

The role of the immediate airborne laser measurement (LIDAR) for the digital terrain model at the time of disaster

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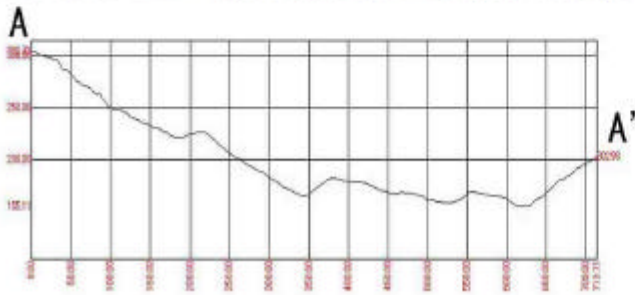
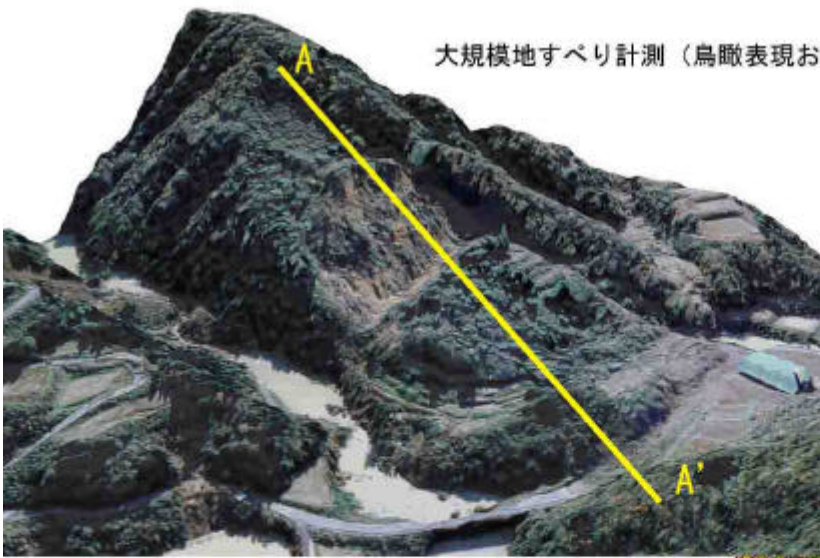
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The 2004th had been a year of a calamity in Japan. By the Chu-etsu Earthquake disaster that brought serious damage at the mountainous areas, it took a long time to grasp whole damage of structures or geographical features by loss of access roads.

On the occasion of a big disaster such as the landslide, the boulder flow, flood, tsunami, etc. an immediate situation grasping is indispensable. Conventionally, the picture information by the airplane has borne the important role to refuge /relief and transportation plan as only information. On the other hand, the feature measurement technique using the aviation laser system (LiDAR=Light Detection and Ranging) can acquire detailed terrain model in any time. The measuring point density of some 10E-1 m can produce a detailed topographical map in a short time. In order to study a changing mechanism of geographical feature, the most important thing is to grasp the fresh and exact geographical figures immediately after calamity occurring before secondary movement or an artificial alteration is added. Since laser measurement data consist of gatherings with 3-dimensional numerical points, it excels in expressing the geographical feature in 3-dimensional bird's-eye view, and the digital data are able to display arbitrary sectional views. The amount of geographical feature change can be computed as a numerical value (height/volume) from difference with the past another numerical model. Specifically, on this Chu-etsu Earthquake, detailed geographical feature models, such as deposition, pervasion occurred by the landslide or flood were useful for the restoration or a measure planning, and more, those data brought greatly useful study on decoding or solving the mechanics of landslides or another geographical hazards.

It will be made a misfortune and this earthquake disaster will carry out change of the ground of thousands of year scale usually pointed out as a trace before our eyes. The exact 3-dimensional terrain models obtained by the air laser measurement should be adopted on various studying and surveillance on the earth, such as boulder flow, volcanic eruption, seashore calamity and snow depth or biomass measurement. The figures followings are some of samples that used for landslide or flood study.

大規模地すべり計測（鳥瞰表現および断面図表示事例）



防破堤箇所の洗堀・堆積事例（段彩図表示）