From: volcanicclouds@yahoogroups.com on behalf of MICHAEL J PAVOLONIS mpav@ssec.wisc.edu [volcanicclouds]
To: Volcanic Clouds
Cc: Andrew Tupper
Subject: Re: [volcanicclouds] Attention to Ulawun [SEC=UNCLASSIFIED]
Date: Wednesday, 26 June, 2019 10:14:27

Not sure if any of this useful or interesting...

The explosive eruption was preceded by the sudden appearance of a thermal anomaly. A few months ago, within VOLCAT, we started automatically computing the radiative power associated with volcanic thermal anomalies (known as volcano radiative power or VRP for short). The VRP exceeded 1 GW several hours prior to the formation of the umbrella cloud. VRP in excess of 1 GW is generally noteworthy and often precedes or is coincident with explosive events (it also occurs with intense effusive activity). VOLCAT generated an alert at about 01:40 UTC due to the rapid appearance of the thermal anomaly with VRP in excess of 2 GW (https://www.ssec.wisc.edu/~mpav/Ulawun_thermal_alert_VOLCAT.png). The VRP time series is also available: https://www.ssec.wisc.edu/~mpav/VOLCAT_thermal_time_series_new_Ulawun.png

The online version of VOLCAT did not detect the eruptive cloud(s) because Ulawun was not a volcano currently targeted for more precise interrogation. The Ulawun cloud vertical growth fell below the universal detection thresholds, but did exceed the thresholds applied to targeted volcanoes. I re-processed the data after labeling Ulawun as a target for enhanced processing and the cloud was detected. The animation of cloud properties up to 08:50 UTC is available at: https://www.ssec.wisc.edu/~mpav/volcat_ash_retv_ulawun.mp4. The corresponding autogenerated time series of areal expansion is also available (https://www.ssec.wisc.edu/~mpav/ulawun_time_series_area_mass.png). It may be useful for estimating mass eruption rate, if that is still a pertinent operational question. Also, using Himawari-8, the maximum height retrieved by VOLCAT is about 22 km (the anvil spreading height is lower).

Mike

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On Jun 26, 2019, at 3:30 AM, Andrew Tupper andrew.tupper@bom.gov.au [volcanicclouds] <volcanicclouds-noreply@yahoogroups.com> wrote:

The operational team will be pretty busy tonight – thoughts on mass eruption rate, height, SO2/ice/ash content (the usual issues in the umbrella cloud of course) will be helpful. For info, our current height of 19 km is a rough guess based on an approximate 10C warm intrusion above the tropopause, seen to the east of the volcano as that part of the overshoot drifted away. The overshoot directly above the volcano appeared to be supercooled and there's every chance that the maximum height was in the low 20 kms. Note also a good period of the umbrella cloud pushing northwards against the wind. This is now decreasing, which is good news, but I imagine the total mass of ejecta will make this one of the largest since Rabaul 1994 (it may exceed Manam 2005?).

Also for info, Japan are unable to give us rapid scan imagery for this one due to conflicting priorities. We'll have to make do with 10 minute multispectral data....

https://volcano.ssec.wisc.edu/imagery/view/#sector:New_Britain_750_m::instr:all::sat:all::image_type:RGB1112or13um_3911um_11um_Ash_Retv::endtime:latest::daterange:60

Andrew

From: Fred Prata <fred_prata@hotmail.com>
Sent: Wednesday, 26 June 2019 6:08 PM
To: Andrew Tupper <andrew.tupper@bom.gov.au>
Cc: Volcanic Clouds <volcanicclouds@yahoogroups.com>
Subject: Re: [volcanicclouds] Attention to Ulawun [SEC=UNCLASSIFIED]

Thanks, Andrew. That is a big one for us tropical SH types. Let me know if you need any help with this.

Regards

Fred

On 26 Jun 2019, at 16:15, Andrew Tupper andrew.tupper@bom.gov.au [volcanicclouds] <volcanicclouds-noreply@yahoogroups.com> wrote:

Hi all – if too much volcanic ash is barely enough, Ulawun (Papua New Guinea) right now is your fix. I'll let others share the pretty pictures, but it appears to have reasonable stratospheric penetration in the overshooting top.

Andrew

Posted by: MICHAEL J PAVOLONIS <mpav@ssec.wisc.edu>