variables. For this case, BEM is more appropriate because it's necessites only the discretization of frontiers. However, this procedure requires the determination of special functions named "Green's functions" which are known analytically only for simple cases. The stratification of the soil introduces an additional complexity that impede to calculate these functions. This obstacle is overcomes by using the Thin Layer Method [1] which is ideal for the case of dynamic loads in the horizontally stratified medium. In the present paper, a buried structure (tunnel) in multilayered soil subjected to an earthquake acceleration, that causes wave propagation in soil transmitted to the tunnel by means of soil-tunnel interaction. The formulation of BEM using these functions is formulated for the discrete case because of the discontinuities in the soil, and necessites to calculate the fundamental stresses and displacements matrices and the displacements and stresses on the free-field (without structures) [2].

It suffices to introduce the condition of rigid displacement of structure to obtain the final result for the displacement of any point in the medium and the displacement of the tunnel. To experiment the previous procedure, we consider the case of Algiers subway (under construction), which is subjected to the Boumerdes 21 may 2003 earthquake (magnitude 6.5). The acceleration considered is that located at Keddara station (located at 12 km from Boumerdes), because it is located directly at the bedrock. We consider accelerations in 3 directions: EW,NS and vertical.

Ground surface points are located with respect to the axis of the tunnel and the effect of the tunnel displacements on the surface movement is investigated.

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SEISMIC HAZARD ASSESSMENT USING THE PROBABILISTIC APPROACH IN NORTH OF MOROCCO (poster)

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This work consists on a seismic hazard zoning in North of Morocco using the probabilistic approach . By using an actualised seismic data catalogue (1900-2002) and predefined model of seismic sources, we assessed the Gutenberg-Richter parameters and the seismic activity rates for different seismic sources.

Those parameters allowed us to assess the seismic hazard in North of Morocco by mean of the computer program CRISIS99 for seismic hazard assessment and to establish a seismic hazard zoning of horizontal peak ground acceleration with 90% probability of non-exceedance in an economic lifetime of 50 years.

The seismic hazard map obtained in this study shows values of horizontal peak ground acceleration between 0.03g and 0.16g (g is the gravity acceleration) and seems to be in good agreement with the seismic hazard map for the Ibero- Maghreb region (Jiménez, M.J. and al.; 1999).

INFLUENCE OF ATTENUATION MODELS ON SEISMIC HAZARD ASSESSMENT IN ALGIERS (CAPITAL OF ALGERIA)

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This research presents the evaluation of seismic hazard at the site of Algiers (Capital of Algeria) using four different attenuation models. Seismic hazard analysis was carried out using a simple earthquake occurrence model and the new seismic catalogue compiled recently by Benouar for the Maghreb region. The site is defined by longitude 3.00°E and latitude 36.45°N. Because earthquake process around the site is poorly understood, it is assumed that future earthquakes will occur in an area in which they have already occurred in the past. The hazard, expressed in terms of the probability of exceedance of the PGA, is calculated for an economic life of the structure of 10, 50, and 100 years. The absolute acceleration for the same return period is also determined. Due to the shortage of ground motion records, no attenuation law has been derived for Algeria. The main objective of this study is to analyse the influence of the attenuation models on the seismic hazard evaluation, since the results of seismic hazard are sensitive to these models. Thus, a selection of an appropriate attenuation law is very crucial. For this purpose, four attenuation laws which seem to fit the Algerian data were selected from the literature, these are Joyner and Boore[1], Ambraseys and Bommer[2], Ambraseys[3] (controlled depth) and Ambraseys[3] (uncontrolled depth). A comparison of the expected seismic hazard allows a first critical estimate showing that seismic hazard is very sensitive to the attenuation models selected and the PGA could be either conservative or not, depending on the attenuation model and the level of acceptable risk.

THE ZEMMOURI-BOUMERDES (ALGERIA) EARTHQUAKE OF MAY 21ST, 2003, Mw=6.8: SOURCE PARAMETERS AND RUPTURE PROPAGATION STUDY FROM TELESEISMIC DATA

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On May 21, 2003, occurred the Zemmouri-Boumerdes earthquake (Mw=6.8, depth 7km) in a zone characterized by relatively moderate and diffuse seismicity. The main shock have been relocated at Zemmouri el Bahri (36.83N,3.65E) close to the continent and the aftershocks sequence (CRAAG mobile stations) gives a distribution in the NE-SW direction with most of the epicenters located on the continent or near the coast. Source mechanism of this event, including fault plane solutions, waveform inversion, spectral analysis, fault slip distribution and displacement field model, is analysed. The results show pure thrusting motion (plane striking 64° and dipping 50° to the SSE) with a STF formed by two main asperities at shallow depth (7 and 4km respectively) and Mo=1.3×10^{19}Nm. Slip distribution show an E-W asymmetric bilateral rupture process. The rupture front through the region (Zemmouri-Boumerdes) of high slip (206 cm) and maximum moment released (50% of the total Mo), in direction of Algiers, produced a pulse of energy about 8s after the start of the earthquake. This strong subevent located at SW of the hypocenter started at 4.0km depth and probably broke the surface. The vertical displacements estimated from the fault slip distribution model, the main shock relocation and the aftershock distribution suggest a fault close to the coastline as origin of the Zemmouri-Boumerdes earthquake. This location supported by