

# 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*



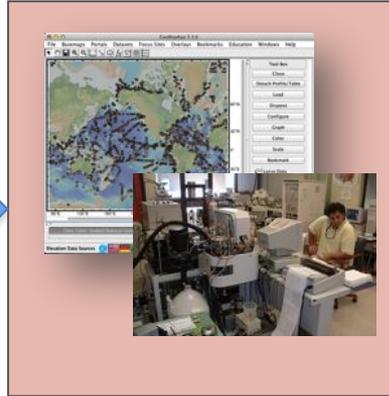
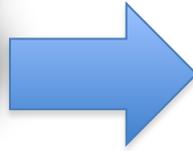
# Beyond Analysis: *Experiencing* Data



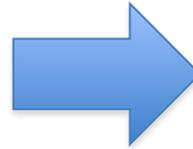
# Historic Scientific Workflow



Data Acquisition



Data Processing  
& Interpretation



Publications

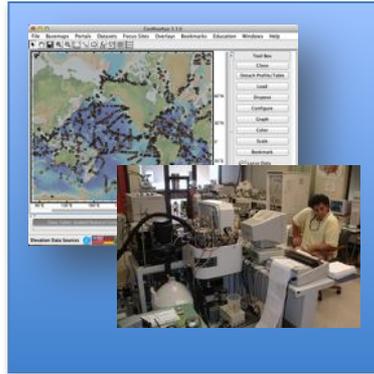


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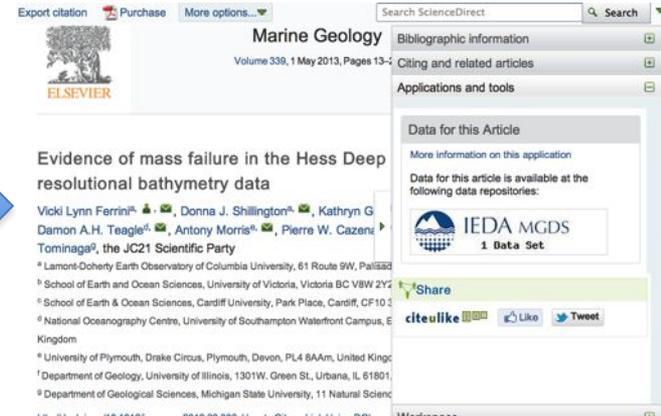
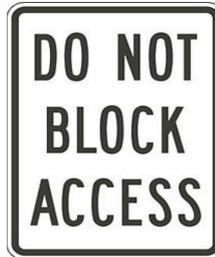
# Modern Scientific Workflow



