

The banner features the Vaisala logo in white on a blue background. To the right, a photograph shows a landscape with mountains and trees under a dark, stormy sky with multiple bright lightning bolts striking down.

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Performance of GLD360 During the Anak Krakatau Explosive Event of December 2018

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Abstract

Volcanoes are hazardous to air travel and pose significant risk to life and property. There are 40-50 ongoing volcanic eruptions around the world at any given time, with an average of nearly 80 eruptions per year. Many of these eruptions produce lightning. Volcanic lightning was once known only from first-hand reports but lightning detection techniques have given volcanologists and atmospheric scientists the ability to identify more eruptions that produce lightning, and in remote places.

Known most for its explosive eruption in 1883, Krakatau is an active volcano between the islands of Java and Sumatra in Indonesia. Its most recent eruption has been underway since June 18, 2018, and on 22 December 2018, an explosive event began that lasted until 28 December. During this event, the southern flank of the Anak Krakatau cone collapsed, triggering a fatal tsunami. Throughout the seven-day event, extremely high lightning flash rates were recorded in the ash plume. Vaisala's Global Lightning Dataset GLD360 detected more than 300,000 lightning events in this time, the most lightning ever detected during an eruption.

This paper reviews the Krakatau explosive event of December 2018 and is focused on documenting and characterizing the lightning in the plume. We also discuss the challenges associated with lightning detection when a large number of lightning events remain relatively stationary for a long period of time.

Topic Areas

Lightning Detection Systems Technology and Performance, Aviation and Other
Unique Uses of Lightning Data

Submission Format

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