

The analog experiments on the 3D RRIM model

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1. Introduction

The Red Relief Image Map (RRIM; Chiba et al. 2006 etc.) is a method that developed for visualize the micro topographical feature of the Aokigahara lava flow of Mt. Fuji using the data acquired by Airborne LiDAR. The RRIM has been used in various cases, since it is possible to express micro to large topography simultaneously and stereoscopically with one sheet (Chiba, 2011).

2. 3D RRIM model

In the conventional method of coloring in the surface of the model, vegetation coverings always expressed by colors that based on aerial photographs. However, it is inappropriate in the case of using elevation data (DEM) excluding the influence of trees. Therefore, attempts have been made to stereoscopically print a RRIM on the surface of the topography model. It becomes very easy to understand topography due to the synergistic effect of the microtopographic representation of RRIM and the stereoscopic expression by modeling. Approximately 10 years have been passed since the development of this method, but so far we have been making in Izu-Oshima, Mt.Usu, Mt.Ontake, Mt.Bandai, Mt.Iwate, Mt.Azuma, Mt.Adatara, Miyakejima, Sakurajima, and Mt.Fuji.

3. Analog model experiment

Because this topographical model is excellent in water resistance and heat resistance, it is possible to conduct an analog model experiment by running a liquid on it. So far, the debris flow and lava flow are split water of the rinse in shampoo, the adjustment of the viscosity depends on the proportion of water. Restoration and collapse of the mountain is possible with wet sand, it has been used for various disaster prevention plans, disaster prevention education, and outreach activities. However, the results differed subtly from each experiment, and there was a problem in quantitative evaluation.

4. Time lapse record

Therefore, during the model experiment, we attempted to take time lapse photography with a single-lens reflex using a tripod and to take a record. The model used is the 1:50000 Mt.Fuji model set at the entrance of Mount Fuji Research Institute. Time lapse shooting was done at 1 pace per second and at playback it was played at 30 pictures per second. It can be said to be 30 times faster shooting. Here, we introduce video and discuss the method of quantitative evaluation.

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