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Part 2: Nanodiamonds Link Outer Space Impactors to Earth Extinctions 12,900 Years Ago

"The danger of comets hitting Earth has not been adequately addressed because we don't know where most of them are. SOHO has discovered 500 new comets in the last eight years!"
- Ted Bunch, Ph.D., Northern Arizona Univ.

On lower left are two of the twenty-one comet fragments that impacted Jupiter's atmosphere leaving dark holes on July 16 to 22, 1994. Each impact mark is larger than Earth. This event was the only time in human history that comet fragment collisions with a planet has been witnessed and photographed. Image © 1994 by John Chumack, Galactic Images.

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January 29, 2009 Flagstaff, Arizona - Adding to the great mystery about what exactly happened 12,900 years ago to this planet, there have been discoveries of ancient animals in the permafrost of Arctic tundra such as woolly mammoths with undigested buttercups and grass in their frozen mouths and stomachs. The freezing of the mammoth animals was rapid and thorough.

Siberian mammoths – now extinct along with so many other large animals that died from whatever the cosmic impact was - were warm blooded animals that grazed on warm temperature plants. Those creatures – along with giant sloths, American lions and camels, giant condors, saber-toothed tigers, mastodons, and giant beavers – were caught in an event so catastrophic that animals were quick-frozen and some skeletons have been found with their spines twisted.

What were the forces that caused so much violence and rapid temperature cooling? The nanodiamond discoveries in six North American Younger Dryas sedimentary layers ranging from Arizona to Canada to South Carolina by Prof. Douglas Kennett, Prof. Ted Bunch and others suggest that not only was there an outer space impact – but the forces involved were probably similar to the huge airburst explosion over Tunguska, Siberia, in 1908. That force about a thousand times as powerful as the bomb dropped on Hiroshima, Japan. Thousands of trees were burned up and an estimated 80 million trees were knocked down over 830 square miles, or 2,150 square kilometers.

Some 80 million trees were knocked over by the 1908 Tunguska atmospheric blast by an object thought to be a large meteoroid or comet fragment at an altitude of about 5 miles above Tunguska. Photograph from Soviet Academy of Science

1927 expedition led by Leonid Kulik. Source: *Wikipedia.*

[Editor's Note: *Wikipedia* - The Tunguska Event was a powerful explosion that occurred near the Podkamennaya (Lower Stony) Tunguska River in what is now Krasnoyarsk Krai of Russia, at around 7:14 a.m. local time on June 30, 1908.

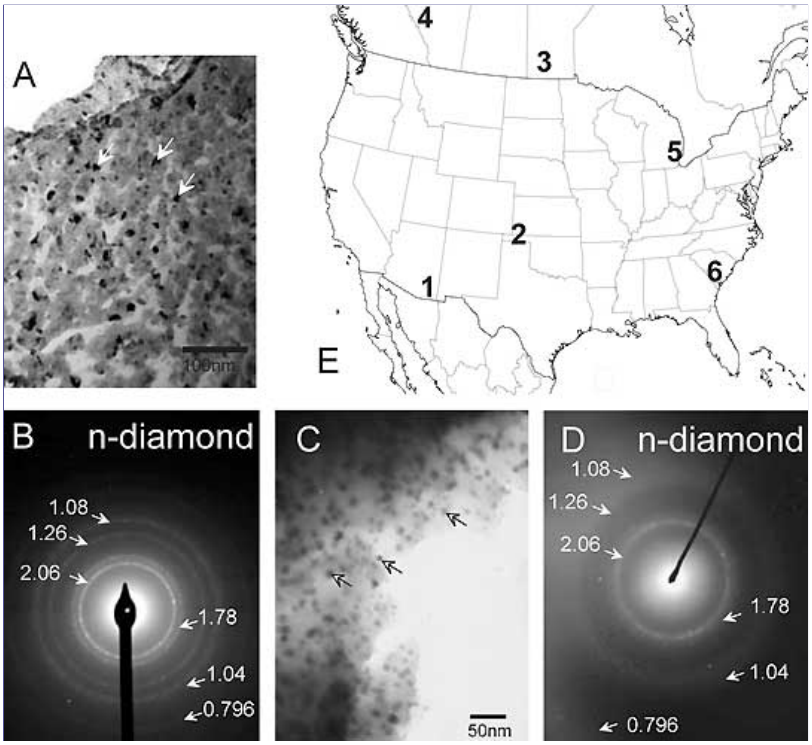
Although the cause is the subject of some debate, the explosion was most likely to have been caused by the air burst of a large meteoroid or comet fragment at an altitude of 5–10 kilometers (3–6 miles) above the Earth's surface. Different studies have yielded varying estimates for the object's size, with general agreement that it was a few tens of meters across.

Although the meteor or comet burst in the air rather than directly hitting the surface, this event is still referred to as an impact. Estimates of the energy of the blast range from 5 megatons to as high as 30 megatons of TNT, with 10 to 15 megatons the most likely - about 1,000 times as powerful as the bomb dropped on Hiroshima, Japan. The explosion knocked over an estimated 80 million trees over 2,150 square kilometers (830 square miles). An explosion of this magnitude is capable of destroying a large metropolitan area.]

