The Antarctic Seismic Data Library System (SDLS): fostering collaborative research through Open Data and FAIR principles

Chiara Sauli¹, Paolo Diviacco¹, Alessandro Busato¹, Alan Cooper², Frank O. Nitsche³, Mihai Burca¹, and Nikolas Potleca¹

¹Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS
²United States Geological Survey (USGS)
³Columbia University NY

Antarctica is one of the most studied areas on the planet for its profound effects on the Earth’s climate and ocean systems. Antarctic geology keeps records of events that took place in remote times but that can spread light on climate phenomena taking place today. It is therefore of overwhelming importance, to make all data in the area available to the widest scientific community. The remoteness, extreme weather conditions, and environmental sensitivity of Antarctica make new data acquisition complicated and existing seismic data very valuable. It is, therefore, critical that existing data are findable, accessible and reusable.

The Antarctic Seismic Data Library System (SDLS) was created in 1991 under the mandates of the Antarctic Treaty System (ATS) and the auspices of the Scientific Committee on Antarctic Research (SCAR), to provide open access to Antarctic multichannel seismic-reflection data (MCS) for use in cooperative research projects. The legal framework of the ATS dictates that all institutions that collect MCS data in Antarctica must submit their MCS data to the SDLS within 4 years of collection and remain in the library under SDLS guidelines until 8 years after collection. Thereafter, the data switch to unrestricted use in order to trigger and foster as much as possible collaborative research within the Antarctic research community. In this perspective, the SDLS developed a web portal (http://sdls.ogs.trieste.it) that implements tools that allow all data to be discovered, browsed, accessed and downloaded directly from the web honoring at the same time the ATS legal framework and the Intellectual protection of data owners. The SDLS web portal, is based on the SNAP geophysical web-based data access framework developed by Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS, and offers all standard OGC compliant metadata models, and OGC compliant data access services. It is possible to georeference, preview and even perform some processing on the actual data on the fly. Datasets are assigned DOIs so that they can be referenced from within research papers or other publications. We will present in details the SDLS web based system in the light of Open Data and FAIR principles, and the SDLS planned future developments.