

Students:

The “AleutianModel.kmz” and “AleutianData.kmz files serve as solutions to this exercise.

Answer the following questions:

(i) *Compare the crustal thickness in different parts of the block.* The crust is thinnest at the south end of the block - about 5 km. It thickens to about 28 km under the volcanic center and then thins slightly at the north end of the block, reflecting extension in the back-arc basin (Bering Sea).

(ii) *What is the approximate angle of subduction in this region?* The initial angle of subduction at the surface is about 12 degree, increasing to about 27 degrees with depth.

(iii) *About how far is it from the trench to the volcanic arc?* About 120 km, which is typical for island arcs worldwide.

(iv) *Why is the Aleutian Arc arcuate? [hint: what would happen if the block were made twenty times as wide as it is?].* If the block were extended laterally, its sides would be floating in space. Island arcs are arcuate because subduction is happening on a sphere.