Peder Nelson

The workshop “Grand Challenges for the Convergence of Computational and Citizen Science Research” should focus on the people and lifelong learning that is facilitated by a robust long-term data life cycle that requires a diverse yet interoperable citizen science cyberinfrastructure of software, hardware, tools, methods, and institutional support for this type of science to fulfill it’s potential. Specifically, the ability to provide local relevance of global datasets back to the data developers and those who make decisions based on this characterization of a place on Earth. However, when the length of time it takes to study longer term ecological processes and phenomena related to the ongoing climate change effects there is also a requirement that there is a project, program, non-governmental organization, governmental organization who will be responsible for stewardship of citizen science data (and the metadata describing the contributors) over the next 30-50 year period. As we have seen with such important science measurements as those from the past 51 years of Landsat satellite program, if there is dedication to long-term research, then the data life cycle could be an important guide in the community discussions for the general citizen science community.

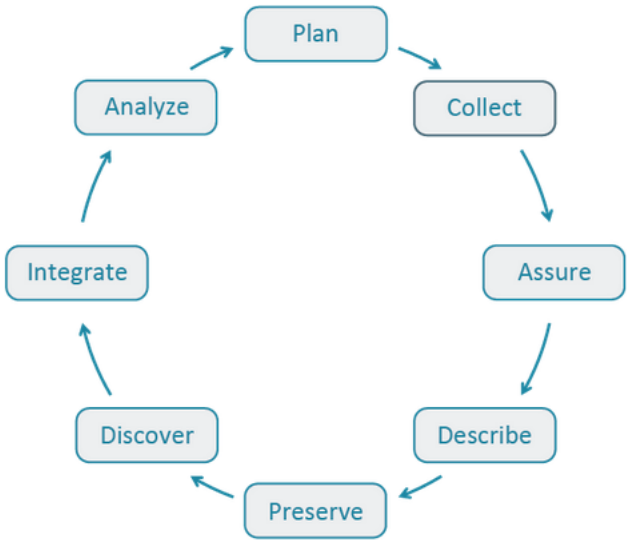

Figure from DataOne (2013)

We are seeing the adoption of “Open Science” standards by large institutions such as the year of transformation to Open Science (TOPS) which is an important step in data and technology stewardship. New computational methods to discover and analyze data has led to quick adoption of machine learning metadata standards as a way of simple restructuring of data without the need to build a new database (https://www.earthdata.nasa.gov/learn/blog/introducing-croissant-format-machine-learning-datasets).

As many citizen science projects are focused on describing the attributes of a specific location, it is important for the citizen science research community to make use of machine learning and advanced computational techniques (e.g. artificial intelligence) for standard uses like object labeling in imagery or text analysis using large language models. However, if a citizen science project is focused on ecological phenomena, there are a vast catalog of complimentary satellite measurements that can yield great insights. From my perspective, it is the confluence of image processing techniques that provide overlap between this interdisciplinary need to turn pixels into information.

Finally, I want to recognize the transformational and transdisciplinary paradigm shift that AI and GeoAI brings to participatory sciences. It is only through workshops like this and further development of multi-project integration, the incorporation of spatially-explicit GeoAI models, and the adoption of open science practices in future studies based around environmental participatory projects that will provide the platforms for the next generation of citizen scientists.