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Integration of European borehole data and their dissemination through international interoperable standards

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The Geological information and modelling Thematic Core Service (TCS) is designed as an efficient and sustainable access system for geological multi-scale datasets for EPOS.
The TCS develops and benefits from the synergy between the existing data infrastructures of the Geological Surveys of Europe (EuroGeoSurveys / EGDI) and the large amount of information produced by the research organizations and the international drilling community.
The integration of distributed data infrastructures involves a broad range of resources and diverse data types across multiple scientific disciplines, including: geological maps, borehole data, borehole associated observations (borehole log data, groundwater level, groundwater quality...) and archived information on physical material (samples, cores), geological models (3D, 4D), geohazard, geophysical data such as active seismic data and other analyses of rocks, soils and minerals.
In this presentation, we focus on the European Borehole Index and the work done since the beginning of the project, first to specify an interoperable data exchange mechanism based on international standards (such as INSPIRE, OGC) implemented by all TCS data providers. Then to collect this information from the data provider, quality check and disseminate it from the TCS Central Node as a service provider to the EPOS community using the same interoperable standards.
Information about and data from a large number of boreholes are available from the geological surveys (up to millions per country). The scientific community provides access to data from a more limited number of comprehensive scientific drilling projects. But, no common mechanism for discovering and retrieving borehole information was in existence. Therefore, the Borehole Index and associated web services (WFS, WMS) were designed with the aim to provide a means for borehole data discovery from multiple and diverse data suppliers in accordance with, and where necessary, extending content standards/practice (GeoSciML, INSPIRE, CGI). The European Borehole Index complies with the INSPIRE European Directive. For promotion of solid Earth Sciences interoperability on a global level, the OGC community was engaged to improve and advance technologies for geoscience data description and sharing through its Geoscience Domain Working Group.
The next step is to take data provision from individual download at the data supplier (web link) to data delivery through a common webservice across multiple data suppliers. The status of this work in progress will be laid out shortly. Also, the problems encountered to manage such a large amount of data and the solutions we tested and applied will be discussed.
In addition, we will present expected workflows for the integration of other existing and new data such as 3D/4D models and how our work fits in EPOS system to create an efficient and comprehensive multidisciplinary research platform for the Earth Sciences in Europe and abroad.