The development of the interactive visualization software

Nobuaki Ohno[1]; Shintaro Kawahara[2]; Akira Kageyama[3]

[1] ESC; [2] ESC/JAMSTEC; [3] JAMSTEC

Recent development of supercomputer has been enhancing the difficulty of visualization of simulation data because of their growing size and complexity. The traditional visualization methods using 2 dimensional screens of PCs and graphic workstations are not powerful enough. We believe that advanced hardware systems based on modern virtual reality (VR) technology give us the solution and, among various VR systems, a room-sized and immersive-type VR system called CAVE is the most suitable one for our purpose.

We have been developing a VR visualization software, VFIVE, for the CAVE system. VFIVE enables us to perform interactive data analysis of 3 dimensional simulation data in the CAVE's VR space. Recently, we have successfully made major improvements of VFIVE; (1) parallel processing using OpenMP; (2) display of the time development data or animation; and (3) display of characters or text data. The interactive visualization using LIC (Line Integral Convolution) method is now possible in the CAVE owing to the OpenMP parallelization. The new text display function enables us, for example, to visually and accurately check the position of a field line's starting position, standing in the CAVE's VR space.

In the talk, the current status of the VFIVE development and its applications to geoscience will be reported.