



**Case studies that illustrate the hazard
(aka, "Fifty shades of failure")**

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Encounters of Aircraft with Volcanic Ash Clouds: A Compilation of Known Incidents, 1953–2009

By Marianne Guffanti, Thomas J. Casadevall, and Karin Budding

ABSTRACT



**Encounters of Aircraft with Volcanic Ash Clouds:
A Compilation of Known Incidents, 1953–2009**

By Marianne Guffanti, Thomas J. Casadevall, and Karin Budding

We actively seek corrections and additions to the information presented here. Persons who have corrections or additional data pertaining to incidents already in the Database or who have data about previously unreported incidents are urged to contact the authors.

Data Series 545
Version 1.0

U.S. Department of the Interior
U.S. Geological Survey

Information about reported encounters of aircraft with volcanic ash clouds from 1953 through 2009 has been compiled to document the nature and scope of risks to aviation from volcanic activity. The information, gleaned from a variety of published and other sources, is presented in database and spreadsheet formats; the compilation will be updated as additional encounters occur and as new data and corrections come to light. The effects observed by flight crews and extent of aircraft damage vary greatly among incidents, and each incident in the compilation is rated according to a severity index. Of the 129 reported incidents, 94 incidents are confirmed ash encounters, with 79 of those having various degrees of airframe or engine damage; 20 are low-severity events that involve suspected ash or gas clouds; and 15 have data that are insufficient to assess severity. Twenty-six of the damaging encounters involved significant to very severe damage to engines and (or) airframes, including nine encounters with engine shutdown during flight. The average annual rate of damaging encounters since 1976, when reporting picked up, has been approximately 2 per year. Most of the damaging encounters occurred within 24 hours of the onset of ash production or at distances less than 1,000 kilometers from the source volcanoes. The compilation covers only events of relatively short duration for which aircraft were checked for damage soon thereafter; documenting instances of long-term repeated exposure to ash (or sulfate aerosols) will require further investigation.

Of 38 source volcanoes, 8 have caused 5 or more encounters, of which the majority were damaging: Augustine (United States), Chaiten (Chile), Mount St. Helens (United States), Pacaya (Guatemala), Pinatubo (Philippines), Redoubt (United States), Sakura-jima (Japan), and Soufriere Hills (Montserrat, Lesser Antilles, United Kingdom). Aircraft have been damaged by eruptions ranging from small, recurring episodes to very large, infrequent events. Moderate-size (Volcanic Explosivity Index 3) eruptions are responsible for nearly half of

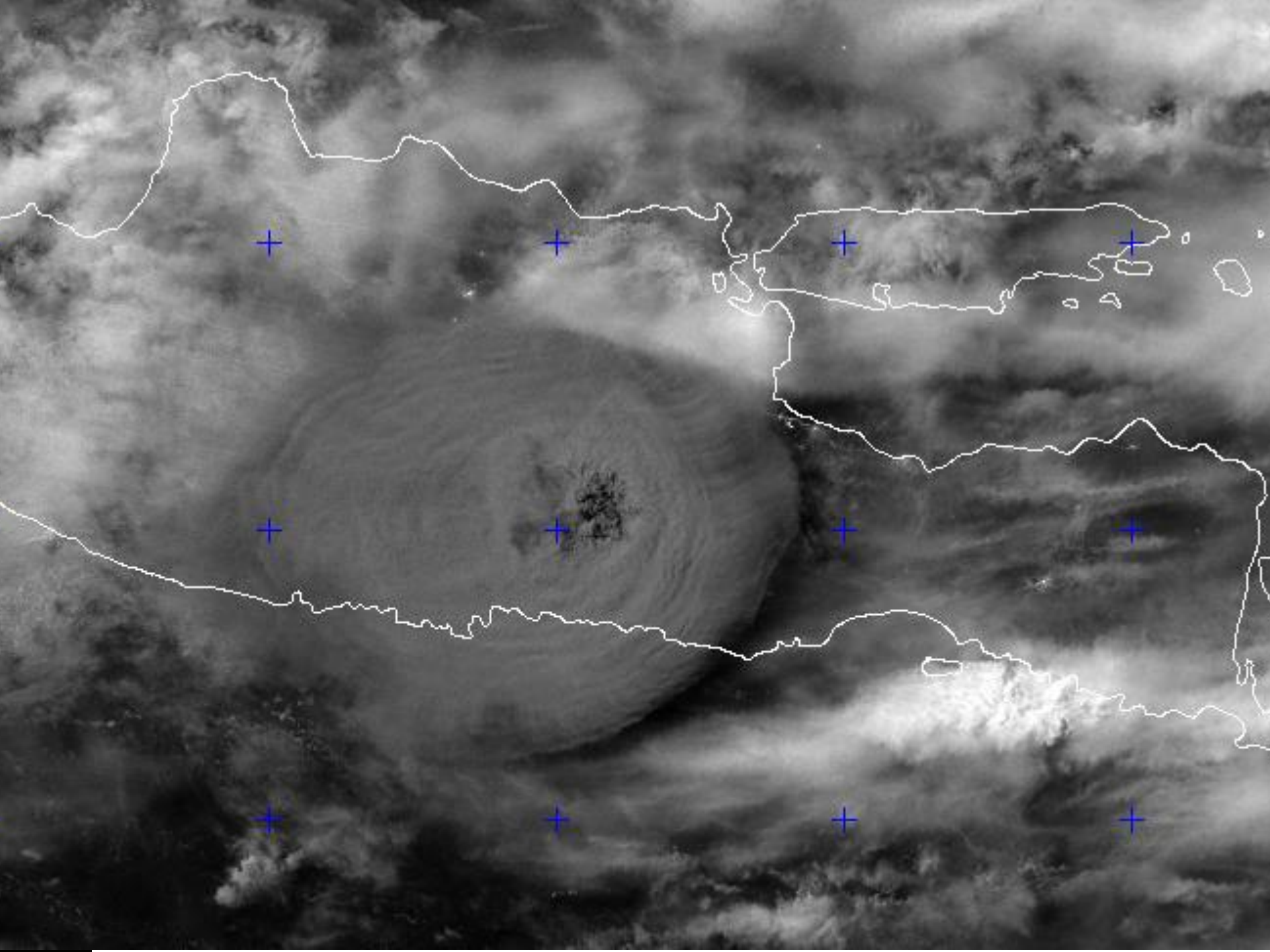
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Remember that ash cloud? It didn't exist, says new evidence

By SEAN POULTER
Last updated at 10:28 AM on 26th April 2010

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Britain's airspace was closed under false pretences, with satellite images revealing there was no doomsday volcanic ash cloud over the entire country.

Skies fell quiet for six days, leaving as many as 500,000 Britons stranded overseas and costing airlines hundreds of millions of pounds.

Estimates put the number of Britons still stuck abroad at 35,000.



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Don't Waste money on protein powder creatine. I found a ***FREE*** way to get ripped without killing myself at the gym or dieting.

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Model was in good spirits (and a very short dress)



