Sinking of Atlantis by Marduk in 9577 BC, Part 4: Destruction from the flood

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Overview

This paper, the last of four papers on Atlantis – Discovery, Sinking, Marduk and Destruction – examines the extent of the tsunami of 9,577 BC. It compares calculated flood levels with actual flood levels in Europe, Morocco, and the Americas. It explains significant extinctions in Britain and France. The analysis encountered two previous tsunamis, one in 10,392 BC from the Arctic Ocean, the second off the coast of South Carolina above the Blake Escarpment around 14,000 BC. It found the trigger for the Atlantis tsunami was a rogue planet called Marduk-Nibiru-Storm. In addition to sinking Atlantis, satellites of Marduk ablated all the ice off the north half of Antarctica.

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Major catastrophes caused by Marduk

Planet Marduk, about ten times the mass of Earth, may have been a piece of star ejected by a supernova that continued to glow from within. Oral and written history describe Marduk / Nibiru as a second sun, surrounded by four moons, numerous satellites and a cloud of fine debris. After entering the Solar System, it was deflected by Neptune and Jupiter into a narrow, retrograde, twenty-year orbit in the same plane as that of the three inner planets: Earth, Tiamat and Jupiter. On every third orbit, Marduk aligned with Jupiter (12-year orbit) and Tiamat (4-year orbit), which caused Marduk to nearly hit Earth with terrible consequences.

In 9637 BC, a near miss by Marduk over Tibet ended the Younger Dryas by elevating the Tibetan Plateau 3 km. This uplift emptied a vast lake in the Tarim Basin, which flooded China and left a layer of brown clay. Friction from the elevation boiled nearby oceans and caused global temperature to rise; in Greenland, the average temperature rose 16°C in 60 years. Massive storms from the boiling ocean struck the Himalayas, which created a multitude of rivers that cut deep ravines into newly exposed land to the south.

In 9577 BC, a strike by a satellite of Marduk near Ireland created an earthquake that caused the island of Atlantis to slip into Rockall Basin, 3 km deep. This turbidite created a 1.6 km high tsunami above an area the size of Britain, with a volume of 400,000 km3. Going east, the tsunami washed over Ireland, Britain, Denmark and the Baltic Sea, flooded the Caspian Sea (Late Khvalynian Transgression), Black Sea (Late Drevnechernomorian Transgression) and eastern Mediterranean Sea, drowned an army near Athens and left a flood mark on the Great Pyramid. Across the Baltic basin, it dropped a load of sand, while in France and Spain, it dropped a load of silt at its maximum extent, which support the highest plowed fields. In North America, it flooded the east coast up to 400m, the Mississippi Valley up to 200 m, and washed over the Yucatan Peninsula. In Central America it crossed Panama to the Pacific. In South America, it flooded deep into the interior of Brazil.

In 9417 BC, a near collision with Marduk allowed Earth to capture Moon, which Marduk had captured from Tiamat nineteen years before. A year later, Marduk passed so close to Tiamat that the luckless planet exploded. Two years later, pieces of Tiamat bombarded Earth and boiled the oceans, while at the same time debris cut off light and heat from the Sun. The result was heavy snowfall, an increase in global ice sheets and a 6 m drop in sea level.

Accounts of destruction by Marduk

9637 BC

A sun-like planet streamed fire on Earth, created earthquakes, spawned great storms, uplifted the heavens (the Tibetan Plateau), flooded China by emptying a lake, boiled nearby seas due to tidal friction, uplifted nearby seas, killed some Sumerian gods. No mention of a pole shift.

Inserted into the Gilgamesh epic is a “great hail from heaven” and a tremendous whirlwind that “swept up to heaven” accompanying a flood that “swiftly mounted up … to the mountains.” This would describe bodies of water in proximity to the Tibetan Plateau being pulled upward as Marduk passed overhead. No mention of a pole shift.

9577 BC

Aztecs tell of a vanished land east of the American coast. “In a single day, all was lost, even the mountains sank into the water …. subsequently there came a great deluge in which many of the sons and daughters of the gods perished. No mention of a stream of fire or pole shift.

An Egyptian account relates that Egyptians felt an earthquake, Atlantis sank in the north Atlantic and flood waters from the sinking sloshed up and down the Mediterranean Sea for a day and a half. No mention of a stream of fire or a pole shift.

9417 BC

Sumerian cylinder seal VA-243 describes a near collision with Marduk that resulted in the transfer of Moon from Tiamat to Earth by Marduk, who had captured Moon the last time he passed Tiamat. The scribe calls Earth ‘Earth’, Tiamat ‘Mother’, Marduk ‘Storm’ and Moon ‘Hand of Mother’. A year later Storm attacks Mother and obliterates her by throwing one of his moons into her belly. After some time, pieces of Mother bombard Earth with devastating results. Those caught out in the open vanish. Every half day the bombardment resumes, allowing a half day to prepare for the next. So much debris flows toward the Sun that both light and heat are blocked. Survivors call on Hand of Mother to save them from the next attack by Storm. After surviving the next encounter, the scribe laments that he is the last of ten thousand (Harris, 2018).

Other

From Brazil, “The lightnings flashed and the thunders roared terribly and all were afraid. Then the heaven burst and the fragments fell down and killed everything and everybody. Heaven and Earth changed places. Nothing that had life was left upon the earth.” This has a pole shift.

Ovid tells of a celestial body called Phaeton whose approach burns earth. Great cities perish. The poles shift. But Phaeton and his chariot disintegrate, unlike Marduk, and there is a pole shift.

The scribe of the Madrid Codex relates “that ten countries with 64 million inhabitants convulsed and sank 8060 years earlier.” It is a copy of a classic Mayan codex of unknown date. If it refers to the seven Tollmann strikes of either 7521 or 7499 BC, then the scribal date would be 539 or 561 AD.

