Craters and faults around Usu volcano, northern Japan: interpretation of detailed topography by red relief image map using DEM

Satoshi Ishimaru[1]; Tatsuro Chiba[2]; Sunao Ohtsu[1]; Wataru Hirose[1]; Jun Tajika[1]; Noritoshi Okazaki[3]

[1] Geol.Surv.Hokkaido; [2] Asia Air Survey; [3] Geol. Surv. Hokkaido

We interpreted craters and faults around Usu volcano in northern Japan, by the red relief image map (RRIM) using DEM. The RRIM processes digital elevation data in such a way that adjusts red color tones and brightness reflecting the gradient of topography and thus creates a pseud-3D geographic map. This method is much better than conventional pseud-3D methods such as a shade method because of no direction dependability. The results around Usu volcano interpreted by the RRIM are follows.

Nishiyama: NW-SE faults around Nishiyama craters run via the south of the summit of Mt. Nishiyama to Ko-usu. Landform like a crater is distributed around the south of Nishiyama craters and the summit of Mt. Nishiyama. It may be crater formed older than the 19th century.

Nishi-maruyama: Two NW-SE faults moved valleys and ridges to leftward. The movement is toward northern west at the eruption in 1911. The circle-shaped landform at the center of Nishi-maruyma is perhaps a crater before the 19th century. It is one of the largest craters around Usu volcano.

Higashi-maruyama: The Higashi-maruyama fault cut a fault and a horst at the front of Mt. Higashi-maruyama. Many craters are distributed along the NE-SW direction at the southern west of the summit of Mt. Higashi-maruyama. They are formed before the 19th century.

Under the upper station of ropeway: Two cryptodomes are located under the station. EW faults and NW-SE faults are distributed on the southern dome. The faults and the craters on the northern dome are older than ones of the southern dome.

O-usu: Up-hill facing scarps, concentric in arrangement, are distributed in a NW-SE graben. This shows expansion of the O-usu lava dome.