



Tartous city (Syria) under seismic investigations

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Even though Tartous is located at a remote distance from seismic sources, a recent seismic hazard study shows that Tartous is still at risk from damaging ground motions induced by distant large earthquakes. The risk is primarily caused by the ability of soft surficial deposits in Tartous to amplify earthquake ground motions about 3 to 4 times. Furthermore, by the near-periodic, long-period, and long-duration nature of the amplified ground motions, tall buildings with fundamental periods near the predominant period of ground motions are likely to be significantly affected due to the resonant amplification of building responses. Three types of studies are much needed in order to develop appropriate seismic design requirements for buildings in Tartous against the effects of distant large earthquakes. The first study is a preliminary seismic Microzonation of Tartous neighboring provinces. Ambient vibrations on the ground surface at more than 100 sites are measured and analyzed by determining their shear wave V_s and soil predominant periods T_0 . In order to evaluate the soil natural periods a new method adopted. The results show that the predominant period of ground motions varies from notably high values (1.0 s to 1.5 s) at sites near the center of the city to low values (around 0.2 s) at the eastern part of Tartous city. In the southern and northern parts show moderate soil periods. The second study is an ambient vibration survey of nearly 30 buildings with heights varying from 10 m to 60 m in order to identify their dynamic properties. Relationships between building natural periods and building height are obtained. Different types of buildings presented in Tartous city were under investigation. The third study is prediction of ground surface parameters by using different initial earthquake for motion, and test the local soil profiles effects including expected (PGA, PGV, and displacement). In this study we have used 3 dif-

ferent types of earthquakes 0.1048g, 0.3155g, and 0.537g, the results obtained were discussed. Finally the whole seismic risk of Tartous city was analyzed.