MULTIDISCIPLINARY UPPER SILESIAN EPISODE AS A NEW HOLISTIC APPROACH IN BUILDING RESEARCH INFRASTRUCTURE

Dorota Olszewska[1], Grzegorz Lizurek[1], Grzegorz Mutke[2], Jan Kryński[3], Witold Rohm[4], Andrzej Araszkiewicz[5], Adam Barański[6]

[1]Institute of Geophysics PAS, Poland, [2]Central Mining Institute, Poland, [3]Institute of Geodesy and Cartography, Poland, [4]Wrocław University of Environmental and Life Sciences, Poland, [5]Military University of Technology, [6]Polska Grupa Górnicza SA [Polish Mining Group]

Measurement polygons for the integrated observation of geodynamic processes are going to be built in the framework of the **EPOS-PL project.EPOS-PL** is a **multidisciplinary** infrastructural project, but in broader perspective there are significant scientific goals, which built RI is aimed for.

Data and data products obtained during **EPOS-PL** may be used in specialized geoscientific research in the project as well as in multidisciplinary, holistic approach exemplified by **Multidisciplinary Upper Silesian Episode (MUSE).**

Collected data and products will be combined as a **Multidisciplinary Upper Silesian Episode** and shared through the **IS-EPOS platform** in the form of new **episodes.**

Episodes
comprehensive data sets on anthropogenic deformation processes including seismological, industrial and geo reference data

Thematic Core Service Anthropogenic Hazard (TCS AH)
for scientists working upon the anthropogenic seismicity and its hazards is an important part of EU RI.
One of its product is the **IS-EPOS e-research platform,** giving you access to:

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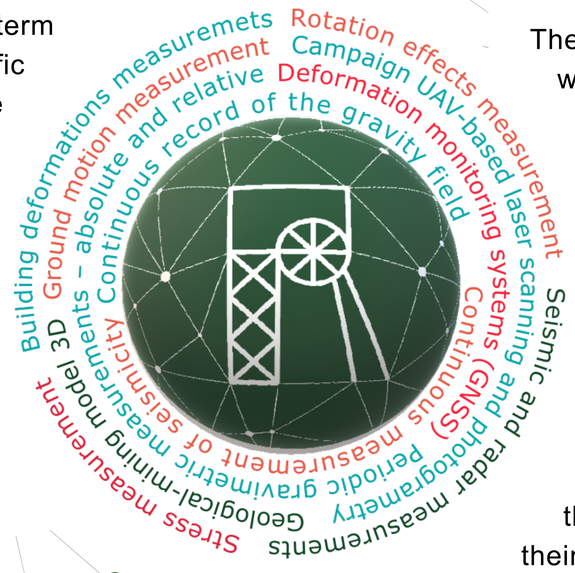
MUSE episodes

The episodes of anthropogenic effects caused by long term underground mining will allow for complex scientific studies based on specialized observations of the geodynamic processes on the mining and post-mining areas. The first polygons from the group of **MUSE** will be built in mining and post-mining areas of **Upper Silesian Coal Basin USCB (Poland).**



