Geophysical Research Abstracts
Vol. 19, EGU2017-8278, 2017
EGU General Assembly 2017


# The MITMOTION Project – A seismic hazard overview of the Mitidja Basin (Northern Algeria)

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The Mitidja Basin (MB) is located in northern Algeria and is filled by quaternary sediments with a length of about 100 km on the EW direction and approximately 20 km width. This basin is limited to the south by the Boumerdes - Larbaa - Blida active fault system and to the north by the Thenia - Sahel fault system. Both fault systems are of the reverse type with opposed dips and accommodate a general slip rate of ∼4 mm/year. This basin is associated with important seismic events that affected northern Algeria since the historical period until the present. The available earthquake catalogues reported numerous destructive earthquakes that struke different regions, such as Algiers (1365, Io= X; 1716, Io = X).
Recently, on May 2003 the Bourmedes earthquake (Mw = 6.9) affected the area of Zemmouri and caused 2.271 deaths. The event was caused by the reactivation of the MB boundary faults. The epicenter was located offshore and generated a maximum uplift of 0.8 m along the coast with a horizontal maximum slip of 0.24 m.
Recent studies show that the Boumerdes earthquake overloaded the system of adjacent faults with a stress increase between 0.4 and 1.5 bar. This induced an increase of the seismic hazard potential of the region and recommends a more detailed study of this fault system.
The high seismogenic potential of the fault system bordering the MB, the exposure to danger of the most densely populated region of Algiers and the amplification effect caused by the basin are the motivation for this project proposal that will focus on the evaluation of the seismic hazard of the region.
The general purpose of the project is to improve the seismic hazard assessment on the MB producing realistic predictions of strong ground motion caused by moderate and large earthquakes. To achieve this objective, it is important to make an effort in 3 directions: 1) the development of a detailed 3D velocity/structure model of the MB that includes geological constraints, seismic reflection data acquired on wells, refraction velocities and seismic noise data, and determination of the attenuation laws (GMPEs) for the basin based on instrumental records; 2) the evaluation of seismic potential and parameters of the main active faults on the MB area; 3) the development of numerical methods (deterministic and stochastic) in order to simulate strong ground motions produced by extended seismic sources.
At the end, we expect to have a complete description of the seismic motion field in terms of pick ground velocity and acceleration (PGV and PGA) and time series of strong ground broadband motion in a large spectral range (f<10 Hz).
This work is partially supported by COMPETE 2020 program (POCI-01-0145-FEDER-007690 project), bilateral project (PT-DZ/0003/2015)