Data Acquisition



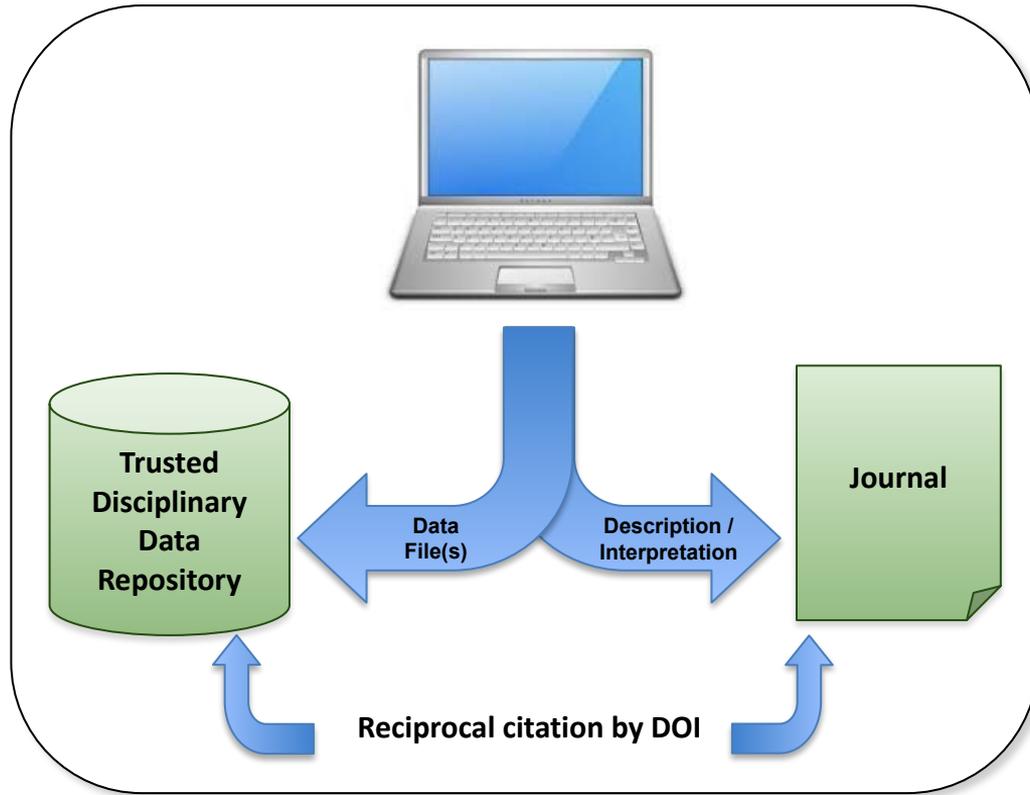
Data Processing  
& Interpretation



Publications

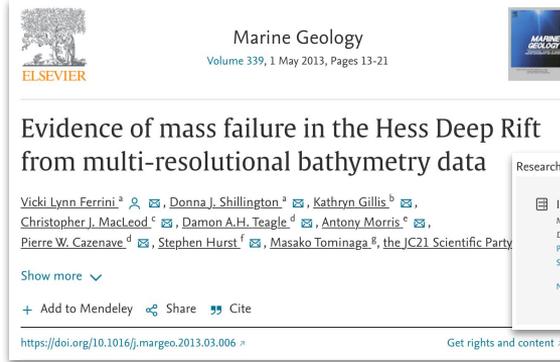


# “Best Practice”



# 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<sup>a</sup>, Donna J. Shillington<sup>a</sup>, Kathryn Gillis<sup>b</sup>, Christopher J. MacLeod<sup>c</sup>, Damon A.H. Teagle<sup>d</sup>, Antony Morris<sup>e</sup>, Pierre W. Cazenave<sup>d</sup>, Stephen Hurst<sup>f</sup>, Masako Tominaga<sup>g</sup>, 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 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 your data?

ezDMP  
Data Management Plans Made Easy

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

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60°N  
30°N  
0°  
30°S

0°E 45°E

Elevation Data Sources

**INTEGRATED EARTH DATA APPLICATIONS**  
iedata.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:** .seggy files from seismic transects.  
**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

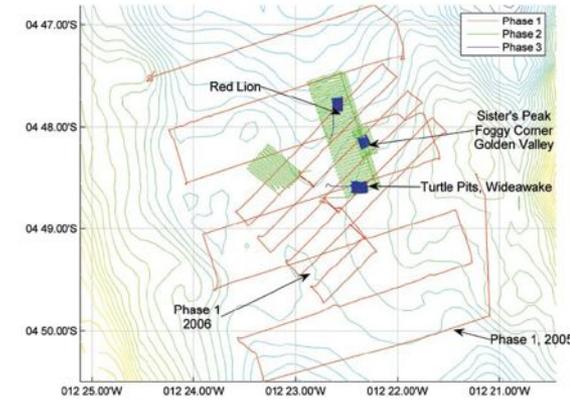
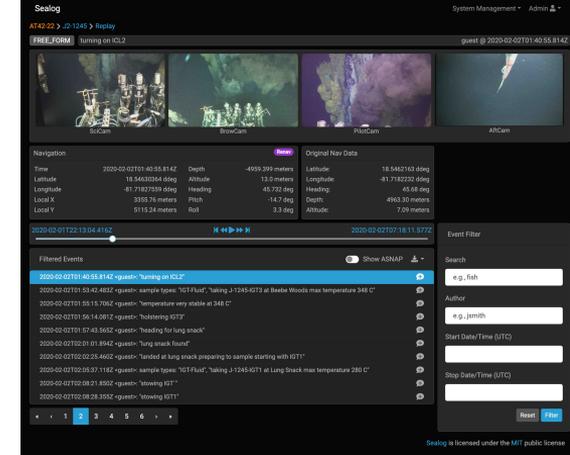
- Facility-Managed Data

- Ship (R2R)
  - Raw sensor data
- Vehicle Data (WHOI + MGDS)
  - Raw sensor data
  - First-order at-sea products



- PI-Managed Data

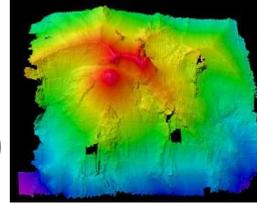
- Documentation
- Cruise report
- Sample metadata
- Processing metadata
- Physical samples
- Science party instrumentation





# Deep-Submergence Data Resources

- WHOI/NDSF ([whoi.edu](http://whoi.edu))
  - Dive metadata & data at WHOI Data Library
  - NDSF vehicles
- Marine Geoscience Data System ([marine-geo.org](http://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](http://www.ncei.noaa.gov))
  - OER dive metadata & data
  - Searchable dive video archive
- Scientific publications
- Other...

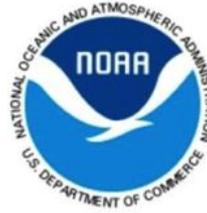
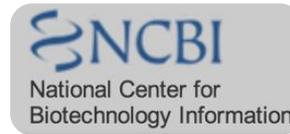


Time	Latitude	Longitude	Local X	Local Y	Depth	Altitude	Heading	Pitch	Roll
2020-02-02T01:40:55.814Z	18.54633564 deg	-81.7122359 deg	8355.74 meters	8119.24 meters	4959.399 meters	13.0 meters	65.72 deg	-14.7 deg	3.8 deg
2020-02-02T01:41:00.000Z	18.5462163 deg	-81.7122359 deg	8355.74 meters	8119.24 meters	4959.399 meters	13.0 meters	65.72 deg	-14.7 deg	3.8 deg



# 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](#)