

Water plus magma = increased explosivity

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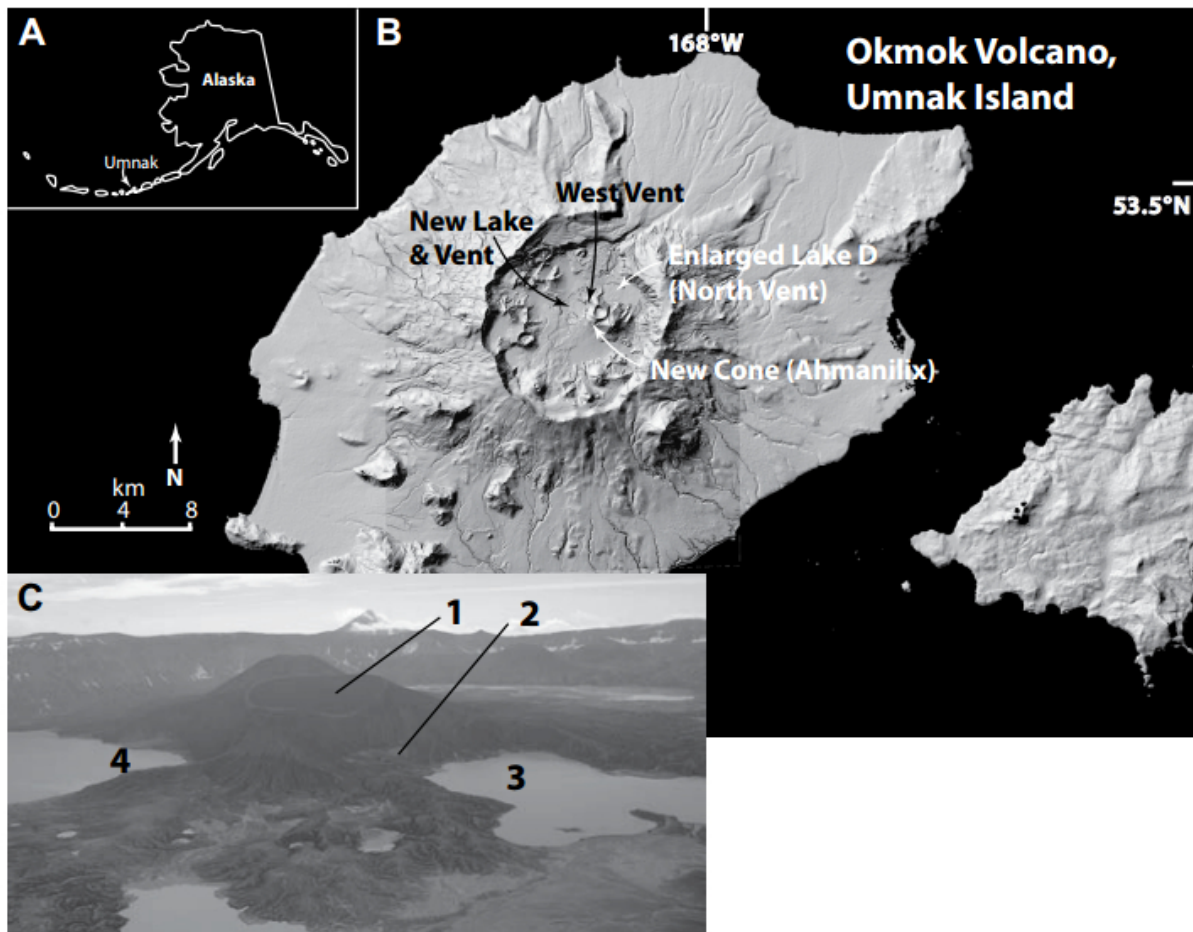


Figure 1. (A) Location of Okmok volcano on Umnak Island in central Aleutian Islands. (B) Digital elevation map of Okmok caldera with locations of several features related to the 2008 eruption. (C) Photo of the vent area of the Okmok 2008 eruption, from the north. Vent localities are denoted by numbers (not in order of activity): 1—Ahmanilix tuff cone, 2—west vent, 3—new lake vent, 4—north vent. Field view is about 2 km wide.

Figure 1 from Unema et al., including the location of Okmok volcano on Umnak Island in central Aleutian Islands.

When water interacts with magma, it can dramatically increase the explosivity of the eruption. However, water in the eruption cloud can also increase the rate at which the particles aggregate into larger clumps, allowing them to settle out faster.

The five-week-long 2008 Okmok eruption in the Aleutian Islands of Alaska was explosive due to the interaction of the magma with the abundant [water](#) inside the caldera, producing billowing clouds that deposited most of the tephra as fine-grained [ash](#) within 10 km of the vent area. The first four hours of the eruption produced coarse tephra that extended well offshore of Umnak Island, but the remainder deposited ash as ash pellets and as muddy rain and mist. This plume scrubbing likely reduced any aviation hazards.

This paper by Joel A. Unema and colleagues describes the stratigraphy, distribution, and grain size, shape, and composition characteristics of the medial to distal deposits of the 2008 Okmok eruption. These are used to interpret water-magma interactions in the conduit and eruption column, eruption parameters (e.g., volume, column height, mass flux), and fragmentation style. Unema and colleagues then compare the Okmok eruption with the Eyjafjallajökull [eruption](#) of 2010.

More information: Joel A. Unema et al. Water-magma interaction and plume processes in the 2008 Okmok eruption, Alaska, *Geological Society of America Bulletin* (2016). [DOI: 10.1130/B31360.1](https://doi.org/10.1130/B31360.1)

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