9,577 BC: Atlantic Ocean Tsunami

Summary

In 9577 BC, a satellite of planet Marduk struck somewhere near Ireland and created an earthquake strong enough to liquify a layer of quartz beneath the island of Atlantis west of Ireland. The top half of Atlantis slid west into Rockall Basin for 135 km, then regained friction and broke the lower half free from the continental shelf. Both halves sped across the basin for 225 km until the front edge dug into the basement and brought the split island to a halt. The sea had been raised an average of 1.6 km across Rockall Plateau, the size of Britain.

A quarter of the tsunami raced east over Ireland and Britain, thereby extinguishing the megafauna. It raced across Germany and Poland, tore off pieces of the Scandinavian Ice Sheet, crossed the hills of Belarus and flowed around the Ukraine. Now it had a straight path south across flat terrain to the Black Sea, where it arrived at the Bosporus, a frothy wave 188 m high, moving over 300 kph. Part of the wave filled the basin, and part went over the hills of the Bosporus, shot into the Aegean Sea, drowned coastal Athens, crossed the Mediterranean Sea and flooded the Egyptian Delta and coastal Levant. The Great Pyramid of Giza retained a high-water mark 133 meters above sea level from runup of this flood. Shellfish found in deep sediment at the base of the Great Pyramid date to 9600 ±300 BC.

In central Russia, the Ural Mountains blocked the flood, where it ponded and dropped a bed of silt 500 m above sea level. Further south, a flood with salinity of one third of sea water raised the Caspian Sea to 0 m asl, called the **Late Khvalynian Transgression**, dated to 10.0 ka BP (9580±17 BC).

A simultaneous widespread flood of one-third sea water in the Black Sea is called the **Late Drevnechernomorian Transgression.** A radiocarbon date of 10.0 ka BP translates to 9580±17 BC. (Mertens et al, 2012; Konikov et al., 2007)

On the Iberian Peninsula, flood level reached 660 m, all the way to Madrid, where the highest plowed fields occur. In France and Spain, the Azilians were extinguished.

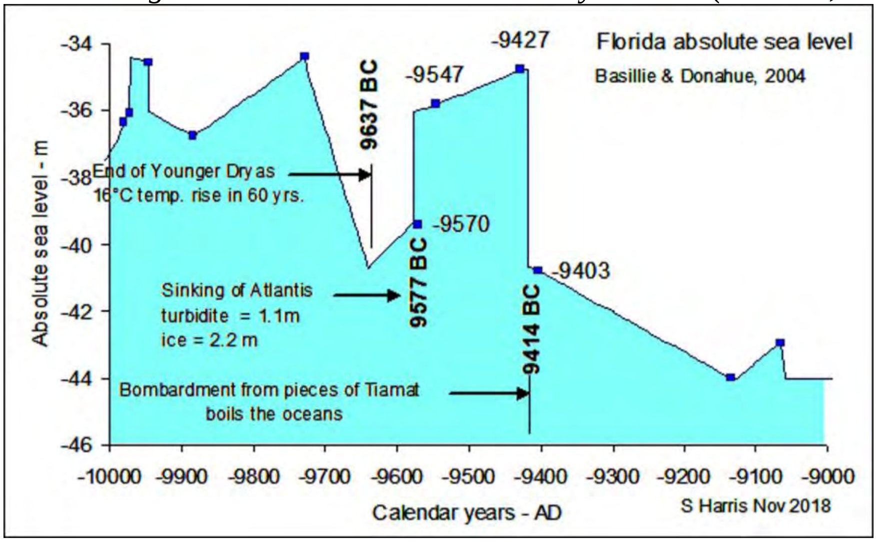
In eastern North America, the flood reached 1200 feet above sea level, the highest plowed fields, and sloshed into the Great Lakes. It continued down the coast, around the Appalachian Mountains, and up the Mississippi River Valley as far as Saint Louis. It drowned Cuba, the Yucatan and Belize, breached the Isthmus of Panama, and flooded half the interior of Brazil.

On the Pacific side of the Arctic Ocean, it breached the Bering Land Bridge; its high velocity prevented Pacific waters from entering the Arctic Ocean.

Volume of Atlantis Flood: 400,000 km3

In 9577 BC, the volume of the tsunami caused by the sinking of Atlantis was 400,000 km3; dividing this volume by the total area of the oceans of 360,000,000 km2 raised absolute sea level 1.1 m. However, as shown in Figure 1, absolute sea level rose three times that amount, 3.3 m, leaving 800,000 km3 to be explained.

Figure 1: Changes in absolute sea level caused by Marduk (Balsillie, 2004).

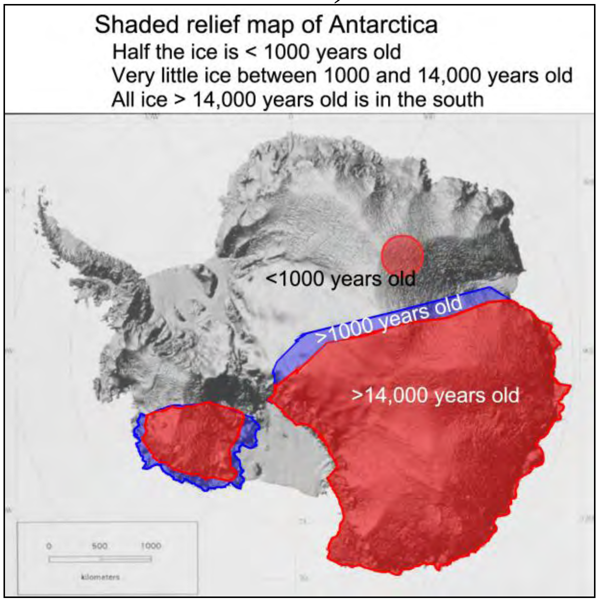


Volume of lost ice in Antarctica: 800,000 km3

The most obvious place to look for that much ice is Antarctica. A map of bore-hole data overlain on a shaded relief map shows an amazing phenomenon: the northern half of the continent has no ice older than a thousand years! (Figure 2). The exception is a drill site called Dome F on the southern slope of the highest peak. Moreover, the remaining ice in the south is nearly all over 14,000 years old. The northern half of Antarctica lost all of its ice over 14,000 years old, plus any ice that accumulated between then and a thousand years ago.

