



Part 1: Nanodiamonds Link Outer Space Impactors to Earth Extinctions 12,900 Years Ago

© 2009 by Linda Moulton Howe

*“Nanodiamonds only form under very high temperatures
and pressures consistent with a major cosmic impact event.”*

- Douglas Kennett, Ph.D., Univ. of Oregon



Illustration of outer space object headed for Earth impact.

January 29, 2009 Eugene, Oregon - 14,000 years ago, the last Ice Age was ending at the close of the Pleistocene. The Earth was warming up, forests began to grow back and large animals such as the Irish Elk and the Woolly Mammoth flourished in Europe and North America. In fact, temperatures were even warmer than they are today. North America was teeming with very large animals such as giant sloths, American lions and camels, saber-toothed tigers, mammoths and mastodons.

But then suddenly 12,900 years ago, something mysterious plunged much of the Northern Hemisphere back into a Big Freeze in *less than one year*. Scientists call that puzzling, rapid cooling the “Younger Dryas,” named after an alpine wildflower. Temperatures dropped so quickly that Siberian mammoths have been found preserved in ancient ice with quick-frozen buttercups in their mouths.



First whole mammoth to be unearthed in 1900 in Siberia was called the Beresovka mammoth. Cast of this specimen can be seen below on left in the Natural History Museum in St. Petersburg, Russia.



More strangely, saber-tooth tigers and other animals have been reported to have twisted spines as if thrown around by powerful unidentified forces. By the end of the Younger Dryas, at least 16 genera of large animal species had been wiped out, their bones later discovered to be covered by “black mats” of organic residue. From fire? From water? Or both? Now, the mystery of what happened 12,900 years ago might finally be solved.



Skeletal head of a sabre-toothed tiger in which canine teeth grew up to 8 inches (20 centimeters) long and extended down from the mouth even when the mouth was closed. Source: American Natural History Museum.



Saber-toothed tiger, or Smilodon, illustration.



Close-up of Murray Springs, Arizona, black mat layer atop the Younger Dryas layer in which nanodiamonds have been discovered. Murray Springs is a significant archeology site that contains an undisturbed stratigraphic record of the past 40,000 years. Image courtesy Douglas Kennett, Ph.D.

[Editor's Note: *Proceedings of the National Academy of Sciences* Article, PNAS May 6, 2008 vol. 105 no. 18 6520-6525. See: **PNAS Website**.

“Younger Dryas ‘black mats’ and the Rancholabrean termination in North America.”

Contributed by C. Vance Haynes, Jr., January 23, 2008.

Departments of Anthropology and Geosciences
University of Arizona, Tucson, AZ.

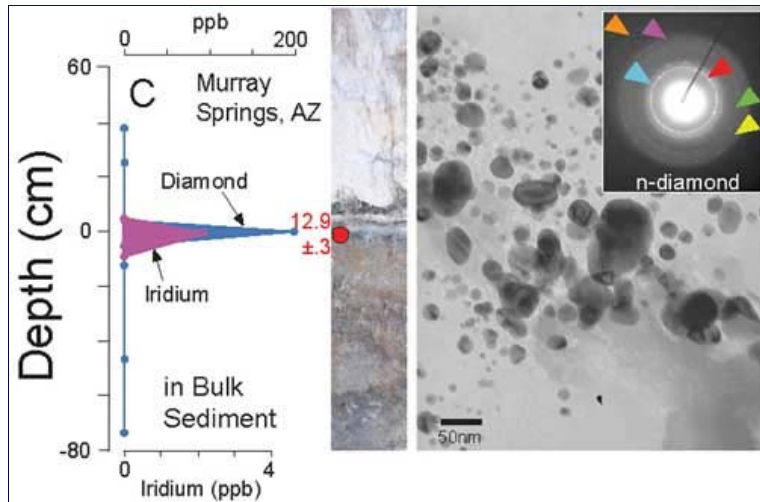
Abstract

Of the 97 geoarchaeological sites of this study that bridge the Pleistocene-Holocene transition (last deglaciation), approximately two thirds have a black organic-rich layer or ‘black mat’ in the form of mollic paleosols, aquolls, diatomites, or algal mats with radiocarbon ages suggesting they are stratigraphic manifestations of the Younger Dryas cooling episode 10,900 B.P. [12,900 years ago] to 9,800 B.P. [11,800 years ago] radiocarbon years.

