Post-doctoral scientist position at CEREGE, Aix-en-Provence, France:
Cross-calibration between OSL and TCN dating methods, for application to active tectonics

The CEREGE institute (www.cerege.fr) invites applications for the following position:
- Full time **Post-Doctoral Scientist** position for **24 months**
- Starting date: **1st September 2018** (flexible)
- Annual gross salary: **37.8 k€** (depending on experience - this includes social insurances).

The candidates should have obtained their PhD no more than 6 years before the starting date. The postdoctoral researcher will work within the framework of the project "Breakthroughs in Quaternary Geochronology to fill in a key gap of knowledge in Active Tectonics" coordinated by Dr. Magali Rizza and funded through the A*MIDEX initiative at the Aix-Marseille University (France).

Executive summary of the project:

The determination of fault slip-rate relies on quantitative characterization of late-Quaternary (1-500 ka) deformation, with the need of accurate dating of geomorphological surfaces affected by the fault motion over multiple earthquake cycles. However, large epistemic uncertainties in dating alluvial surfaces with Optically Stimulated Luminescence (OSL) and Terrestrial Cosmogenic Nuclides (TCN) methods severely limit discussions and preclude our ability to understand behavior of active faults. In this project, we propose to develop complementary approaches to accurately date late-Quaternary morphological surfaces through an exhaustive, detailed and unique direct comparison of both dating methods, a strategy that would then lead to major improvements in our understanding of the respective physical processes associated to these dating methods. To better understand the systematics of these dating methods, we propose to combine both OSL and TCN dating methods on the same geomorphic markers with a high-resolution sampling. This approach has the potential to provide new important insights into the processes affecting alluvial landforms in different climatic setting. We aim to produce major advances in constraining sources for the natural variability of the OSL signal for a better understanding of luminescence characteristics from sediment populations with different light-exposure histories. We will focus on challenging study cases where slip rates of active faults are still in debate due to epistemic uncertainties in dating alluvial surfaces. The results of this project will offer new perspectives for the large scientific community involved in active tectonics.

Required qualifications:

- ❑ PhD in Geosciences with a strong background in luminescence research
- ❑ theoretical knowledge and hands-on experience in luminescence (OSL) dating/ theoretical knowledge in cosmogenic dating is an asset
- ❑ interest in active tectonics and in working in a multidisciplinary team environment
- ❑ skills in mathematical-physical data evaluation
- ❑ experience in field sampling and laboratory work
- ❑ oral/written communication skills in English

Tasks:

- ❑ independent research in luminescence dating (preparation, measurements and data evaluation)
- ❑ cross-calibration between TCN and OSL data,
- ❑ publication and presentation of results in international journals and at conferences
- ❑ acquisition of (inter-)national third-party funding
- ❑ supervision of technicians, undergraduates and graduates students (if applicable)

Review of the applications will start February 1st and close on March 15th. The call is open until the position is filled. Applications should be sent via e-mail in a single pdf document to Magali Rizza (rizza@cerege.fr) and Pierre Valla (pierre.valla@geo.unibe.ch) with: (i) a cover letter outlining experience and expertise relevant to the project, (ii) a complete CV including a list of publications, and (iii) at least two letters of recommendation.