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THE APRIL 7th 2014 Mw 4.9 UBAYE EARTHQUAKE SEQUENCE : USE OF DATA FROM POST- SEISMIC EXPERIMENT TO CONSTRAIN FUTURE FAST ESTIMATION OF STRONG GROUND MOTION

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On April 7th, 2014, a Mw 4.9 magnitude earthquake occured in Ubaye valley in French Alps. This earthquake was largely felt in a area comprised between Grenoble (France), Nice (France) and Torino (Italy). The Ubaye valley is one of the most seismic areas in the French Alps (see the web site of the Sismalp network : http://sismalp.obs.ujf-grenoble.fr/cases/stpaul/stpaul.html), that has faced several long duration seismic swarms over the last ten years (Jenatton et al., 2007), comprising a Mw 4.1 earthquake in 2012 (Courboulex et al., 2013).

Located close to the French-Italien border, this area benefits from automatic real time seismicity location thanks to agreement between permanent seismological stations operators (mostly Arpa Piedmont and Val d'Aoste region on the Italian side, CNRS/Universities on the French side) for exchanging raw data in real-time and rapid information on earthquake characteristics. The implementation of such data and information exchanges between Italian and French partners together with a coherent spatial coverage of seismological stations throughout the Western Alps is supported by the INTERREG/Alcotra program. Especially, the present INTERREG CASSAT project (2014-2015)

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focuses on the improvement of strong ground motion observations and interpretation (e.g. shake-maps) in real time.

Following the 2014 April 7th Mw 4.9 earthquake, the French part of the Networking European Rapid Response Networks (Margheriti et al., 2014) coordinated a rapid deployment of seismological stations. Seven seismological stations composed each of short-period velocimeter and accelerometer from the French national mobile seismological pool SISMOB (INSU/CNRS) and from GEOAZUR research laboratory were deployed in the epicentral area, completing the already relatively dense Sismalp network.

These recordings will be used to improve hypocentral location and rupture mechanisms of seismic events as well as to propose the active faults segments that may have ruptured. The actual seismic sequence will be discussed in relation with the various seismic swarms recorded in the area since 2003. In the framework of CASSAT program, these events will help to calibrate and validate the GMPEs (Ground Motion Prediction Equations) to be used for predicting strong ground motion in quasi real-time (e.g. shake-maps) for future similar or larger events in the area. Since shake-maps may also be given in intensities, the observed intensities will be used to calibrate the conversion from strong motion parameters to intensity.

REFERENCES

Courboulex, F., A. Dujardin, M. Vallée, B. Delouis, C. Sira, A. Deschamps, L. Honoré, and F. Thouvenot (2013), High Frequency Directivity Effect for an Mw 4.1 Earthquake, Widely Felt by the Population in Southeastern France, *Bulletin of the Seismological Society of America*, *103*(6), 3347-3353.

Jenatton L., Guiguet R., Thouvenot F., Daix N. (2007) The 16,000-event 2003-2004 earthquake swarm in Ubaye (French Alps), Journal of Geophysical Research, 112, B11304, doi:10.1029/2006JB004878.

Margheriti L., S. Hainzl, T. Boxberger, A. Govoni, M. Moretti, B. Delouis, C. Cornou, A. Paul, G. Hetényi, J. Clinton (2014), 34th General Assembly of the European Seismological Commission, Istanbul, Turkey, August 24-29, 2014.