Geophysical Research Abstracts
Vol. 14, EGU2012-13155, 2012
EGU General Assembly 2012


# Importance of macroseismic data from moderate local earthquakes for seismic microzoning effects distribution during the 2003 Bardo, Tunisia, earthquake

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The area considered in this study is located in Northern Tunisia. Being part of the western Mediterranean region, the geodynamic evolution of Northern Tunisia is closely related to the convergence between the African and the European tectonic plates. Numerous Quaternary fold, reverse and strike slip faults and historical earthquake indicate that the seismic hazard of Tunisia is considerable and a better strategy for seismic risk evaluation needs to be developed. In fact, the recent Quaternary activity in Tunisia has been proved and described by numerous authors. This activity sometimes affects Holocene to historic deposits. In particular, evidence of damage can be seen in several sites where constructions dating back to the Roman epoch have been affected. The large number of sites showing Holocene to Historic tectonic deformations cannot be explained by the relatively weak magnitude (M< 5), which characterizes the seismicity of Tunisia. These results suggest that Tunisia is characterized either by relatively important seismicity during the recent quaternary period or by a very shallow seismicity. The second hypothesis is supported by the recent macroseismicity data where several surface effects are observed in many examples of moderate earthquakes.

To verify the results of seismic microzoning and to improve techniques, the macroseismic data of past strongly expressed earthquakes is an important key reference. The macroseismic and accelerometric data of the 2003 Bardo, Tunisia, earthquake in the epicentral region are collected and compiled to produce the most reliable and detailed isoseismal map. The area enclosed in the isoseismal with IV EMS degree is not symmetric with respect to the isoseismal with higher degree (V EMS). From this point of view, we can affirm that the attenuation was stronger on the western part than on the eastern one. Moreover, due to very local site effects, we found sporadic small areas with intensity up to IV EMS degree randomly distributed. Through the case study of the 2003 Bardo earthquake, the results suggest that is important for more accurate microzoning to consider the regional characteristics of soil conditions and that the damage data can be the basic input for verification and revision of the site amplification evaluation.