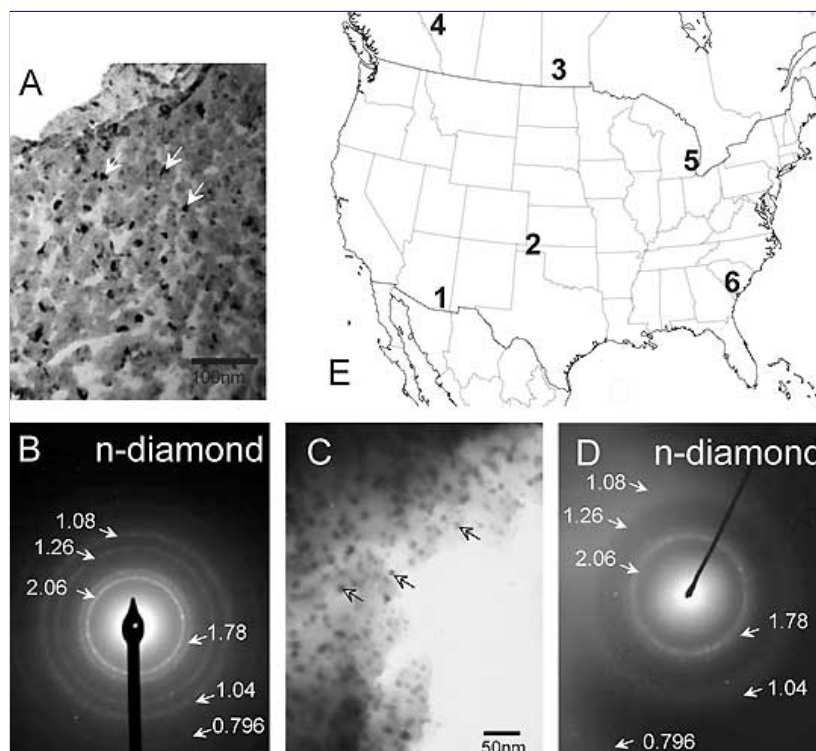
This layer or mat covers the Clovis-age landscape or surface on which the last remnants of the terminal Pleistocene megafauna are recorded. Stratigraphically and chronologically, the Younger Dryas extinction appears to have been catastrophic, seemingly too sudden and extensive for either human predation or climate change to have been the primary cause. This sudden Rancholabrean termination at $10,900 \pm 50$ B.P.

[12,900 years ago] appears to have coincided with the sudden climatic switch from Allerød warming to Younger Dryas cooling. Recent evidence for extraterrestrial impact, although not yet compelling, needs further testing because a remarkable major perturbation occurred at 10,900 B.P. that needs to be explained.]

The January 2, 2009, issue of the journal *Science*, presented research by Douglas Kennett, Ph.D., and Associate Prof. of Anthropology at the Univ. of Oregon, along with his father, paleontologist James Kennett, Ph.D., at the Univ. of California-Santa Barbara, and half a dozen other scientists, including Ted Bunch, Ph.D., a NASA Exobiologist and Adjunct Prof. of Geology at Northern Arizona State University in Flagstaff. Their latest research about the 12,900-year-old mystery is in a paper entitled, “Nanodiamonds in the Younger Dryas Boundary Sediment Layer.” In fact, the nanodiamonds discovered are often layered on top of the extinct animal bones.



Iridium and n-diamonds were found in the bulk sediment of the Younger Dryas sedimentary layer at Murray Springs, Arizona. Image and data courtesy Douglas Kennett, Ph.D.



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.

Interviews:



Douglas J. Kennett, Ph.D., Assoc. Prof. of Anthropology, University of Oregon, Eugene, Oregon: "Many of these animals appear to go out at 12,900 years ago. In fact, this stratum of nanodiamonds – the sediments containing these nanodiamonds – in some

cases sit directly above the bones of these extinct animals. These animal bones do not occur above the sedimentary layers in well-stratified sections.