This lack of ice more than explains three maps based on much older maps that illustrate the north coast free of ice: the Piri Reis Map, the Oronteus Finneis Map, and the Buache Map. These maps depict the coastline and rivers, and employ advanced cartographic projection techniques that were unknown at the time.

Figure 2: Shaded relief map of Antarctica showing age of overlying ice sheets. Uncolored is less than 1000 years old. (Drill sites from US ITASE project) (Map from US NOAA)

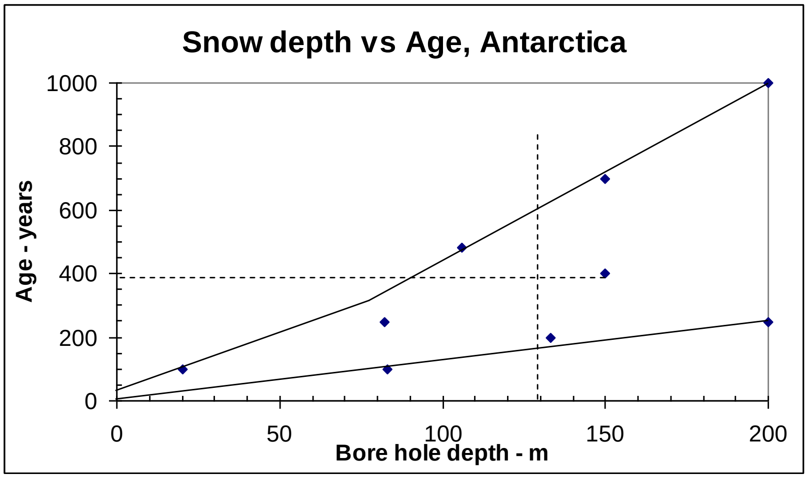


The northern half of the continent measures 4170 km x 1540 km = 6.4 million km2. Ice thickness in the north averages around 130 m, accumulated in 1000 years. Ice thickness in the south averages around 800 m. The difference, 670 m, is missing, 4.3 million km3.

It appears that when a satellite of Marduk sank Atlantis, another satellite disintegrated over northern Antarctica and evaporated 130 m of ice totaling 800,000 km3, which raised sea level by 2.2 m. The curve of the Earth protected the southern half, and a high mountain protected the site Dome F.

If 130 m represents snow cover down to bedrock, then its age was around 390 years (Figure 3, Snow depth vs age). This suggests that 390 years earlier, 9577+390 = 9967 BC, a similar event also removed snow down to bedrock. Absolute sea level does in fact show a jump of 1.8 m around 9975 BC (Figure 1).

Figure 3: Snow depth vs Age in northern Antarctica. (US ITASE Project)



Atlantic Flood from Atlantis to Bosporus

Before Atlantis sank, the poles were in reverse position (see Part 3: Nibiru).

I find it impractical to give directions with a shifted pole, so **I will pretend that the hemispheres had not been reversed.** It makes no difference to the physics.

According to the Egyptian priest of Sais, after defeating the army of Atlantis, the Greek army then drowned from a flood near Athens. Is this possible? Yes, because a low route exists from Atlantis, across Poland, around the Ukraine, south to the Black Sea, hence through the Bosporus Strait to the Aegean Sea.

Route of Atlantis Flood across Northern Europe

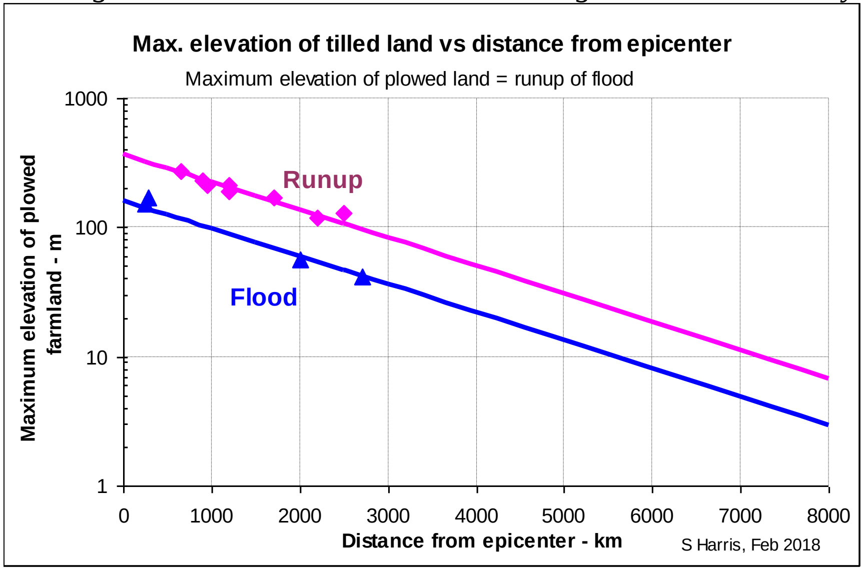
Beginning at the center of Rockall Plateau, a low-level route to the Bosporus crosses Ireland, Britain, Denmark, Germany, Poland, Belarus, Ukraine and the Black Sea. The eastward fraction of the flood arrived at Ireland about 1500 m high and 250 km wide with a peak of 2100 m. The mountains of Ireland and Britain are low compared to the tsunami and offered no impediment. The most significant loss occurred while crossing the low mountains between Poland and Belarus (Figure 4).

