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Sharing experimental data and facilities in EPOS: Updates on services for the analogue modelling community in the TCS Multi-scale Laboratories

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EPOS, the European Plate Observing System, is a unique e-infrastructure and collaborative environment for the solid earth science community in Europe and beyond. A wide range of world-class experimental (analogue modelling and rock and melt physics) and analytical (paleomagnetic, geochemistry micoscopy) laboratory infrastructures are concerted in a “Thematic Core Service” (TCS) labelled “Multi-scale Laboratories”. Sharing experimental facilities and data on analogue modelling of tectonic processes as well as on properties and applicability of different rock analogue materials are among the thematic areas that have been achieved during the current implementation phase of EPOS. The TCS Multi-scale Laboratories offers coordination of the laboratories’ network, data services, and trans-national access to laboratory facilities.

In the framework of Transnational Access (TNA), TCS Multi-scale laboratories’ facilities are accessible to researchers across the world, creating new opportunities for synergy, collaboration and scientific innovation, according to trans-national access rules. TNA can be realized in the form of physical access (in-situ experimenting and analysis), remote service (sample analysis) and virtual access (remote processing). The 2018 TNA call has been supported by dedicated national funding and/or in-kind contribution and realized 23 individual research projects, 7 of which took place in analogue modelling laboratories. The 2019 TNA call will again offer access to large variety of experimental facilities.

In the framework of Data Services, TCS Multi Scale Laboratories promotes FAIR (Findable-Accessible-Interoperable-Reusable) sharing of experimental research data sets through Open Access data publications. Data sets are assigned cc-by licences and come with digital object identifiers (DOI). They are thus citable in all relevant journals. A dedicated metadata standard eases exploration of the various data sets in a TCS catalogue. With respect to analogue modelling, a growing number of analogue modelling data sets include analogue material properties (e.g. friction and rheology data) and modelling results (images, maps, graphs, animations) as well as software (for visualization and analysis). The main repository for data sets is currently GFZ Data Services, a domain repository for the geosciences hosted at the Helmholtz Centre Potsdam (GFZ). Other national repositories are planned to be implemented within the next years.

The EPOS TCS Multiscale Laboratories framework will lay the foundation for a comprehensive database of rock analogue materials (“rockypedia”) and provide the opportunity to organize community benchmarks and comparative studies about reproducibility of experimental results.