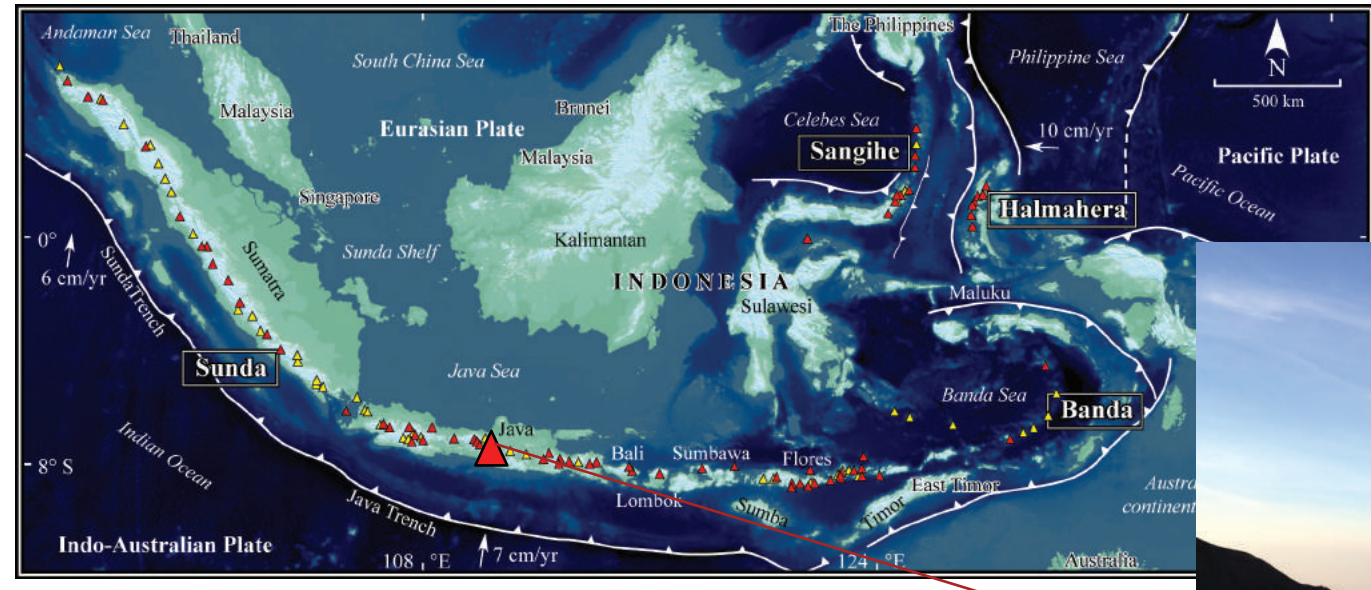


Tracking the evolution of the Merapi volcano crater area by high-resolution satellite imagery

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(2) BPPTKG, PVMBG, Geological Agency, Indonesia, (3) IPGP, Paris

Merapi volcano, one of the most active volcano in Indonesia, located in the Province of Yogyakarta in Central Java



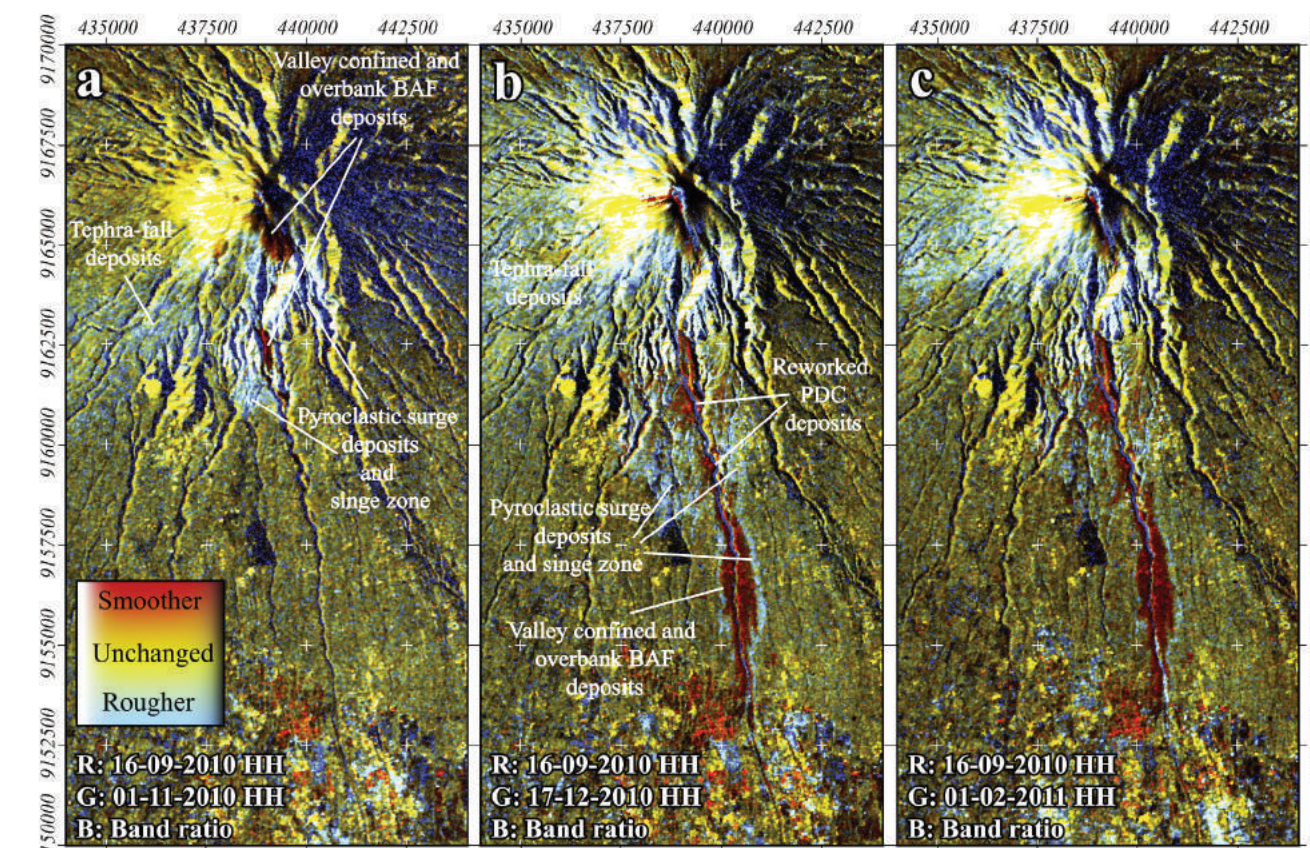
Activity characterized by a succession of dome growth and collapse generating pyroclastic density currents (PDCs)
Latest large eruption: November 2010, VEI4, PDCs reaching more than 15 km from the summit

