First impressions EPOS Multi-scale laboratories Trans-national access pilot program

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Introduction

The Multi-scale laboratories community in EPOS

The TCS Multi-scale laboratories includes a wide range of world-class experimental and analytical laboratory infrastructures: from high pressure-temperature rock and fault mechanics and rock and melt physics facilities, to electron microscopy, micro-beam analysis, analogue modelling, rock geochemistry, geochronology and paleomagnetic laboratories.

The TCS Multi-scale laboratories main objectives are:

- To make available harmonized data and products from several types of solid Earth science laboratory infrastructures through the EPOS platform
- To offer regulated and transparent trans-national access to the newest and most advanced solid Earth laboratory facilities in Europe
TCS Multi-scale laboratories Trans-national access (TNA) pilot

The TCS Multi-scale laboratories facilities are accessible to researchers and research teams across Europe, creating new opportunities for synergy, collaboration and innovation, in a framework of trans-national access rules. TNA can be realized in the form of physical access (in-situ experimentation and analysis), remote service (sample analysis) and virtual access (remote processing).

Most of the Earth science laboratories participating in EPOS, are already hosting visiting researchers on a regular basis, but the access is often based on research collaboration only and not regulated. In order to make the access to laboratories more transparent and to advertise the facilities to a wider group of potential users, the community of the EPOS Multi-scale laboratories setup a first TNA pilot call in May 2017 with access to five laboratories in the Netherlands (Utrecht University) and in Germany (GFZ-Potsdam).

The TNA pilot program has been a unique opportunity to test the EPOS General Principles, regulating users access to solid Earth European facilities and to create a transparent and regulated workflow to manage all aspect of trans-national access.

We interviewed Dr. Emilio L. Pueyo Morer, an Earth sciences researcher at the University of Zaragoza. Together with a team of enthusiastic young scientists, Dr. Morer submitted a proposal to the first TNA pilot call and was granted access, financed by the Netherlands Organisation for Scientific Research, to the Tectonic Modelling Laboratory (TecLab) at Utrecht University.

Interview with Dr. Emilio L. Pueyo Morer, one of first EPOS TNA users

1. How did you find out about the EPOS Multi-scale laboratories TNA pilot program?
I learned about the possibility to access other solid Earth science laboratories in Europe, thanks to my participation in the EPOS TCS Multi-scale laboratories activities. During one of our meetings in Utrecht, in early 2017, I had the possibility to interact with Dr. Ernst Willingshofer (Utrecht University), who was really interested in my ideas. However, I know that the TNA program was advertised externally to our network and I really hope EPOS will do its best to promote the TNA programme to an even wider pool of researchers in the following years.

2. Where did you do your TNA project?

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European Plate Observing System [www.epos-ip.org](http://www.epos-ip.org) | info@epos-ip.org | epos@ingv.it

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Our research project has taken place in three locations exploring the full spectrum of the TNA concept, namely physical and virtual access as well as remote service. In preparatory phase we did some preliminary analysis of the materials we wanted to use for our analogue models at the Univ. Zaragoza. In a second (physical access) phase we visited the Utrecht University TecLab to perform the experiments, while we sent samples of the materials used to the experimental tectonic laboratory at GFZ Potsdam (HelTec) for additional mechanical tests (remote service). Finally, we evaluated the potential of the experimental results for strain analysis using image correlation with soft- and hardware installed at GFZ (virtual access).

3. **What was you TNA project about?**

Our project aims at building accurate 4D (volume plus time) reconstructions of analogue models (so called "sand boxes"). It merges some concepts previously developed by our group (e.g., the use of highly X-ray absorbent materials as deformation indicators) and the experience of TecLab in working with CT scanners on analogue modelling. Additionally, we took advantage of the GFZ-Potsdam experience material property characterization and image correlation-based strain analysis. In the frame of the EPOS TNA pilot program, we built a great international research team including Ernst Willingshofer and Fred Beekman from Utrecht University; Matthias Rosenau from GFZ Potsdam and Alba Peiró, Antonio Casas, Teresa Roman, Ruth Soto and myself from the IGME- University of Zaragoza.

4. **What do you think about the EPOS Multi-scale laboratories TNA program? Would you recommend it to other researchers?**

The EPOS Multi-scale laboratories TNA program is a great opportunity to optimize the potential of research facilities across Europe and to promote further collaborations among groups. I hope all partners in the initiative, including participating institutions and funding agencies, will adequately support the program and get the most out of an initiative with a big potential. For us the pilot experience was simply excellent. For the last 10 years, we have been running our Earth science analogue models in the CT scanners of public hospitals in Zaragoza. Despite good results, it was almost impossible to run long-lasting experiments like those we have carried out in-lab CT scanner in Utrecht University TecLab. I fully recommend to all researchers (and specially young ones) to apply in following TNA calls. Besides, TNA guarantees equal opportunities based on scientific quality of the proposal, what else can we ask for?
Conclusion

The TCS Multi-scale laboratories TNA pilot continues and in 2018 the TCS Multi-scale laboratories is offering access to 22 facilities in six European countries. The second TNA call just closed and the TNA proposals are now under evaluation by a committee of expert laboratory scientists. A third call for proposals for access to EPOS Multi-scale laboratories will be announced in Spring, keep an eye on the dedicated section in our website!

The current TNA pilot is supported by dedicated national funding and/or in-kind contributions from the partners of the TCS Multi-scale laboratories.

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