Figure 4: Low route over Britain through Belarus to Bosporus is 4500 km long. The Scandinavian Ice Sheet ended near the top of this image.

A large tsunami crossing dry land declines logarithmically in height. Measured data from the 2194 BC tsunami of Frisland across flat land bordering the Baltic Sea suggests a constant slope on a semi-log plot (Figure 5) (Harris, 2018).

$h = h_0*10^{(-.00022*s)}$, where s is in km, h in meters.

Figure 5: Measured decline in wave height vs distance on dry land.



Submergence of Ireland and Britain

The Atlantis tsunami averaged 1500 m high at western Ireland. Obstructions up to half the total depth have little effect, so it passed over Ireland without change. The tsunami arrived at Britain 1200 m high; only the highlands of Scotland offered token resistance (Figure 6).

Figure 6: Elevation of United Kingdom above 600 m.

Extinction of megafauna in Britain

In 10,000 BP uncorrected radiocarbon years, the megafauna of Britain utterly vanished (Table 1, Coard and Chamberlain, 1999). Into the void drifted smaller animals from southern Europe, followed by hunters like Homo sapiens.

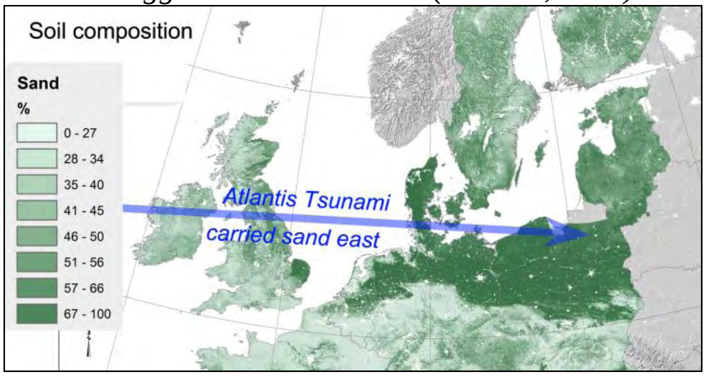
Table 1: Extinction of species in Britain in 10 ky BP (Coard & Chamberlain, 1999).

Period site: Date (^{14}C kyrs BP):	Late Devensian (>10.0)	Early Holocene (<10.0)
Alopex lagopus	✓	
Bison priscus	✓	
Coelodonta antiquitatis	✓	
Crocuta crocuta	✓	
Dicrostonyx torquatus	✓	
Equus ferus	✓	*
Gulo gulo	✓	
Lemmus lemmus	✓	
Mammuthus primigenius	✓	
Megaloceros giganteus	✓	
Microtus gregalis	✓	
Microtus oeconomus	✓	*
Ochotona pusilla	✓	
Ovibos moschatus	✓	
Panthera leo	✓	
Rangifer tarandus	✓	*
Saiga tatarica	✓	
Spermophilus sp.	✓	
Alces alces	✓	✓
Arvicola terrestris	✓	✓
Cervus elaphus	✓	✓
Canis lupus	✓	✓
Homo sapiens	✓	✓
Lepus timidus	✓	✓
Microtus agrestis	✓	✓
Ursus arctos	✓	✓
Vulpes vulpes	✓	✓
Apodemus spp.		✓
Bos primigenius	#	✓
Capreolus capreolus		✓
Castor fiber		✓
Clethrionomys glareolus		✓
Felis silvestris		✓
Lepus capensis		✓
Lynx lynx	#	✓
Micromys minutus		✓
Muscardinus avellanarius		✓
Sciurus vulgaris		✓
Sus scrofa		✓
Insectivora		✓
Mustelidae (excluding *Gulo*)		✓

Flood across Doggerel Bank carried sand eastward

Doggerel Bank, the land between Britain and Denmark, was primarily a sandy delta of the Rhine. The tsunami scraped off the top layer of sand and carried it east, depositing it in the lowlands of Denmark, Sweden, Germany, Poland, the Baltic States, and Ukraine (Figure 7).

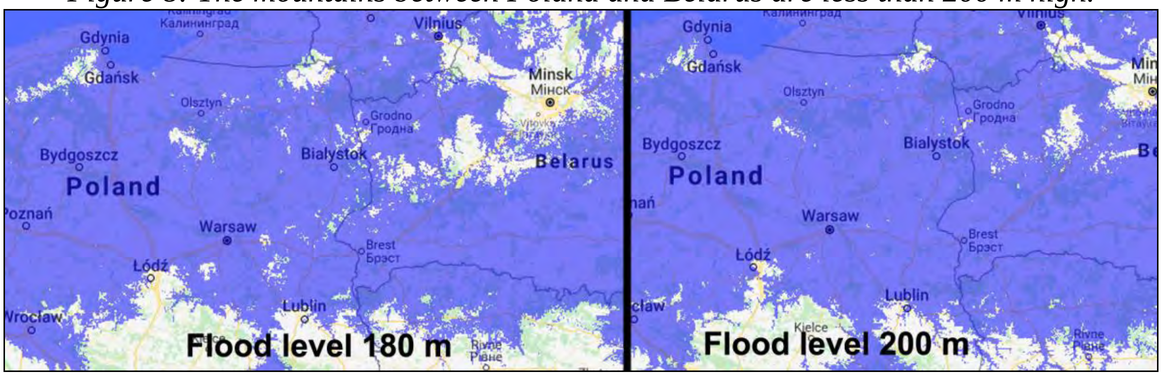
Figure 7: The Atlantis Tsunami carried sand from the Rhine delta at Doggerel Bank eastward (Baliabo, 2016).



