



Graph Database Outbrief

DOI Working Group: 1pm, Thursday, September 23rd 2021

Doug Newman

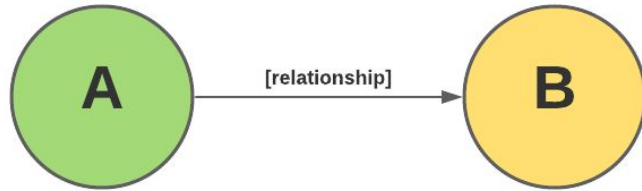
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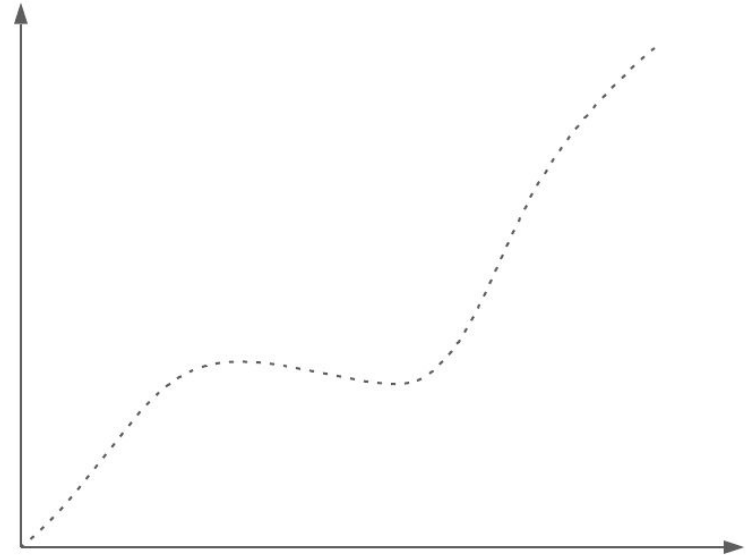
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What is GraphDB?

