[JJ] Evening Poster | S (Solid Earth Sciences) | S-CG Complex & General

[S-CG66]Recent progress on 3D geologic modeling and simulation studies

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Recently, three-dimensional geologic modeling, visualization and related simulation technologies have been developed remarkably especially in the professional study fields of civil engineering, energy resource exploration and disaster prevention. Although these professional study fields have own prominent technologies, more technical exchanges are thought to be required for further modeling technology development. This session aims to review the progress of modeling technologies and provide an opportunity to exchange technical information for further development of 3D geologic modeling and related simulation studies.

[SCG66-P03]Construction of 3D sedimentary velocity structure model of Nara Basin

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We constructed a 3D sedimentary velocity structure model of the Nara Basin, Japan, combining geological knowledge, geophysical surveys, and seismological observations to contribute to the improvement of ground motion prediction for future earthquakes. Not many geophysical surveys have been conducted on the underground structure in the Nara Basin. However, geological studies suggest that the sediment filling the Nara basin and the Osaka basin have common ground. Therefore, we utilized the methods and knowledge we acquired through modeling the velocity structure of the Osaka basin to construct a sedimentary velocity structure model of the Nara Basin. Firstly, a key beds’ depth model was constructed by combining the bedrock-depth distribution estimated from gravity anomaly and the geological profile at a borehole near the center of the Nara Basin. Then, the key beds’ depth model, meaning the 3D structure of the depositional age, was converted to a 3D structure model of seismic velocities and density. Microtremor observation results were used to constrain the 3D sedimentary velocity structure model in terms of the seismological response of the ground. The ability of the sedimentary velocity structure model to reproduce ground motion was examined through a ground motion simulation for a small earthquake.