Mountains between Poland and Belarus

The last hurdle was the mountains between Poland and Belarus, 2700 km away (Figure 8). They form an intermittent barrier at 180m that the wave overcame, and no barrier at 200 m.

Figure 8: The mountains between Poland and Belarus are less than 200 m high.

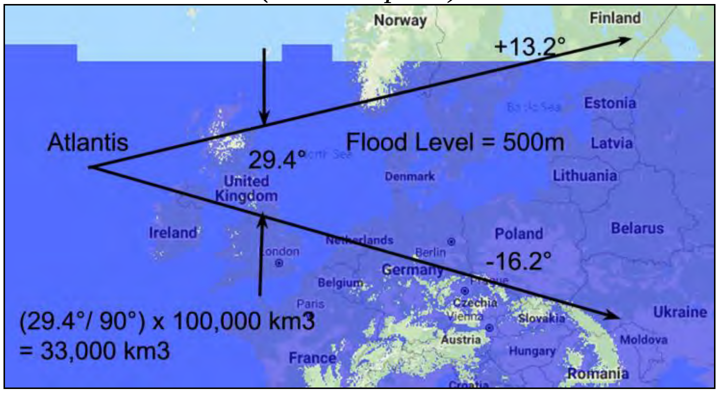


Average tsunami height on a flat plane declined to 505 m at Belarus. Average mountain height at Belarus of 180 m lowered the tsunami to 325 m, which was partially offset by a 13% runup on the higher elevation. Final height was 362 m.

1500 m * 10^(-.00022* (2700 km -550 km)) = 1500 m * 0.337 = 505 m on a flat plane
505 m – 180 m = 325 m clearance of the tsunami without runup
325 m * (505 m /325 m)^.25 = 325 m * 1.116 = 362 m clearance over Belarus

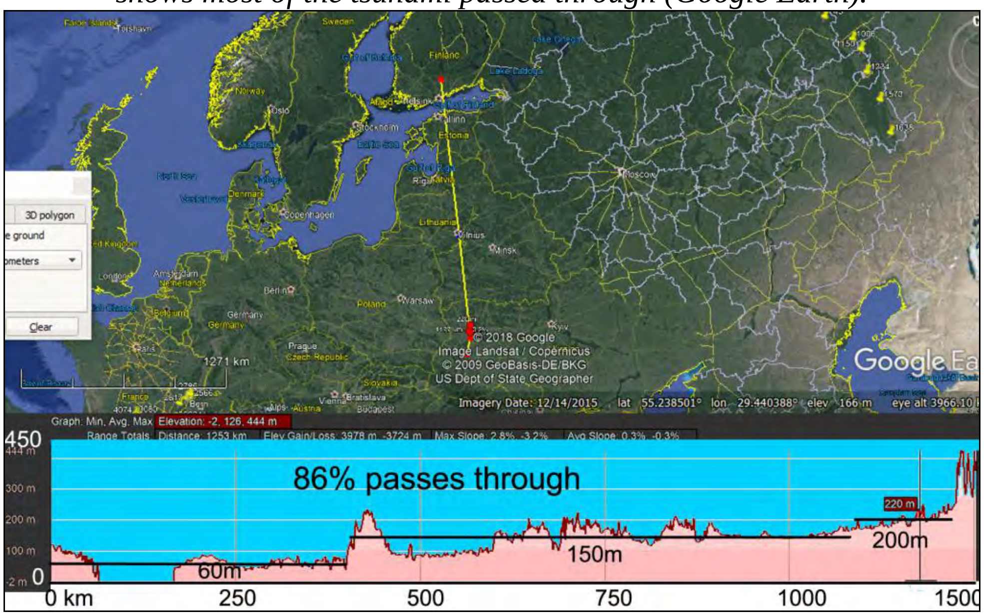
Volume of the eastern component of the tsunami began with ¼ x 400,000 km3 = 100,000 km3. One-third passed between the mountains of Norway and Germany, 33,000 km3 (Figure 9).

Figure 9: One third of the eastern component of the flood passed between the mountains of Norway and Germany, totaling 33,000 cubic kilometers. (Floodmap.net)



Between the ice sheet covering Finland and the mountains of the Ukraine, most of the remaining tsunami passed through, totaling 86%*40,000 km3= 34,000 km3 (Figure 10).

Figure 10: A transection from Finland to Ukraine shows most of the tsunami passed through (Google Earth).

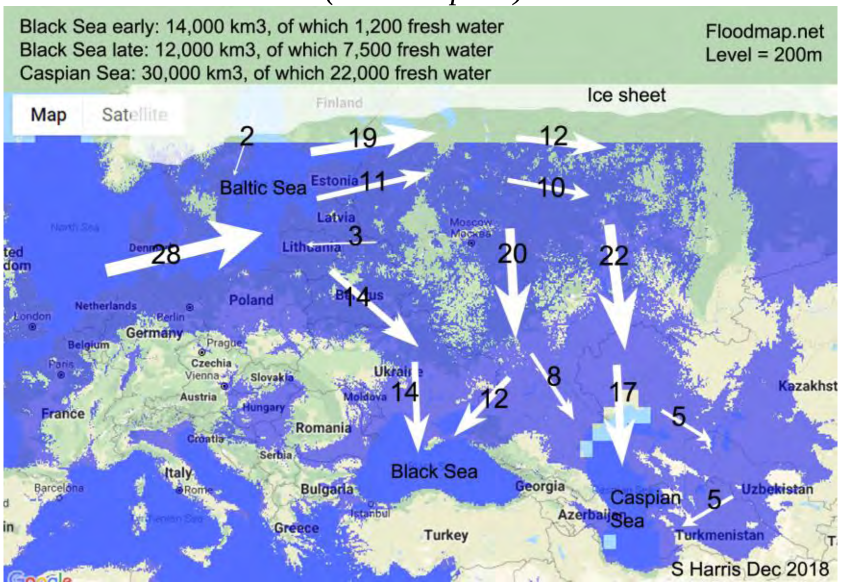


Going East the flood encountered some mountains which returned 3,000 km3 of sea water back to the Baltic Sea, plus perhaps 2000 km3 of meltwater from the ice sheet over Sweden.