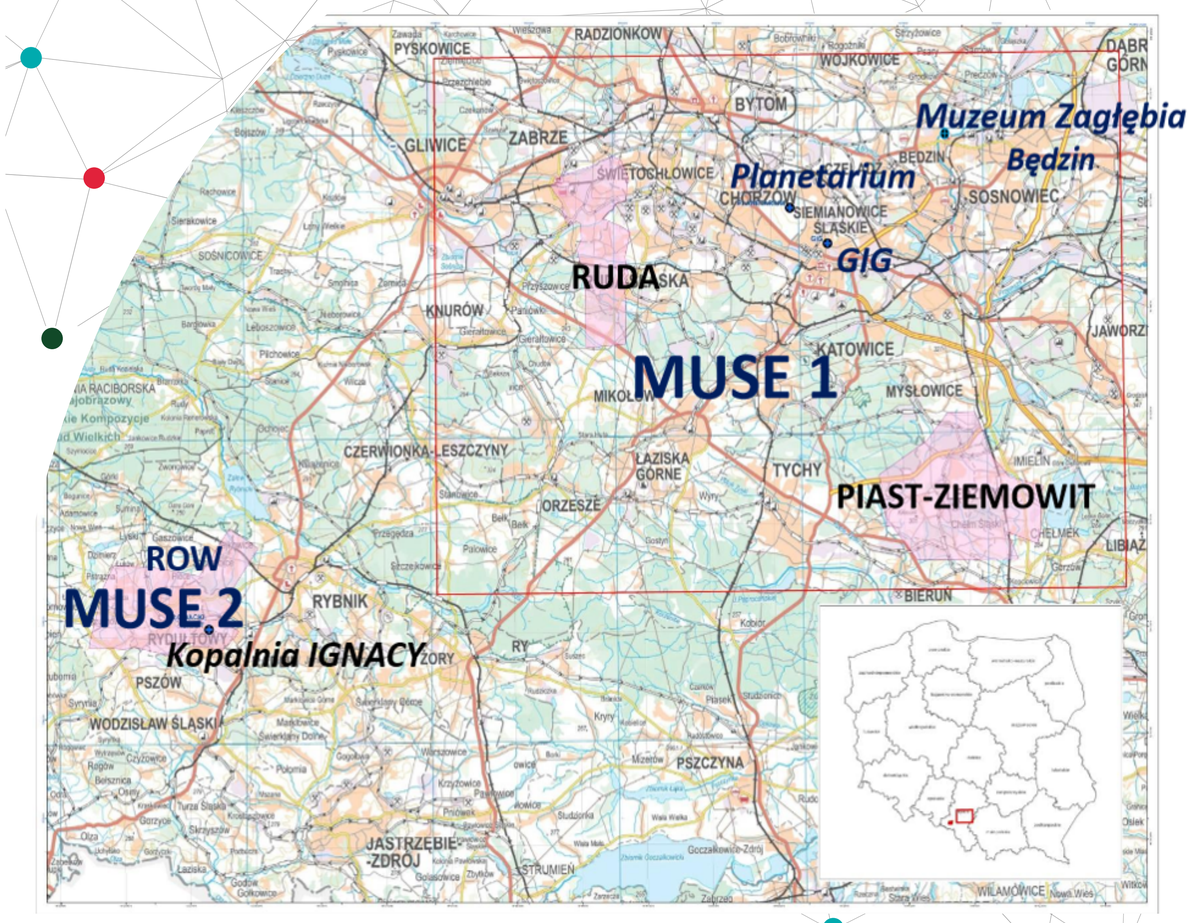
New episodes **IS-EPOS platform**

- **MUSE** - regional polygon (updated USCB)
- **MUSE** - Ruda-Bielszowice mine
- **MUSE**- Piast-Ziemowit mine
- **MUSE** - ROW mine

The first step to create the **MUSE** is to build an integrated geodetic observation system, which uses a combination of various point and surface measurement techniques. Additionally, in **MUSE** areas an integrated geophysical observation and measurement system will be used in order to observe physical processes, which take place inside the rock mass.

The system will include **local and regional seismological, geodetic, gravimetric and other geophysical networks.**

Building the super sites of integrated measurements and research within **MUSE**is a new way of building RI as well as heralding an open platform for bilateral knowledge transfer between industry and science. In such case the research and measurements should be carried out with the **Polska Grupa Górnicza (PGG)** [Polish Mining Group] allowance on their facilities.



