

HEAT DISCHARGE EVALUATION FROM USU VOLCANO AND SHOWA-SHINZAN VOLCANO USING LANDSAT TM

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Usu volcano and Showa-shinzan volcano are active volcanoes located on the southern rim of the Toya caldera, Hokkaido, Japan. Airborne thermal surveys were repeated from 1975 to 1983 and no airborne thermal survey was conducted mainly because of financial problems after 1984. The temperature distribution was calculated from the thermal band of Landsat Thematic Mapper (TM), which has 120m by 120m ground resolution. Six nighttime thermal images were analyzed from 1984 to 1997. The altitude correction of 0.0065K/m was applied based on the 50m-mesh digital elevation model (DEM). Data quality is good when standard deviation of temperature distribution is decreased by the altitude correction. When it's increased, particular attention should be paid for the data interpretation. Thermal anomalies were found at the Kousu lava dome, northwest and southwest walls of the summit crater of Usu volcano and the summit of Showa-shinzan volcano. The pattern of anomaly was found to be similar to the pervious surveys. Heat discharge was estimated based on temperature difference from average temperature of thermally normal area. The heat discharge from Usu volcano was estimated as 70-80MW from 1991 to 1997, and heat discharge from Showa-shinzan volcano was estimated as 20MW in 1991.