time (UTC):
 Reset filter

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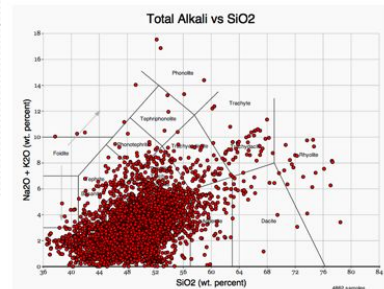


Processed/Derived Data

- Which data should be preserved?
 - Data supporting publications
 - Processed data of value
 - Results of lab analysis
- Where should it be curated?
 - Domain-specific repository?
 - What are requirements of repository?
- Documentation
 - What does a new user need to know?
 - How were products generated?
 - What are caveats of data?

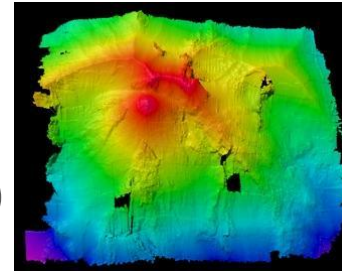


Sample ID	Material	Number of Samples	Material
MA1 TE, REE			
MA2 TE, REE, IR			
MA3 TE, REE, IR			
MA4 TE, REE			
MA5 TE, REE			



Deep-Submergence Data Resources

- WHOI/NDSF (whoi.edu)(ndsf.whoi.edu)
 - Dive metadata & data at WHOI Data Library
 - NDSF vehicles
- Marine Geoscience Data System (marine-geo.org)
 - Dive metadata, field & derived data
 - Navigation, geophysical data, event logs, bottom photos
 - Data from many operators/vehicles
 - SOI: ROV SuBastian
 - NDSF: Alvin, Jason, Sentry
 - Nautilus: Hercules
 - MBARI Mapping AUV
 - REMUS
 - LEGACY: DSL120, IMI130, ABE
- NOAA/NCEI (www.ncei.noaa.gov)
 - OER dive metadata & data
 - Searchable dive video archive
- Scientific publications
- Other...

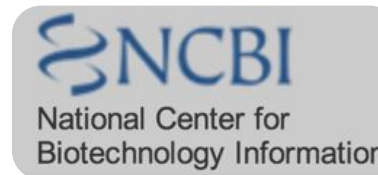


Time	Latitude	Longitude	Local X	Local Y	Depth	Altitude	Heading	Pitch	Roll	Original Nav Data
2020-02-02T01:40:55.814Z	18.54639364 ddeg	-81.7182232 ddeg	3355.76 meters	5115.24 meters	-959.399 meters	13.0 meters	45.732 deg	-14.7 deg	3.3 deg	Latitude: 18.5462163 ddeg Longitude: -81.7182232 ddeg Heading: 45.68 deg Depth: 4963.30 meters Altitude: 7.09 meters

File Name: COL.20111020.081729042.0046514.tif
Date: 2011-10-20 08:17:29
Longitude: 9.50693846
Latitude: -104.2428492
[Download Full Resolution Image](#)
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Which Repository?

- Know data policies
- Seek domain-specific repositories
- System features to consider
 - Long-term Archiving
 - Data Usage Reports
 - Data Publication
 - User Support
 - Usability
 - Interoperability



[Ready, set, share: Researchers brace for new data-sharing rules](#)