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IEDA Integrated Services for Solid Earth Observational Data

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The Interdisciplinary Earth Data Alliance (IEDA) is a data facility funded by the US NSF that provides a suite of data tools and services for solid Earth observational data from the Ocean, Earth, and Polar Sciences. Created as a partnership between EarthChem and the Marine Geoscience Data System (MGDS), IEDA systems serve as primary community data collections for global geochemistry and marine geoscience research and support the preservation, discovery, retrieval, and analysis of a wide range of observational field and analytical data types.

Individual IEDA systems originated independently and differ from one another in purpose and disciplinary scope. The EarthChem Library, Marine Geo-Digital Library, and the US Antarctic Program Data Center (USAP-DC) are data repositories, developed and operated with disciplinary focus and expertise. The Global Multi-Resolution Topography (GMRT), PetDB, Geochron, and the EarthChem Portal are actively maintained data syntheses intended to support advanced data mining and analysis. SESAR (System for Earth Sample Registration) is a metadata catalog for physical samples that investigators and sample repositories register in order to obtain IGSNs as persistent identifiers for their samples. Additionally, IEDA offers a data visualization and analysis tool, GeoMapApp, that is widely used in research and education for map-based data exploration. The diversity of IEDA's data types, tools, and services is a major strength and of high value to investigators.

In order to improve usability of its portfolio, IEDA has created new ways for researchers to more efficiently navigate data submission and data access, promoting discovery and access within and across its systems and serving interdisciplinary science while also remaining aware of and responsive to the more specific needs of IEDA's disciplinary user communities. The IEDA Data Submission Hub (DaSH) aspires to streamline the submission process for both the science data contributor and for the repository data curator. Instead of users deciding a priori, which system they should contribute their data to, the DaSH helps route them to the appropriate repository based primarily on data type, and to efficiently gather the necessary documentation for data accession. Similarly, for those looking for data, the IEDA Data Browser provides cross-system browse and discovery of data in a map interface presented in both Mercator and South Polar projections. The new IEDA Integrated Catalog is a core element of the integrated IEDA architecture, providing a single source index of all resources maintained in IEDA repositories in standard format. Web service interfaces enable development of various user-facing applications for specific communities or use cases, and allow single-point harvesting of IEDA metadata by other aggregators such as data.gov or EarthCube.

A major focus for IEDA in the near future will be to network internationally with other disciplinary data systems. For example, the EarthChem Portal already provides a way to discover and access data from geochemical databases operated by providers in Germany (GEOROC) and in Japan (GANSEKI). IEDA will pursue collaboration with initiatives and projects for geochemical data management in Germany and Australia to enhance access to an integrated global data resource.