Volcanic events

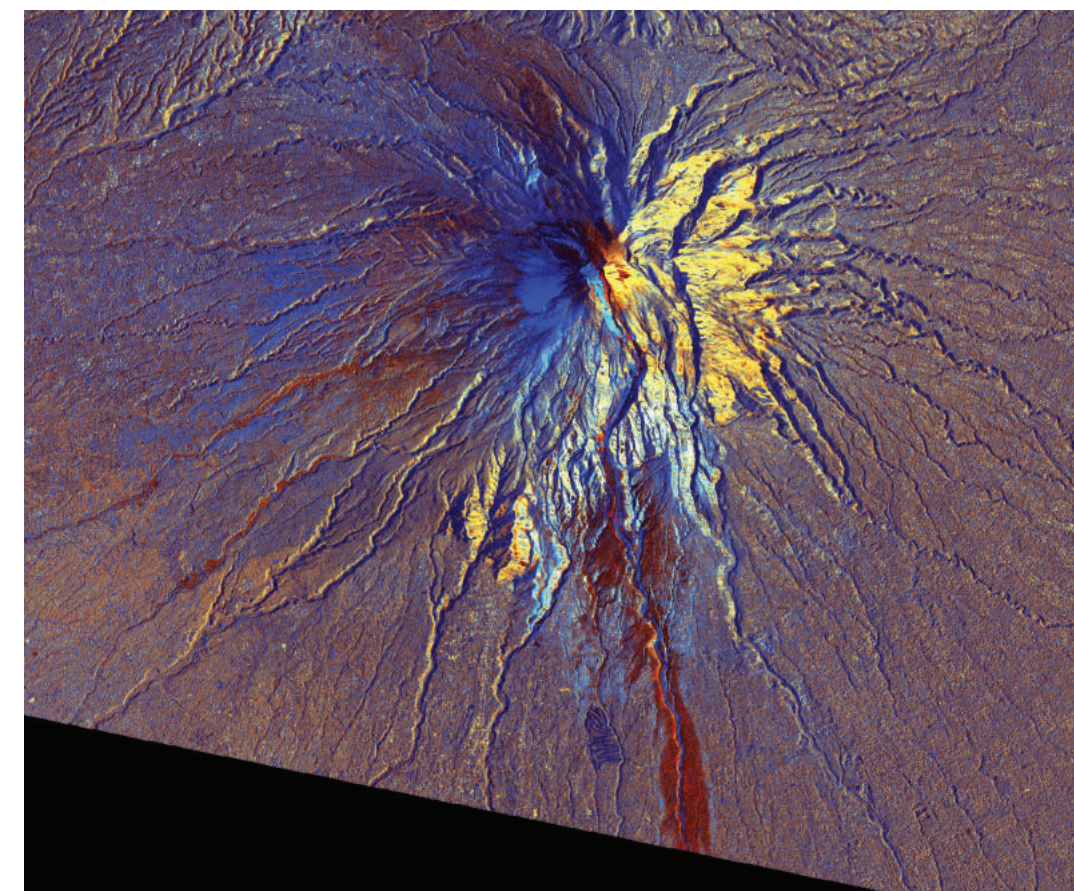
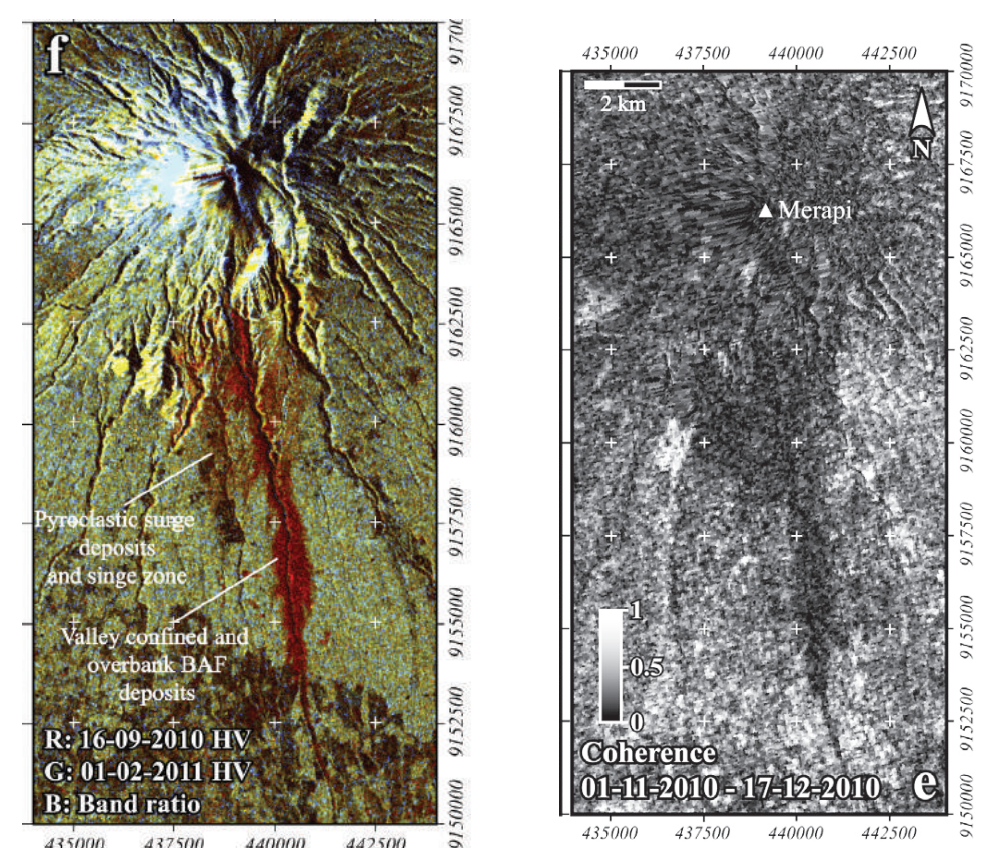
largest event in more than a century
VEI 4 eruption
2010/10/26 explosions
2010/11/06 paroxysmal event

