

## Characteristic of 27<sup>th</sup> September – 7<sup>th</sup> October 2017 earthquake swarms in Jailolo Volcano, West Halmahera, Indonesia, based on hypocenter and b-value

A P Astuti<sup>1\*</sup>, N S Arifuddin<sup>1</sup>, M I Tahir<sup>2</sup>, E M Elsera<sup>2</sup> and M F I Massinai<sup>1</sup>

<sup>1</sup>Department of Geophysics, Hasanuddin University, Indonesia

<sup>2</sup>Meteorological, Climatological, and Geophysical Agency (BMKG) of Indonesia, Makassar, Indonesia

\*E-mail: [auliapuji24@gmail.com](mailto:auliapuji24@gmail.com)

**Abstract.** Halmahera is an area with active tectonics, so it has a high level of seismicity. Swarm earthquakes occurred in Jailolo from November to December 2015, and then in 2017, another earthquake swarm occurred from September to October. This earthquake is characterized by an increase in the number of earthquakes in a certain period with a relatively small magnitude, without mainshocks, and occurs in volcanic areas. This research used arrival time from P and S waves recorded at Taide Digital Seismograph (TDS) which was positioned at Ternate Geophysical Station (TNTI). We used cross-section on hypocenter to see the depth distribution using GMT and determination of b-value using ZMAP code. From the results of this study, the variation in the magnitude of the earthquake swarm obtained ranged from 0.7 to 5.0 with a depth of 7.7-12 km. Our results show a b-value of approximately 1.0 in the area near Jailolo Volcano, 1.0-1.5 in the northwest of Jailolo and 1.0-2.0 in the southeastern part of Jailolo. Based on b-value we obtained, the characteristics of the Jailolo swarm earthquake tend to be influenced by magmatic activity.