This kind of graph

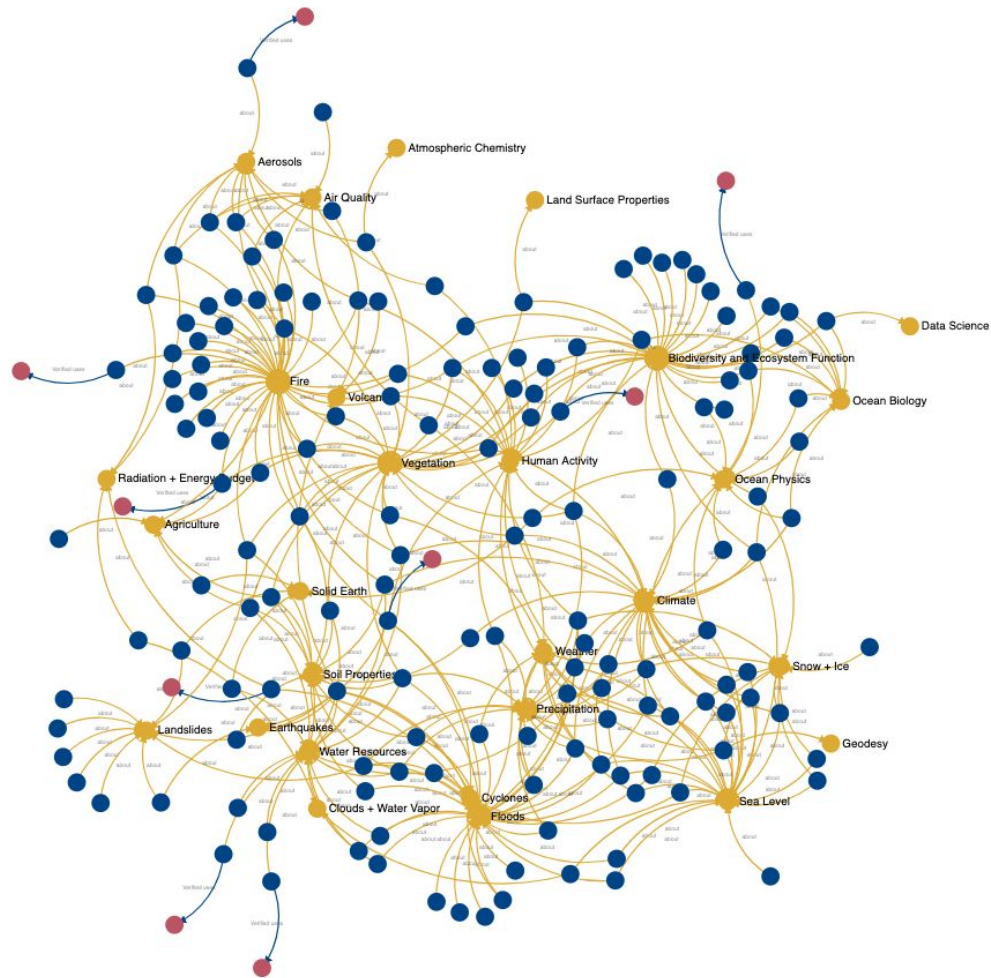


Not this kind of graph

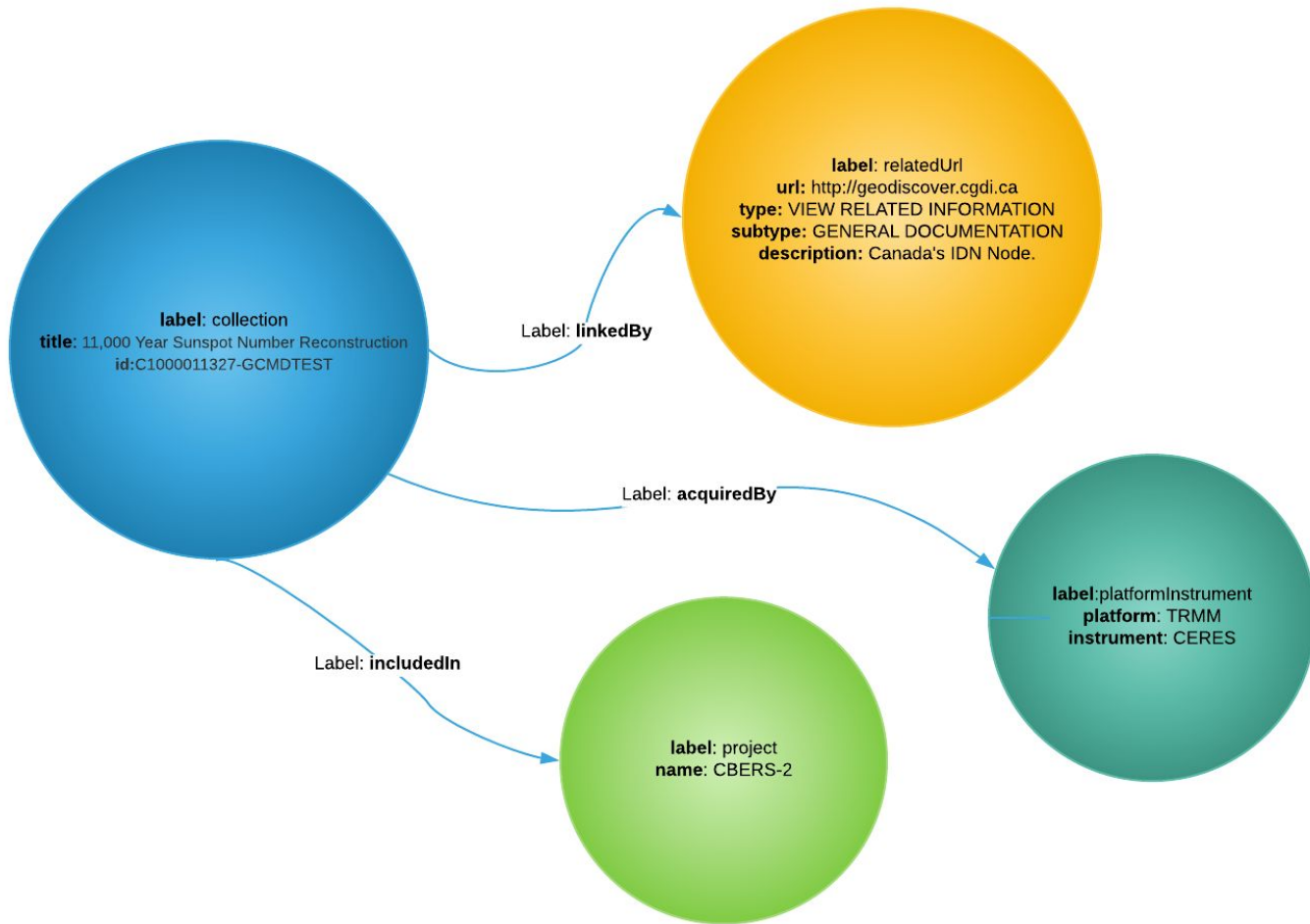


'Connect together the main elements of Earth Observation knowledge