MUSE 1 information

MUSE -Regional polygon - Post mine area of USCB (Poland):

- Continuous measurement of USCB seismicity
- Continuous rotation effects measurement
- Seismic and radar measurements at the station locations
- Continuous record of the gravity field
- Periodic gravimetric measurements - absolute and relative
- Deformation monitoring systems (GNSS)
- Continuous building deformations measurements - tiltometers and feeler gauges
- Campaign UAV-based laser scanning and photogrametry
- Campaign-based terrain deformation mapping (using InSAR and LiDAR)
- Regional geological model

Mine areas

MUSE - Ruda-Bielszowice mine

- Continuous seismicity measurement - Mine underground seismic network SOS 64-128
- Continuous stress measurement - Mine underground network for stress measurement SOS-stress
- Continuous ground motion measurement
- Numerical modeling of blasting efficiency
- Geological-mining model 3D

MUSE - Piast-Ziemowit mine

- Continuous seismicity measurement - Mine underground seismic network
- Continuous rotation effects measurement
- Continuous ground motion measurement
- Deformation monitoring systems (GNSS)
- Continuous water level measurement at the boreholes
- Geological-mining model 3D

MUSE 2 information

Mine area

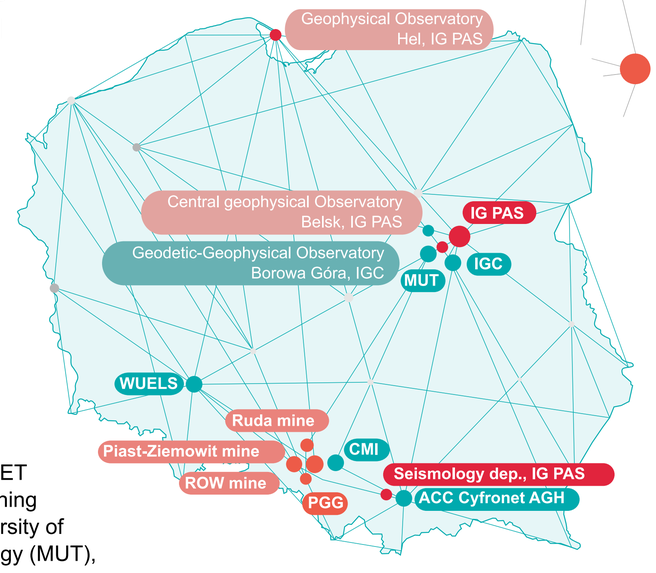
MUSE - ROW mine

- Continuous seismicity measurement - Mine underground seismic network SOS 64-128
- Continuous rotation effects measurement
- Continuous ground motion measurement
- Seismic and geotechnical measurement at the boreholes near to fault
- Campaign UAV-based laser scanning and photogrametry
- Campaign-based terrain deformation mapping (using InSAR and LiDAR)
- Continuous record of the gravity field
- Periodic gravimetric measurements - absolute and relative
- Deformation monitoring systems (GNSS)
- Continuous water level measurement at the boreholes
- Seismic and radar measurements at the station locations
- Continous building deformations measurements - tiltometers and feeler gauges
- Geological-mining 3D model

EPOS-PL project

EPOS as a pan-European project may be a source of inspiration and motivation for the complex and ambitious efforts of building national research infrastructures (RI). Such a case happened in Poland, where new, national RI is aimed to facilitate research and to improve its outputs in the area of Solid Earth sciences.

The areas of interest are anthropogenic seismicity, magnetism and magnetotelluric studies, GNSS observations, gravimetry, radiometry, deep seismic soundings and multiscale laboratories of Solid Eart.



www.epos-pl.eu

Consorcium members
Institute of Geophysics, PAS (IG PAS), Academic Computer Centre CYFRONET AGH University of Science and Technology (ACC Cyfronet AGH), Central Mining Institute (CMI), Institute of Geodesy and Cartography (IGC), Wrocław University of Environmental and Life Sciences (WUELS), Military University of Technology (MUT), Polska Grupa Górnicza SA (PGG) [Polish Mining Group].

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Institute of Geophysics PAN
64 Ksiecia Janusza St.
01-452 Warsaw
www.igf.edu.pl