YOU FOUND THE NANODIAMONDS ONLY IN THE 12,900-YEAR-LAYER, NOT ABOVE OR BELOW?

That's correct. We've looked above and below in the geological and archaeological sections we have investigated and the nanodiamonds occur in sediments dating to 12,900 years ago, but not above or below.

WHAT IS THE SIGNIFICANCE OF FINDING NANODIAMONDS IN THAT SPECIFIC LAYER AS IT RELATES TO THE END OF THE PLEISTOCENE AND THE EXTRAORDINARY DEATHS OF SO MANY ANIMALS AROUND THE WORLD?

Well, nanodiamonds only form under very high temperatures and pressures consistent with a major cosmic impact event. It's very hard to explain their presence in these sediments just based on other kinds of surficial processes. And, of course, increased temperatures and pressures would have had major repercussions for the environment in North America, including vegetation and animals and humans that were on the landscape at the time.

Outer Space Impacts Ended Clovis Culture Along with Large Animals?

ONE OF THE BIG ONES WAS THE CLOVIS.

Yes, Clovis culture. The same nanodiamond stratum sits directly above Clovis artifact sites such as Murray Springs, Arizona, and Blackwater Draw near Portales, New Mexico, are some of the classic Clovis period sites. And it's similar to the animal remains. We do not see Clovis artifacts above this nanodiamond stratum in well-preserved archaeological deposits.



[Editor's Note: *Wikipedia* - Historically, Clovis was a human culture 13,000 years ago that lived and hunted all over North America with unique Clovis fluted and bifacial arrowheads. Clovis people may have been the last humans to observe the large animals of the Pleistocene before the extinction event that apparently ended the Clovis as well.



Clovis points from various sites in North America.
Image courtesy Center for the Study of the First
Americans, Texas A&M University.

Fluted points like the Clovis have not been found in adjacent continents. The fluted bifacial spear point appears unique to North America. Other related stone tools can be found in the Upper Paleolithic cultures of the Old World but not the Clovis point. The Clovis point has not been found in Siberia as might be expected if the culture originated in northeast Asia. Paradoxically, the closest analogue to the Clovis technology, especially with its distinctive bi-face manufacturing methods, lies in the area of Spain and France with the Solutrean culture.]

The destruction would have been instantaneous. People living in the immediate vicinity of impact or airbursts would pretty much have been annihilated. And where the impacts and airbursts would have occurred, there would have been a lot of debris kicked up into the atmosphere. And I can imagine there would have been major sound – even hard to imagine the senses that would have been involved in all this. Also, the wildfires triggered by all this would have put smoke and soot up into the atmosphere that would also have had major atmospheric effects in terms of obscuring the sun for fairly long periods of time.

I FOUND A QUOTE FROM CHARLES DARWIN, THE FAMOUS NATURALIST. HE WAS WRITING ABOUT HIS OWN SHOCK AT THE EXTINCTION OF SPECIES AT THE CLOSE OF THE PLEISTOCENE AND THIS IS WHAT HE WROTE: ‘THE EXTINCTION OF SPECIES HAS BEEN INVOLVED IN THE MOST GRATUITOUS MYSTERY. NO ONE CAN HAVE MARVELLED MORE THAN I AT THE EXTINCTION OF SPECIES.’ HE DECLARED THAT FOR WHOLE SPECIES TO BE DESTROYED IN SOUTHERN PATAGONIA, IN BRAZIL, IN THE MOUNTAIN RANGES OF PERU AND IN NORTH AMERICA UP TO THE BERING STRAITS, ONE MUST, ‘SHAKE THE ENTIRE FRAMEWORK OF THE GLOBE.’

IS IT POSSIBLE THAT YOUR HYPOTHESIZED SWARM WAS GLOBAL – SOME KIND OF IMPACT FROM OUTER SPACE THAT HIT BOTH NORTHERN AND SOUTHERN HEMISPHERES?

