Re: Possible evidence for Stone Age (Clovis) Cosmic Catastrophe?

Source: http://sci.tech−archive.net/Archive/sci.archaeology/2005−11/msg00046.html

- *From*: Philip Deitiker <Donevenask@xxxxxxxxxxxxxxx>
- *Date*: Wed, 02 Nov 2005 18:30:26 GMT

In sci.archaeology message
news:vbnhm197hie2lfq1tdheb09706ms654e62@xxxxxxx by
nospam@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx . . . :

> Apparently on date Wed, 2 Nov 2005 08:01:51 +0100, "Uwe Müller"
> <uwemueller@xxxxxxxxxx> said:
>
>>
>><nospam@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx> schrieb im Newsbeitrag
>>news:r7icm1dqdqe2heoip7i32df2f7no3rtd1n@xxxxxxxxxx
>>> Apparently on date Mon, 31 Oct 2005 13:56:43 +0100, "Uwe
>>> Müller" <uwemueller@xxxxxxxxxx> said:
>>>
>>> >"Eric Stevens" <eric.stevens@xxxxxxxxx> schrieb im
>>> >Newsbeitrag
>>> >news:ckjbm19tin58i7dfaof41j9vvlj1882em9@xxxxxxxxxx
>>> >> On Mon, 31 Oct 2005 05:56:48 +0000, Doug Weller
>>> >> <dweller@xxxxxxxxxxxxxxxxxxxxxxxxx> wrote:
>>> >>
>>> >> >On Mon, 31 Oct 2005 14:24:25 +1300, in sci.archaeology,
>>> >> >Eric Stevens wrote:
>>> >> >
>>> >> >>The story is muddled but the underlying theme is not very
>>> >> >>surprising.
>>> >> >>
>>> >> >>http://abcnews.go.com/Technology/wireStory?id=1261061
>>> >> >>
>>> >> >>
>>> >> >See
>>http://www.universetoday.com/am/publish/supernova_kill_mammoths.h
>>tml
>>> >>
>>> >> Thanks Doug. That makes much more sense than the news
>>> >> release I cited (and similar other sites). That is
>>> >> something slightly different from what I anticipated,
>>> >> although I have heard of this supernova before. It all
>>> >> helps drive nails in the uniformatarian coffin.
>>> >

>>> >I've heard this being discussed before. The major point
>>> >against this
>>theory
>>> >was, that anything hitting the athmosphere at a speed of
>>> >around 10.000
>>km/s
>>> >and surviving to reach the surface, will not make tiny little
>>> >holes, but
>>big
>>> >craters.have fun
>>>
>>> Is there a reference to this online anywhere?
>>
>>It has been discussed, if that is what you want to call it, in
>>the german language group de.sci.geschichte under the header of
>>'Mammuts im Kometenhagel'. But be warned, this group makes
>>sci.arch. look like a sober and conservative group of academics.
>>
>>Someone stated, that a particle with a speed of 10.000 km/s, a
>>diameter of 0,1 mm and a weight of 8 microgramms will on impact
>>release an energy of about 1,6 kg of TNT. Hundreds or thousands
>>of those particles hitting a mammoth tusk, and making only tiny
>>holes, seem out of the question.
>
> A megatonne is 4e+15 joules, so this translates into 4e+6 joules
> per kilogramme or about 6,000 kJ of energy for your energy
> above.
>
> I have a sphere of volume 5e−13 cubic meters, which times 8000
> kgs per M^3 for iron gives a mass of 4e−9 kgs. About half the
> mass, mind you I did divide the diameter by two to get radius of
> the sphere.
>
> 10,000,000 meters per second, squared is 1e+14
>
> And half M v^2 works out as 2e−9.e+14 or 2e+5 joules, or 200 kJ
> of energy.
>
> That's somewhere about the same energy as you get from a
> teaspoon of fat.
>
> It's significant, particularly when it is driving a tiny speck
> of hard iron into something tough. But it isn't the sort of
> thing that would smash the mammoth to bits, as such.
>
>>Someone else stated, that any particle with a velocity that high
>>will remain matter only as long as it takes to hit the same
>>amount of mass in the athmosphere, fractions of a second.
>
> Well, at that sort of velocity, it only takes a fraction of a
> second to pass through the atmosphere, which is getting pretty

> close to non−existent 1,000,000 meters up, and even that's a
> tenth of a second at these speeds.
>
> The air encountered, etc, I don't really know about this. Maybe
> a particle would flash into iron vapour although what happens
> when there is a storm of these all striking the atmosphere with
> huge velocity vectors in the same direction?

