2021 ESIP Summer Meeting (July 19th-23rd, 2021)
https://2021esipsummermeeting.sched.com/
Meeting Takeaways Doc
Community Participation Guidelines & Reporting: Click HERE

GeoScience Ontology Landscape
Thursday, July 22 • 4:00pm - 5:30pm

More info & slides on Sched Session Page: https://sched.co/jMO8

Attendance & Check in
Add your Name / affiliation / pronouns / location / social media to a bullet

- Stephen M. Richard, USGIN/Loop3D/ Tucson AZ
- Christopher Jones / NCEAS, UCSB, DataONE, Arctic Data Center / he,him,his / Colorado
- Adam Shepherd, BCO-DMO
- Ruth Duerr, Ronin Institute
- Sky Bristol, USGS
- Kristina Fauss/ UC Santa Barbara, Geog, wildfire / kfauss@ucsb.edu
- Tyler Stevens/NASA EED/Baltimore, MD
- Sarah O'Connor / NOAA-NCEI /Silver Spring, MD
- Fran Lightsom / USGS / she, her / Woods Hole, MA
- Marion McKenzie/ she,her/ University of Virginia, ESIP Fellow/ Charlottesville, VA
- Doug Fils, Ocean Leadership.
- Lauren Walker / NCEAS, DataONE, Arctic Data Center / she / Nashville TN
- Ryan McGranaghan / he-him / ASTRA LLC & NASA GSFC / Mount Rainer, MD / @AeroSciengineer / podcast: Origins
- Kate Young Data Scientist at Nutrien Ag Solutions in Loveland CO
- Madison Langseth / USGS / she,her / Denver, CO
- at Nu
- Jing Tao/NCEAS, University of California, Santa Barbara
- John Porter / VCR-LTER UVA / he-him / Charlottesville, VA
- Kate Rose - NOAA Affiliate /NOAA NCEI, Northern Gulf Institute/Stennis Space Center, MS
- Andrea Pörsch / Helmholtz Metadata Collaboration / GFZ German Research Centre for Geosciences, Potsdam
- Alizia Mantovani / University of Turin, Italy
- Matt Jones, DataONE, UC Santa Barbara
- Pier Luigi Buttigieg / Helmholtz Metadata Collaboration / Bremen, Germany
- Sophie Hou / Apogee Engineering/USGS / she/her
- Amanda Dean/ NOAA-NCEI/ Asheville, NC
- Tim McCormick / British Geological Survey / he-him / UK
- Sheri Phillips, NOAA NCEI Silver Spring MD

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- Brandon Whitehead / Manaak Whenua / NZL / whiteheadb@landcareresearch.co.nz
- Teddy Gelabert / NASA (ESDS/SSAI) / GSFC /
- David Valentine, UCSD/SDSC, San Diego
- Mark Rattenbury, GNS Science, New Zealand
- Martin Weinelt / Helmholtz Metadata Collaboration / Kiel DE / mweinelt@geomar.de
- Mike Bobak, NCSA
- Lesley Wyborn, ANU,Australia
- Dave Vieglais, DataONE / University of Kansas
- Luan Fonseca Garcia / UFRGS / luan.garcia@inf.ufrgs.br
- Karl Benedict, University of New Mexico, Albuquerque, NM. kbene@unm.edu
- Gary Berg-cross, Ontolog Forum
- Sara Lafia / ESIP Fellow (University of Michigan)

Agenda

At session start:

- **Welcome**
  - Orient attendees to tech (Zoom, QiqoChat, JamBoard)
  - Invite attendees to share their name/affiliation/location in the Zoom chat
  - Invite others to take notes in this document (if desired)
  - Assign any other roles needed
- **Community Participation Guidelines Reminder**
  - By participating in this session, you agree to adhere to the ESIP Community Participation Guidelines
  - Report an Issue: https://www.integritycounts.ca/org/esip
- **Goals of this Session**
  - To provide participants with an overview of existing activities developing Geoscience Ontology resources, and the problems they are designed to solve.
  - Canvas the community on use cases and requirements that are not addressed by existing ontologies.
  - Identify opportunities, motivations, and processes to harmonize existing ontologies, or requirements for new ontologies that are needed to meet requirements.

Schedule (add notes inline under agenda topics)

10 min : introductions, logistics

15 min Luan Fonseca Garcia GeoCore ontology,

15 min Alizia Mantovani: OntoGeonous ontology,

15 min Boyan Brodaric, Steve Richard: GeoScience Ontology

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15 min Brandon Whitehead: SWEET Ontology; Pier Luigi Buttigieg: ENVO

20 min Discussion:

- Canvas the community on use cases and requirements that are not addressed by existing ontologies.
- opportunities, motivations, and processes to harmonize existing ontologies,
- requirements for new ontologies that are needed to meet requirements.
- **Takeaways & Shared insights**
    - What did we discover?
    - How can we help each other?
    - What knowledge and resources do we have to share?
    - Important remaining questions?
- Shout-outs & thanks
- Requests for peer assists

During the session: please keep an eye on the jam board; we will use the ideas posted here as the framework for our discussion session

Resources for this session (link supplementary docs or presentations here)