It’s possible. There actually is some pretty tantalizing evidence that there are similar types of sediments down in South America. We need to find out if these nanodiamonds and other materials occur in a sedimentary layer above the animals in South America.

AT THE TIME OF THE LARGE ANIMAL EXTINCTIONS.

Yeah, basically in the late Pleistocene we had 35 animal genera [plural of genus; each genus has many species], which includes many species that are known to have gone extinct in the late Pleistocene. Now the timing of all that is not closely tied to 12,900 years ago, but 16 genera *are* 12,900 years ago. If you look carefully at the data, it looks like a fairly abrupt extinction of 16 genera at this time. That’s both from the radiocarbon records and also the stratigraphic records in the sediments across North America of the bones of these animals. You come to a certain point at sediments dating to 12,900 years ago that contain a variety of exotic materials like microspherules and carbon spherules and iridium – things that have been tied to other impact events and now we’re adding to the assemblage of the nanodiamonds that are known to form under high temperatures and pressures that we argue are consistent with a cosmic impact event.”

Did Comet Debris Impact with Earth 12,900 Years Ago?

What was that cosmic impact event? One of the nanodiamond team scientists is Ted Bunch, Ph.D., Adjunct Professor of Geology at Northern Arizona University in Flagstaff. Dr. Bunch also worked at NASA for 31 years as a research scientist and manager of exobiology. He thinks a swarm of comets, or comet debris, collided with the Earth and produced very hot, gaseous airburst explosions and direct hits on the Ice Age sheets still covering much of the Northern Hemisphere.

Interview:



Ted Bunch, Ph.D., Former NASA Research Scientist and Exobiology Manager and now Adjunct Professor of Geology, Northern Arizona University, Flagstaff, Arizona:
“What we’re projecting here is an impact by swarm of comets that were actually cometary pieces from a break up in outer space. These are known. There are at least 60 such break ups that have been observed. And I think the Earth encountered one of these cluster comets. The pieces were maybe spread maybe hundreds of kilometers apart and

maybe 1,000 to 2,000 kilometers in length. And they rained down on North America, probably over the Canadian ice sheet called the Laurentide.

[Editor's Note: *Wikipedia* – “The Laurentide Ice Sheet covered hundreds of thousands of square miles, including most of Canada and a large portion of the northern United States, between 95,000 and 20,000 years before present day. Its southern margin included the modern sites of New York City and Chicago. Up to two miles thick and much thinner at its edges, this ice sheet was the primary feature of the North American ice age.]

“And maybe the comet pieces made some craters in the ice, but the smaller objects probably detonated in the atmosphere and caused massive fires in the lower part of Canada and throughout the United States.

Some of the diamonds have been made possibly by an impact of one of the comet clusters with the ice in Canada. What you need to get the high pressures, you need to have an impact of body against body. If you have a detonation, like an atomic detonation or an aerial burst with respect to the particles that exploded in the atmosphere, you produce very high temperatures – not necessarily high pressures.

But there are a lot of parts of this scenario that say that we have a mixture of very high pressure-formed diamonds, some of which could have come in with the comet and formed extraterrestrially. But the specific type of diamonds called ‘n-type’ diamonds – there are trillions of these guys. They were formed by very high temperature and then it was quenched. It was just like you took something that was 5,000 degrees F. and you stuck it immediately in the cold water. That’s how you form some of the diamond forms that we have found.

YOUR HYPOTHESIS IS THAT HIGH-TEMPERATURE DEBRIS HIT THE ICE SHEET?

Hit the ice sheet and possibly in forested areas because that’s how these intense fire storms probably started. Some of the comet clusters hitting the ice – the big pieces possibly making craters – impacting and making the high pressure and temperature forms of diamonds: the cubic, hexagonal and the more common diamonds, which are not high pressure, but high temperature, the N-diamonds, probably formed from the rapid and very intense burning of biomass forests.

“Impact Winter”

THE FIRES FROM THE FORESTS, MIXED WITH DEBRIS THROWN UP INTO THE ATMOSPHERE, COULD HAVE CAUSED WHAT CARL SAGAN USED TO CALL THE ‘NUCLEAR WINTER?’