HR Satellite acquisitions

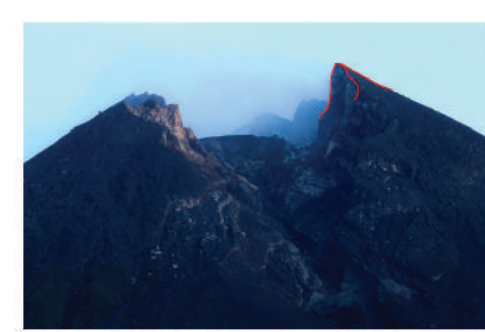
TerraSAR-X 2010/10/26
TerraSAR-X 2010/11/06



Mapping eruptive deposits of the 2010 eruption with ALOS images (amplitude and coherence) from Solikhin et al, 2015



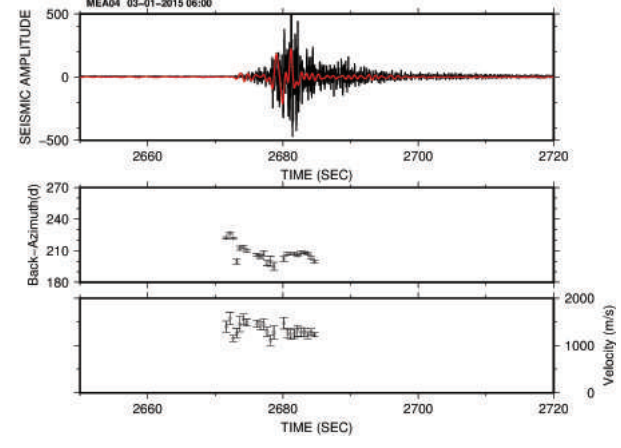
Red: TerraSAR-X 2010/10/26
Green: TerraSAR-X 2010/11/06
Blue: TerraSAR-X 2010/11/06/2010/10/26



