TCS Geomagnetic Observations in a nutshell

Participating Institutions:

British Geological Survey (NERC), UK
Ebro Observatory (OE), Spain
École et Observatoire des Sciences de la Terre (CNRS-Unistra), France
Finnish Meteorological Institute, Finland
GFZ Helmholtz Centre, Potsdam, Germany
Institute of Geophysics of the Czech Academy of Science, Czech Rep.
Lulea University of Technology, Sweden
The Geomagnetic community is well organized with data and products available in global repositories. However geomagnetic data, usually in 'community formats', can be difficult to link to data sets from other communities.

EPOS will address this by providing geomagnetic data in modern ways that conform to international standards and allow it to be easily combined with data from the whole geoscience community and beyond.
Magnetotelluric data are up to now stored only by data providers.
The Geomagnetism work programme in EPOS is aimed at simplifying access to magnetotelluric data and derived products and developing lithospheric conductivity models.
TCS offer to users through EPOS

- Magnetic observatory data
- Variometer data
- Magnetic survey data
- Global magnetic models
- Geomagnetic activity indices and events
- Magnetotelluric time series, transfer functions and lithospheric conductivity models
Main scientific challenges

Recent satellite magnetic missions provided unprecedented amount of high quality data.

In combination with ground based data it should lead to substantial improvement of global and regional models of geomagnetic field and its secular variation.
Main scientific challenges

Results of magnetotelluric study including lithospheric conductivity models in Europe enlarge the pool of methods that can be used to the study of the structure of the crust and lithosphere.

Example: Regional conductivity model of West Carpathians
## Benefits from the interoperation

<table>
<thead>
<tr>
<th><strong>SEISMOLOGY</strong></th>
<th>Improved models of the Earth’s lithosphere, mantle and core</th>
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<tr>
<td><strong>NEAR-FAULT OBSERVATORIES</strong></td>
<td>Multiparameter monitoring of fault processes</td>
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<tr>
<td><strong>GNSS DATA AND PRODUCTS</strong></td>
<td>Corrections of GNSS data and models of the ionosphere</td>
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<tr>
<td><strong>VOLCANO OBSERVATIONS</strong></td>
<td>Multiparameter monitoring of volcanic processes</td>
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# Benefits from the interoperation

<table>
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<tr>
<th>Benefits</th>
<th>Details</th>
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<tr>
<td>High resolution models of global geomagnetic field</td>
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<td>Structure of the crust</td>
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<td>Age determination of rocks for Earth’s history</td>
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<td>Subsurface navigation (directional drilling) and surveying</td>
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EPOS impact on the community

The Geomagnetism community is well organised in providing data, less so in giving easy access to the metadata.

One of the goals of the Geomagnetic work package in EPOS is to build an international metadata system that will be able to store this information so that the work we do today can be understood tomorrow.
EPOS impact on the community

The integration of geomagnetic and magneto-telluric data and services into Integrated Core Services will simplify the access to these data and services and thus increase the download and usage of data.

The community will benefit from a broad spectrum of services like data analysis or visualization.
Find more …

https://www.epos-ip.org/tcs/geomagnetic-observations