Yes, we call it the ‘impact winter,’ not to be confused with atomic warfare. But you’re right, the dust – not necessarily from the impact of the Y. D. (Younger Dryas) event because we don’t have craters, but we have massive fire burning. We find charcoal and soot at all the 51 sites in North America and in Europe. So, there were extensive fires, and that material – the bad gases from fires and particulates.

CUT OUT SUNLIGHT FROM THE SUN.

Yes. Interestingly, Prof. Vance Haynes, who is a noted vertebrate paleontologist, spent a life time looking at the remains of just these sorts of fossils. And he finds that the layers of the Younger Dryas and the black mat that covers the Younger Dryas (Y.D.) covered these bones right on top. None of these animals were found above what we call the black mat, the Younger Dryas boundary. The animal fossils were all there and covered by this material, which means that most passed away rather rapidly during and after the event.

[Editor's Note: *Wikipedia* - Black Mats and Clovis, the first archaeologist to describe the black mat on an archaeological site was C. Vance Haynes, who in the 1960s was working at the Murray Springs Clovis site in southeastern Arizona, where he noticed a layer of black matted material directly on top of the Clovis occupation layer. The black mat is a thin layer of organic material that Haynes thought at the time represented evidence of a drought. Black mats vary in color and content, but they are always found to have been created in moist to wet conditions such as ponds, elevated or perched water tables, boggy areas, wet meadows and the margins of spring pools. Scientists debate the genesis of these mats, but one possible theory is that in a shallow pond, for example, dead plants and animals filter through the water and drop to the bottom, creating a thick organic layer.

None of the black mats investigated at these Clovis sites contained any Clovis

nor any evidence of any of the Pleistocene fauna and Haynes discovered that black mats are fairly common and often right above Clovis sites.]

I WAS READING IN AN ARTICLE ABOUT THE YOUNGER DRYAS THAT SAID THIS WAS THE MOST RAPID CHANGE IN CLIMATE ON RECORD TO DATE.

From what we know – records don't go back billions of years – but certainly when the climate lowered so rapidly it would have been catastrophic!

PROF. KENNETT SAID THAT THERE WAS MAJOR CHANGE FROM WHAT WAS WARMING TO WHAT WAS MORE A 'BIG FREEZE' IN LESS THAN ONE YEAR.

That's right. We talk about, 'Ah, global warming of 1 degree F. in 100 years.' Big deal! But there with the Younger Dryas event, we are dropping temperatures several degrees over night and that created a Big Freeze, another thing that probably was responsible for the demise of the animals that went to extinction."

Anthropologist Leonard Cedric commented in 1979 about the mysterious Younger Dryas extinctions:

"The event was worldwide. The mammoths of Siberia became extinct about the same time as the giant rhinoceros of Europe; the mastodons of Alaska and the bison of Siberia ended simultaneously. The same is true of the Asian elephants and the American camels. The cause of these extinctions must be common to both hemispheres. If the coming of glacial conditions was gradual, it would not have caused the extinctions, because the various animals could have simply migrated to where conditions were better. What is seen here is total surprise – and uncontrolled violence."

Continued in **Part 2** - Younger Dryas event 12,900 years ago might have been like Tunguska, Siberia, in 1908, when an outer space airburst explosion burned and knocked down millions of trees over 830 square miles (2,150 square kilometres).

More Information:

