

RETROACTIVE APPLICATION OF FORECAST FAILURE METHOD FOR PREDICTING MERAPI ERUPTION 2010 USING DEFORMATION AND SEISMIC DATA

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It has been applied Forecast Failure Method (FFM) in retroactive to estimate time of failure of the 2010 Merapi eruption. In this case, we used the slope of distance data measured by EDM and the seismic cumulative energy data before Merapi eruption. EDM measurement carried out daily while weather condition visible to see the reflectors as a target. It has been installed 12 reflectors facing radially to the South (Kaliurang), South East (Deles), West (Babadan) and North (Jrakah and Selo) where some benchmark built as fixed point in the observatories..

EDM data has showed significant shortening distance since early September from all direction, but difference in rate of distance changes. The strongest slope distance changes occurred in the South sector which has been accelerated from some millimeter/day to more than 50 cm/day for two months. FFM have been done by two-point analysis technique to increase correction factor due to variations of the data. FFM could be sensitive if the relationship between the physical parameters and time is about 2 or more. The rate of slope distance change a week before eruption have a linearity about 4. As comparison of the result, FFM methods has been applied to the cumulative seismic energy parameter (sum of energy of Volcano Tectonic, Multiphase (MP) and Low Frequency (LF) events). The result showed the prediction of eruption occurred on Julian day 297 - 300, it is consistent with the first eruption that occurred on October 26, 2010 or Julian Day 299.