The nanodiamond layer the scientists have found are micron-sized diamonds that can only be produced by high temperatures or high impact pressures, but no craters have been found so far. That's why Prof. Ted Bunch, Ph.D., Adjunct Professor of Geology at Northern Arizona University in Flagstaff and former NASA research scientist and exobiology manager thinks the impacts were made by big pieces of broken up comet that exploded in the atmosphere. Like gigantic blow torches from above, the explosions could have set fire to the Earth in many places. Prof. Bunch continues about why nanodiamonds discovered in the Younger Dryas sedimentary layer indicate high temperature and high pressure impacts.

Interview:

Ted Bunch, Ph.D., Former NASA Research Scientist and Exobiology Manager and now Adjunct Professor of Geology, Northern Arizona University, Flagstaff, Arizona: "This Younger Dryas layer contains various types of diamonds. Some of the diamonds, like the cubic diamond, can only be formed by either great depth in the Earth due to high pressure and temperature; or by shock impact. We've also found hexagonal diamonds. They can only be formed by shock impact and they ordinarily are only found in terrestrial impact craters. We think that in this layer of nanodiamonds, there is also iridium and other evidence of an outer space impact.



The six Younger Dryas sedimentary layer sites where nanodiamonds were discovered are:
1-Murray Springs, Arizona; 2-Bull Creek, Oklahoma; 3-Lake Hind, Manitoba, Canada;
4-Chobot, Alberta, Canada; 5-Gainey, Michigan; 6-Topper, South Carolina.
Map and photomicrographs courtesy Douglas Kennett, Ph.D.

That is different from the Chicxulub crater, which is responsible for wiping out the dinosaurs 65 million years ago because that large meteorite hit land and produced a lot of shock characteristics – a huge explosion, probably many more times more powerful than all of the atomic weapons that have ever been created, detonated or in storage.

65 million years ago, something large from outer space
crashed into the northern end of the Yucatan Peninsula and caused
what scientists call the "K-T Boundary Extinction"(Cretaceous - Tertiary)
that wiped out the dinosaurs. What remains today is the Chicxulub
Crater (map below) layered with iridium.

THAT'S THE K-T BOUNDARY EXTINCTION OF THE DINOSAURS?

That’s correct. But our Younger Dryas event is a little different because the fragments from the comet break up before the Earth encounter. Those pieces probably did not make craters because we don’t have a crater to look at. But the comet pieces might have pelted the glacial sheet still present at that time in Canada and ejected a lot of ice blocks, but not shocked rock material like the Chicxulub event. So, we don’t have the typical shock characteristics from something like impact with the Earth, but we have the diamonds.

We also have other characteristics that are similar maybe to the Tunguska event in Russia one hundred years ago (1908). There are some nanodiamonds there as well and there are some carbon spherules and some magnetic spherules – about the same materials that we find in our nanodiamond sites in North America.

THAT WAS THE MASSIVE AIRBURST THAT TOOK OUT 830 SQUARE MILES OF FOREST IN SIBERIA.

Yes.

WITH FIRE AND KNOCKING DOWN TREES.

Fire to the central portion and knocked down trees for a diameter of 2,000 kilometers 1,243 miles). There was no crater formed.

Comet Fragments Hit Jupiter in 1994

IN 1994, WE HAD THE BROKEN UP COMET IMPACT JUPITER.

That’s correct. That was Comet Shoemaker-Levy.

On lower left are two of the twenty-one comet fragments that impacted Jupiter's atmosphere leaving dark holes on July 16 to 22, 1994. Each impact mark is larger than Earth. This event was the only time in human history that comet fragment collisions with a planet has been witnessed and photographed. Image © 1994 by John Chumack, Galactic Images.

DO YOU THINK WHAT HAPPENED ON JUPITER IN 1994 IS SIMILAR TO WHAT MIGHT HAVE HAPPENED ON THE EARTH 12,900 YEARS AGO?

Sure! (laughs) That’s a good analog. We look at Tunguska as an analog and we look at more of the linear array of Shoemaker-Levy Comet. Those were pieces that followed each other in and as Jupiter rotated, the comet pieces impacted the gaseous surface of Jupiter. What we are proposing is not necessarily a linear array, but a cluster array like a shotgun blast that struck North America and maybe beyond.

AND WOULD HAVE BEEN COMETARY AND NOT METEORITIC?

Probably cometary because we don’t find asteroidal particles. The same as at Tunguska. That was probably cometary because the Russians and other investigators have not found typical rocky, asteroid debris.

Atmospheric “Blow Torch” Fire

WHY WOULD COMETARY DEBRIS INTERACTING WITH THE EARTH’S ATMOSPHERE

CAUSE WIDESPREAD FIRES?

The fire at Tunguska was caused by the gaseous jet from the aerial explosion of a rather small piece of comet. But that gaseous jet hit the ground like a blow torch. That's what caused the fires in the very center of these knocked down trees.