AND context in a way that is: machine-readable, human-usable and curatable'

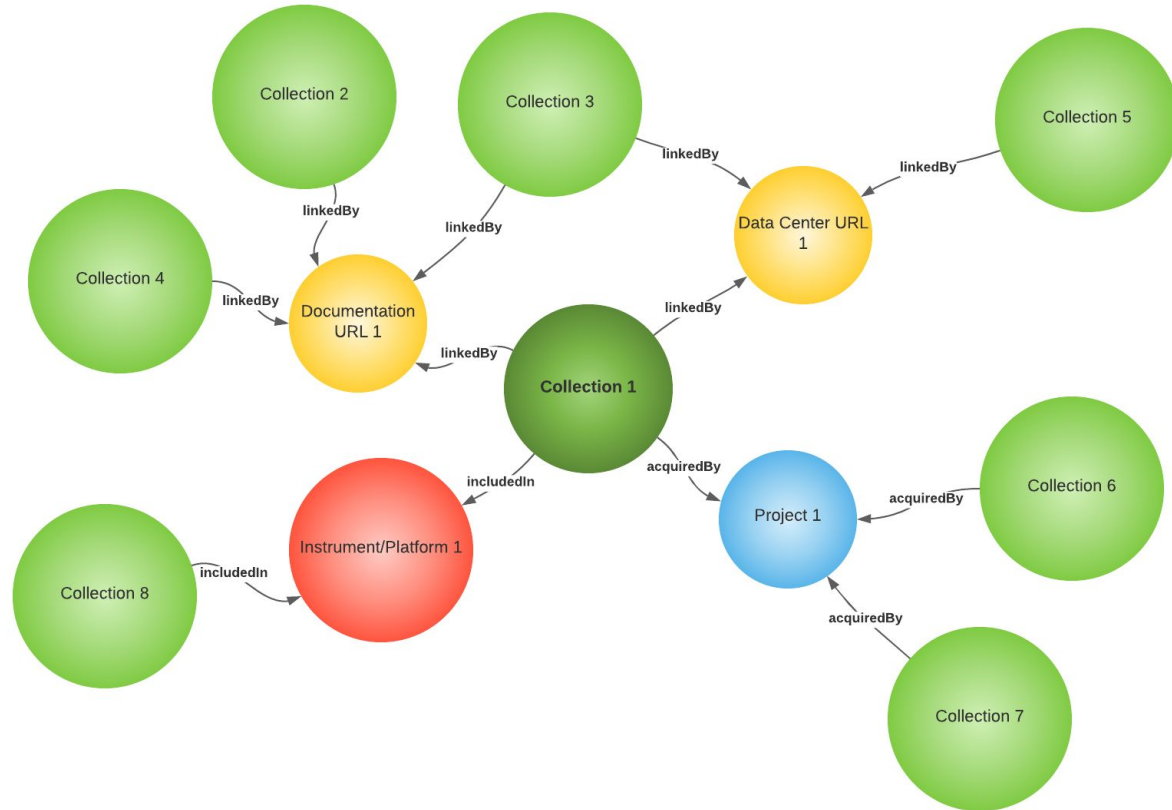
Chris Lynnes, WGISS-47



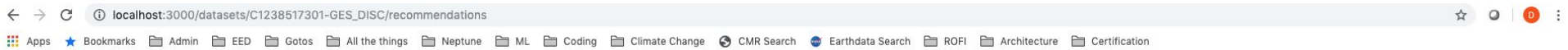
CMR GraphDB?



