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## Development of virtual reality visualization software

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Visualization is a key step in computational geosciences. Researchers can find structures and dynamics that are hidden in the "sea" of numerical data. In accordance with the exponential growth of computer hardware and simulation methods, complexity of the output data and, therefore, the difficulty of their visualizations are rocketing up these days. A new technology for visualization is strongly required and will be more in future. The modern virtual reality (VR) technology, especially the so-called CAVE system, provides an answer to this challenge. We have been developing, in these several years, visualization tools for CAVE-type VR systems and combined them into a framework, VFIVE. We have applied VFIVE to analyze various types of geophysical simulations. Recent study of our VR visualization will be reported. New visualization methods implemented in VFIVE are (i) Interactive Time Line Method for frozen-in vector fields, and (ii) Interactive Force Line Methods for general vector fields. We have also started to implement our VR visualization framework on a new API, VR Juggler. The status of the development will also be reported.

Keywords: visualization, virtual reality, CAVE