

Smoked Out: Why Volcanic Ash and Planes Fight for the Same Small Airspace



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As the vast ash cloud from Iceland's volcano spreads over the Europe, flights to two thirds of European countries were delayed or canceled on Friday. Although flying through the ash isn't always deadly, the sheer volume of the volcanic output over England is enough to shut down Heathrow airport until the skies clear.

But this shutdown, with global consequences and no real end in sight, isn't just bad luck: it's science. Volcanic ash and airplanes are both drawn to the same airspace—the jet stream—making plane routes especially susceptible to attracting volcanic ash.

The jet stream, the channels of fast-moving air that crisscross the planet, are created by the tension between warm and cold air masses. Traveling from west to east, their narrow corridors make for great plane routes; the momentum the planes gain when pushed by the fast-moving air saves airlines time and money. But the stream also attracts volcanic ash, according to a September 2009 article in the *Journal of Volcanology and Geothermal Research*.

"Plumes tend to be selectively injected into the jet stream," says coauthor Marcus I. Bursik, Ph.D., an expert on volcanic plumes and their effect on aviation safety at the University of Buffalo. That's because the fast-moving air both attracts the ash plumes and prevents them from moving higher in the atmosphere: swept up in the air currents, the plumes lose density and can no longer continue to rise. Trapped in the jet stream, they clog the airways.

Together with researchers at the University of Alaska, Bursik recently proposed a new project that would improve tracking estimates of where the clouds are going. By using available data and modeling tools, scientists would be able to better understand how the ash is distributed in the atmosphere in order to avoid disruptions in air traffic. With such data in hand, pilots would have a much better view of the route during and after a volcanic eruption and ways to navigate around the ash plumes.

But until then, British flights are grounded and European travel disrupted. The ash has taken over the airways.

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