

## CEDIM Forensic Disaster Analysis Group (FDA)

### Volcano-Tsunami Anak Krakatoa

Information as of 2 April 2019 – Report No. 1

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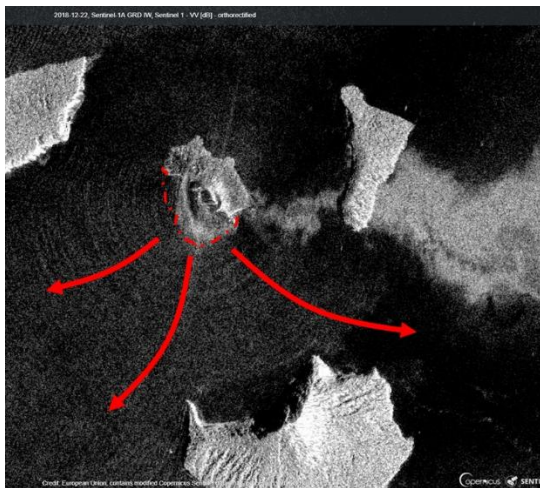
#### SUMMARY

Official Disaster Name	Date	Arrival UTC	Local
<b>2018 Sunda Strait Tsunami</b>	<b>22-12</b>	<b>14 UTC</b>	<b>+7</b>

#### Location Information:

Country	ISO	Dev. Region	Most Impact	Building PF	HDI (2018)	GDP (2017)	Pop. (2017)
<b>Indonesia</b>	<b>IND</b>	<b>Sumatra, Java</b>	<b>Banten</b>	<b>Below Avg</b>	<b>0.694</b>	<b>\$42.2bn</b>	<b>12.4 mill.</b>

#### Hazard Information



Anticipated movement direction of the tsunami-causing volcano landslide, imagery taken from sentinel-1a.

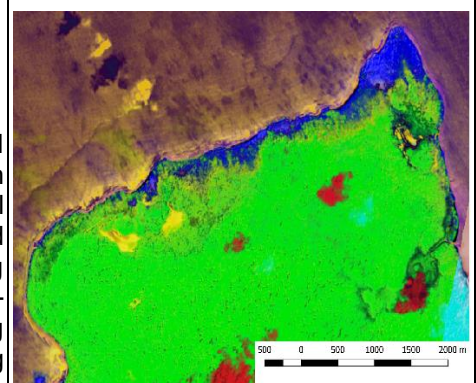
Anak Krakatoa is the successor volcano of the great Krakatoa which erupted in 1883. The volcano is known for its significant growth during the last decades. On Dec. 22<sup>nd</sup>, 2018, after a probable eruption of the volcano, parts of its South-Western flank slid into the ocean including an unknown underwater volume. This landslide triggered a tsunami which affected almost all coasts in the Sunda Strait within 30-50 min. Since the local time was in the early evening, the tsunami waves arrived at the coasts without great visual clues such as receding water leaving the people unprepared. In Lampung, the tsunami wave coincided with a high tide leading to an amplification. The wave pattern led to very local major inundations of up to 6m and 1-3m in a wider area.

Quickly after the flank collapse, the volcano continued with major eruptive activity for several weeks including various stronger exposures, leading to a significant loss of mass, reducing its height by about 220m.

#### Preferred Damage Information:

Description: *Local major inundation in Banten and Lampung, run-up of 1-3m (up to 6 at a few places).*

The tsunami reached the coasts of Banten within 30min and Lampung after 40min. Various coastal buildings have been destroyed. Many fatalities occurred directly at the coasts. The local tsunami warning system was built for earthquake-tsunamis triggered by seismic waves. Due the nature of this event, the available warning system was not able to respond. Seismic stations recorded a low-frequency seismic signal at the time of the tsunami triggering corresponding to a magnitude-5 earthquake reflecting the shaking signal of the moving landslide. This earthquake-equivalent signal was insufficient to trigger a tsunami warning. Warnings due to the eruptive activity prior to the tsunami were in place for the direct vicinity of the volcano (1.2 km radius).