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

- 12/21/2008 — Mystery of Missing East Coast Acorns
- 10/24/2008 — Rapidly Changing Earth
- 08/15/2008 — Amphibian Warning Bell of Mass Extinctions
- 06/21/2008 — Updated June 25, 2008: Increasingly Acidic Pacific Coast Waters Threaten Marine Life
- 03/27/2008 — Ice Block Size of Northern Ireland Has Broken From Wilkins Ice Shelf in West Antarctic Peninsula
- 02/29/2008 — Mysterious Bat Deaths in New York, Vermont and Massachusetts
- 01/18/2008 — Amphibians Dying Out At Alarming Rate
- 01/10/2008 — Solar Cycle 24 Has Begun
- 10/05/2007 — Earlier, Faster and Deeper Arctic Ice Melt Down
- 08/08/2007 — 2007's Warm, Erratic Global Weather
- 07/11/2007 — Mystery of Night Shining Clouds - Another Global Warming Change?
- 06/28/2007 — Hackenberg Apiary, Pennsylvania - 75-80% Honey Bee Loss in 2007. What Happens If Colony Collapse Disorder Returns?
- 06/21/2007 — Large Lake in Southern Chile Has Disappeared
- 06/01/2007 — Is Earth Close to Dangerous Tipping Point in Global Warming?
- 05/29/2007 — Deadly VHS Fish Virus Has Spread to Lake Michigan
- 05/18/2007 — Antarctica: Unprecedented Western Ice Melt and CO2-Saturated Southern Ocean
- 04/12/2007 — First 2007 Crop Pattern in United States
- 03/17/2007 — Honey Bee Disappearances Continue: Could Pesticides Play A Role?
- 02/23/2007 — Scientists Hope "Amphibian Arks" Can Save Frogs and Toads
- 02/23/2007 — Part 1: Earth Life Threats - Alarming Disappearance of Honey Bees
- 02/23/2007 — Part 2: Earth Life Threats - "Noah's Ark" for World's Seeds
- 02/02/2007 — Updated: New U. N. Global Climate Change Report: Earth Could Warm Up 3.2 to 11.52 Degrees Fahrenheit by 2100
- 01/13/2007 — Confusing Sun: Will Solar Cycle 24 Be Most Intense On Record?
- 01/10/2007 — 2006: USA's Warmest Year On Record
- 12/07/2006 — Earth Headed for Warmest Period in 55 Million Years?
- 11/09/2006 — Outer Space Sunshade to Cool Earth in Global Warming?
- 09/09/2006 — Methane - Another Threat in Global Warming
- 08/19/2006 — Repair of Earth's Ozone Layer Has Slowed
- 07/18/2006 — 2006 - Hottest Year So Far in U. S. History
- 06/24/2006 — "High Confidence" Earth Is Warmest in 400 Years - Maybe Even 2,000 Years
- 04/08/2006 — Recent Caribbean Coral Reef Die-Off Biggest Ever Seen
- 03/17/2006 — Planet Earth's Ice Melt

