Re: Sumatra 100 foot shift

Source: http://sci.tech−archive.net/Archive/sci.geo.satellite−nav/2004−12/2865.html

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From: Stichting ST (*atarist_at_xs4all.nl*)
Date: 12/30/04

Date: Thu, 30 Dec 2004 15:53:06 +0100

On Wed, 29 Dec 2004 19:35:50 −0500, Alan Browne
<alan.browne@FreeLunchVideotron.ca> wrote:

>Viper wrote:
>
>> Thanks for that link Alan.
>> While I don't think a tectonic 100 foot shift is unresonable in a major
>> quake, (I live in Alaska, and I'm well aware of the potential Geo
>> shifts from a quake) I still wonder what USGS was looking at that led
>> them to the conclusion (even if "premature") that there had been one,
>> and to what magnatude, and in what direction .....??(including vertical
>> shifts)
>> Satelite photos? GPS stations?
>>
>> I see that CNN now reports the planet's revolutions may have
>> accelerated as a result of the quake.
>>
>> http://www.cnn.com/2004/TECH/science/12/29/quake.wobble.reut/index.html
>
>If somwbody said an island a km across moved 100 feet, I wouldn't blink. But a
>1500 km long island moving that far without causing more earthquakes and
>tsunamis on the other side as well (Singapore would have been badly hit, as well
>as Borneo, Java, Vietnam, Cambodia, possibly Bankok, ... more).
>
>Even there they state that a GPS won't notice it... but surely a properly
>instrumented system must. Of course it depends on what you compare it to (what
>is the reference? Stars are usually the best). Per that article, enough mass
>'dropped' to increase the spin rate (like a skater spinning and pulling in her
>arms). 1,000,000 / 365 =~ 2740 years until a another leap second is needed due
>to this event but an upheaval of similar mass at about the same latitude will
>return it to the pre−earthquake rate. The earth is accelerating/decelerating
>its spin all the time...
>
>Cheers,
>Alan.

well since 1964 they have measured the changes the big earthquake (also with
tsunami) in Alaska made. See:

http://www.drgeorgepc.com/Earthquake1964Alaska.html
It states there:
"The earthquake caused vertical displacements which ranged from about 15 meters of uplift to 2.3 meters of subsidence relative to sea level."
"According to field measurements conducted by the U.S. Geological Survey, the earthquake was accompanied by vertical displacements over an area of about 520,00 square kilometers. " (= 520,000?)
"The zone of subsidence covered about approximately 285,000 square kilometers. It included the the west part of the Chugach Mountains, the north and west parts of Prince William Sound, most of Kenai Peninsula, and almost all the Kodiak Island group, all the way to Trinity islands."

So much for the vertical. For the horizontal I cannot find the amount of movement at the moment. But from the Alaska Denali Earthquake event (November 3, 2002):
"Early reports of fault movements indicate that Sunday's event caused more than 18 feet of slip at the ground surface (and possibly much more) along at least a 150 mile−long stretch of the fault. Movement on the fault caused ground north of the fault to move eastward, relative to ground south of the fault."

So 30 meters for a 1500 km long island seem much but it is not in the realm of the impossible.

Piet