

## Study on Extraction of Fault Landforms Based on Digital Elevation Model

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Active fault survey of land region is carried out lineament extraction by means of aerial photograph interpretation at first. Comparing Active Fault in Japan (rev. ed.), Active Fault Map in Urban Area and Digital Active Fault Map of Japan, there are differences in distribution of active fault. Therefore, we consider objectively reproducible method of lineament extraction.

We propose a lineament extraction method by means of topographic features such as altitude change, slope form, direction of ridge and valley represented by Digital Elevation Model (DEM), and compare interpreted lineaments by interpreter with extracted lineaments by means of this method about the its distribution.

We chose mid Niigata prefecture as the study areas. In the study areas, dip slip faults such as Kihinomiya Fault, Katagai Fault and Muikamachi Fault are distributed.

50m interval DEM and 10m interval DEM are used for the analysis. In a part of area, 2m interval DEM created with airborne laser scanner is used.

The procedure for developed method of lineament extraction using DEM is as follows;

- 1.Extract the general trend of the structure by means of DEM.
- 2.Classify geomorphic features by means of surface forms represented by DEM.
- 3.Calculate topographic quantities such as gradient and aspect from DEM and extract the line pattern area by means of cluster analysis.
- 4.Extract lineaments to trace line elements which are composed geomorphic features corresponded to interpretational geomorphic features within the line pattern area.

We extracted lineaments by this method using DEM in mid Niigata prefecture and we compared extracted lineaments with interpreted lineaments. As a result, they were corresponding well.

As for this method, if more geographical features are represented by using DEM, a further upgrade is expected.

#### Reference

Takeda et.al.,(2006) Active Geological Structure and Landforms in Epicentral Region of the Mid Niigata Prefecture Earthquake in 2004,Zisin,58,413-426.