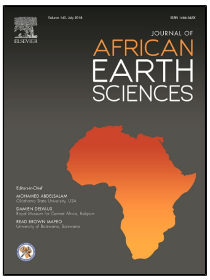
Accepted Manuscript



Site-specific earthquake ground motion parameters at the Southeastern part of Muscat, Sultanate of Oman

Mohamed Ezzelarab, Issa El-Hussain, Adel M.E. Mohamed, Ahmed Deif

PII:	S1464-343X(18)30151-1
DOI:	10.1016/j.jafrearsci.2018.05.020
Reference:	AES 3223
To appear in:	*Journal of African Earth Sciences*
Received Date:	29 August 2017
Accepted Date:	30 May 2018

Please cite this article as: Mohamed Ezzelarab, Issa El-Hussain, Adel M.E. Mohamed, Ahmed Deif, Site-specific earthquake ground motion parameters at the Southeastern part of Muscat, Sultanate of Oman, *Journal of African Earth Sciences* (2018), doi: 10.1016/j.jafrearsci.2018.05.020

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Site-specific earthquake ground motion parameters at the Southeastern part of Muscat, Sultanate of Oman

Mohamed Ezzelarab[1,2], Issa El-Hussain[1], Adel M. E. Mohamed[1,2], Ahmed Deif[1,2]

1- Earthquake Monitoring Center, Sultan Qaboos University, Sultanate of Oman,
2- National Research Institute of Astronomy and Geophysics, Helwan, Cairo, Egypt.

Abstract

The site-specific earthquake ground motion parameters were presented for the southeastern part of Muscat governorate, including amplification factor at different periods and the values of PGA and spectral accelerations at the surface. The study starts with assessment of the seismic hazard at bedrock level using the probabilistic approach. This assessment was preformed considering an updated earthquake catalogue. The outputs of the probabilistic seismic hazard were uniform hazard spectra for return periods of 475,975 and 2475 years. Spectral matching technique was applied to define the compatible ground motion time series based on the outputs of the probabilistic approach and the deaggregation process. The representative's dynamic soil profiles were determined using the in-situ measurements of compressional and shear waves. The effects of soil deposits on the propagated ground motions time series was evaluated using the equivalent linear analysis in the frequency domain. The final results clarified that, the fundamental site period at the middle coastal parts of the area has the largest values (0.2 to 0.276 sec). The maximum amplification factors found to be 2.76, 2.36, and 2.8 for the periods of PGA, 0.1 sec, and 0.2 sec, respectively. The values of PGA and spectral accelerations at the surface level are also provided.

Keywords: PSHA; Site Effect; Amplification Factor; PGA; Spectral Acceleration

1. Introduction

The earthquake ground motion in any site is generally controlled by a combination of three factors; the seismic sources, the propagation path of seismic waves, and the local site effect. The first two factors could be analyzed through the methods of seismic hazard assessment to produce the expected ground motion at the regular bedrock level. The site effect refers to the corresponding modifications to this ground motion due to the local geology and it is related to many factors (Safak, 2001; Parolai, 2012). One of these factors is the soil deposits

Download English Version:

https://daneshyari.com/en/article/8913392

Download Persian Version:

https://daneshyari.com/article/8913392

Daneshyari.com