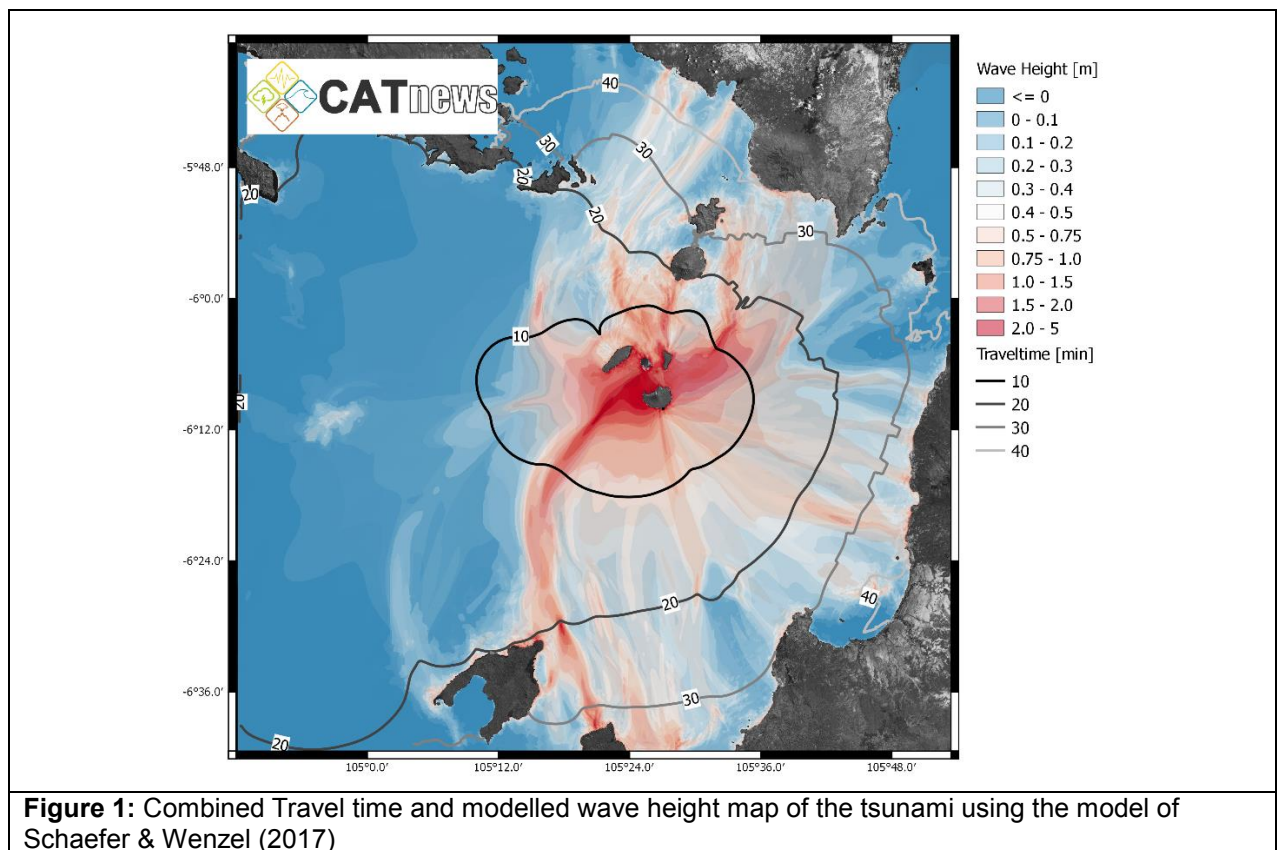
Inundation at Ujung Kulon, Banten indicated with blue colours, resolved from sentinel-2

**Preferred Social Impact Information:**

Type	Total	Description (top 3 affected locations)	Source
Deaths	<b>453</b>	Pandeglang:304, Lampung Selatan:126; Serang: 21	BNPB
Injuries	<b>14059</b>	Pandeglang:7656, Lampung Selatan:4007; Serang:2395	BNPB
Homeless/Displaced	<b>41132</b>	Pandeglang:28139, Lampung Selatan:7942; Serang:4820	BNPB

**Preferred Current Economic Impact Information:**

Type	Value	Description	Source
Destroyed Units	1188	Collapsed or washed away	BNPB
Damaged Units	1585	Including minor, moderate and severe structural damage	BNPB
Ships	510	Mostly small fishing boats	BNPB
<b>Total Loss</b>	Rp800 bn. \$56 mn USD	Total capital damage including infrastructure, residential, public, businesses and tourist facilities	CATDAT (combination ground reports and modelling)



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