

# The EPOS-PL Project: A modern database for archival Polish MT data



Institute of Geophysics  
Polish Academy of Sciences

Anne Neska and Krzysztof Nowożyński

anne@igf.edu.pl



## THE PROJECT

The Department of Magnetism in the Institute of Geophysics, Polish Academy of Sciences, participates in the EPOS (European Plate Observing System) project as well as in the corresponding national infrastructure project called EPOS-PL. According to the aim of both projects we work on a database for exchange and integration of information on our archival and currently collected data. Beside of input to our instrument pool this project enables performing tasks like scanning of analog magnetograms (this concerns geomagnetic observations) and, for the branch of magnetotellurics, a thorough tidying-up of our archival data. These have been brought to a well-documented state and to a common format such that it is easier to use them for ourselves and others. The paradigm of this effort is an inventory like SPUD EMTF of the USGS (1).

## DATA

Currently the database contains data of ~250 LMT stations, some of them occupied more than once. They have been measured not only by our Institute, but also by the correspondent groups of the FU Berlin and GEOMAR during the last 20 years, and they are situated not only in Poland, but in almost all neighboring countries (see map below). A part of them measured only geomagnetic variations and therefore contains only induction arrows.

## PRODUCTS

For every station, information of the following categories can be found in the database:

- Metadata. Contain (but are not limited to) precise information on site location, measurement time and sampling interval, measured channels/EM-field components, instrumentation including system responses, underlying projects, and the institutions behind the data. See Tables 1 and 2. A special xml format has been created to document these metadata.
- Time series. See Figs. 1 and 2 for examples. In binary DDF format.
- Transfer functions, i.e., tippers, and, where present, impedances. Currently they are stored in Egbert's Z format with the aim to be converted to the xml format by A. Kelbert to contain all relevant metadata.
- A web application has been created that plots appropriate sounding curves when the corresponding point on a map is clicked (see picture below).

## OUTLOOK

In future also resistivity models shall be part of the database. The web application shall be integrated with similar products from other geoscience disciplines, and at least metadata shall be public.

Station ID	PL2002WRZ1
Site location	Wierzcholek
Latitude	53.40767
Longitude	17.23476
Measurement period start / stop	2002.09.25 14:08:40 2002.10.03 09:47:55
Sampling interval	5 s
Components	Bx, By, Bz, Ex, Ey
Apparatus:	PSM magnetometer (1) TWG 8504-07 (2)
- magnetic	
- telluric	
- logger	DR-02
Institute	IG PAS
Grant	KBN 3P04D01823

Table 1. Example of a station's metadata

Station ID	DE2007TOR1
Site location	Tornitz
Latitude	51.73777
Longitude	14.08944
Measurement period start / stop	2007.04.24 11:58:00 2007.05.26 07:58:56
Sampling interval	2 s
Components	Bx, By, Bz, Ex, Ey
Apparatus:	RAP29 [3] fluxgate AU16 TA10 SRAM13
- magnetic	
- telluric	
- logger	
Institute	FU Berlin
Grant	DFG BR1351/2-3

Table 2. Example of another station's metadata



Fig. 1 Time series of PL2002WRZ1 during high magnetic activity.

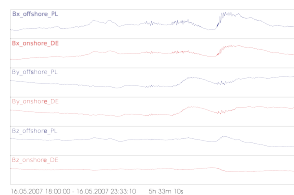


Fig. 2 Time series of PL2007OTC1 (blue, offshore) and DE2007TOR1 (red) are synchronous by chance.

## REFERENCES

- (1) Kelbert, A., G.D. Egbert and A. Schultz (2011), IRIS DMC Data Services Products: EMTF, The Magnetotelluric Transfer Functions, <https://doi.org/10.17611/DP/EMTF.1>.
- [1] Jankowski J, Marianiuk J, Ruta A, Sucksdorff C, Kivinen M (1984), Long-Term Stability of a Torque Balance Variometer with Photoelectric Converters in Observatory Practice, *Geophysical Surveys* 6, 367 – 380
- [2] Tomczyk S (2007), A New Model of Telluric Amplifier for Magnetotelluric Soundings, *PUBLS. INST. GEOPHYS. POL. ACAD. SC.*, C99 (398), 99 – 104
- [3] Steveling E & Leven M (1992), Ein Datalogger für niederfrequente geophysikalische Messungen, in: Haak V & Rodemann H (eds.) *Protokoll über das 14. Kolloquium „Elektromagnetische Tiefenforschung“*, Borkheide (Germany) 25-29 May 1992, Dtsch Geoph Ges Potsdam, 417 – 422

## ACKNOWLEDGEMENTS

This work was partially financed as a part of the statutory activity from the subvention of the Ministry of Science and Higher Education in Poland. The work of adapting archival data to EPOS is funded by grant EPOS-PL (No.POIR.04.02.0014A003/16).

