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Simultaneous reading of small-meso scale topography in NE Japan outer arc, using digital stereoscopic topographic map

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Geomorphological reading is the most important and fundamental working in topographic process study. Recently, many kinds of tools, demonstrated by highly precise topographic maps, relief maps and high resolution air-photos and satellite images, are developed for improvements in the readings. But in any case, it seems to be difficult to simultaneously read topography in several scales and describe the results as a map. Digital stereoscopic topographic maps (DSTM) by Yokoyama et al. (2012) makes it possible and is newest effective tool from professional and educational viewpoints .

We demonstrated the effect of using DSTM in small-meso scale terrestrial topography reading in the northern Northeast Japan arc. Obtained results are as follows.

(1) Small scale topography of $<$ 10 km in size and $<$ 100 m in height: Early Pleistocene marine terrace sequences are seamlessly observed and their situation can be recognized. New active structures can be identified by unusual drainage patterns and incision degrees.

(2) Meso scale topgraphy of 10-100 km in size and 100-1000 m in height: More than C-class active faults in activity are clearly identified by continuous shades representing fault scarps. Fault line valleys and scarps by differential erosion and low-relief erosion surface are clearly detected besides.

(3) Coastal, volcanic, tectonic and structural topography can be simultaneously read in regional scale of 1:200,000. Based on this excellent fruit, We presented the synthesized geomorphological map, considering internal and external process.

The above results indicate that DSTM is useful for analytic geomorphological study and the complication of regionally described topography. Further practical applications are desirable in interdisciplinary fields around geomorphological science.

Keywords: Geomorphological reading, small-meso scale geomorphology, digital stereoscopic topographic map, regionally described topography, northern Northeast Japan arc