

Re: Meteoric and Cometary impacts in historical times – Observations in History

Source: <http://sci.tech-archive.net/Archive/sci.archaeology/2004-10/1622.html>

From: Eric Stevens (*eric.stevens_at_sum.co.nz*)

Date: 10/26/04

Date: Tue, 26 Oct 2004 21:56:23 +1300

On Mon, 25 Oct 2004 17:02:27 GMT, Joe Jefferson
<jjstrshp@mindspring.com> wrote:

>Eric Stevens wrote:

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>> On Fri, 22 Oct 2004 19:20:44 GMT, Joe Jefferson

>> <jjstrshp@mindspring.com> wrote:

>>

>> >Eric Stevens wrote:

>> >>

>> >> On Fri, 22 Oct 2004 01:50:31 GMT, Joe Jefferson

>> >> <jjstrshp@mindspring.com> wrote:

>> >>

>> >> >Eric Stevens wrote:

>> >> >>

>> >> >> *It*

>> >> >> *certainly appears as though there should have been a Tunguska size*

>> >> >> *impact about once every century with even more of smaller bolides.*

>> >> >>

>> >> >Okay, we'll take your figure of once a century. That's within the same

>> >> >degree of magnitude as the figure I've seen. Going back to the NASA web

>> >> >site, I see that the explosion flattened trees within about a 40km

>> >> >radius, so call it 5,026 square kilometers. According to my home atlas,

>> >> >the total surface of the Earth is 512,175,090 square kilometers. So the

>> >> >critical missing factors are, first the average percentage of the

>> >> >Earth's total surface that was inhabited during the time period you're

>> >> >interested in, and second the percentage of those inhabited regions

>> >> >about which we know enough to be able to tell whether or not they were

>> >> >affected by an impact event. My gut feeling is that neither of these is

>> >> >very large for most of human history, but it's not my gut that matters

>> >> >here. What percentages were you using when you concluded that

>> >> >statistically there should have been more significant impacts than

>> >> >archaeologists and/or historians have believed?

>> >>

>> >> *I think you are trying to oversimplify the problem. Lets use the*

>> >> *figure 1-1 I referred to above. If we assume the smallest noticeable*

>> >> *impact is a mere (?) 10 kilotons (I mean most people would notice a 10 kiloton explosion in their neighborhood) you read from the graph that there should be about 8 to 10 per year.*

>> >

>> > *People might notice a bolide of that size, but it wouldn't be likely to have much of an effect on their lives.*

>>

>> > *Don't forget we are talking about >10 kilotons. Most people would tend to be affected by an explosion of that magnitude in their vicinity.*

>

> *Yes. An explosion of 10 kilotons that takes place many kilometers high in the atmosphere. The damage radius never even comes close to the Earth's surface.*

>

>> > *They'd see a bright flash high up in the air, or if they happened to be looking in just the right direction they might see a fireball cross the sky and disappear in a bright flash. Maybe, MAYBE, something nearby might be hit by a small piece of debris. In the modern era there might be a story about it in the local newspaper. As you said, these events occur fairly commonly. They do not do anything that could be considered historically significant.*

>> >

>> >> *That is say 27,000 in the last three millennium. If you go to say 100 kilotons you get about one every 3 years. Say 1000 in the last 3000 years. At the 1 megaton level we get an impact about once a decade. Say 300 in the last 3000 years. Tunguska is about once per century – say 30 in the last 3000 years.*

>> >

>> > *Your numbers are too high by a factor of three, probably because the chart you're looking at is poorly designed. Try the NASA diagram at <http://liftoff.msfc.nasa.gov/academy/space/solarsystem/meteors/ImpactHazard.html> and the trend is much clearer. For every tenfold increase in explosive power, there is a tenfold decrease in frequency, starting with a 10 kt blast about once a year.*

>>

>> *That's a good page but it's 4 years old.*

>

> *The page you posted was 8 years old.*

>

>> *The estimate of the number of potential impactors has increased exponentially since then. Right now they are arguing about whether there is even a larger number of virtually undetectable dark bodies out there which will increase the numbers even again. This question won't really be answered until after NASA launches its orbiting infrared telescope called the Wide-field Infrared Survey Explorer (WISE) in 2008.*

>

> *A first approximation of the answer can be had by counting the number of impacts large enough to do significant damage within the past 50 years – the time frame in which large meteors hitting anywhere in the northern hemisphere should have been detected by the radar networks set up to*

>detect nuclear missiles.

I am going to split the thread at this point as we are heading down two separate paths. See my new thread.