Initial use case: related collections

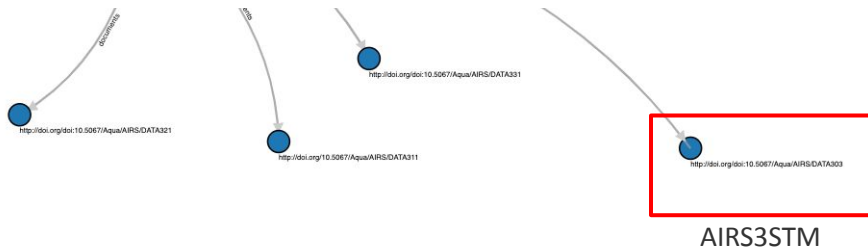


10 minute experiment with urls



Similar datasets to 'AIRS/Aqua L3 Monthly Standard Physical Retrieval (AIRS-only) 1 degree x 1 degree V006 (AIRS3STM) at GES DISC'

- [AIRS/Aqua L3 8-day Standard Physical Retrieval \(AIRS-only\) 1 degree X 1 degree V006 \(AIRS3ST8\) at GES DISC](#)
- [AIRS/Aqua L3 Daily Standard Physical Retrieval \(AIRS+AMSU+HSB\) 1 degree x 1 degree V006 \(AIRH3STD\) at GES DISC](#)
- [AIRS/Aqua L3 8-day Standard Physical Retrieval \(AIRS+AMSU+HSB\) 1 degree x 1 degree V006 \(AIRH3ST8\) at GES DISC](#)
- [AIRS/Aqua L3 Daily Standard Physical Retrieval \(AIRS+AMSU\) 1 degree x 1 degree V006 \(AIRX3STD\) at GES DISC](#)
- [AIRS/Aqua L3 Monthly Standard Physical Retrieval \(AIRS+AMSU+HSB\) 1 degree x 1 degree V006 \(AIRH3STM\) at GES DISC](#)
- [AIRS/Aqua L3 Daily Standard Physical Retrieval \(AIRS-only\) 1 degree x 1 degree V006 \(AIRS3STD\) at GES DISC](#)
- [AIRS/Aqua L3 5-day Quantization in Physical Units \(AIRS+AMSU\) 5 degrees x 5 degrees V006 \(AIRX3QP5\) at GES DISC](#)
- [AIRS/Aqua L3 8-day Standard Physical Retrieval \(AIRS+AMSU\) 1 degree x 1 degree V006 \(AIRX3ST8\) at GES DISC](#)
- [AIRS/Aqua L3 Monthly Standard Physical Retrieval \(AIRS+AMSU\) 1 degree x 1 degree V006 \(AIRX3STM\) at GES DISC](#)



```
g.V().hasLabel('collection')
  .has('id', conceptId)
  .inE('linkedBy')
  .outV()
  .hasLabel('relatedUrl')
  .outE('linkedBy')
  .inV()
  .hasLabel('collection')
```

Current state of CMR graphdb

- Properties that can be extracted from metadata records alone
- Populate via metadata ingest pipeline
- Expose relationships via CMR GraphQL - related collections
- Graph traversal API (Gremlin)
- SIT

Related collections UI

Related Collections (96)

[Download Data](#)

[Services \(0\)](#)

[Tools \(0\)](#)

[Citation Information](#)

[Documentation](#)

[Additional Information](#)

[Infrared Global Geostationary Composite Demo 010](#)

10.5067/GHRC/AMSU-A/DATA303

Related URL 2

http://ghrc.nsstc.nasa.gov/uso/ds_docs/globalir/globalir_dataset.html

[VIEW RELATED INFORMATION / USER'S GUIDE](#)

