Do Community Recommendations Improve Metadata Completeness?

Sean Gordon (scgordon@hdfgroup.org)[1], Ted Habermann[1], Matthew B. Jones[2], Ben Leinfelder[2], Bryce Mecum[2], Lindsay A. Powers[3], and Peter Slaughter[2]
1. The HDF Group, 2. National Center for Ecological Analysis and Synthesis 3. United States Geological Society

IN23C-1785

Background

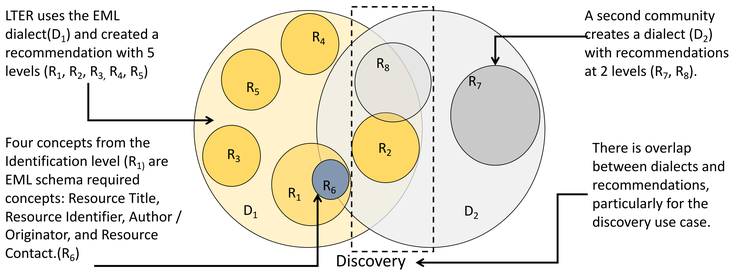
Many communities use the term "standard" when they describe their metadata and, as a result, there are many existing "standards". This approach focuses attention on differences between communities. We use the term "dialect" to focus attention on common concepts and goals.

Recommendations and Dialects:

Recommendations reflect community experiences and documentation needs. Communities have common documentation needs, so recommendations overlap, particularly for the discovery use case. Sharing recommendations is an important mechanism for sharing those experiences and community knowledge.

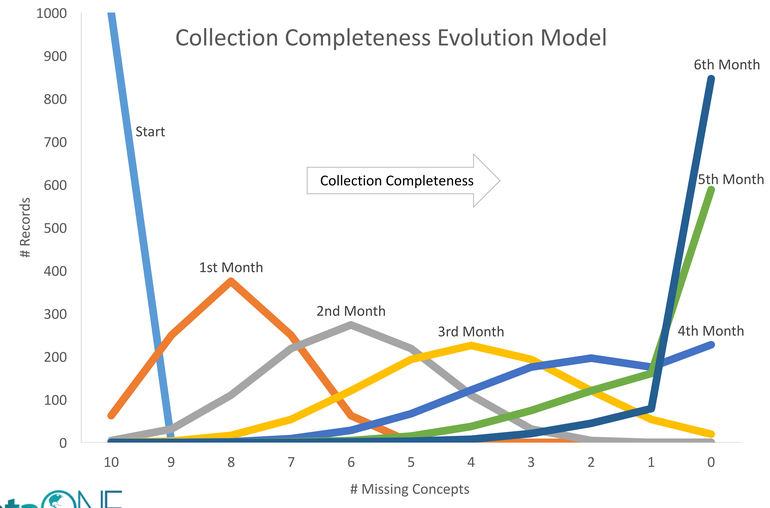
LTER and EML

The Long Range Ecological Network created the LTER Recommendation for Completeness to help guide the creation of Ecological Markup Language records. There are five levels in the LTER recommendation: Identification, Discovery, Evaluation, Access, and Integration. All levels of LTER are subsets of concepts in the EML dialect.



Premise

The LTER Completeness Recommendation includes documentation concepts the LTER community considers important for creating quality metadata. Ideally the completeness of LTER metadata should improve over time. The graph below illustrates how metadata collections evolve towards completeness. The model output improves 50% of 1000 records by one concept each time step. The visualization displays every fourth time step to simulate a 6 month period of collection development.



Process

- Sampled 250 LTER metadata records from DataONE and created collections for each year 2005-2016.
- Measured conceptual content existence in each record.
- Analyzed results for LTER Completeness in the Recommendations Analysis Dashboard[1] for each years collection.
- Compared analyses across time periods using collection evolution[2] analysis and a variation that focuses on individual concept completeness.
- Compared heterogeneity of each collection to completeness using signature score groups[1] and a distribution of completeness for each year.

