

Comet collision to come?

August 11 2011



This +2 magnitude February eta Draconid was filmed by Peter Jenniskens with one of the low-light-level video cameras of the Cameras for Allsky Meteor Surveillance (CAMS) station in Mountain View, California, at 07:59:24 UT on February 4, 2011. Credit: CAMS/SETI

New research shows that the Earth was impacted for a few hours by a stream of dust from a potentially dangerous comet on February 4, 2011.

A telegram was issued on July 10th by the Central Bureau for Astronomical Telegrams of the International Astronomical Union announcing that the Earth got impacted for a few hours by a stream of dust from a potentially dangerous comet last February 4.

“This particular shower happens only once or twice every sixty years,” says discoverer Dr. Peter Jenniskens of the SETI Institute and NASA Ames. “The stream of dust is always there, but quite invisible just

outside of Earth's orbit. Only when the planets steer the dust in Earth's path do we get to know it is there.”

Jenniskens heads the Cameras for Allsky Meteor Surveillance (CAMS) project in California. Since last October, the SETI Institute has teamed up with Fremont Peak Observatory and UCO/Lick Observatory in monitoring the night sky with low-light video cameras in an effort to map the meteor showers in the sky over the San Francisco Bay Area. They triangulate the meteor trajectories and determine their orbit in space.

The International Astronomical Union keeps score of showers that were claimed to exist in the past and now has a list of 300+ showers that need confirmation. Only 64 showers have been established so far. Jenniskens' goal is to establish many more.



The meteoroids were moving on a very elongated orbit, typical of long-period comets like Hale-Bopp (pictured above). Credit: Philipp Salzgeber

While reducing the Fremont Peak and Mountain View station observations from February 4, normally a night with not much going for it, Jenniskens discovered a handful of meteoroids that arrived at Earth from the exact same direction in the sky. The meteoroids arrived from the direction of the star Eta Draconis, and the shower is now recognized by the [International Astronomical Union](#) as the February Eta Draconids (FEDs for short). This was the first new shower discovered in the CAMS project, and a very unusual one at that.

The meteoroids in question were moving on a very elongated orbit, typical of that of long-period comets such as Hale-Bopp. Unlike Hale-Bopp, this one passes close to Earth's orbit. Long-period comets come back to the Sun only rarely and if any one is on a trajectory to hit the Earth, we could have little warning.

Now, Jenniskens has found the trail of crumbs of such a comet, which passed very close to Earth's orbit the last time it was near the Sun. That could have been only a few hundred years ago, or many thousands. At that time, the comet released a cloud of dust which is now returning. Some dust grains return earlier than others, depending on how elongated their orbit ended up being, and the result is a continuous stream of returning dust grains. That stream is detected only when it encounters the Earth, when the meteoroids cause a brief 2-hour meteor shower.

“Earth gets hosed typically only once or twice every sixty years by such streams,” says Jenniskens. “Only when Jupiter and Saturn are back at their original positions do they steer the dust trail in our path. The trail wags in and out of Earth's path much like the Sun moves around in response to the motion of these heavy planets.”

The February Eta Draconids follow a short list of other such known showers, which include the November 22 Alpha Monocerotids, which were seen last in 1995, and the September 1 Aurigids, which created a

spectacular shower in 2007. The return of those showers was predicted by Jenniskens.

Now the February Eta Draconid shower has been discovered, Jenniskens is confident that a next return can be predicted. He teamed with Finnish astronomer Esko Lyytinen to investigate. Lyytinen calculated a possible return in 2016 or 2023, after that not again until 2076.

Future observations of this shower may pry loose other information about the comet that caused this stream of meteoroids, which is a potential danger to Earth. “If the meteoroids can hit us, so can the comet,” says Jenniskens, “We don’t know whether the comet has already passed us by or is still on approach.” To get some extra advance warning, one could look along the measured orbit to those spots where the comet could arrive at Earth’s orbit on a future February 4 date.

“Even then, chances are very small that the [comet](#) will actually hit us, as such impacts are rare in [Earth](#)’s history,” he added.

Provided by Astrobio.net

Citation: Comet collision to come? (2011, August 11) retrieved 17 April 2024 from <https://phys.org/news/2011-08-comet-collision.html>

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