Position Offered: POSTDOCTORAL RESEARCHER

Project: *Digital twins for large earthquakes – integration of physics-based simulators and geological data for large scale earthquake forecasts*

Technological and scientific fields: Digital twins, data analysis and integration, advanced techniques in Earth and oceans observation

Location: Tres Cantos, Comunidad de Madrid, IGME, https://www.igme.es

Research Group/PI: GI-OBTIER, Julián García Mayordomo, https://shorturl.at/iaKbz

PROJECT SUMMARY

Physics-based computational tools for simulating earthquakes from geological data of active faults currently lead the research on seismic hazard. The extensive body of information produced by the simulators enables the development of advanced statistical analyses to forecast the occurrence of future earthquakes and their characteristics. The objectives of the project are: 1) To derive global-scale seismic rupture forecasts, 2) To determine the parameters that control the occurrence of seismic ruptures, 3) To integrate them into surface rupture hazard and seismic hazard assessments, and 4) To transfer the results for application in earthquake-resistant standards.

PROFESSIONAL PROFILE

Minimum requirements:

- PhD in Earth Sciences, specialization in Geo-Hazards.
- Research experience in probabilistic seismic hazard assessment (PSHA) based on fault-source models.
- Excellent knowledge of geological data on active faults, their uncertainties, and their incorporation into seismic occurrence/forecast models.
- Experience in programming and developing geoscientific code, especially applied to active faults and seismic hazard.
- Proficiency in Spanish and English, with strong oral and written communication skills.

Merits to be considered:

- Experience in physics-based earthquake simulation models (multi-cycle).
- Experience with geological fault data (e.g., paleoseismic), including its collection and systematization in databases, and skills for its statistical and probabilistic analysis.
- Knowledge of seismic hazard assessment softwares.
- University teaching, supervision of Master's theses, and scientific dissemination.

WHAT IS OFFERED

Integration into a leading research line in earthquake geology applied to seismic hazard assessment. The candidate will pursue a university master's degree in Data Science (60 ECTS), as well as specialized postgraduate courses. They will undertake 2 research and training stays of 3-6 months each at the University of Barcelona and the Istituto Nazionale di Geofisica e Vulcanologia in Italy. They will collaborate in the co-supervision of master's theses, attend international conferences, and participate in scientific outreach and dissemination activities.

Contract conditions:

Indefinite contract for a Postdoctoral Researcher associated to the Momentum Project of 4 years' duration according to Spanish science law. Gross annual salary (41.000 € - 52.000 €).

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

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Financiado por la Unión Europea NextGenerationEU
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