



IEDA: Integrated Earth Data Applications to Support Access, Attribution, Analysis, and Preservation of Observational Data from the Ocean, Earth, and Polar Sciences

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IEDA (Integrated Earth Data Applications) is a data facility that is based on a partnership between the Marine Geoscience Data System (MGDS, www.marine-geo.org) and the Geoinformatics for Geochemistry Program (GfG, www.geoinfgeochem.org) and funded by the US National Science Foundation under a Cooperative Agreement to ensure access and preservation of observational data from the Ocean, Earth, and Polar Sciences. Many of the datasets acquired in the Ocean, Earth, and Polar Sciences contain irreplaceable observations made of earth's dynamic properties and are obtained at high cost, particularly in the marine environment. IEDA's goal is to maximize the return on research investments, while enabling verification of research results and contributing to new science initiatives.

The Marine Geoscience Data System and the Geoinformatics for Geochemistry Program have developed, maintained, and operated community-driven data collections that support the preservation, discovery, retrieval, and analysis of a wide range of observational field and analytical data types from the marine and terrestrial environments, among them the PetDB database, the EarthChem data network, the Ridge2000 and MARGINS databases, the Antarctic and Southern Ocean Data System (ASODS), the Global Multi Resolution Topography Synthesis, and the System for Earth Sample Registration (SESAR).

MGDS and GfG have evolved and grown over more than a decade, gaining broad community support for data services that have been developed in close partnership with the respective disciplinary user communities, based on an active understanding of practices, needs, and concerns pertaining to data acquisition and data use. MGDS and GfG have engaged investigators in the design of the systems, seeking their feedback, and educating the community about responsibilities and benefits of scientific data management and sharing, and they have worked with funding agencies, editors, publishers, professional societies, and researchers, proactively driving the development of community standards and best practices for data submission, data publication, data documentation, and data archiving, and to advance implementation.

Close community liaison has provided the basis for success that has given the MGDS and GfG data systems a high level of sustainability as a data facility. As such, IEDA will start to provide enhanced services for data curation through partnerships with institutions and projects that can ensure long-term archiving of data holdings. An IEDA data publication service has been implemented for scientists to publish their datasets with citable universal identifiers (DOIs) so that submitted datasets are properly attributed to their creators and can be cited independently of scientific articles.