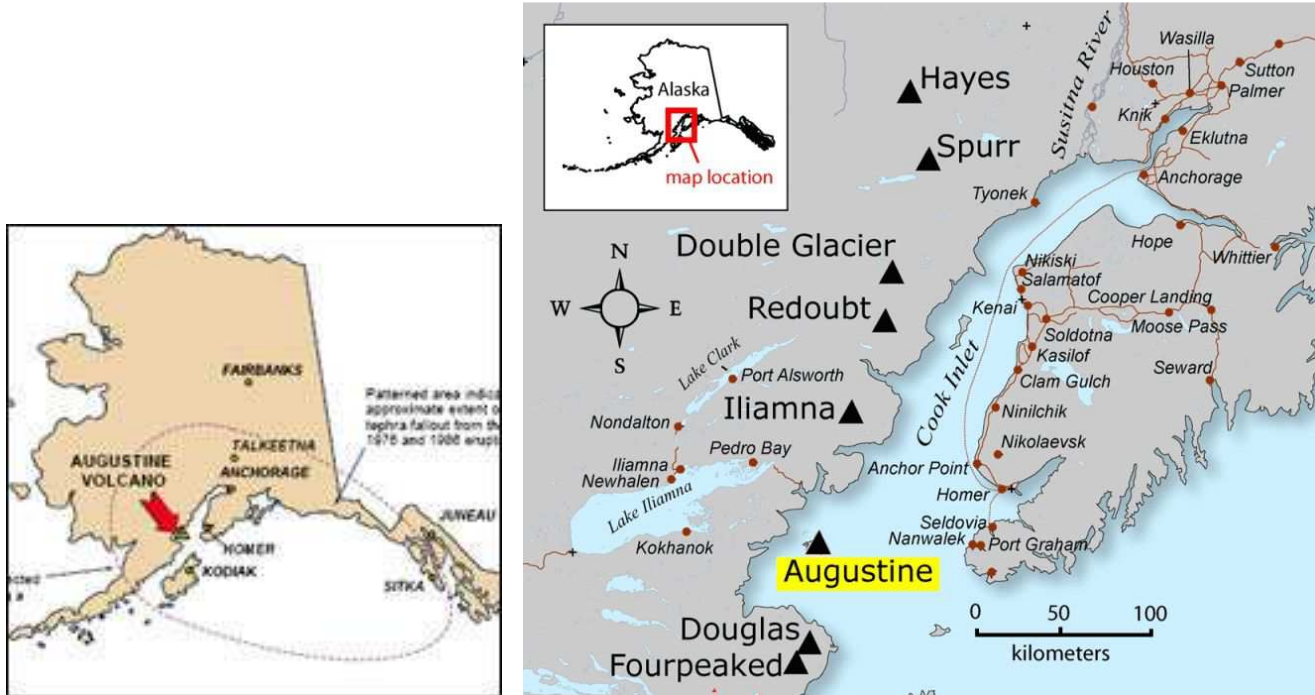


# Augustine Volcano (Island) - Alaska

The volcano forms Augustine Island in opening of Cook Inlet, southcentral coastal Alaska. Anchorage is to the northeast at the end of the Cook Inlet. The irregular coastline of Augustine Island is due to the repeated catastrophic collapse of the summit dome, forming debris avalanches down the flanks and into Cook Inlet. The island is mainly made up of past eruption deposits. The nearly circular uninhabited island formed by Augustine Volcano has a nearly symmetrical central summit with an altitude of 4,134 feet.



