Compiling and Creating Recommended Practices for the Preservation of Geological Data to Promote the FAIR principles

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Overview of Purpose

FAIR: Findable, Accessible, Interoperable, Reusable

The **National Geological and Geophysical Data Preservation Program** (NGGDPP), or *Data Preservation Program*, manages the USGS Materials Repository, which houses the Core Research Center and NSF Ice Core Facility. NGGDPP **promotes** the **preservation**, **curation**, **retrieval** and **availability** of public data and samples for research.

Goal

Support NGGDPP's efforts by producing three updated recommended practices and standards for the topics of **Structure from Motion (SfM), Digital Scanning** and **Digitizing Well Logs.**

Methods

RESEARCH → USGS Mentors provided literature

OUTREACH → Connected with experts

DRAFT → Drafted a protocol

FEEDBACK → USGS Mentors provided suggestions/ edits

REVISE → Incorporated suggestions

PUBLISH → Publish protocols via Protocols.io upon review

Tools

protocols.io · Teams · Trello

Recommended Practices

1. Structure from Motion (SfM)

- A 3D model produced from **a series of overlapping 2D images**, collected from multiple angles about the sample.
- Creation of **various geological models**.
- Updated practice will allow users to **follow tips and standards**, used by photogrammetry experts.
- Fossils, hand samples and rock cores.

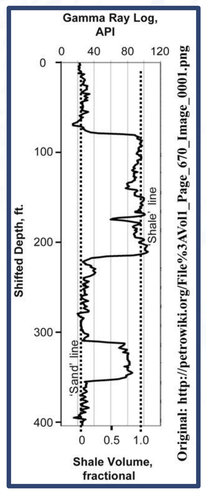
These models were published by Shellie Luallin via https://sketchfab.com/Paleogirl

2. Digital Scanning

- Geological document workflow with application of the **FAIR principles**.
- Appropriate protocols **prevent the loss of materials** and research value.
- e.g. Historical field notebook.

3. Digitizing Well Logs

- Graphical **instrument reports from down-hole** measurements printed to paper or film.
- Records collections existing on **paper or film may be more than sixty years old** and at risk of physical degradation.
- **Preserved documents** allow for **accessible collections**.
- Digitizing information creates **metadata ready to publish** on a national online database.



Discussion

- ➔ Living recommended practices allow **ongoing updates**.
- ➔ **Promote** consistent use of **scientific standards**.
- ➔ Instruction on the use of **persistent identifiers**.
- ➔ Wide varieties of samples require **individual record keeping techniques.**
- ➔ Lack of consideration for the FAIR principles.

Moving Forward

- ➔ **Emphasize** the **importance** of updated recommended practices and metadata standards.
- ➔ Late 2021, we will participate in and conduct three webinars.

The 2021 Geo-Launchpad team had the opportunity to tour the Geologic Material Repository, located in Lakewood, CO, and further develop an understanding of the importance of our current project and future projects.

Acknowledgments

We would like to thank:
NSF
GSA On To The Future Program
UNAVCO: **Kelsey Russo-Nixon, Anika Knight**
USGS: **Lindsay Powers** and **Mikki Johnson**
Avocational Paleontologist: **Shellie Luallin**
Kansas Geological Survey: **Deb Stewart** and the Records Management Department
This work supported by the National Science Foundation under Grant No. 1724794. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

We would like to acknowledge that some research was conducted on the traditional territory of Cheyenne, Núu-agha-tʉvʉ-pʉ (Ute), and Očhéthi Šakówiŋ (Sioux) Native American tribes.