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Sunday's Leonids Should Produce Spectacular Meteor Show

Hundreds, Maybe Thousands, Expected Per Hour

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UNH Professor Eberhard Moebius can be reached at 603-862-3097. The best time for interviews is Thursday, Nov. 15, but you may try to contact him any day.

DURHAM, N.H. -- Weather permitting, astronomers are predicting a spectacular outburst of meteor showers this Sunday, as Earth is heading for a minefield of cosmic dust laid down by the comet Tempel-Tuttle.

North Americans and people on the western Pacific Rim will have the best chance to spot Leonids activity this year, says Eberhard Moebius, professor of space physics at the University of New Hampshire's Institute for the Study of Earth, Oceans, and Space.

For the east coast of the United States flurries of shooting stars are expected in the early morning hours - - 4 to 6 a.m. -- on Sunday, Nov. 18.

"According to modeling, which has been extremely successful in forecasting the activity during the past three years, we may see between 800 and 4,000 meteors per hour during the peak time around 5 a.m.," says Moebius. "With up to one meteor per second, this can produce quite a show."

This year is particularly favorable for the Leonids, says Moebius, because they come at a time close to a new moon. Therefore, no moonlight will interfere with the meteor shower, and the numerous small shooting stars will be visible.

Every 33 years, most recently in 1998, Temple-Tuttle makes its closest approach to the Sun and ejects a cloud of debris. The Leonid meteor showers -- so named because they come from a point in the constellation Leo -- occur every November as the Earth passes through Tempel-Tuttle's orbit.

The resulting meteor showers consist of particles, ranging in size from dust to marbles, traveling at speeds over 150,000 miles per hour that collide with Earth's atmosphere. Over the past few years, these encounters have led to increased meteor sightings because Earth has been passing the streams closest to the comet itself on its orbit.

Comets, according to Moebius, are "dirty snow balls," that heat up when they come close to the sun, spewing out volatile materials such as water vapor and other gases, which "take dust and larger pieces along." Visible is the glowing gas ball that surrounds the comet nucleus when the comet is close to the sun. The cloud of debris stays in the comet's orbit, until it is "scooped up by a planet," which leads to meteor showers.

"The Tempel-Tuttle comet has been part of our solar system since its beginning," says Moebius, explaining that it was left over material from the formation of the planets.

This year Earth is heading for encounters with four dust streams that were set loose during the comet's closest approaches to the sun over the last 300 years. During the morning hours of Nov. 18 the Earth will pass a stream from 1766.

After midnight through dawn is generally the best meteor viewing time.

"It is then that we are looking into a piece of the sky which represents the 'windshield' of the Earth on its journey around the sun," says Moebius. "Meteors are scooped up by this side of the Earth, like snowflakes by the windshield of a car during a drive in a snowstorm."

To view the Leonids at 5 a.m., Moebius says to look for the constellation Leo 60 degrees above the horizon in the southeast. Jupiter, as the brightest object in the sky, will be at the same height above the horizon in the

southwest and may serve as a guide. For the best view, observations should be made from a dark site away from bright street or residential lights.

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