



How to curate and exhibit various types of physical samples using FAIR principles

Doris Maicher, Felix Mittermayer, Pina Springer, and Jörg Söling
GEOMAR, Kiel, Germany (dmaicher@geomar.de)

In a modern research environment, physical samples are often treated as a burden, to be stored and forgotten but when their existence is digitalised and connected to the underlying metadata it becomes a great resource for present and future generations of researchers. This value is further expanded if the information is easily accessible for the research community, particular by offering intelligent search options, interconnection, extraction of data files etc. GEOMAR Helmholtz Centre for Ocean Research has accumulated thousands of biological and geological samples, collected mainly during marine expeditions but also from time series and experiments. Samples date back as far as 1964. Today, the biological collection comprises roughly 180.000 samples (mainly fish and plankton) in formaldehyde as well as a large amount of cryofrozen materials. The core and rock repository holds a collection of about 4000 sediment cores totaling 30.000 core sections and more than 5000 boxes with hard rock samples and refined sample specimens. We have set ourselves the task to curate all these materials and connect them with sufficient metadata in order to make them searchable and, more importantly, findable.

The Ocean Science Information System at GEOMAR (OSIS) joins all kind of data resulting from the institute's sea-going expeditions and land-based projects. It is designed for data exchange in the context of these expeditions and experiments, and during a research project's moratorium it supports scientists in documenting provenance of their research data and ultimately their publication. OSIS also serves as a hub for detailed information, metadata and references to peer-review journal publications. The metadata in OSIS are publicly accessible and the system is interlinked to the institutional repository OceanRep as well as several other data archives and databases. It will act as a first entry point for scientists to identify samples by their metadata even before contacting the appropriate curator to inquire sample accessibility and conditions.

In context with the physical specimens, OSIS provides linkage to more specific sample databases. Currently we connect biological samples collected on a research vessel via the expedition metadata to their current storage locations on land, which will be further refined to connecting single ship-based sampling stations with the storage position of individual samples. Moreover, for geological samples (sediment cores) metadata from OSIS are made available for further in-house use by the software CurationDIS from smartcube GmbH. The sediment core specific details are managed by the curation software which is also used to provide a persistent identifier (IGSN). Future plans include connecting rock samples in a similar structure as sediment cores.