

SONet: A Scientific Observations Network for Environmental and Ecological Data Interoperability

Mark Schildhauer¹, Shawn Bowers², Josh Madin⁴, Corinna Gries³, Deborah McGuinness⁵,
Matt Jones¹, Phillip Dibner⁶, Luis Bermudez⁷, John Graybeal⁷

¹NCEAS, UC Santa Barbara, ²UC Davis Genome Center, ³CAP/LTER and
Arizona State University, ⁴Macquarie University, Australia, ⁵McGuinness
Associates, ⁶Open Geospatial Consortium Interoperability Institute, ⁷Monterey
Bay Aquarium Research Institute

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Advances in ecological, biodiversity, and other environmental and life sciences increasingly depend on the use of information from multiple disciplines to tackle broader and more complex questions about the natural world. Such advances, however, are hindered by data heterogeneity, which impedes the ability of researchers to discover, interpret, and integrate relevant data that have been collected by others.

The *Scientific Observations Network*, or **SONet**, is a recently funded NSF project intended to facilitate the development of a community-sanctioned, unified data model for representing observational data. SONet brings together researchers in the ecological, biodiversity, and environmental sciences, working in close conjunction with computer scientists and information managers, to define and develop specifications and open-source technologies to facilitate the interpretation and integration of scientific data.

A key aspect of SONet's approach has grown out of

earlier workshops, in which domain and information-management experts agreed that the “scientific observation” provides a promising conceptual linchpin for improved software interoperability and data integration across disciplines. In the sense used here, a scientific observation consists of the measurement of a characteristic of some entity, at a given place and time. The specifics of the entities and the characteristics measured can be captured through emerging approaches in semantic technologies, most promisingly via formal ontologies.



Figure 2: Overview of SONet workshops and activities

The SONet effort provides resources to build a cross-disciplinary community to refine and promote a unified approach to modeling scientific data, through working groups (Fig. 1) and a series of workshops (Fig. 2) and to begin the process of building interoperable ontologies that capture the semantic nuances needed for effectively communicating the meaning and interpretation of data to specialists as well as scientists pursuing synthetic analyses. Working groups together with network experts will also develop a series of demonstration projects to illustrate the capabilities for data interoperability.

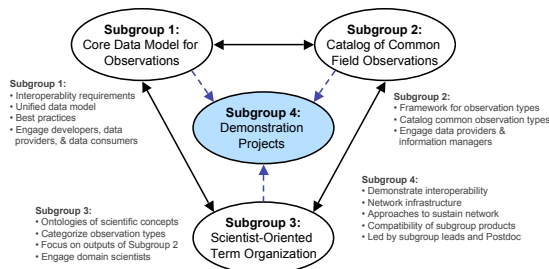


Figure 1: Primary SONet working groups