2014/12/19



2015/01/06



Seismic signature
2015/01/03

Mapping crater wall destabilization by coherence change detection

Image 1
Coherence co-event
2014/12/31-2015/01/21

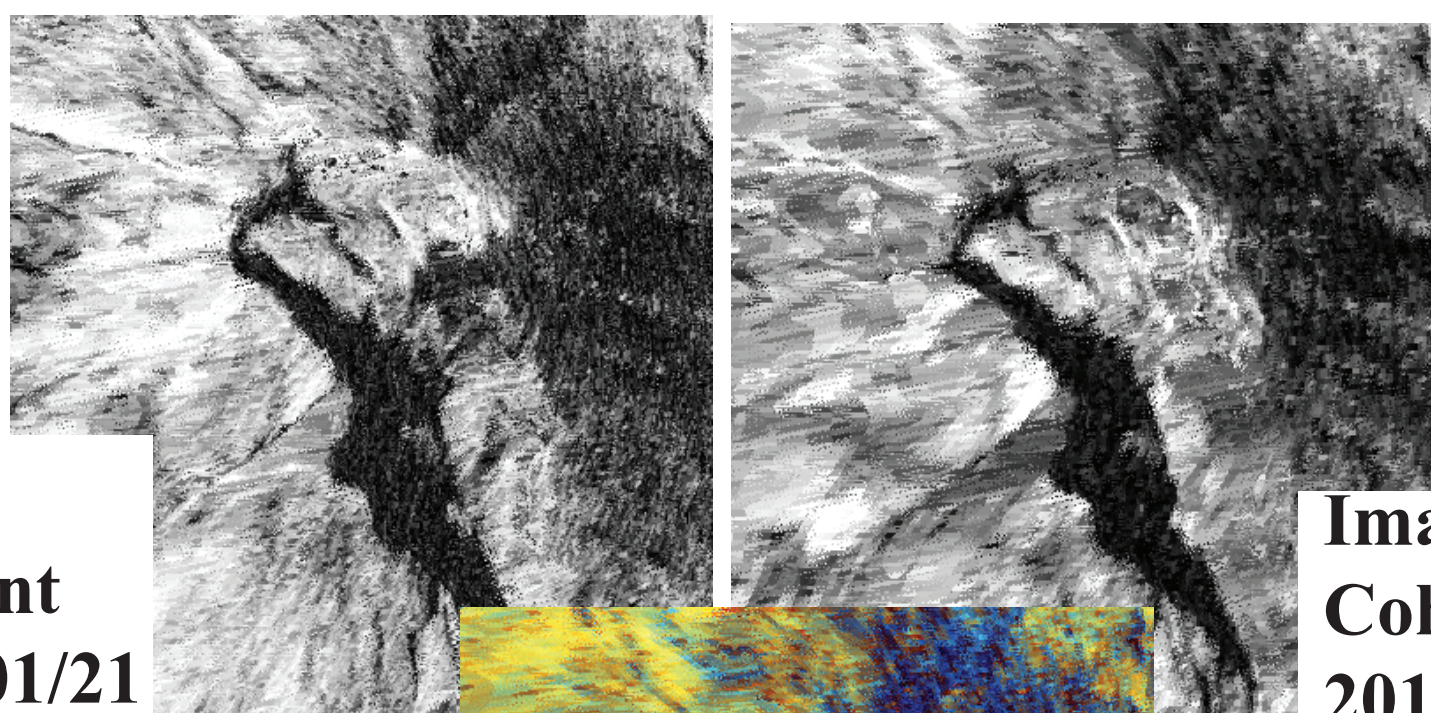


Image 2
Coherence post-event
2015/01/21-2015/01/22

Red: image1
Green: image2
Blue: Image2/image1

2013/04/26
Pleiades image (reference)