>

—— snip material to be dealt with elsewhere ——

>> >> *My suspicion is that most people would have so little understanding of what had happened that they could not describe it in terms which are comprehensible today. In fact, because the ideas of such disasters are beyond the knowledge of most of us, I strongly suspect that some of their stories have come down to us even today in a form which we presently cannot readily recognise. The question is whether or not some of the physical evidence is unrecognisable to us for much the same reason.*

>> >

>> > *What do you base that suspicion on? Ancient peoples were able to describe volcanoes as big fiery explosions coming from the ground. Why do they think they couldn't just as easily describe a big fiery explosion in the sky?*

>>

>> *I think they did, but they had nothing in their cosmology to explain such events. Instead they come down to us as, for example, 'Jupiter's bolts' (changed in later translations to Jupiter's lightning bolts). How do you think they would describe a repeated bombardment of up to Tunguska size events? What about:*

>

> *A *repeated* bombardment of Tunguska size events? As in more than one being visible from a single place within a human lifetime? I don't believe there's any evidence something like that has happened since the very earliest days of the solar system.*

See for example <http://home.freeuk.com/tomlyons/chapter2a.htm>

"Krinov (1960) quotes a description of a fall at Velikii Ustig, Russia, in 1296.

On the second week, at noon, there appeared over the town – a dark cloud, and it was dark as night: after this there appeared great clouds rising on all four sides and these clouds lightning kept ceaselessly flashing. As it thundered over the town it was impossible to talk. Even the ground seemed to shake and sway continuously as if terrified by this horror. And clouds of fire arose and collided with one another: great heat arose from the lightning and thunder."

This wasn't a single bolide as with Tunguska but clearly an ongoing shower of probably smaller rocks and cometary rubble such as may be being described by Hesiod.

Apart from that, I have already cited:

"In February or or March of 1490, three different sources describe another remarkable event. According to Yau et al.:"Stones fell like rain in the Chiing–yang district(Shansi Province). The larger ones were 4 to 5 catties (about three pounds) and the smaller ones were 2 to 3 catties (about two pounds). They struck dead more than ten thousand people" etc

Then there are two significant events and some possible trivia in <http://www.science–frontiers.com/sf103/sf103g08.htm>

The evidence is there alright. Its just that we tend not to be aware of it.

>
>> *... and the infinite great sea*
>> *moaned terribly*
>> *and the earth crashed aloud,*
>> *and the wide sky resounded*
>> *as it was shaken, and tall Olympos rocked*
>> *on its bases*
>> *in the fan of the wind of the immortals,*
>> *and a strong shudder drove deep*
>> *into gloomy Tartaros under the suddenness*
>> *of the footrush*
>> *and the quenchless crashing of their feet*
>> *and their powerful missiles.*
>> *So either against either they threw*
>> *their re–echoing weapons*
>> *and the noise of either side outcrying*
>> *went up to the starry*
>> *heaven as with great war crying*
>> *they drove at each other.*
>> *Now Zeus no longer held in his strength,*
>> *but here his heart filled*
>> *deep with fury, and now he showed*
>> *his violence entire*
>> *and indiscriminately. Out of the sky*
>> *and off Olympos*
>> *he moved flashing his fires incessantly,*
>> *and the thunderbolts*,*
>> *the crashing of them and the blaze*
>> *together came flying, one after*
>> *and spinning whirls of inhuman*
>> *flame, and with it the earth,*
>> *the giver of life, cried out*
>> *aloud as she burned, and the vast forests*
>> *in the fire screamed....*
>>
>> *The wonderful conflagration crushed Chaos, (line 700)*
>> *and to the eyes' seeing*
>> *and ears' hearing the clamor of it,*

>> *it absolutely*
>> *would have seemed as if Earth*
>> *and the wide Heaven above her*
>> *had collided, for such would have been*
>> *as Earth wrecked and the sky came piling down*
>> *on top of her,*
>> *so vast was the crash heard*
>> *as the gods collided in battle.*
>> *The winds brought on with their roaring*
>> *a quake of the earth and dust storm,*
>> *with thunder and with lightning,*
>> *and the blazing thunderbolt*,*
>> *the weapons thrown by great Zeus,*
>> *and they carried the clamor*
>> *and outcry between the hosts opposed,*
>> *and a horrible tumult*
>> *of grisly battle uprose,*
>> *and both sides showed power in the fighting.*
>
> *Very poetic, but how does this compare to the total body of Greek*
> *religious texts from that era?*

Possibly in much the same way that an eyewitness account of 9/11 compares to the total body of US religious texts.

