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论文

广东地区地震动衰减和场地响应的研究

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摘要: 根据广东数字地震台网14个地震台的249条波形资料, 研究了广东地区的衰减模型和各台站的场地响应. 采用三段几何衰减模型拟合, 得到了广东地区的几何衰减函数. 同时也采用线性几何衰减模型和两段几何衰减模型对观测数据进行了拟合. 残差比较表明, 线性几何衰减模型的残差最大, 两段几何衰减模型的残差其次, 而三段几何衰减模型的残差最小. 由此可以推论广东地区采用三段几何衰减模型具合理性和适用性. 得到广东地区非弹性衰减Q值随频率f的关系为 $Q(f) = 481.5 \cdot f^{0.31}$; 14个台站的场地响应均没有显示出明显的放大效应, 这与它们均处于岩石地基相符.

关键词: 广东地区 地震动衰减 场地响应 几何衰减函数 Q值

ATTENUATION OF GROUND MOTION AND SITE RESPONSE IN GUANGDONG REGION

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Abstract: Based on 249 horizontal component digital seismograms recorded on 14 stations of Guangdong Telemetered Network, the attenuation of ground motion and site response of each station is investigated. Assuming a trilinear geometrical spreading model, we obtained the attenuation function in Guangdong region. The same dataset also used tried to fit both linear and bilinear geometrical spreading models. The comparison of the residuals of the results for these models shows that the residual is biggest for linear model, medial for bilinear model, and the smallest for trilinear model. It is suggested that the trilinear geometrical spreading model is reasonable and suitable for Guangdong region. The frequency dependent Q in the Guangdong region is estimated as Q