1. *GeoSciML, an XML data interchange format with an underlying UML conceptual model. Now under stewardship of an OGC workgroup (OGC GeoSciML);*
2. *OntoGeonous ontology, (Lombardo et al. 2018); an implementation of the GeoSciML conceptual model, with application to geologic maps. Mantovani et al. 2020*
3. *GeoCore ontology, (Garcia, et al., 2020 https://doi.org/10.1016/j.cageo.2019.104387). Geoscience ontology, applications area in petroleum exploration.*
4. *GeoScience Ontology; https://github.com/Loop3D/GKM , Developed for Loop3D project to provide background knowledge support for implicit generation of 3D geologic models. (Brodaric, Richard, GSC OFR in prep)*
5. *Time Ontology (Cox & Richard, 2005; 2014; Wang, C., Ma, X., Chen, J., 2018) ; an ontology for representing time, including geologic time, as a W3C recommendation. Used for representation of International Commission on Stratigraphy geologic time scale https://vocabs.ardc.edu.au/viewById/196*
6. *Environmental ontology (ENVO); a large, formally managed, ontology for concepts related to the Earth Environment. Includes various geoscience classes and properties, but coverage is spotty.*
7. *Semantic Web for Earth and Environment Technology Ontology (SWEET); Developed by Rob Raskin (NASA) in early days of semantic web, to represent concepts related to the Earth and Environment, now under stewardship of the ESIP Semantic Web Cluster. Includes various geoscience classes and properties, but coverage is spotty and logic is not always clear.*

8. *NADM Conceptual Model 1.0— A Conceptual Model for Geologic Map Information* *USGS OFR 2004-1334*

Feedback
Please take a moment to share your thoughts on this session in Sched by going to the Sched session page linked at the top of this document.

Paste in Zoom Chat notes that you would like to save here

14:05:37 From Sky Bristol to Everyone:
It would be pretty sweet if SWEET could help us mere mortals wade through the very sour mash of disconnected and uncertain semantic sources that we currently have to deal with.
14:08:15 From metamattj to Everyone:
@brandon nice overview. how does SeREEn relate to COR in terms of bringing semantic resources together?
14:08:16 From Lesley Wyborn to Everyone:
the RDA ESES-IG has internationally crowd-sourced this list of semantic resources: https://docs.google.com/spreadsheets/d/1IJ3nXherJWW5wmpyHYkxQ_UHUJaSeney1fGHT0SasM0/edit#gid=1725001098
14:12:05 From brandon w to Everyone:
@metamattj -- good question. I think the salient point being structures can be hosted anywhere, it would be great if they were allhoused or accessible from COR, but that's just not the case (or realistic). So the SeREEn idea is conceptually similar to the OBOFoundry in many respects and wanting to catalog what is 'in the wild' if you like
14:13:39 From metamattj to Everyone:
thanks for the clarification. So it does sound similar to what the RDA group is doing that Lesley posted about
14:14:05 From brandon w to Everyone:
@sky, yes, that's an area where improvement is definitely needed.
14:14:40 From Sky Bristol to Everyone:
Is anyone here actively curating Wikidata or just using it as a potential connection point to our own stuff?
14:15:55 From Lesley Wyborn to Everyone:
All we were doing in creating that list is simply to try and find out what out there- bringing that into something like the OBO foundry or SeREEn would be the next step. Did someone mention funding?
14:17:43 From brandon w to Everyone:

Yes, @metamattj, there iare similarities. I think the idea is to build off of what was started there --- could that spreadsheet be more accessible, crowsd sourced, etc. via a separate repo with consistent metadata throughout

14:17:50 From Lesley Wyborn to Everyone:

we need an Earth science best practice!!

14:20:15 From brandon w to Everyone:

@Sky, the interest in making the links to wikidata is to both reuse as well as push back when other definitions are added. The link is the first step. (I think)

14:23:12 From Sky Bristol to Everyone:

@Brandon - Thanks, but I guess the question is why not simply use Wikidata directly as our clearinghouse, getting behind that infrastructure as a community to curate it into the resource we need? It sometimes seems like we keep reinventing a wheel that's already rolling along pretty well.

14:23:55 From Pier Luigi Buttigieg to Everyone:

+1 Ruth - and that cross-linking of ontologies takes some expert curation - automappings are generally iffy

14:24:53 From ruth.duerr3@gmail.com to Everyone:

+1 Pier

14:28:01 From krose to Everyone:

Agree, Ruth!

14:28:03 From Pier Luigi Buttigieg to Everyone:

The smoothest places to work is where there are very regular classification schemes (e.g. minerals) - that's a spot where semantic patterns can be used to autogenerate content

14:28:53 From Pier Luigi Buttigieg to Everyone:

@Steve: I'd persist them [mapping between vocabularies] in something like SSSOM or another easily parseable artifact that's separate from the ontologies themselves (and which allows comments on nuance)

14:29:15 From Pier Luigi Buttigieg to Everyone:

the SKOS matching predicates give a good first approximation of the nature of the match

14:29:19 From metamattj to Everyone:

@sky you make great points on Wikidata. Do you find there is a consistent model for Wikidata, such as how ENVO follows BFO? Maybe that pushes people elsewhere?

14:29:50 From Alizia to Everyone:

my research group and me think that a very important point is the reproducibility of the knowledge, making people understand the reason of every choice in data representation. maybe harmonization can be hard, but if the decision process is clear anyone can at least read and understand the data

14:31:34 From Sky Bristol to Everyone:

@metamattj - I've connected with a couple communities that have layered their own consistent models within the Wikidata structure. It really depends on what a given group decides

to do in a very open system. So, you make selections on what to use out of Wikidata based on a set of criteria that expresses what we trust and who we trust.

14:32:51 From Sky Bristol to Everyone:

One thing I really like about the Wikidata approach is that there is a strong forcing factor to supply explicit references and qualifiers - something often implicit or assumed in the ontologies we've been talking about here today.