New Teaching Materials for Earthquake Study using Povray

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We released new three dimensional maps and animations to use as educational tools for earthquake study. Povray(http://www.povray.org/), a freeware rendering tool, is used to render seismicity maps or simulation results. The evaluation of using Povray is as follows,

Advantages:

1. Low-cost and can be used on many PC platforms (Unix,Windows).

2. Very high quality output images are easily made from c language like scene files.

3. limitless of objects and output pixels.

4. Create landscapes using smoothed height fields.

5. Script based rendering system can easily make an animation.

Disadvantages:

1. Installation and usage need some skills for OS and programming.

2. CUI interface is not so friendly for PC beginners.

3. The height fields are not directly translated to three dimensional heights.

Examples of release materials:

1. Three dimensional seismicity maps for ChromaDepth 3-D Glasses(American Paper Optics).

These maps were already developed in 1998 (Okamoto,1998) using N88BASIC language.

This time they are recreated using Povray and added some new features such as topography or buried fault planes. The calculating time is rapidly shortened than the old one.

2. Tsunami simulations.

Our tsunami simulations rendering with Povray show both expanding waves and sea floor relief while the others display expanding tsunamis only. Povray can create easily such transparent effect. The animations which calculate the tsunamis with 2004 great Sumatra earthquake are prepared.

3. Active fault models as an example of 3-D landscapes.

Povray also easily creates 3-D landscapes from height field image maps. Examples are active fault models which were developed in 1998 (Okamoto,1998). Virtual latticed landscapes are eroded by random precipitations on PC memories.