TerraSAR-X 2014/12/31
TerraSAR-X 2015/01/11
TerraSAR-X 2015/01/21

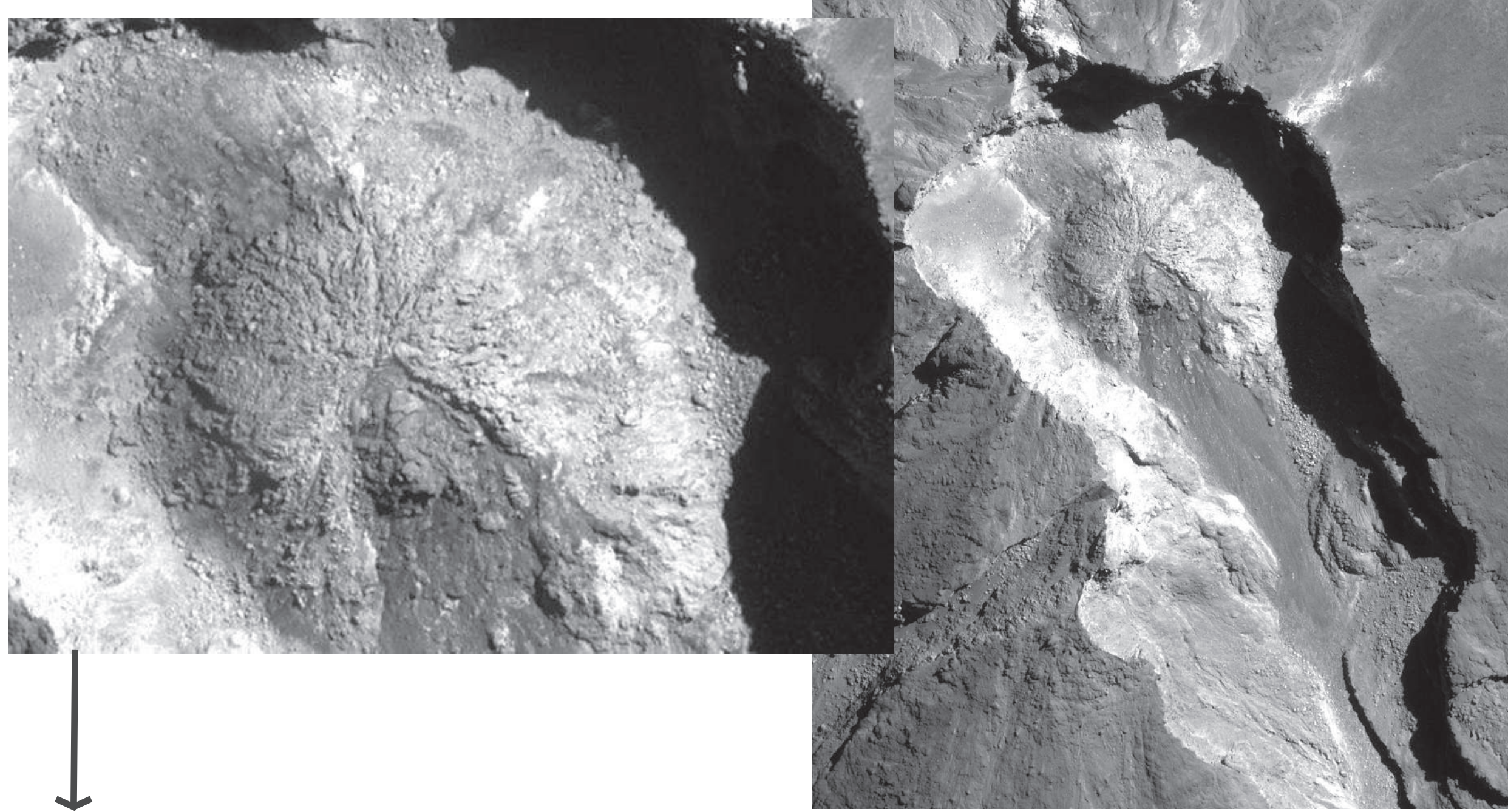
2015/01/03
small crater wall destabilization

