



Morphological change of the Anak Krakatau volcano, Indonesia following the tsunami-generating flank collapsed as detected by multitemporal optical, infrared and radar satellite data.

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The cone volcano Anak Krakatau, which is largely built on the steep northeast caldera wall of the 1883 Krakatau eruption, is currently featuring activity on its southwest slope and thus growing into the 1883 caldera and this position makes the edifice unstable. On 22 December 2018, tsunami took place in Sunda strait, the deadliest in this area since the 1883 Krakatau eruption. We have collected multitemporal datasets from the multisensory (radar, thermal, multi-spectral) satellite images to assess the changes in the form of the Anak Krakatau edifice following the collapse and to evaluate if these changes may be related to the formation of the tsunami.

The capacity of radar to penetrate clouds as well as ash plume are an advantage for observations during the eruption. Radar images from Sentinel-1 indicate that the SW flank of Anak Krakatau collapsed on 22 December 2018. Hence, it is likely that this collapse generated the tsunami in Sunda strait. Comparing radar imagery from 10 December 2018, 22 December 2018 and 25 December 2018 indicates further changes to SW flank of Anak Krakatau, estimated $\sim 0.49 \text{ km}^2$ of the area have been lost after the initial collapse. According to the thermal and optical satellite, during 17-19 February 2017 produced a relatively extensive lava that flow down the SW flank then the eruption continues from the end of June 2018 to December 2018. The loading of these new additions of erupted material onto SW slopes of Anak Krakatau lead the possible trigger for the collapse. Eventually, the over steepening of the flanks reaches a critical point and it collapse. The integration of multitemporal remote sensing datasets gives insight of the eruptive activity, dynamic from the surface and detection of the collapse which possible induced tsunami in Sunda strait.