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Ancient Meteor Blast May Have Caused Extinctions, Report UC Santa Barbara Scientists

New scientific findings suggest that a large, extraterrestrial rock may have exploded over North America 13,000 years ago, explaining riddles that scientists have wrestled with for decades, including an abrupt cooling of the atmosphere and the extinction of large mammals.

Two scientists from the University of California, Santa Barbara presented the discovery today, along with two other researchers at a news conference at the annual meeting of the American Geophysical Union being held in Acapulco, Mexico. Over 20 scientists contributed to the discovery.

James Kennett, paleoceanographer and professor emeritus in the Department of Earth Science at UC Santa Barbara, said that the discovery potentially explains three of the most-debated controversies of recent decades.

"This is what happens when you do interdisciplinary science," said Luann Becker, research scientist with UC Santa Barbara's Institute of Crustal Studies. "You can solve some of the bigger problems."

The time period in question is called the "Younger Dryas," a time of abrupt cooling that lasted for about 1,000 years and occurred during an inter-glacial warm period.

Evidence for the temperature change is recorded in ice cores.

According to the scientists, the extraterrestrial rock must have been about five kilometers across, and either exploded in the atmosphere or directly hit the Laurentide ice sheet located in the Northeastern section of North America. Wildfires across the continent would have resulted from the fiery impact, killing off the vegetation that was the food supply of many of the larger mammals like the woolly mammoths, causing them to go extinct. Since the Clovis people of North America hunted the mammoths as a major source of their food, they too were affected by the impact and their culture died out, explained Becker.

The scientific team visited over a dozen archaeological sites in North America where they found high concentrations of iridium, an element that is rare on Earth, and is almost exclusively associated with meteors. They found microspherules of glass-like carbon, which form at high temperatures and are thought to be a result of the impact blast. Also present were another type of impact tracer -- carbon molecules called fullerenes with gases trapped inside.

The team concluded that the impact of the space rock melted a large portion of the Laurentide ice sheet, causing enormous amounts of cool, fresh water to flow into the Atlantic and Arctic Oceans. This would have caused a major disruption of the circulation of warm and cold water in these oceans, leading to a cooler atmosphere and the glaciation of the Younger Dryas period.

The scientists found evidence for the impact as far west as the Santa Barbara Channel Islands. Kennett said that the best examples from the West Coast were found at a site on Santa Rosa Island.

The Paleoclimate Program of the National Science Foundation and NASA funded this research.

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we

draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.