2012/08

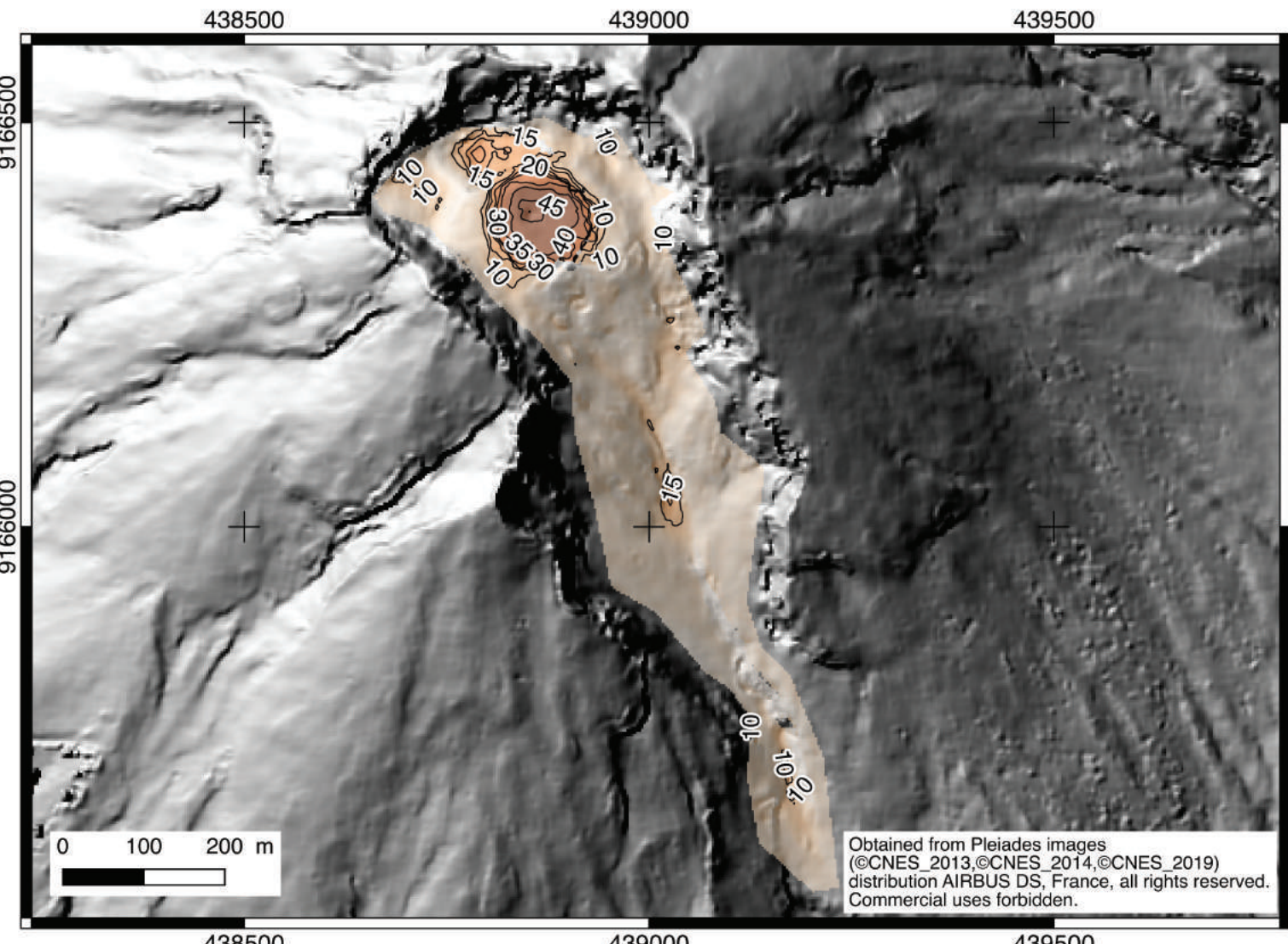
12 phreatic explosions

2014/04

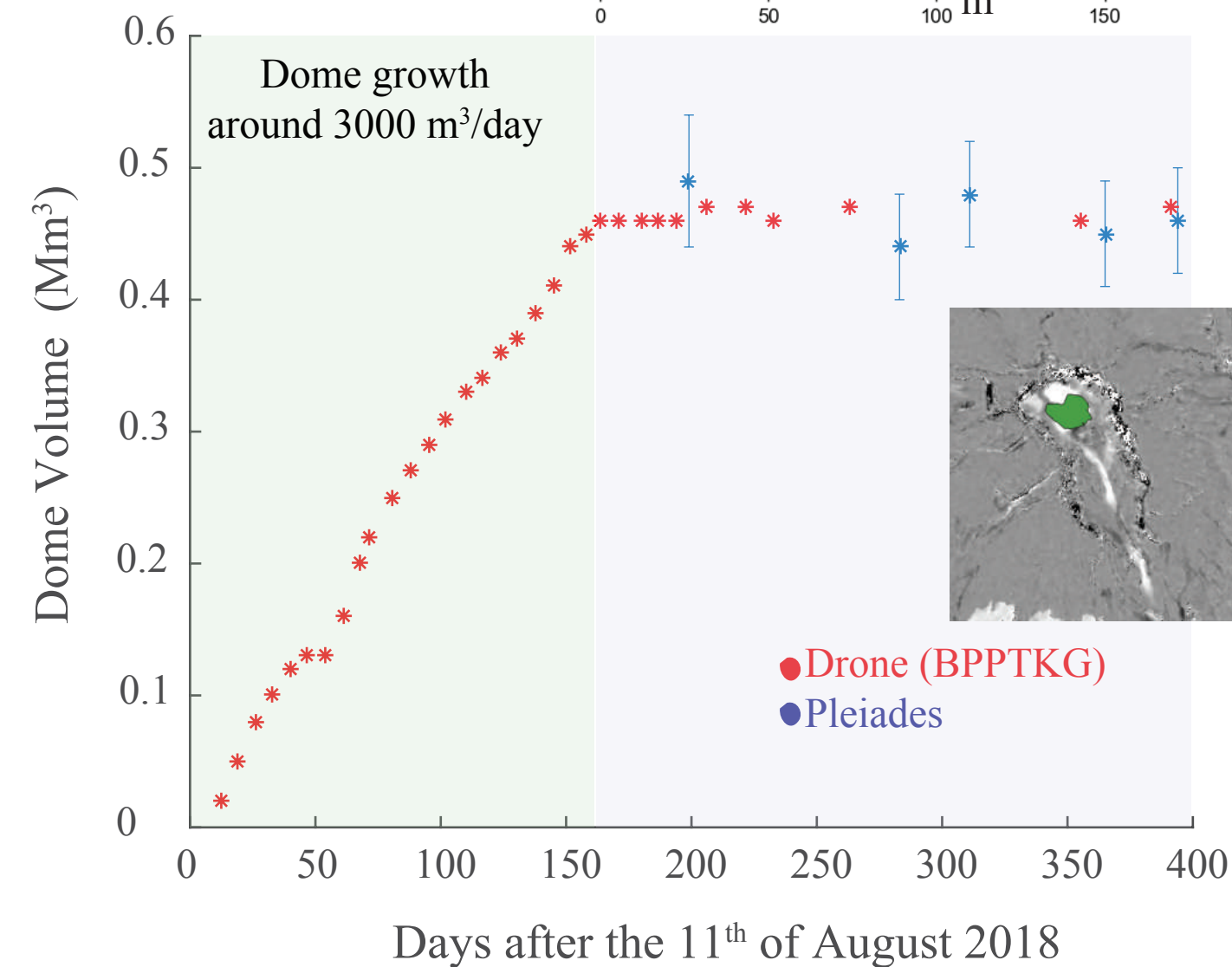