<https://doi.org/10.5067/9LNYIYOBNBR5>

[VIEW RELATED INFORMATION / DATA RECIPE](#)

Another Related URL for Demo

Project 2

Platform / Instrument 2

[Infrared Global Geostationary Composite Demo 9](#)

10.5067/GHRC/AMSU-A/DATA303

Related URL 2

CMR graph database roadmap

Rough*

1. Graph implementation in UAT/PROD by Q4 2021
2. Concept associations via MMT
3. Curated relationships via MMT and UBD**

*All roadmaps are subject to PI planning

** Usage-based discovery

Concept association

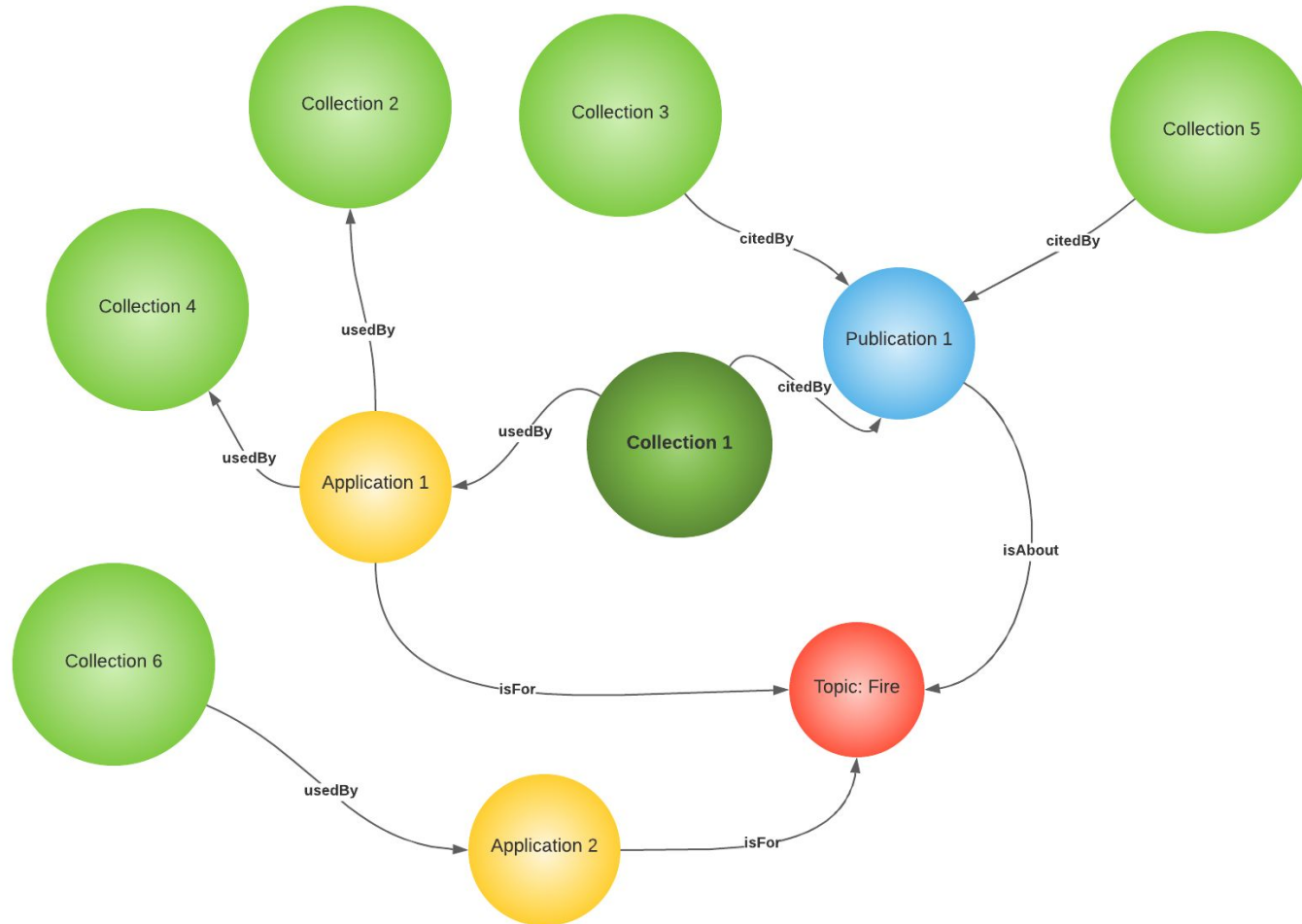
- UMM-S are related to UMM-C
- UMM-T are related to UMM-C
- UMM-VAR are related to UMM-C
- UMM-VAR are related to UMM-VAR