The slower the particle is going when entering the atmosphere, the more likely it is too survive. The perfect scenario is given by an object dropped from 100 km up for example a 1 gram object

E = mgh. Gravity = 9.7 M/S² in the column. Mass = 1/1000 of gram, h = 100,000 meters. 0.001 * 9.7 * 100,000 = 970. Let us argue that the density is equal to 5 and the column in which the object travels through is 0.3 cm² in crosssectional are. The amount of air in that column is 0.3 kilogram, therefore the object is going to dissipate most of its energy before it hits the ground as it is passing through a column 300 times its weight. In addition the object is going to reach a point at about 25,000 meters in which energy dissipation is going to be maximum, the object has about 700 joules of energy and traveling about 1200 M/S (about 2400 mph) the surface of the object will be hot (like the wing of a concorde) but it will not melt. And over the course of a few seconds the object will slow down.

Next example is an object traveling at 11,000 M/S, the space shuttle for example coming into earths atmosphere, if 2400 requires a concorde to use really good airconditioning, 10,000 is going to turn iron white hot, iron will come off of the object.

One might ask the basic question why doesn't NASA slow down its space craft to 0 horizontal miles per hour before entry. The reasoning is on lift off, most of the fuel expended is used to get the shuttle to orbital velocity (25,000 MPH) and there is very little friction in orbit, as a result no way to slow it down. In fact if Nasa put just a little bit more energy into the shuttle and pointed it outward, it could actually leave earths orbit. In terms of energy orbits are a small transition potential energy state between 'splat' and 'adios' Of that energy only a small proportion was actually to get the shuttle to orbital altitude, the rest to orbital velocity.

There is a differential that can be used to determine the energies at between different static altitudes it something like the energy at infinity − potential energy at 'splat'.

Objects can hit the earth at two tradjectories, they can strike the earth from exosolar direction, in which case they would be traveling faster than earth or contraobital with respect to earths orbit and earth happens to cross it path. Suppose the object is traveling in from the asteroid belt, its relative velocity is X + 10000 m/s where earths velocity is X, as soon as it enters the gravitation feild of earth (lets say practically 500,000 miles distance) it begins to accelerate its KE will be added to the kinetic energy govern by the mgh differential and so its velocity on entry will be considerably greater than a space shuttle. The other scenario is if the earth catches an asteriod in close orbit around the sun, in this case the earth is moving slightly faster than the object and the object is pulled from suns orbit into earths orbit, and finally accelerated into earth. This rare occasion it subtract some energy from the differnetial and if the direction of the object is tangential it may move into orbit or leave orbit or smash into the moon. The best case scenario is the object goes into earths orbit and after several near passes of the atmosphere slows down befor eventually falling in. Thats a littl bit of a side tract, but I can give a slight hint on how a scenario plays out. Suppose one day while pluto was traveling about its orbit traveling about the speed of a 20 year old mexican volkwagon down a country road. Suddenly it is struck by an asteroid and its orbital speed goes to Zero. Now pluto starts to fall, can anyone guess what its speed toward the sun will be when it crosses earths orbit. Hint the earth is rotating around the sun at 29800 M/S about 9 times the energy of a space shuttle is traveling as it reenters the atmosphere. Suppose the object completely atomizes before hitting the earth. Assuming that no convection occurs how hot will the object be when it disentegrates. Assuming that it looses all its energy to the column it passes through, how much will the column be heated. So how exactly much does extrahelio velocity matters, for once an objects enters the solar system with any trajectory towards the sun, by the time it passes earth its going pretty hot damn fast.

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- ***Follow−Ups***:
  - ***Re: Possible evidence for Stone Age (Clovis) Cosmic Catastrophe?***
    - *From:* Uwe Müller

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