



CONTRIBUTION TO FUNDAMENTAL STUDIES IN SEISMIC, SEISMO-TECTONIC AND SEISMO- VOLCANIC PROCESSES

COORDINATING CENTRE: ECGS, Luxembourg

REPORT ON THE RESULTS OBTAINED WITHIN THE COORDINATED
PROJECTS FOR 2014

ECGS

Two work packages have been set up in the framework of the 2014 administrative agreement and progress has been made within these two work packages as outlined below.

The first of the work packages deals with the subject of the quantification of the earthquake source contribution to ground motion variability, while the second one is related to the extension of the Luxembourg Seismic Network.

Study on the source contribution to ground motion observations

The aim of this work package is to improve our understanding on the influence of earthquake source physics variability on the variability of the observed earthquake ground motions. To this end, Dr. Adrien Oth spent three months as a visiting researcher at the Earthquake Research Institute (ERI) of the University of Tokyo, working with Prof. Dr. Hiroe Miyake.

The amount of stress released during earthquakes is a key parameter for the understanding of earthquake rupture physics and the generation of ground motions. A serious discrepancy between the stress release variability as expected from the earthquake-to-earthquake variability of ground motion prediction equations, and the variability of seismologically measured stress release estimates has recently been observed in the literature. This issue is of major importance because the stress release variability has a direct impact on the predicted ground motion variability, which in turn impacts the predicted hazard level. Japan is an ideal case for investigating these problems, and based on the recently published extensive work on seismological stress release estimates in Japan by Dr. Oth, it was possible to investigate the link between ground motion parameters variability and stress release variability in-depth and within a consistent framework, avoiding the need to mix stress release estimates from various different studies which might be biased relative to each other due to various methodological assumptions.

During his stay at ERI, Dr. Adrien Oth attended the 2014 Annual Meeting of the Seismological Society of America (SSA) in Anchorage, USA, to present the most recent findings of this project in an oral presentation. As stated in the administrative agreement, a part of the 2014 EUR-OPA contribution has been used to fund Dr. Oth's participation in this meeting. A report presenting the findings of this work package will be submitted as a deliverable by 30 November 2014.

Installation of additional seismic station in Luxembourg

The second work package of the 2014 administrative agreement consisted in the acquisition of a new seismic sensor for a seismic station to be deployed in Luxembourg in order to further complement the existing seismic network. The seismic sensor in question (Güralp CMG-3ESP Compact) has been recently ordered. However, due to unexpectedly long delivery times, the delivery of the sensor and, consequently, the installation of the seismic station will unfortunately only be possible at the beginning of the year 2015. Since the deliverable associated with this work package consists in this installation, the finalization of this deliverable is expected within the first quarter of the year 2015.