HGM22-01   Room:101B   Time:May 26 15:15-15:30

Terrain classification of Southwest Japan including the Seto Inland Sea by object based area segmentation

IWAHASHI, Junko[1*] ; MATSUSHI, Yuki[2] ; FUKUOKA, Hiroshi[3]

[1]GSI of Japan, [2]Kyoto University, [3]Niigata University

Terrain classification studies have been predominantly pixel-based using DEMs. Previously the corresponding author developed a pixel-based automated classification method of topography using slope gradient, convexity, and texture calculated from a DEM for small-scaled classification of plains, terraces, hills, mountains, and volcanos (Iwahashi, 1994; Iwahashi and Pike, 2007). However, a pixel-based approach could not handle scale issues or increasing noise associated with enlarging resolution of DEMs. In addition, pixel data include problems of data volume and difficulties in spatial joining with attributes of thematic maps.

Recently object based techniques for land-cover classification using color orthoimages or satellite images have become popular. In this presentation, the authors introduce the method of making terrain-type polygons by object-based software using a combined image of geometric signatures. We produced a terrain classification map of Southwest Japan including the Seto Inland Sea using a 150-m DEM which was a mosaic of land elevation and seafloor elevation. The terrain-type polygons were statistically compared with other thematic maps such as landslide distribution and lithology.

This study was carried out within a framework of "Mapping of large landslides based on the sea-land combined terrain classification: case study of the overall Outer Zone of Southwest Japan including the Nankai Trough" which was a theme in '2014 Collaborative Research with the Disaster Prevention Research Institute, Kyoto University'. We would also like to thank the Japan Coast Guard who provided the 150-m and 450-m Geographical Feature Meshes Data of Southwest Japan.

References

Iwahashi, J. (1994):Development of landform classification using digital elevation model. Disaster Prevention Research Institute annuals (Kyoto Univ.), 37(B-1), 141-156. (in Japanese with English abstract and figures)

Iwahashi, J. and Pike, R. J. (2007):Automated classifications of topography from DEMs by an unsupervised nested-means algorithm and a three-part geometric signature.Geomorphology,86,409-440.

Keywords: Fundamental Geospatial Data, seafloor topography, object based area segmentation, DEM, terrain classification, Seto Inland Sea