Making geo-electromagnetic (magnetotelluric) data accessible via EPOS portal

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Over the past decades a great wealth of magnetotelluric (MT) data have been collected by many researchers across the globe. Making the data accessible and available to other scientists within the same discipline and beyond poses a big challenge but also offers great opportunities for new and cross-disciplinary science. Since the last EM Induction workshop in Helsingor in 2018 we have continued to further develop the archiving of and access to European MT data within the European Plate Observing System (EPOS). EPOS is a multidisciplinary, distributed research infrastructure that facilitates the integrated use of data, data products, and facilities from the solid Earth science community in Europe and is funded by the European union. MT data is integrated in the Geo-Electromagnetic Thematic Core Service (TCS) in close collaboration with geomagnetic observations and data services. EPOS' main achievement is an openly accessible data portal that contains the metadata and download links to all data available through this service, thus making MT data searchable and accessible to a wide range of science, policy makers and other users.

Geo-electromagnetic data are currently held in a variety of formats, software and locations, which creates a barrier to access. Data provided through EPOS will have to conform to common standards. We have developed and implemented today's standard-de-facto for web metadata - the JSON container, a standard text-based format for representing structured data - as the data storage format for MT data and models. This data format is intentionally implemented to contain all the necessary information to fully describe EM metadata. Existing standards like .edi can be converted easily and software tools are openly available.

For EPOS, the data from all TCSs are searchable via the centralised Integrated Core Services (ICS) portal. The portal itself only provides a search function through metadata provided by various TCSs, but the data themselves are stored on individual TCS servers. We have established data storage of MT data at BGS and LTU facilities and discuss with other national research institutes to test and use their facilities for sustained MT data storage and access.

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