

Strong ground motion prediction for Yamagata Basin Faults in consideration of the deep-ground sedimentation

Hideaki Shinohara[1]; Kazuhito Hikima[2]; Koichi Hayashi[1]; Michio Morino[3]; Yasushi Komaru[4]; Shunsuke Hamada[1]; Hiroyuki Fujiwara[5]; Yuzuru Hayakawa[5]

[1] OYO; [2] Oyo Corporation & ERI ; [3] OYO Corp.; [4] OYO Corporation; [5] NIED

<http://www.oyo.co.jp/>

Long-term evaluations of Yamagata Basin faults have been presented by the Headquarters for Earthquake Research Promotion based on the recent information and data on both active faults and historical earthquakes in Japan. We estimated strong ground motion for scenario earthquake along Yamagata basin faults by using these informations.

Three-dimensional propagation characteristics of seismic waves and amplifications in surface layers were estimated based on the detailed information and the collected in the vicinity of Yamagata Basin faults. Strong-motion time histories on the engineering seismic base layer were evaluated by using the hybrid method in which strong motion in long period is evaluated theoretically and that in short period semi-empirically.

Earthquake motion evaluated by the Three-dimensional finite difference method showed that amplitude of wave becomes larger and duration becomes longer as a sedimentary layer becomes more thick. Predominant period of 1 second or lager was seen in the velocity response spectrum at the ground surface. In conclusion, the structure of the surface foundation is strongly related with earthquake motion and ground sedimentation.

三次元地下構造モデル (S波速度)

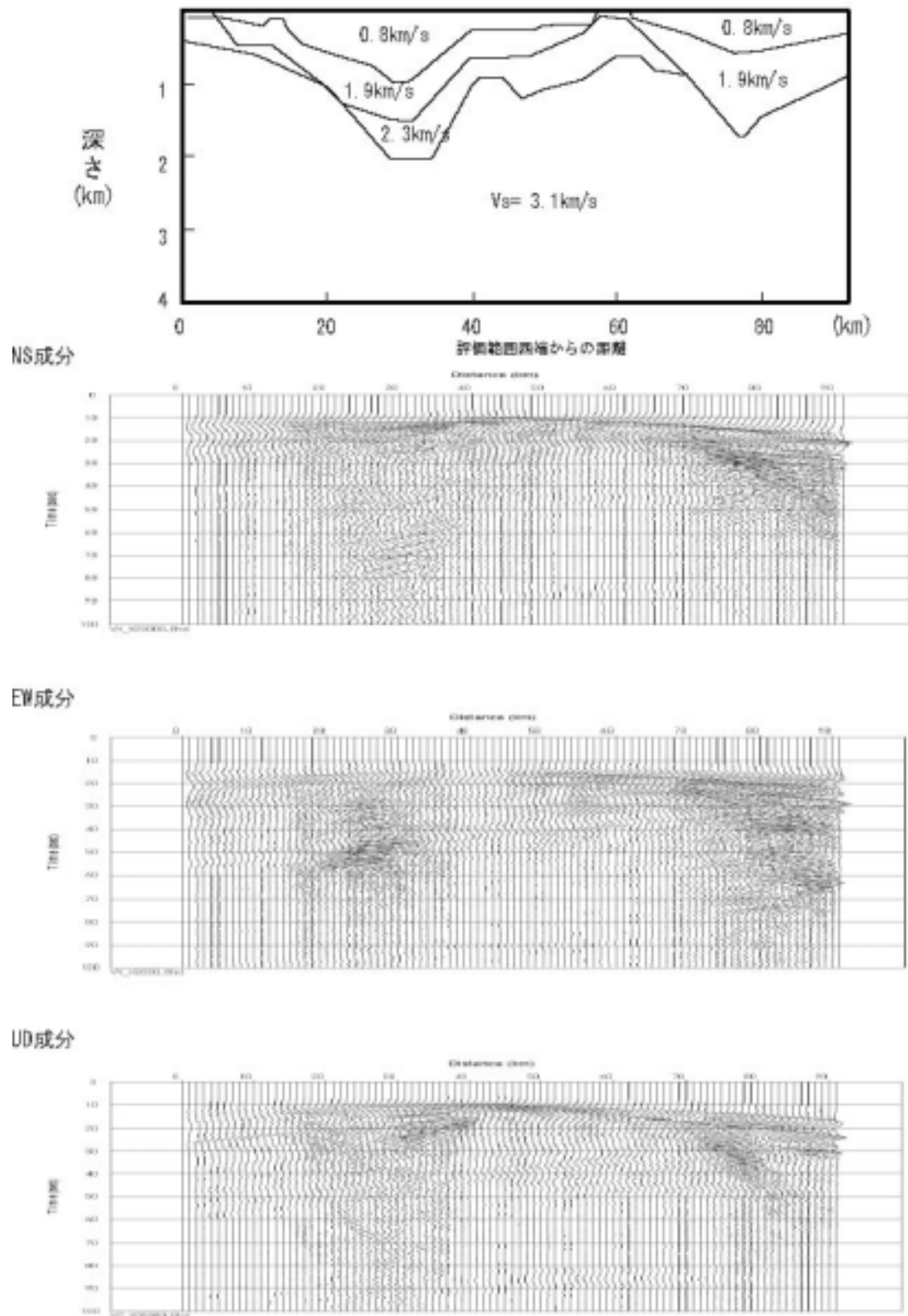


図1 三次元地下構造モデル断面とその断面沿いの評価点における時刻歴波形の例