DO YOU THINK THAT IS AN ACCURATE ANALOGY FOR WHAT WOULD HAVE HAPPENED 12,900 YEARS AGO FROM THE COMETARY MATERIAL?

That's what we're advocating.

SO THERE MIGHT HAVE BEEN THE BLOW TORCH GAS EXPLOSIONS IN MANY MORE THAN HALF A DOZEN PLACES?

Probably, because we have a very fine site in the Channel Islands at the Arlington site [Channel Islands National Park, California, is a chain of eight islands located in the Pacific Ocean off the coast of Santa Barbara, Southern California] and this very same layer with all the nanodiamonds and extinction of the pygmy mammoths is precisely at 12,900 years ago. You can't really get a firestorm on the California side and blow it out to sea and start fires on the Channel Islands! (laughs) The fires were not completely across the United States, but affected very large regional areas.

I CAN UNDERSTAND THAT IF THERE ARE AIRBURSTS AND THE BLOW TORCH GAS IMPACTS, THERE MIGHT NOT BE ANY CRATERS, BUT THE IMPACT ON THE PLANET WOULD BE HUGE.

That's right. The blow torch thing is temperature only and might have melted the upper few millimeters of the soil, but certainly ignited all the biomass (trees and plants).

IF WE WERE HUMANS ALIVE AT THAT TIME, WE MIGHT HAVE SEEN FIERY EXPLOSIONS ALL OVER THE PLACE.

That's right.

THAT COULD EXPLAIN PERHAPS WHY THERE WERE SUDDEN DEATHS AND TWISTED SPINES OF SOME OF THE ANIMALS THAT MIGHT HAVE BEEN VIOLENTLY AFFECTED BY GAS EXPLOSIONS?

We're working out of the box because fifty years ago very few scientists believed there was anything such as a meteorite impact crater. It took Gene Shoemaker with his extensive work at the Meteor Crater, Arizona, in 1962, to prove that was an impact crater. We've come a long way in a short period of time. There are almost 200 known impact craters around the Earth and everybody says, 'OK, if you don't have a crater, you don't have an impact.' So, we're challenged by limited box-thinking of not looking beyond the end of your hand to see that other impact scenarios can happen. That's what we're up against!

Threat of Near Earth Objects

Our problem now is a possible encounter with what is called a near Earth object. There are thousands of them that cross over the Earth's orbit all the time. Everything is pretty well stabilized, but occasionally one gets knocked out like a billiard ball. Something comes in and disturbs one of those stable asteroids that comes in and makes a big hole in the ground on Earth. But that's very infrequent.

The danger of comets hitting Earth has not been adequately addressed because we don't know where most of them are. SOHO (Solar and Heliospheric Observatory) has discovered 500 new comets in the last eight years! Astronomers find them all the time and so does Hubble, the space platform telescope. So, there are a lot of comets out there and we don't know where they all are!

ANY ONE OF THEM COULD IMPACT WITH THE EARTH, DEPENDING UPON ORBIT WITH THE EARTH AND REPEAT WHAT HAPPENED 12,900 YEARS AGO.

Well, we know it's happened before. It will certainly happen gain. If this actually happened as we are hypothesizing, and as we know it happened in Tunguska in 1908, then comet fragment impacts are another space hazard that we have to consider.

In addition to the astronomers, there are amateurs and professionals who find comets all the time. And Hubble has found, I think, six or eight of the cluster broken up comets and I think there are probably 60 of them known now. But you have to keep looking. And you never know when something is going to happen! (laughs)

But the problem with comets, long period comets, is that some take up to 70 years to make their complete orbit around the sun. So, if we start now looking for those, they might be way out in

the far reaches of the solar system and we won't see them until they come back around and something might have perturbed them in that time and they might be coming right for us and we don't know that.

JUST LIKE 12,900 YEARS AGO!

Yes, exactly! (laughs)

WHAT IS YOUR NEXT RESEARCH STEP IN THIS NANODIAMOND RESEARCH?

We've found good evidence in the Greenland ice core. NOVA is doing a special on the evidence that our team has found and we're in the process of writing a very large article on it."

Even though the scientists are not yet detailing their Greenland discoveries, the implication is that their ice core dates to 12,900 years ago and has the same type of nanodiamonds, iridium and other materials that they have found in Canada and the United States. As their research extends to Europe, the Near East and perhaps South America in the future, will more nanodiamonds in Younger Dryas layers be found that strengthen the possible link to devastating outer space impactors 12,900 years ago?

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More Information:

For further reports about Earth climate changes, please see **Earthfiles Archive:**

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- 06/21/2008 — Updated June 25, 2008: Increasingly Acidic Pacific Coast Waters Threaten Marine Life
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NASA Near Earth Object Program: **http://neo.jpl.nasa.gov/**

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Frozen Mammoth Carcasses in Siberia: **http://www.answersingenesis.org/home/area/fit/chapter1.asp**

Douglas Kennett, Ph.D.: **http://www.uoregon.edu/~dkennett/Welcome.html**

Ted Bunch, Ph.D.: **http://www.cefns.nau.edu/Academic/Geology/people/DrTedBunch.shtml**

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