Flood waters divide between Black Sea and Caspian Sea

At the Ukraine, the tsunami followed various routes (Figure 11). The Black Sea received two pulses of 14,000 and 12,000 km3, of which 8,700 was fresh water. The Caspian Sea received three pulses of 17,000, 8,000 and 5,000 km3, of which 22,000 was fresh water.

Figure 11: Saline and fresh-water volumes going east. (Floodmap.net)

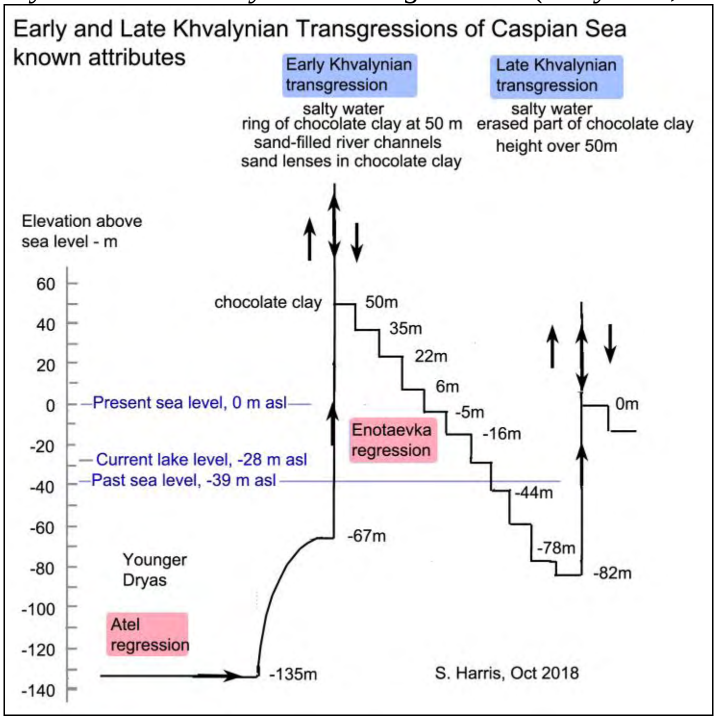


Late Khvalynian Transgression of the Caspian Sea: +82 m in 9580±17 BC

During the early Holocene, the Caspian Sea experienced two catastrophic floods named **Early Khvalynian Transgression** and **Late Khvalynian Transgression.** Both were instantaneous because no intermediate steps occur. Based on the kind of shellfish, the salinity of each was about one-third that of sea water; therefore, the floods originated in an ocean.

The Early Khvalynian came from the direction of the Arctic Ocean, evidenced by the unusual mud it brought, the second from the Atlantic Ocean, the Atlantis tsunami. Ekaterina Badykova (2007) summarized what is known (Figure 12).

Figure 12: Plot of Early and Late Khvalynian Transgressions (Badykova, 2007).



Both resulted from a tsunami because: 1) rain and melting of the ice sheet could not provide enough water in such a short period of time, 2) emptying of lakes would not provide salt, 3) an oceanic tsunami would have enough volume, but the sea water must be diluted.

Early Khvalynian raised the level of the Caspian Sea 123m, from -67m to +50m asl, where it ponded at the level of the outlet sill to the Black Sea. Volume required was 70,000 cubic kilometers. A great amount of fine silt settled out and left a bath-tub ring of chocolate-colored clay 1 to 6m thick around an area 2½ times larger than the present Caspian Sea. The primary component of the mud, illite, comes from Pre-Cambrian rocks of the Baltic Shield east of the Scandinavian ice sheet and north of the Caspian drainage divide. Within the mud is a one-time spike of pine pollen. Egyptians did **not** record a flood from the Bosporus.

Between these two events, the level of the Caspian Sea dropped -134m in nine steps from +52m to -82m asl, called the **Enotaevka Regression.** Badykova estimated a minimum of 400 years to create this many discrete steps, and probably closer to 1000 years.

Late Khvalynian raised the Caspian Sea level 82 m, from -82m to +0m asl, where it ponded at the level of the outlet sill to the Black Sea, substantially above sea level at -39m asl. This tsunami wiped out most of the chocolate clay layer in the northern part of the Caspian Sea Basin, which indicates that its height was over 50 m asl. Volume required was 30,000 km3. Afterwards, fresh water diluted salty water in the north part of the Caspian Sea. This time Egypt recorded a devastating flood that lasted a day and a half.

Reported dates from cores of the Late Khvalynian Transgression exhibit a tight cluster of radiocarbon dates centered on 10,000 RC BP (9580 ±17 BC), which aligns with the Atlantis Tsunami of 9577 BC.

Radiocarbon dates in the Caspian Sea are wildly inconsistent, between 9 and 30 ka BP, which indicates contamination by old carbon. The greater the depth, the greater the contamination. Only the youngest dates are acceptable, between 9 ka and 14 ka BP, which is about the same BC.