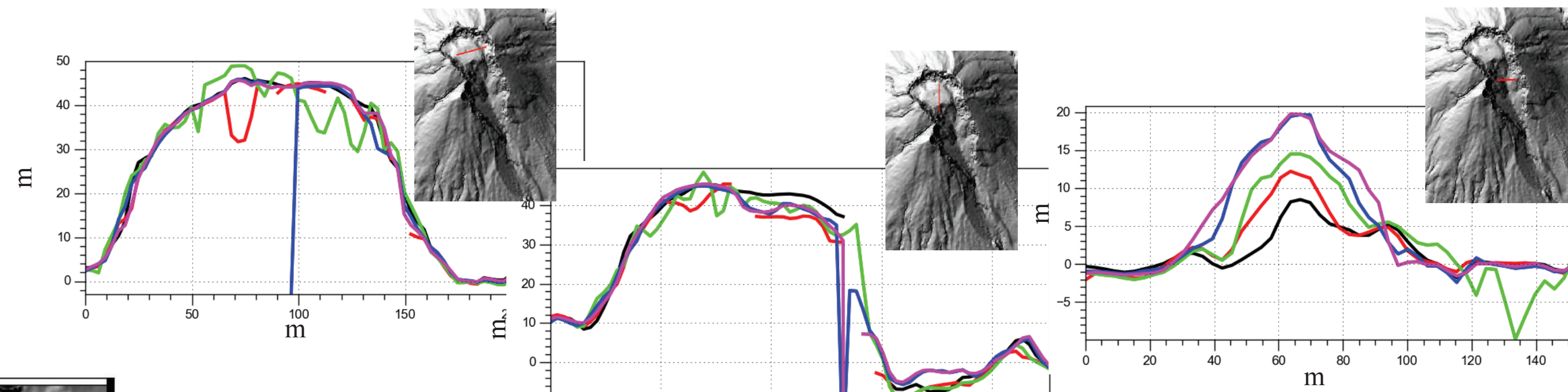
Pleiades panchromatic image (0.7m resolution)