But Hesiod wasn't the only one writing in such a tone. Lucretius much later wrote [<http://www.american-buddha.com/luc.cosm.soc.htm>]:

"For fire was victorious and went round scorching many parts of the earth when the galloping steeds that draw the chariot of the sun swept Phaethon from the true course, right out of the zone of ether and far over all the lands. Then the Father Almighty, in a fierce gust of anger, struck down the aspiring Phaethon with a sudden stroke of his thunderbolt, [41] down out of the chariot to the earth. But the sun intercepted his fall and took up the everlasting torch of the firmament, and brought the trembling steeds back to the yoke from their stampede and, guiding them along their proper course, restored the universe to order. Such is the story as recited by the ancient bards of Greece, [42] a story utterly rejected by true doctrine. What may really lead to the triumph of fire is an increase in the accumulation of its particles out of infinite space. Then comes the crisis: either its forces for some reason suffer a setback, or the world shrivels in its parching blasts and comes to an end".

>
> *I'm reminded of a time years ago when I saw a book that claimed two gold*
> *artifacts from Colombia represented an airplane and a piece of earth*
> *moving equipment. And I'll admit, they looked that way to me too.*
> *However, shortly afterward I happened to find a big book filled with*
> *pictures of hundreds of different gold artifacts from Colombia and*
> *Panama. After spending about two hours looking at those pictures I went*

>back to the original book, and suddenly the artifacts looked to me very
>much like a manta ray and a jaguar. The difference was that I had become
>more accustomed to the artistic conventions of that time and place.

I accept that point. However, I suspect that we now are faced with the need to accept that our present interpretations of these ancient documents is wrongly coloured by the conventions of this time and place.

>
>> *A more accurate translation may just be 'bolt'.
>
>Based on what, exactly?

Some translations leave out the 'thunder' bit and just stick with 'bolt'. I understand that 'bolt' is a more accurate translation of the older writings. I can't give you a reference off the cuff but I have several times noticed that while one translation will say 'thunder bolt' an other will merely say 'bolt'. Mind you, the ancient authors could have been justified to use the term 'thunder' to describe the sound of

>
>> *Have you ever heard 'the vast forests in the fire screamed...'*?
>> *They do just that as all the trees flash into flame at the same*
>> *instant. Its a terrifying sound if you are anywhere near when that*
>> *occurs.*
>>
>> *What do you think the author was talking about?*
>
>*When in doubt, begin with the obvious. Hesiod was describing the origin*
>*of the gods.*

Yes, we all know that that is how the gods came into being. We can reproduce the phenomenon in the lab. :-(

In fact, you may be closer than you realise even though you haven't scored a direct hit. :-)

>*It's certainly possible that his description was influenced*
>*by something he had actually seen, but nowhere does he himself claim*
>*that it was. (And I think we are entitled to doubt that anybody has ever*
>*seen all the trees around them in a forest literally "flash into flame*
>*at the same instant" and survive to tell us about it.)*

I've spent quite a few years in the forest industry and do know something of forest fires. In the right conditions fires advance in leaps and bounds and large areas of tinder dry forest can burst into flame more or less simultaneously. I agree few unprotected people caught in this can survive but it is more common for the observer hear this as the fire moves towards or around them.

>
>> *Hesiod's Theogony by the way. 8th century BC.*

>
>*So are you saying that there was an impact event in 8th century Greece?*
>*Do you have any other evidence?*
>
>> >> *By the way, talking of disasters, would you care to have a crack at*
>> >> *the etymology of 'disaster'? :-)*
>> >
>> >*It comes from Greek astrology by way of Latin; loosely meaning "opposed*
>> >*by the stars". It can be compared with Shakespeare's "star-crossed lovers".*
>>
>> *Try 'dis' = evil, and 'aster' = star.*
>
>*Where do you get dis = evil? The references I checked have it as 'apart'*
>*or 'asunder', or simply as a prefix signifying reversal.*

I'm now not quite sure where I got the evil star from but the NSOED defines 'disaster' as "an unfavourable aspect of a star or planet". It also lists nearly three columns of words with the 'dis' prefix, virtually all of which use the prefix as negating the following word. However, the prefix 'dys' is later described as "Forming ns and adjs. w the sense 'bad, difficult, unfavourable, abnormal, impaired'". It seems that the traditional medieval english disregard for spelling may have cause some of the meaning of 'dys' to leak over into 'dis' as applied to 'disaster'. In any case, a 'bad' star is not too different from an 'evil' star.

Eric Stevens