Postdoctoral Researcher Position in Seismology (Earthquake Early Warning)

The **French Institute of Science and Technology for Transport, Development and Networks** (*Institut français des sciences et technologies des transports, de l'aménagement et des réseaux*, **IFSTTAR**) and the **Swiss Seismological Service (SED)** at the ETH Zurich are seeking a highly motivated postdoc candidate to work on integrating fault properties into earthquake early warning (EEW). The planned research will be conducted within the FAULTS_R_GEMS (Properties of FAULTS, a key to Realistic Generic Earthquake Modeling and hazard Simulation) project, funded by the French ANR (PI: I. Manighetti, Géoazur lab., Université Côte d'Azur), in which we, as a multidisciplinary and international team of different institutions, seek to better understand the interactions between seismic faults and earthquakes. The postdoc will be employed and based at IFSTTAR Paris (France), but is expected to frequently visit ETH Zurich (Switzerland) for extended research stays, and Géoazur lab. at Université Côte d'Azur (Nice, France) for short meetings on fault issues.

IFSTTAR (http://www.ifsttar.fr/) is a French institute involved in science and technology for transport, urban planning and networks. In particular, The "Earthquakes and Vibrations" Lab investigates seismic phenomena as well as vibrations: seismic hazard, propagation and amplification of seismic waves in complex geological structures, vibrations in soils and structures, dynamic soil-structure interaction, dynamic behavior of structures and foundations, vulnerability, risk assessment. Our researchers mainly develop physical, mechanical and numerical models associated to observations in the lab and on the field.

The **SED** (http://www.seismo.ethz.ch) is a leading European seismological research, education and service agency; it is responsible for national seismic monitoring and operates the Swiss national broadband, short-period and strong-motion networks. The SED is one of the globally recognized leaders in the domain of rapid earthquake characterization, including EEW. EEW algorithms developed in our team include point-source approaches such as the Virtual Seismologist and Gutenberg Algorithm, and the finite-source FinDer algorithm. Some of these methods have been integrated into the open-source and widely used SeisComP3 seismic monitoring software, and are running in real-time in Switzerland, California, Central America, and Chile.

Géoazur (https://geoazur.oca.eu/) is a research laboratory from Observatoire de la Côte d'Azur and Université de la Côte d'Azur in Nice, France, specialized in fault and earthquake studies, with a particular emphasis on seismogenic fault properties, earthquake source and rupture dynamics.

We are looking for a researcher that will explore and develop methodologies for the optimum use of prior knowledge of fault properties, expected rupture evolution, and ground-motions for EEW. Goal is the development of a "Prior EEW module" to enhance probabilistic estimates from our current Bayesian-based EEW system.

The primary responsibilities for the researcher are:
- Incorporate expected rupture evolution into EEW
- Determine and integrate fault-specific prior probabilities into EEW
- Perform real-time and offline tests of the new "Prior EEW module" as part of our existing EEW platform
- Collaborate and meet with other FAULTS_R_GEMS partners (Géoazur, Nice; Géosciences Montpellier; Inria Sophia; LJAD, Nice; IPGP Paris; IRSN; ENS Paris; University of Arizona, University of Pisa)

The position is initially for 24 months, with the possibility of extension. Regular travel to ETH Zurich is expected. The working language at IFSTTAR and SED is English, yet some notions of French would be useful. Targeted start date of the position is May 2018. The selection process starts immediately (January 2018) and will continue until the position is filled.

The candidate should have a PhD in geoscience, engineering or a related field with documented experience on relevant subjects, which may include earthquake early warning, software development for seismic networks, and earthquake statistics. A solid background in

programming, preferably in Python or Matlab, is required. Postdoctoral experience and / or familiarity with SeisComP3 are not necessary, but would be of advantage.

We are looking forward to your application, including a CV, a statement of research interests, and the names and complete contact information of three referees. Only complete applications will be considered.

For further information and application submission, contact Dr. F. Bonilla and Dr. M. Böse by email: fabian.bonilla<at>ifsttar.fr, maren.boese<at>sed.ethz.ch.