



EPOS Thematic Core Service Anthropogenic Hazards Research Infrastructure - governance and communication

Anna Leśnodorska¹, Beata Orlecka-Sikora¹, Monika Staszek¹, Stanisław Lasocki¹, Joanna Kocot²

¹ Institute of Geophysics Polish Academy of Sciences (IG PAS), Poland; alesnodorska@igf.edu.pl

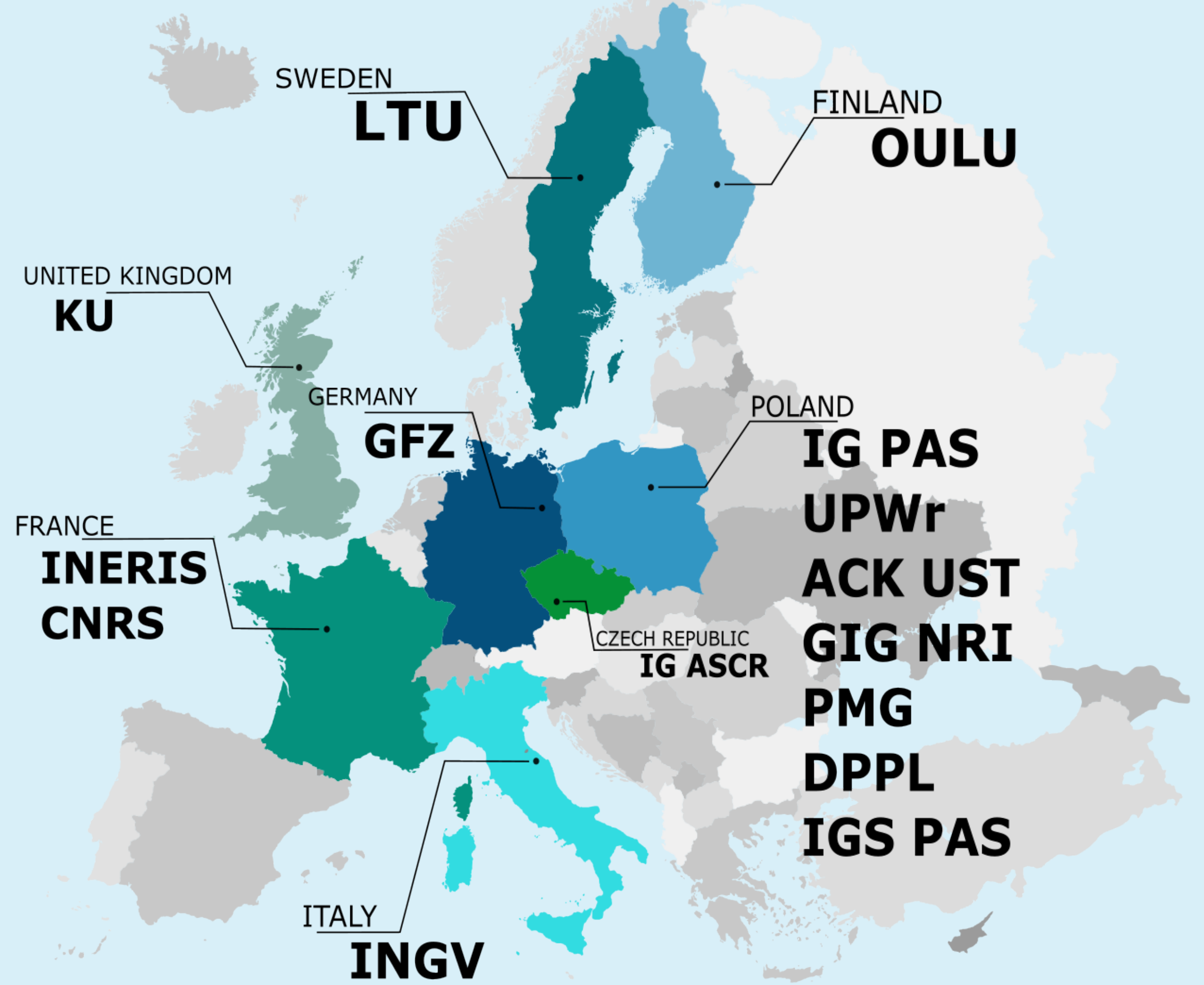
² Academic Computer Centre Cyfronet, AGH University of Science and Technology (CYFRONET), Poland; joanna.kocot@cyfronet.pl