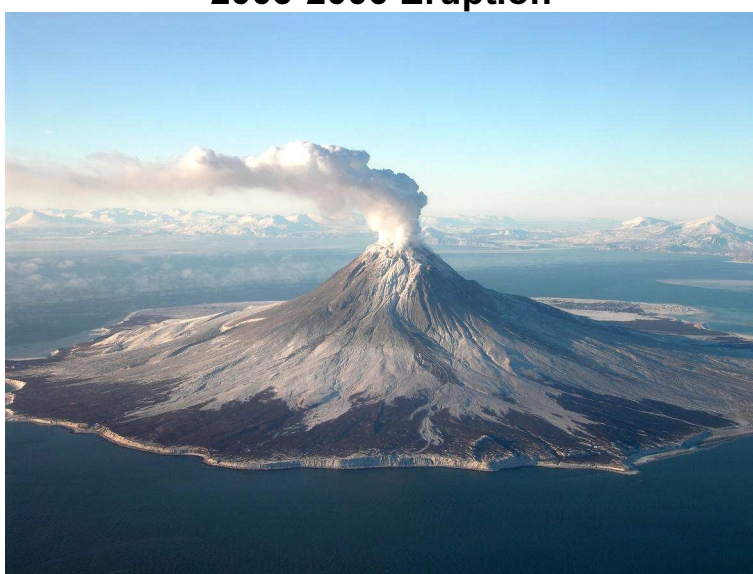
Augustine Volcano is a stratovolcano consisting of a central complex of summit lava domes and flows surrounded by an apron of pyroclastic, lahar, avalanche, and ash deposits. The volcano is frequently active, with major eruptions recorded in 1883, 1935, 1963–64, 1976, 1986, and 2006. The large eruptions are characterized by an explosive onset followed by the quieter effusion of lava.



1976 and 1986 eruptions deposited ash over Anchorage and disrupted air traffic throughout the area



### 2005-2006 Eruption



The eruption consisted of phases, starting in April 2005 and continuing through March 2006. The precursory phase began as a slow, steady increase in microearthquake activity beneath the volcano. The number of located VT earthquakes slowly increased from an average of one to two per day in May 2005 to five to six per day in October 2005 to 15 per day in mid-December 2005. In December of 2005 a series of small phreatic explosions were clearly recorded on the Augustine seismic network. Then, vigorous steaming from the summit area, a new vigorous fumarole on the summit's southern side, and a light dusting of ash on the volcano's southern flanks. A strong plume of steam and gas extended to the southeast. Between December 2005, and January 2006, seismicity rates were strongly elevated, with more than 420 earthquakes located by the AVO. Much of this activity occurred in spasmodic bursts similar to those observed before the 1986 eruption.

The volcano erupted on January 11, 2006, entering a second "stage", which would continue until January 28. Tectonic earthquakes began early in January, resulting in an explosive Volcanic Explosivity Index 3 eruption later in that day. Several ash columns were generated, each 6 miles above sea level; these plumes were steadily influenced to the north and northeast of the volcano. Samples of the tephra were dense, insinuating that the lava released was mature. Six explosions were recorded by seismic instruments between January 13, the first of these consuming a seismograph and a CPGS located on the northwestern flank. Ash columns now reached 9 miles and Kenai Peninsula residents reported ash deposits. On January 16, a new lava dome was observed on the summit; and the next day another explosive eruption sent ash 8 miles into the atmosphere. This explosion created a 20-30 meter wide crater in the new lava dome.

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### **1883 Eruption and Tsunami**

Why did the early eruption cause a tsunami but not the more recent eruptions?

Looking at the photos above of this volcanic island, you'll note the large 'apron' at its base. Evidently, it takes a tremendous debris slide into the Cook Inlet to cause a tsunami.

Here is a quote from 1883:

" This morning at 8:15 o'clock, 4 tidal waves flowed with a westerly current, one following the other . . . the sea rising 20 feet above the usual level. At the same time the air became black . . . and it began to thunder."

In 1883, the extreme tides of Cook Inlet saved the village from being swamped. Because the Augustine-induced tsunami happened at low tide, the 20-foot rise of the sea had the same effect as a random high tide. Researchers think perhaps a few kayaks were lifted away and a few shelters were destroyed, but no one was killed.

In 1883 the north side of the Augustine dome collapsed into the sea. People in Anchorage were concerned when in 1986, Augustine erupted again. The dome did not collapse, but there remained a concern that it might collapse with the next large eruption. The 2006 eruption has come and gone and still no collapse or tsunami, but it just a matter of when...

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