

How high is Mount Whitney? Depends on when you ask

John Cox, Bakersfield Californian, 4-17-13

It won't make hiking to the top any easier, but Mount Whitney is officially five feet shorter than everyone thought.

Based on new estimates of Earth's average sea level, the highest peak in the contiguous United States has been reset at an even 14,500 ft., according to the U.S. Geological Survey.

That's still at least 60 feet higher than the No. 2 peak, Colorado's Mount Elbert, but well below Alaska's high point, 20,320-foot Mount McKinley.

Geologists say the new estimate's impact is probably minimal, given that the surrounding area's elevation likely hasn't changed relative to Mount Whitney. But it could force recalibration of official maps, which would affect land surveying work.

Mount Whitney, named after a former state geologist, is located on the border of Inyo and Tulare counties in the Sierra Nevada. One of the West Coast's most important geological landmarks, it is a popular destination for hikers and sightseers.

The mountain's official height has risen and fallen many times over the years as altitude-measuring technology has improved. In the mid-19th century, state geologists would lug barometers made of mercury and glass tubes up mountain trails to take air pressure readings.

In the early part of the last century, surveyors relied on a network of known elevations to triangulate the altitude of various peaks. More recently, geologists have turned to the satellite-based Global Positioning System.

Only a few years ago, the USGS changed Mount Whitney's official altitude from 14,494 feet to 14,505. That was based on a new understanding of the Earth's pear-like shape, called the geoid.

The government's best guesses notwithstanding, Mount Whitney is actually rising as a result of geologic forces, not falling.

Cal State Bakersfield geology professor Jan Gillespie said there are two theories for why the mountain is slowly getting taller. One is that "mantle drip" beneath Tulare Lake is propping up the surrounding area, including Mount Whitney, even as it gradually lowers the Central Valley.

A more recent theory is that part of the earth's surface broke off from the North American Plate as it was being forced under by the opposing Pacific Plate. Gillespie said this theory holds that the broken section has floated up and is now buoying the North American Plate -- and Mount Whitney along with it.

There may be practical implications of Mount Whitney's fluctuating peak. The National Geodetic Survey, which tracks changes to the Earth's surface caused by things like oil field subsidence, uses mountain peaks and other elevations as benchmarks for the data that it updates and shares with land surveyors.

"Elevations are constantly changing throughout the United States," said Donald Britton, a surveyor with McIntosh & Associates in Bakersfield. He added that any revised estimate would not affect past surveying projects but could change the numbers used in future jobs.

Scientists have their own reasons for monitoring mountaintop elevations. Chris Wills, a supervising engineering geologist with the California Geological Survey, said the agency takes an interest in peak elevations because of

what they say about gradual changes in Earth's surface.

"That has implications for both the ancient history of the area and what can happen next: Where are you likely to see rock falls or landslides or floods?" he said.

How long the latest estimate will stand is anyone's guess. A technical information specialist at the USGS, Mitch Adelson, said technological advancements will likely continue to refine the latest estimate, which he found "sort of weird" because it is a round number.

"There are always little changes," he said. "Accuracy things always change a little bit."

But does this mean Mount Elbert is nipping at Whitney's heels?

Probably not, said Wills. He explained that revised estimates tend to be within the range of a few feet, not tens of feet.

"It's not important to anybody except the egos of a few mountain climbers and some tourism promoters," he said.