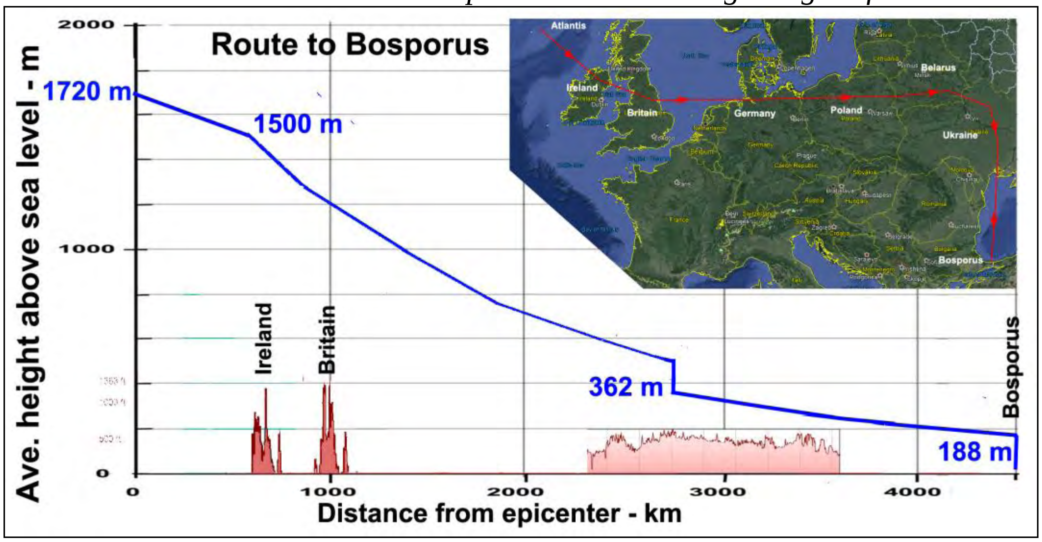
Old carbon comes from release of trapped oil, gas, naphtha or methane hydrates when overlying sediments are stripped off by either a turbidite or a tsunami. The Caspian Sea is Russia's largest producer of oil and gas; major fields lie beneath presently exposed lake bottom in the north. Before drilling began, spontaneous oil eruptions were reported from fields close to the surface.

Route from Belarus to Bosporus

The short route of the tsunami travelled 1300 km from Belarus to the Bosporus, gradually losing height from 362 m to 188 m (Figure 13).

362 m * 10^ (-.00022*1300 km) = 362 m * 0.517 = 188 m

Figure 13: Route over the British Isles and Belarus.
The tsunami arrived at the Bosporus with an average height of 188 m.



The long route had basically the same 200 m impediment of mountains, but travelled 3400 km.

362 m * 10^ (-.00022*3400 km) = 362 m * 0.179 = 65 m

Late Drevnechernomorian Transgression of the Black Sea: +48 m in 9580±17 BC

Lake level for the Late Drevnechernomorian Transgression of the Black Sea rose from -40 m asl to + 8m asl. (Larenkov and Kadurin, 2011)

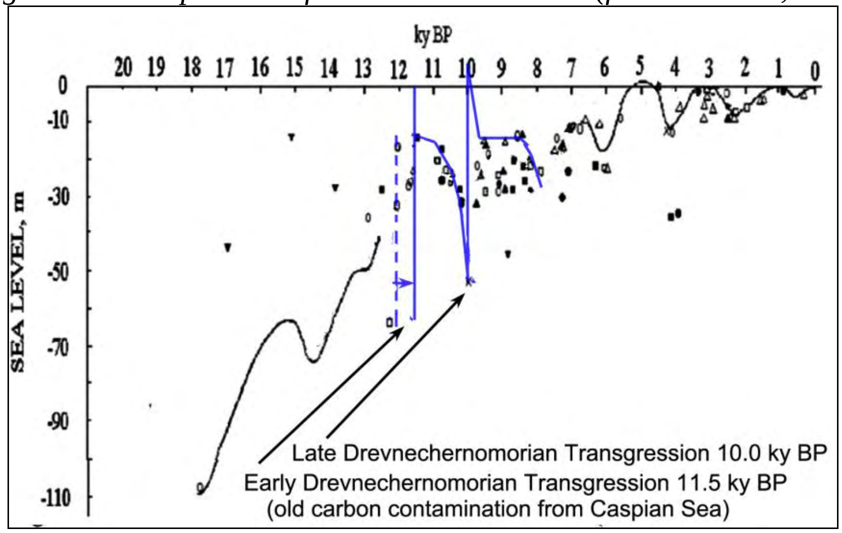
The Late Drevnechernomorian Transgression of sea water in the Black Sea occurred before 8.9 ka BP. Afterward, lake level fell to -18 m asl (Yanko-Hombach, 2013).

The Late Drevnechernomorian Transgression occurred around 10.0 ky BP [9580±17 BC]. Lake level rose from -52 m to an unknown height, then fell back to -15m (Konikov et al, 2007).

Increase in lake volume was about 14,800 km3

volume increase = Area * height = 400,000 km2 x (0.052- 0.015 km) = 14,800 km3.

Figure 14: Compilation of dates and lake levels (from Konikov, 2007)



Atlantic Flood from Bosporus to Egypt

The flood through the Bosporus occurred in two stages.

> The early stage took the shortest route and raised the level of the Black Sea from -50 m to -15 m. It required 14,800 km3 of water, which was highly saline and cold, and still occupies the bottom of the Black Sea.
>
> The late stage went a longer route and added to its initial volume with fresh water from erosion of the Scandinavian ice sheet.

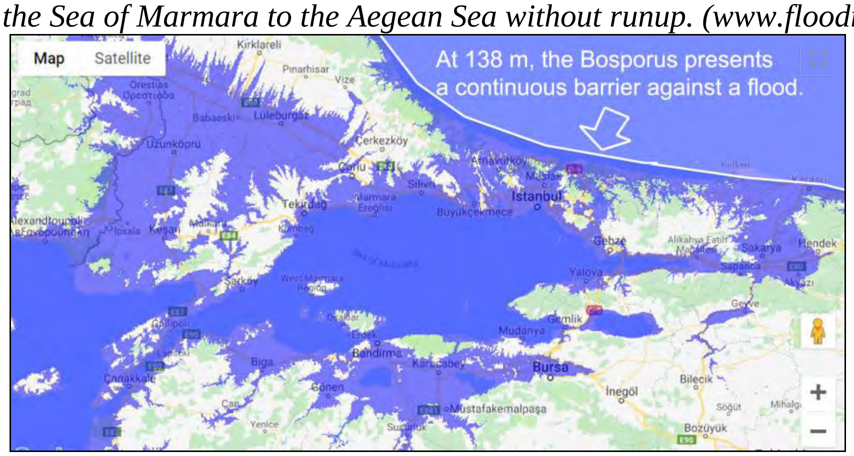
Flood through the Bosporus

With an average height of 188 m, the tsunami hit the Bosporus traveling 300 kph (Figure 15).