DEM (3m resolution, 1m precision) produced with AMES Stereo Pipeline automatically coregistered (Berthier et al., 2007)



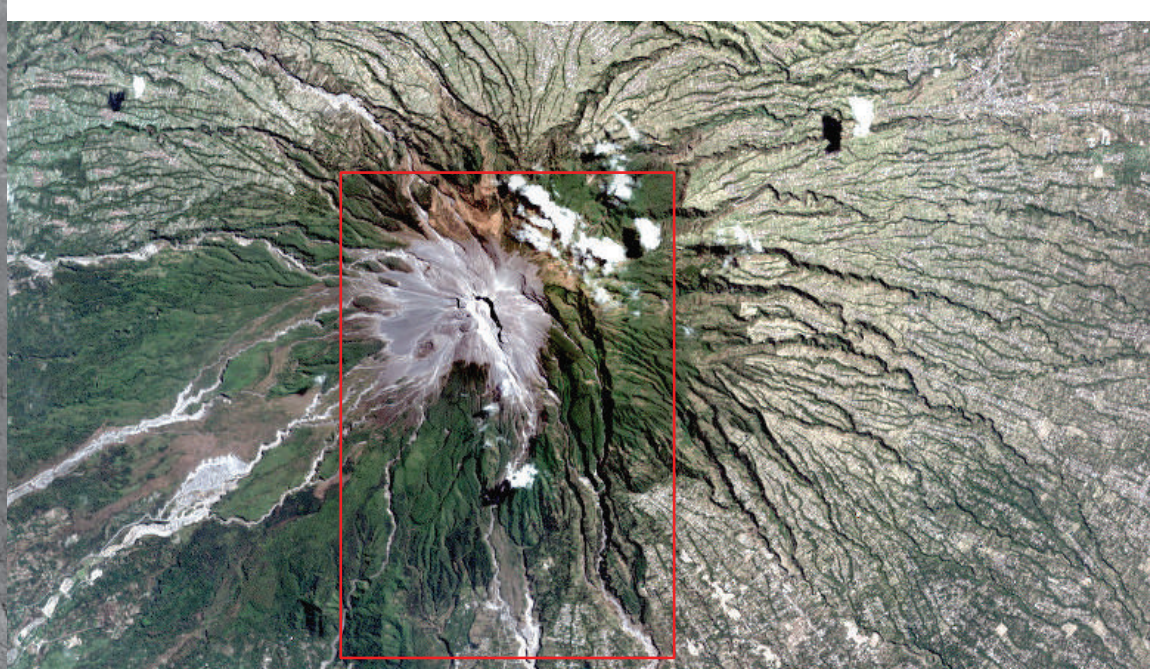
2019/02/26 / Reference



No significant growth of the dome since february 2019

Good agreement between Pleiades estimation and drone measurements

Pleiades image4 2019/08/21

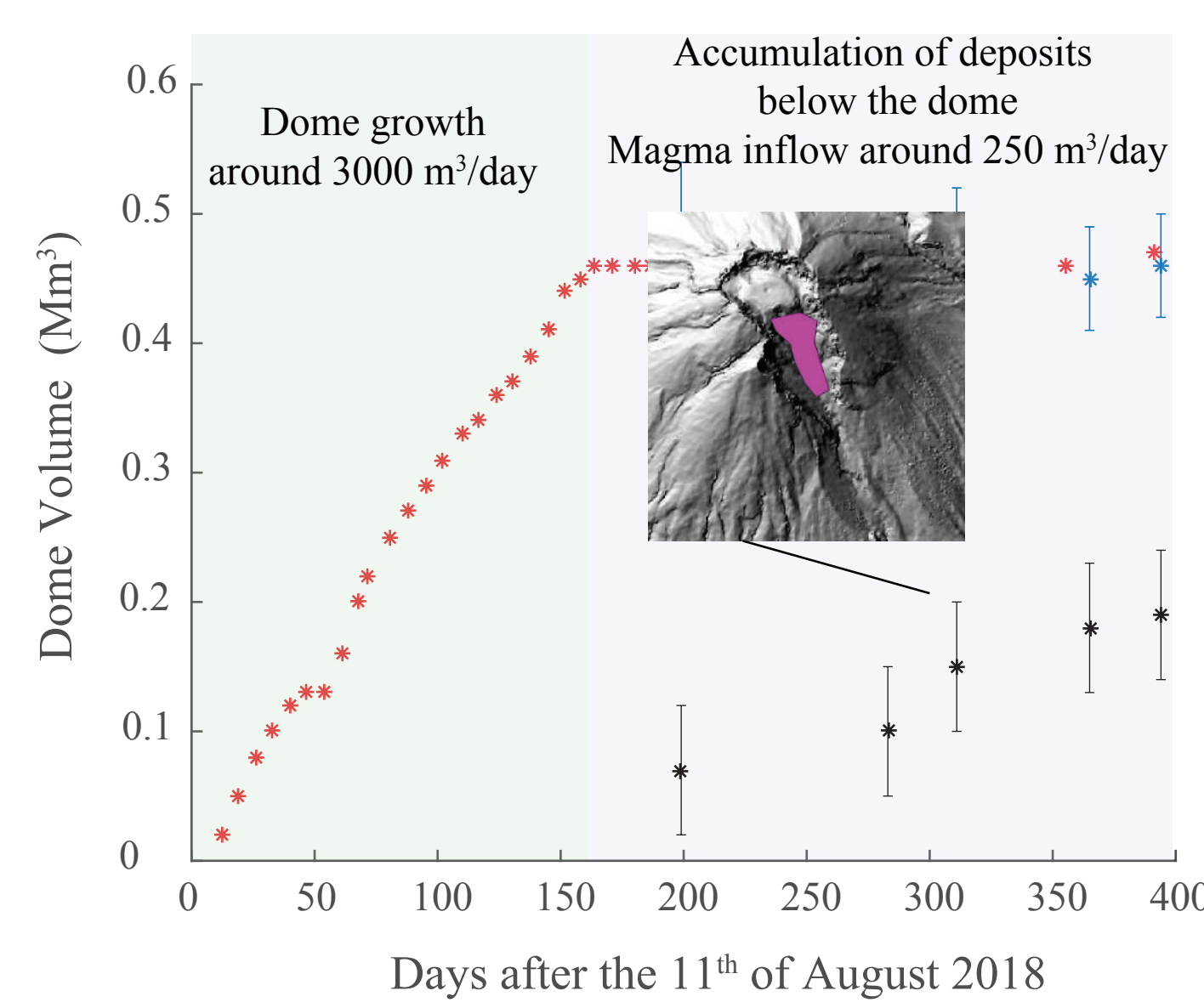


ISIS proposal submission

ISIS proposal accepted
Pleiades image1 2019/02/26

Pleiades image2 2019/05/21
Pleiades image3 2019/06/18
Pleiades image4 2019/08/21
Pleiades image5 2019/09/09

Tri-stereo images



Accumulation of deposits by dome destabilization a few hundreds of meters below the dome

No drone measurements available

Magma inflow is still going on

2018/05/11
phreatic eruption (→ 5.5 km high)

2018/06/01
phreatic eruption (→ 6 km high)

2018/08/17
New Dome