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ASTEROID TOUTATIS

PASSES CLOSE BY,

BUT IT'S NOT

RISKIEST THREAT TO EARTH

by

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Over the next few days, Earth will have a familiar visitor: the yam-shaped asteroid 4179 Toutatis, which will come as close as 4.3 million miles as our planet, or about 18 times the distance between the Earth and the moon. Nearly 3 miles long on its widest face, Toutatis is one of the largest asteroids that is routinely observed near Earth – but there's no cause for nervousness on this pass, scientists say.



(Photo: NASA/Don Davis)

NASA keeps tabs on all near-earth objects, and their calculations say a civilization-ending impact from space -- like this artist's impression -- is rather unlikely over the next several hundred years.

"There is no danger of a collision with Earth," NASA Near Earth Object Program researcher Lance Benner said in a statement on Wednesday.

Toutatis, named after a god of ancient Gaul, was discovered in 1989 by French astronomer Christian Pollas. Its path brings it near Earth every 4 years, and its 2012 pass isn't even the closest it's come – in 2004, the asteroid flew by within less than a million miles of Earth. NASA estimates that Toutatis won't get that close again until 2562.

Scientists will be keeping a close eye on Toutatis during this flyby, to learn more about the object's unique composition and behavior. Toutatis has an unusual spin, wobbling like a botched football pass rather than spinning around an axis like most planets and asteroids.

"We already know that Toutatis will not hit Earth for hundreds of years," Benner said. "These new observations will allow us to predict the asteroid's trajectory even further into the future."

Benner and his colleagues at the NASA's Near Earth Object Program keep tabs on Toutatis and other celestial objects that swing near our planet. As of December 2012, 9,487 Near-Earth objects have been discovered.

One of the ways that the group rates the risk of asteroid or comet impacts is by the Torino Scale, which assesses both the likelihood of an impact and the possible resulting fallout. The Torino Scale runs from 0 – where the likelihood of a collision is effectively zero, or where an object is so small that it burns up in Earth's atmosphere – to 10, where a collision is certain and likely to cause global devastation. Impacts that rate a 10 on the Torino scale occur less than once every 100,000 years.

At the moment, the only objects that NASA's Near-Earth Object program rates above a 0 on the Torino Scale are two asteroids: 2011 AG5 and 2007 VK184, which both score a 1, meaning that a pass near Earth is predicted with no unusual level of danger. 2011 AG5, which is about 460 feet across, has a 1 in 500 chance of hitting the Earth in February of 2040; 2007 VK184, which is 426 feet wide, has just a 1 in 1,820 chance of colliding with us in June 2048.

In 2004, the asteroid 99942 Apophis caused a stir, when it seemed that there was a 2.7 percent chance that the 885-foot-wide object would strike Earth in April 2029. This earned Apophis a 4 on the Torino scale – the highest rating awarded by NASA thus far. Further observations seemed to eliminate the possibility of an impact, but in 2005, Apophis' rating was cranked up to 4 again when scientists speculated that the asteroid could pass through a 'gravitational keyhole' in 2029, setting the stage for an impact in 2036.

But more observations by scientists showed that the probability of Apophis passing through the keyhole was incredibly low, and the object's Torino rating was eventually lowered to 0, where it stands today.

Though Apophis isn't colossal in size, researchers think its potential fallout would be devastating, though not quite as apocalyptic as the Chicxulub impact, often implicated in wiping out the dinosaurs.

The NEO's risk page lists objects that pose the most significant threats to Earth over the next 100 years. One object that does not appear is the asteroid 1950 DA, which has at best a .33 percent chance of striking the Earth on March 16, 2880, making it one of the riskiest near-earth objects. While the odds are long, 1950 DA is relatively large – about two-thirds of a mile across – so its potential impacts could be devastating.

However, further observations over the next several hundred years could lower the risk of a collision with 1950 DA even further. And if the asteroid does need to be turned away from Earth, the solution could be as simple as scattering chalk, charcoal or white glass beads on the asteroid's surface, or sending a spacecraft with a solar sail to envelop 1950 DA. Then the sunlight bouncing off the asteroid's surface could be enough to push it out of harm's way.

"There is no reason for concern over 1950 DA," NASA says. "The most likely result will be that St. Patrick's Day parades in 2880 will be a little more festive than usual as 1950 DA recedes into the distance, having passed Earth by."

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