Thematic Core Service Anthropogenic Hazards is one of the ten solid Earth science communities - specific services of the European Plate Observing System (EPOS) program.

Thematic Core Service Anthropogenic Hazards mission is to integrate - within EPOS - the research infrastructures related to studies of geohazards of anthropogenic origin, in particular those caused by the exploration and exploitation of georesources.

The exploitation of georesources entails significant risks and changes to the environment. To enhance the understanding and mitigation of these hazards, the TCS AH operates through the EPISODES Platform (episodesplatform.eu), a comprehensive e-research digital environment and workspace that connects international data nodes and provides open access to multidisciplinary datasets, termed "episodes", software, applications and computational resources for advanced analysis and visualization.



TCS AH Consortium is supported by three external Experts Committees:

- Innovation Advisory Committee
- Data Provider Committee
- User Committee.



Episodes encompass critical data related to various subsurface activities, such as CO2 sequestration, hydrocarbon extraction, geothermal energy production, and more.

The EPISODES platform not only facilitates experimental research in a virtual laboratory but also promotes interdisciplinary collaboration among scientists, industry partners, and the community. It offers functionalities for data integration, visualization, and analysis, addressing correlations between technological activities and induced seismic responses.

45 worldwide episodes

Episodes

An Episode is a set of time-correlated geophysical, technological and other relevant geodata that relates comprehensively anthropogenic seismicity to its industrial cause.

Worldwide Episodes Map

79 services

Applications

Applications are software tools to process and analyze the data. They help to relate seismicity and technological factors for hazard assessment and other scientific targets.

Workspace + HPC

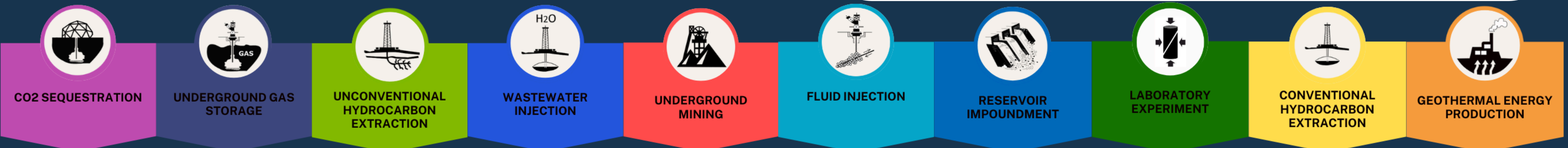
Each affiliated user is provided a personal workspace where individual data processing and analyzing can be carried out.

Episodes examples:

- BOBREK MINE (UNDERGROUND MINING)
- LAI CHAU (RESERVOIR IMPOUNDMENT)
- THE GEYSERS (GEOTHERMAL ENERGY PRODUCTION)
- GRONINGEN FIELD (CONVENTIONAL HYDROCARBON EXTRACTION)
- PREESE HALL (UNCONVENTIONAL HYDROCARBON EXTRACTION)
- ASPO (FLUID INJECTION)

Applications examples:

- Spectral analysis (P-waves, spectrum fitting)
- Maximum Magnitude Deterministic/Probabilistic Models
- Earthquake swarm



As TCS AH continues to develop its infrastructure and expand data centers, it aims to strengthen global research capabilities, enhance public understanding of anthropogenic hazards, and facilitate the transfer of expert knowledge between industry and academia. Through these initiatives, TCS AH strives to drive innovation and contribute to the effective management of risks associated with georesource exploitation.

Social Media

