

A record close shave: Asteroid 2020 VT4 just skimmed by Earth

18 November 2020, by David Dickinson



Artist's impression of an asteroid passing the Earth.
Credit: [ESA/P. Carril](#)

Wow. A low-flying space rock set a record last Friday (appropriately, the 13th), when 2020 VT4 passed just under 400 kilometers (250 miles) over the Southern Pacific.

The asteroid was spotted by the Asteroid Terrestrial-impact Last Alert System (ATLAS) survey at the Mauna Loa Observatory in Hawaii in the early morning hours of Saturday, November 14, just 15 hours after approach. This is not uncommon for fast-movers, especially asteroids that are coming at the Earth from our sunward blind spot, like 2020 VT4.

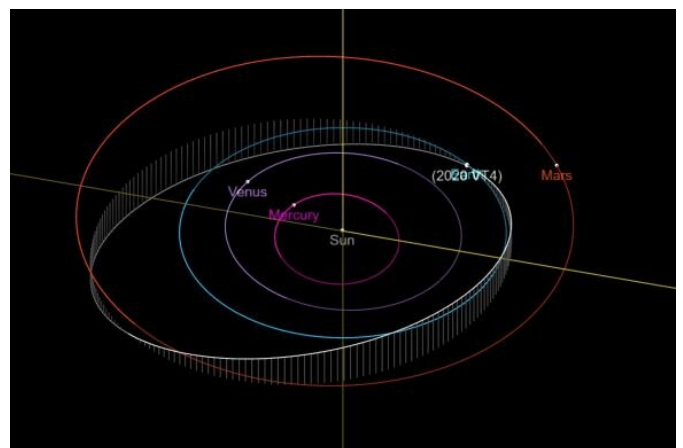
The asteroid- 2020 VT4 is estimated to be 5 to 10 meters (16-32 feet) across, about the size of a small house. Earth just missed occupying the same space as the perihelion point for the asteroid, which occurred just 20 hours prior to Earth passage.

This sets a record for the closest documented non-meteoroid asteroid pass versus the Earth. This

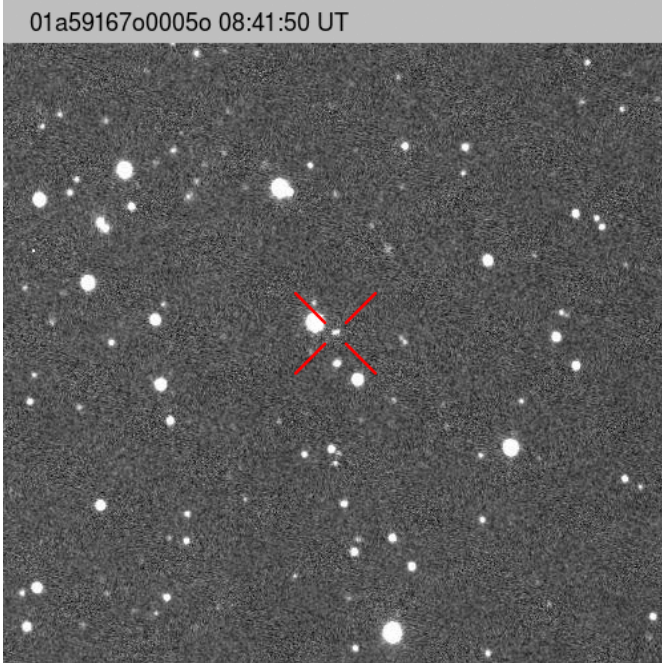
record was already broken once this year, with the passage of asteroid 2020 QG 3,000 kilometers (1,864 miles) from the surface of the Earth on August 16. A brilliant bolide was captured on video on the afternoon of August 10, 1972, as it became a brilliant daytime fireball over the Grand Teton Mountains in Wyoming before skipping back out of the Earth's atmosphere. Another recent record was set in October 2008, when astronomers spotted 4-meter (13 foot) asteroid 2008 TC3 19 hours prior to impact, and later recovered fragments in the Nubian Desert in northern Sudan two months later, making 2008 TC3 the first asteroid that was documented before and after impact.

Newly-discovered asteroid A10sHcN approached Earth yesterday, passing only a few hundred miles above the South Pacific Ocean. This encounter shortened its orbit, ensuring that this Earth-crosser will make more frequent close approaches. <https://t.co/TmkzozlZPf>
pic.twitter.com/XrnKiiGTyJ

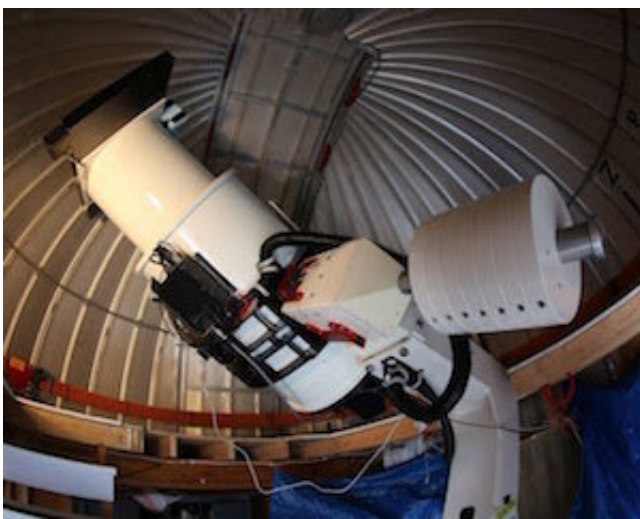
— Tony Dunn (@tony873004) [November 14, 2020](#)



The orbit (pre-Earth passage) of asteroid 2020 VT4.
Credit: NASA/JPL



Discovery images of asteroid 2020 VT4. The frame pictured is a quarter of a degree (15?) on a side. Credit ATLAS/Larry Denneau



The 0.5-meter ATLAS2 telescope on Mauna Loa. Credit: ATLAS-MLO

Unfortunately, the close passage of asteroid 2020 VT4 seems to have gone unwitnessed; closest approach occurred at 17:20 Universal Time (UT) on Friday November 13 over the South Pacific near the Pitcairn Islands under daytime skies, and it followed the edge of the Earth's shadow outbound. For context, the International Space Station also orbits 400 kilometers (250 miles) above the surface of the Earth, and is 109 meters (358 feet) from tip-to-tip... 2020 VT4 would have certainly been visible as a fast-moving, +3 magnitude 'star' on its outbound leg south of Tasmania in the pre-dawn sky had any island-bound observer or early morning sailor happened to be watching. No satellites (including the ISS, which was over the South Atlantic at the time) were affected by the passage of 2020 VT4, though it certainly did plow through the sphere of geostationary satellites and graze the ring of low Earth orbit.

This passage actually substantially altered the orbit of 2020 VT4. Inbound, the asteroid was on a 549-day orbit around the sun, inclined 13 degrees relative to the ecliptic. Its encounter with the massive Earth deflected it into a 315-day orbit inclined 10.2 degrees versus the ecliptic plane. With a perihelion now inside the [orbit](#) of Venus, this actually changes 2020 VT4's classification from a NEO Apollo Earth-crosser to an Aten asteroid.

2020 VT4 will next visit the Earth on November 13, 2052, with a much more distant 0.02 AU (1.8 million mile, nominal) pass.

2020 VT4's record will be hard to top—but 2020 is far from over.

Provided by Universe Today

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