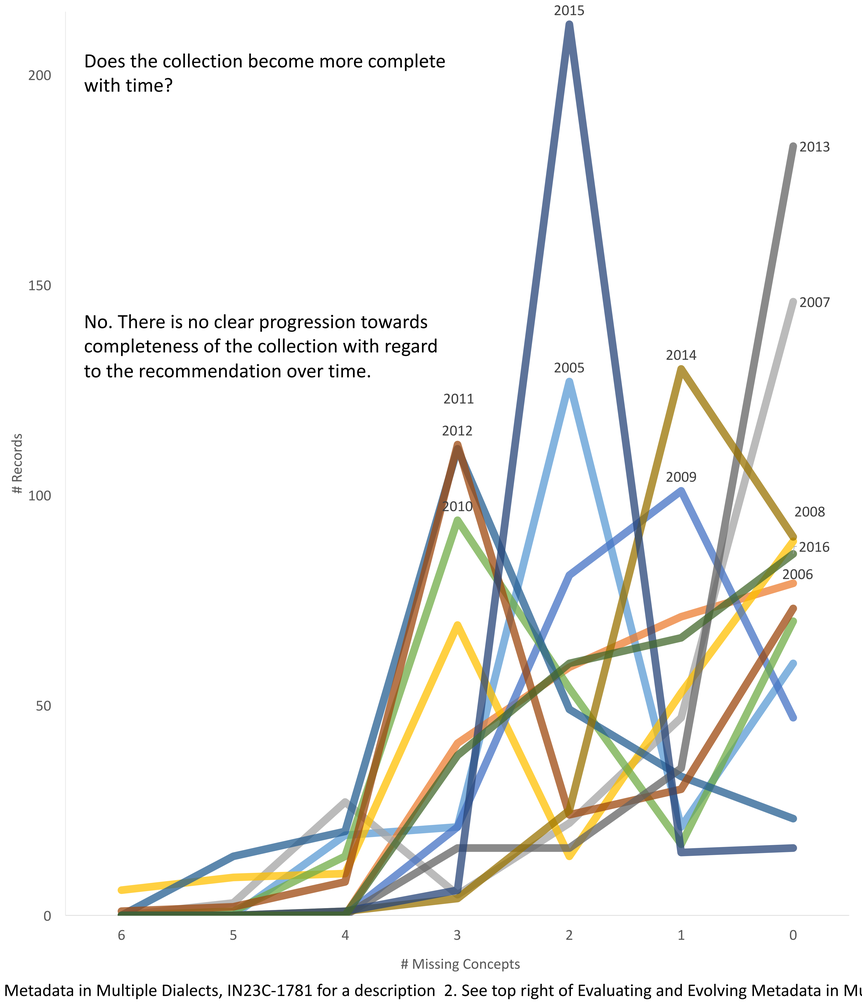
Limitations

- Not a set of records through time.
- Sampling proportion vs sampling size.
- No ethnographic perspective.

LTER Collection Evolution of LTER Identification

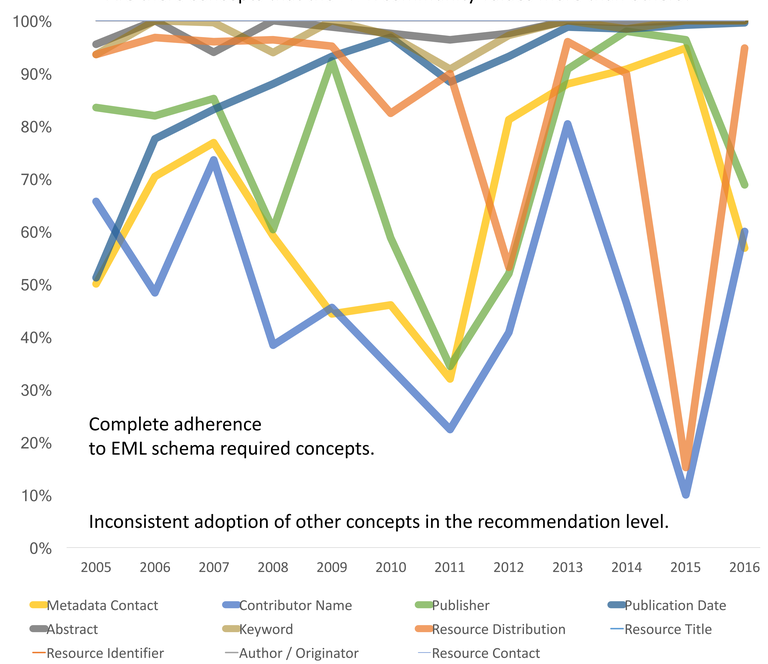
Does the collection become more complete with time?

No. There is no clear progression towards completeness of the collection with regard to the recommendation over time.



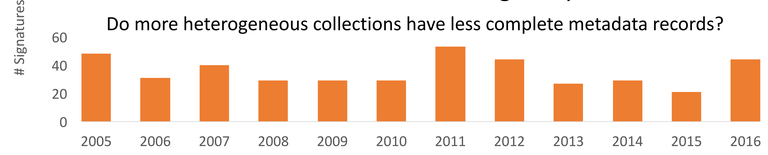
LTER Identification Concept Completeness

Are there concepts that the LTER community values more than others?



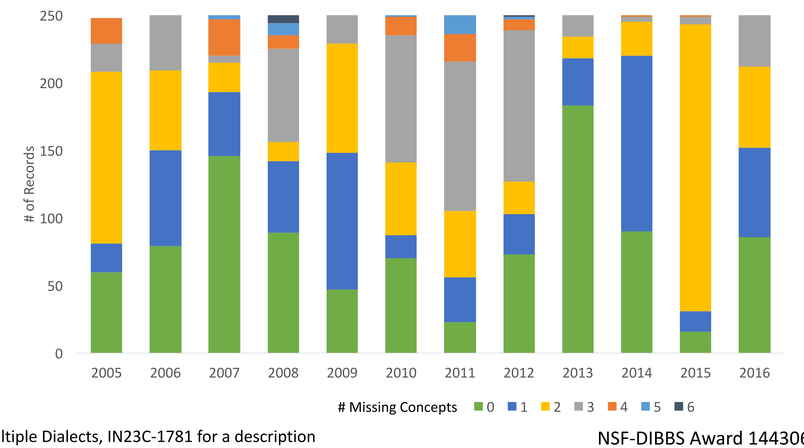
LTER Collection Heterogeneity

Do more heterogeneous collections have less complete metadata records?



LTER Identification Completeness Distribution

Heterogeneity has no clear effect on the completeness of a collection.



1. See bottom third of Evaluating and Evolving Metadata in Multiple Dialects, IN23C-1781 for a description 2. See top right of Evaluating and Evolving Metadata in Multiple Dialects, IN23C-1781 for a description

NSF-DIBBS Award 1443062