**Supplementary Material 2**

**Smithsonian Institution’s Global Volcanism Program bulletin reports referring to rainfall**

The following are excerpts from the Smithsonian Institution’s Global Volcanism Program (GVP) Bulletin Reports which indicate a link between heavy or extreme rainfall and volcanic activity in Indonesia. Note that because of the abundance of reports that link rainfall with lahar events (secondary remobilisation of volcanic deposits), these are not included. Relevant bulletins were identified programmatically using the GVP webservices interface. The following are illustrative examples relevant to the Article, rather than an exhaustive list.

Egon (Indonesia):

“*This first Bulletin report discussing Egon describes the sudden appearance of volcanic activity there in January 2004. Heavy rains fell over Egon and its surrounding area on 28 January … followed at 1700 by an explosion and a black ash cloud rising ~ 750 m above the summit*” [1]

Karangetang (Indonesia)

 “*A sudden eruption at Karangetang on 6 August 2010 occurred without warning and caused considerable damage … four people were confirmed dead and five were injured …* [An official noted] *that the volcano erupted just after midnight when water from heavy rains had penetrated the volcano's hot lava dome, causing the explosion*.” [2]

Lokon-Empung (Indonesia):

“*The phreatic eruption was triggered by extensive rainfall; specifically, 602 mm of rain fell during January 2002 compared to 193 mm during December 2001. This excessive rainfall was thought to cause instability of the edifice.*” [3]

*“*[O]*n 22 February 2011, a phreatic eruption … was possibly triggered by high rainfall*” [4]

**References**

[1] Global Volcanism Program, 2004. Report on Egon (Indonesia) (Wunderman, R., ed.). *Bulletin of the Global Volcanism Network*, 29:3. Smithsonian Institution.<https://doi.org/10.5479/si.GVP.BGVN200403-264160>.

[2] Global Volcanism Program, 2011. Report on Karangetang (Indonesia) (Wunderman, R., ed.). *Bulletin of the Global Volcanism Network*, 36:1. Smithsonian Institution.<https://doi.org/10.5479/si.GVP.BGVN201102-267020>.

[3] Global Volcanism Program, 2002. Report on Lokon-Empung (Indonesia) (Wunderman, R., ed.). *Bulletin of the Global Volcanism Networ*k, 27:2. Smithsonian Institution.<https://doi.org/10.5479/si.GVP.BGVN200202-266100>.

[4] Global Volcanism Program, 2011. Report on Lokon-Empung (Indonesia) (Wunderman, R., ed.). *Bulletin of the Global Volcanism Network*, 36:6. Smithsonian Institution.<https://doi.org/10.5479/si.GVP.BGVN201106-266100>.