Tracking the evolution of the Merapi volcano crater area by high resolution satellite imagery

Virginie Pinel¹, Raditya Putra², Akhmad Solikhin², François Beauducel¹,²,³, Agus Budi Santoso², Hanik Humaida²

1. IRD, ISTerre, Le Bourget du Lac, France (virginie.pinel@ird.fr)
2. BPPTKG, PVMBG, Geological Agency, Indonesia, 3. IPGP, Paris
Method

Pleiades panchromatic images (tri-stereo) (0.7m resolution)

DEM (3m resolution, 1m precision)

AMES Stereo Pipeline

Coregistration Difference

Pleiades©CNES 2019, distribution AIRBUS DS, France, all rights reserved. Commercial uses forbidden.

EGU2020-5415 GMPV9.7

Elevation difference in the summit area of Monti volcano between the 26th of February 2019 and 2014. Estimated volume of eruptive deposits: 9.82 Mm³
Results

Dome growth around 3000 m³/day

Accumulation of deposits below the dome
Magma inflow around 250 m³/day

Days after the 11th of August 2018

Dome Volume (Mm³)

Drone (BPPTKG)
Pleiades
Conclusions

General:
Validation of the use of tri-stero Pleiades images for dome growth quantification by comparison with drone measurements

Merapi Volcano:
No significant growth of the dome from January 2019 to September 2019 but accumulation of deposits by dome destabilization a few hundreds of meters below the dome (outside the area surveyed by drone)
→ Magma inflow is still going on at a rate of 250 m³/day