**DARE to Perform Seismological Workflows**

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The DARE e-science platform (http://project-dare.eu) offers innovative tools to ease scientific workflow development and execution exploiting efficient Cloud resources. It aims to enable on-demand numerical computations and analyses, fast large dataset handling, flexible and customisable workflow pipelines and complete provenance tracking. It also integrates available e-infrastructure services (e.g. EUDAT, EIDA) and can be linked to user developed interfaces.

DARE is validated via two domain-specific pilots, one from the climate modelling community and one from the seismological research field. Focusing on the latter, the EPOS Use Case is driven by urgent issues and general user needs of solid Earth Science community, following developments and application standards in the computational seismology research society. This Use Case also benefits from the pioneering experience of previous European projects (e.g. VERCE, EPOS-IP) in this framework.

We present here the development of a scientific workflow to perform a quick calculation of seismic source parameters after an earthquake. The workflow requirements include HPC calculations (on local-institutional or Cloud resources), fast data-intensive processing, provenance exploitation and seismic source inverse modelling tools. The DARE platform automatically conducts the required actions optimally mapped to computational resources, linking them together by managing intermediate data. It automatically deploys the necessary environment to perform on-demand transparent computations executing a dockerised version of the numerical simulation code on a Kubernetes cluster via a web API. Other API calls allow for remote, distributed execution of dispel4py workflows, used to describe the steps for data analysis and download of seismic recorded data via EIDA Research Infrastructure services. Well established scientific python codes, such as those for waveform misfit calculation and source inversion, are thus easily implemented in this flexible and modular structure, and executed at scale. Moreover, the pilot requirement of searching and reusing multiple simulations for the same earthquake strongly benefits from customisable management of metadata and lineage through the DARE platform exploiting the integration of S-ProvFlow with dispel4py.