Curated relationships

The bulk of our potential relationships reside outside of our concept metadata

- This dataset was used in this article*
- This dataset contains this essential climate variable

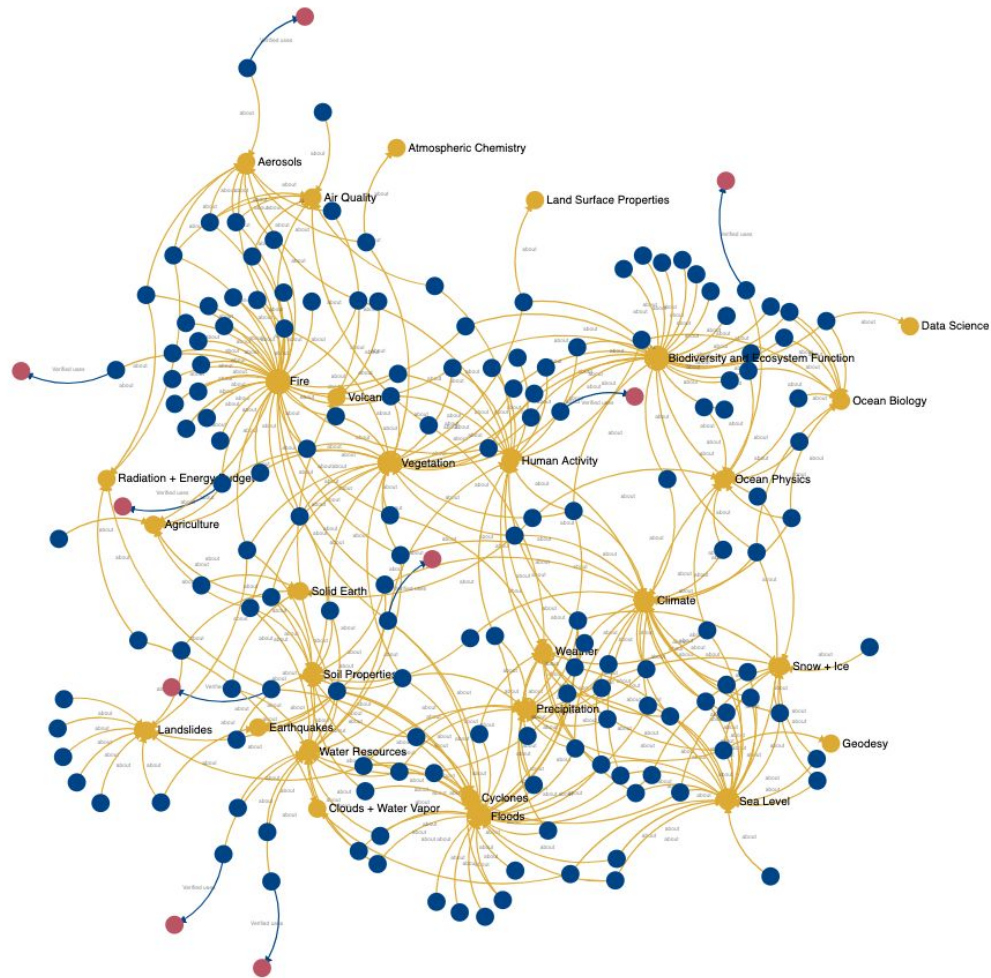
* usage-based discovery



Visualizing relationships between
DOIs?

Between DOIs?

- Our collections can have DOIs
- Articles and publications will generally have DOIs
- The addition of curated relationships will allow us to visualize these relationships



QUESTIONS?