

Study of natural disasters and terrain of Izu Oshima with Red Relief Image Map

CHIBA, Tatsuro^{1*}

¹Asia Air Survey Co., Ltd.

Introduction

In recent years, advances in LiDAR technology, detailed topographic data with high accuracy by eliminating the influence of the tree is now obtained. The contour by aerial photogrammetry so far, terrain under the trees is due to the estimation of operator that assumes the tree height, the difference of the laser measurement was evident. However, it is to express in scale in which it is easy to utilization of the whole picture microtopography measurement such results is difficult. Also shaded contour plot also altitude tints Figures it was not appropriate. I invented red relief image map method at the time of terrain reconnaissance of Aokigahara-Jukai of Mount Fuji in 2002. After that I've been used to field survey and interpretation of volcanic terrain around the country.

red relief image map

The more red than at steep slope, as bright as ridge, expressed the darker the valley, red relief image map is a some false color image of certain ortho. Since the state overlapping the topographic map, without the use of specialized equipment, it is possible to obtain a natural three-dimensional feeling in one piece, a combination of a red relief image map and LiDAR DEM and revolutionized the field survey.

terrain of Izu-Oshima

Also in Izu-Oshima, LiDAR DEM were detected, H24 by Tokyo, H25 by Tokyo, H18 by GSI has been carried out. In addition, as the foundation map information 5mDEM, measurement results of H24 have been published from the GSI.

This section shows a red relief image map of Izu-Oshima, we describe the features of the volcanic terrain that can be read from there.

Izu-Oshima, there is a caldera in the center, Mt central cone is located in the center. Mt shows the terrain of tuff cone crater is large in proportion to size, but I'm repeating the activity in which the bottom of the crater of the central vertical hole moves up and down, to overflow the lava. The eruption occurred at 1950-51 and 1986 in recent years. In addition, in the Izu-Oshima, fissure eruption many distribution on the outside of the caldera, C fissure eruption in 1986. It has been estimated that there is a fissure of Y5 drained the lava flow the steep slopes on the east side of Motomachi, but the exact location has not been clearly covered in trees. The red relief image map by the laser measurement of H18, Y5 fissure is visible clear, although confirmation has been difficult by many trees. After that, the field survey of the collapse can be accomplished by the typhoon disaster of October 2013, it was confirmed to be Y5 fissure.

Features of the terrain of the surface slope collapse

The typhoon of October 16, 2013, a large debris flow disaster occurs at the Motomachi Kandachi area of Izu-Oshima. Wake of this disaster was the collapse of the surface layer of volcanic ash on the slopes, and this slope are crossed by Y5 fissure, debris flow was flowing down over the Motomachi lava flowed from there. For the valley of this lava flow is very shallow, became the disaster spill debris flow can not swallow. In addition, I describe the characteristics of the micro-topography in the poster.

Keywords: izu-ooshima, DEM, red relief image map, lava flow, LiDAR, surface failure