- 11/18/2005 — Is the Sun Heating Up?
- 10/07/2005 — Warmer Sea Surfaces and Increased Wind Power Are Making Hurricanes Stronger
- 09/29/2005 — 2005 Arctic Summer Ice Melt - Largest On Record
- 09/23/2005 — Phenomenon of "Instant" Hurricanes in 2005
- 09/23/2005 — 9 X-Class Solar Flares Between September 7 - 19, 2005.
- 08/26/2005 — What Is Killing Amphibians Around the World?
- 05/11/2005 — Greenland Sea Cold Water Re-Cycling Has Nearly Stopped. Britain Expected to Become Cooler.
- 05/07/2005 — Did Milky Way Gas and Dust Turn Earth Into Icy Snowball Four Times?
- 03/31/2005 — U. N. Reports Earth's Ecosystem Deteriorating Rapidly - Will Humans Change Bleak Future?
- 02/26/2005 — Collapse of Societies: From Easter Island to Iraq - to Western World?
- 02/03/2005 — Kyoto Protocol Goes Into Effect February 16, 2005. British Scientists Warn Global Temperatures Could Climb Higher Than Earlier Estimates.
- 01/22/2005 — From U. S. to Arctic - A Sea Change in the Weather
- 01/03/2005 — Audience Feedback About Abrupt Climate Change 5,200 Years Ago and Mayan and Aztec Calendar Links
- 12/31/2004 — Abrupt Climate Change Occurred Worldwide 5,200 Years Ago
- 11/02/2004 — North Pole Summers Without Ice?
- 10/15/2004 — Ever-Increasing Carbon Dioxide Build-Up in Atmosphere Since 1958
- 09/17/2004 — Cat 4 and 5 Hurricanes Charley, Frances and Ivan in Four Weeks -Unprecedented in American Recorded Weather History
- 08/27/2004 — Global Warming Impact On Birds - More Extinctions Expected
- 08/14/2004 — Oceans Are Absorbing A Lot of Greenhouse CO2. As Chemistry Changes, What Happens to Sea Life?
- 02/27/2004 — Abrupt Climate Change: Scenario from A Pentagon-Commissioned Report
- 02/23/2004 — Is There Liquid Water on Martian Surface?
- 11/29/2003 — Glaciers Are Melting Around the World So Fast That Water Supplies Could Be Threatened
- 09/02/2003 — Updated - Astronomers Don't Think Asteroid Will Hit Earth in 2014
- 07/16/2003 — First 3-D Images of the Sun's Granular Surface
- 05/30/2003 — Scientists Surprised by Common House Fly Fossils in Antarctica
- 01/05/2003 — What Are the Grooves in the Martian South Pole?
- 12/14/2002 — Arctic Rivers' Fresh Water Flows Could Change Atlantic Ocean Current
- 11/14/2002 — What Happened 12,000 Years Ago That Killed So Many Animals?
- 10/21/2002 — Mt. Kilimanjaro's Ice Cap Is Melting Fast
- 06/04/2002 — EPA Admits Humans Burning Fossil Fuels A Big Factor in Global Warming
- 03/21/2002 — Antarctic Peninsula Is Melting - And So Is Arctic Ice
- 02/13/2002 — January 2002 Warmest On Record For Whole World
- 01/30/2002 — Latest Satellite Data Shows Surprisingly Thicker Ross Ice Shelf in Antarctica
- 01/05/2002 — Global Warming Update - Could Increasing Carbon Dioxide Gas Be Transformed Into Limestone?
- 12/22/2001 — Scientists Warn That Climate and Earth Life Can Change Rapidly
- 12/01/2001 — 1200 B. C. - What Caused Earthquake Storms, Global Drought and End of Bronze Age?
- 07/21/2001 — Missing Link Between Humans and Chimpanzees – Ethiopian Forest Biped 5.8 Million Years Ago?
- 03/24/2001 — Alps Permafrost Melting
- 03/04/2001 — Disappearing Glaciers - Evidence of A Rapidly Warming Earth
- 02/25/2001 — Environmental Updates
- 02/18/2001 — Environmental Updates and Mysterious Deaths of 2000 Atlantic Brant Geese
- 02/07/2001 — 94% Decline In Aleutian Islands Sea Otter Population
- 01/28/2001 — U. N. Global Warming Forecast: Could Be 10 Degrees F. Hotter by End of 21st Century
- 09/10/2000 — Largest-Ever Antarctic Ozone Hole
- 09/10/2000 — Arctic Ice Melt Threatens Polar Bears
- 05/07/2000 — Serious Drought in the Great Lakes
- 04/20/2000 — Severe Arctic Ozone Loss and Deep Ocean Warming
- 01/13/2000 — Computer Projections About Earth Weather 2000-2100
- 01/09/2000 — Global Warming Alert from NOAA and U.K.
- 06/04/1999 — Global Warming Linked to Increasingly Warmer and Wetter Winters in Europe & Western North America
- 05/27/1999 — Amphibian Decline - Parasites and Increased UV Radiation
- 05/05/1999 — Two Antarctic Ice Shelves Almost Gone

Websites:

Journal Science: <http://www.sciencemag.org/cgi/content/short/323/5910/94>

Younger Dryas: <http://www.agu.org/revgeophys/mayews01/node6.html>

Late Pleistocene Extinctions: <http://www.pnas.org/content/104/41/16016.abstract>

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.cefn.s.nau.edu/Academic/Geology/people/DrTedBunch.shtml>

Credits

**Copyright © 1999 - 2010 by Linda Moulton Howe.
All Rights Reserved.
www.earthfiles.com
earthfiles@earthfiles.com**

Republication and redissemination of the contents of this screen or any part of this website are expressly prohibited without prior Earthfiles.com written consent.

[Privacy Policy](#) | [Terms & Conditions](#)
[Refund Policy](#)

Copyright © 1999 - 2010, Earthfiles.com / DigitalEyeCandy.ca
All rights reserved.