



Winter 12-29-2007

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Recommended Citation

Wallace, Sherry, "Asteroid Impact with Mars Could Reveal Dangers to Earth" (2007). *News and Events*. 3207.

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Asteroid Impact with Mars Could Reveal Dangers to Earth

December 29, 2007

Bloomington, Ill.--For the first time in human history an asteroid may make contact with an earth-like planet giving scientists around the world a chance to learn what such an event could mean to earth. The asteroid discovered in late November 2007 has approximately a 1 in 25 chance of crashing into Mars on Jan. 30, 2008 according to recently updated calculations.

The asteroid, known as 2007 HD, was discovered in late November using observations made by the Catalina Sky Survey. At first the odds of its impacting Mars were set at 1 in 75, but the probability is now much more likely. Archival images from the Sloan Digital Sky Survey II, obtained by tracing the orbit back in time have improved our knowledge of the asteroid's path. Calculations now show an uncertainty region 400,000 km long by only 600 km wide during the asteroid's closest approach to Mars, and this region includes the planet itself. Although the most likely scenario will be a near miss, a collision is still possible. The asteroid will be observed in early January, allowing the orbit to be more precisely determined.

The object is estimated to be about 50 meters (30 feet) in diameter from its measured brightness. Its speed at the time of collision will be about 13.5 km/sec (8.4 mi/sec). It is estimated that the impact might produce a crater one kilometer-- more than a half-mile--in diameter. While the odds of this event taking place are quite small, should the impact occur planetary scientists will be looking on with great curiosity, because of the implications for earth.

The only similar event was the collision with Jupiter of the 21 fragments of Comet Shoemaker-Levy 9 in 1994. However, Jupiter, the solar system's largest planet, is composed almost entirely of gases. The fragments left large holes in the Jovian cloud tops for a short time, and then all traces disappeared. A collision with the solid surface of Mars would be much more instructive about what could happen to the Earth in the event of an asteroid impact.

More information can be obtained at NASA's Web site on Near-Earth Objects, <http://neo.jpl.nasa.gov/> or contact Linda French, Illinois Wesleyan Department of Physics, 309-661-9093 (home), 781-820-3160 (mobile), or lfrench@iwu.edu.

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