第 I 部門 Modeling and seismic characteristics of sedimentary basin in Bangkok 京都大学工学部地球工学科 学生員 oLI Suheng 京都大学大学院工学研究科 正会員 清野純史

1.Introduction

Bangkok Metropolitan Region (BMR), the economical hub and social center of Thailand, locates at the center of the lower part of Chao Phraya basin and serves for a large population of 16 million people. In this study, the subsurface model of sedimentary basin of Bangkok Metropolitan Region and its surrounding areas is constructed. The amplitude diagrams located within Bangkok city where has the upmost inhabitants' density are obtained.

2.Kriging method for modeling

In the field of geological engineering, the general geological structure and the physical properties of site are required to be estimated from the limited experimental data source. Substantial data could be estimated by interpolation of Kriging Method.

3. Model of BMR subsurface

In Figure 1, the purple area shows the region for modeling, blue circles

LI Suheng, Kiyono Junji kiyono.junji.5x@kyoto-u.ac.jp represent the locations of the drilling boreholes sample. The surface area of the model is 1600 km². The subsurface model is shown in Figure 2.



Figure 1: Model range





4.Method for earthquake simulation

Finite Difference Method is capable of being stably and efficiently implemented within the formed planar topography boundary. The model is discretised in staggered grid which defines the stress components and velocity of wave propagation from each other within the model.

5.Velocity diagrams of seismic response

Figure 3 expressed the location of epicenter which in depth of 4 km, on the west boundary of the basin. A, B, C, D represent the observatories in different locations within BMR. Figure 4 shows the amplitude velocity in North South direction. Figure 5 expresses the amplitude velocity in East West direction and Figure 6 represents amplitude velocity of the surface to subsurface direction



Figure 3: Epicenter and observatories



Figure 4: Amplitude Velocity EW



Figure 5: Amplitude Velocity NS



Figure 6: Amplitude Velocity Up Down

6.Conclusion

The location with the maximum depth of 2000 meters is in the southmost part of Bangkok coastline and has the largest amplitude velocity caused by relatively deep sedimentary basin. The amplitude is gradually decrease as the location of observatories becoming far from the epicenter.

Reference

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