$v = 2*(g*h)^{½} = 2*(9.8*188)^{½}$ = 86 meters per second or 309 kph

Black Sea level was -50 m asl, which reduces the effective wave height to 138 m.

Figure 15: Path of 138 m flood from the Black Sea across the Bosporus, through the Sea of Marmara to the Aegean Sea without runup. (www.floodmap.net)



Maximum runup is given by the Stockdon equation:

15) $R_{max} = 0.043(H_0L_0)^{½}$

where H_0 = deep-sea wave height and L_0 = deep-sea wave length. For H_0 = 0.188 km and L_0 = 300 km, then

$$R_{max} = 0.043(0.188*300)^{½} = 0.323 \text{ km}$$

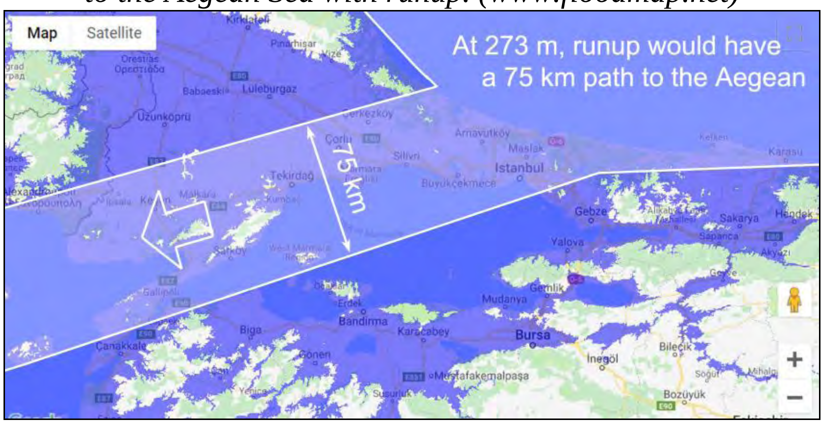
Before the flood, Black Sea level was -50 m asl, which reduced the runup level from 323 m to 273 m, but still opened a channel 75 km wide (Figure 16).

Subtracting 188 m from 323 m gives 135 m of wave cleared the Bosporus. Speed slowed down as did wavelength, the new length being reduced by the square root of the two heights.

$$L_1 = 300 \text{ km} * (135 \text{ m}/188 \text{ m})^{½} = 300* 0.85 = 255 \text{ km}$$

Into the Aegean flowed a bore measuring 0.135 km x 75 km x 255 km = 2600 km3.

Figure 16: Path of tsunami from the Black Sea through the Sea of Marmara to the Aegean Sea with runup. (www.floodmap.net)



Erosion of escarpment at the Sea of Marmara

As it plunged from the Black Sea to the Sea of Marmara, it severely eroded the north shore of the Sea of Marmara, so that it resembled Niagara Falls (Figure 17).

Figure 17: Eroded cliff on the north shore of the Sea of Marmara. (Google Earth)

Scouring of bottom of Aegean Sea

Entering the Aegean Sea, it scoured the entire width of the Aegean Sea (Figure 18).

Figure 18: Scoured bottom of the Aegean Sea created by a high-speed flood from the direction of the Sea of Marmara. (Google Earth)

Drowning of Athens

The flood pulse into the Aegean Sea had an average height of (273-138) = 135 m, an average width of 75 km, and a wave length of 255 km, giving a volume of 2600 cubic kilometers.

Athens lies 687 km from the Bosporus. Using 135 m as an initial tsunami, then it would decline to 95 m. Sea level was 40 m lower, so flood level was 55 m (Figure 19). Normally Athens was protected from a tsunami by a string of tall islands, but this is more like a rising tide than a tsunami. Speed of a 95 m high bore is 157 kph.

The port of Athens is Piraeus, on a low hill east of the docks. The nearest safe hill from Piraeus is 4 km away. If someone spotted the wave 10 km out to sea, they had 4 minutes to reach safety. A horse can travel 3.2 km in that time, but not 4 km. According to the Egyptian priest, they all perished.

Figure 19: A flood of 95 m, with sea level being 40 m lower than today, would drown the port of Piraeus, where the Athenian navy was stationed. (www.floodmap.net)

The flood continued at a lesser rate for many more hours as waves with longer routes arrived. These then bounced off various land masses around the Mediterranean for a day and a night.

The tsunami travelled 4500 km to Athens at an average depth of 700 m, which gives an average speed of 600 kph. At this velocity, it arrived 9 hours after the strike.

Flood mark on Great Pyramid of Giza

After crossing the Mediterranean from Greece, the tsunami flooded the Nile Delta. Was it responsible for a flood mark 73 m (240 feet) up the side of the Great Pyramid of Giza?

The base of the Great Pyramid lies 60 m above sea level. In 9577 BC, absolute sea level was 39 m lower. Therefore, absolute height of the base was 60 + 39 = 99 m asl, and the pyramid watermark 172 m asl. The nautical distance between the Bosporus and the pyramid is 1580 km, so the average flood height would have been 60 m, not high enough to flood the base.

135 m * 10^ (-.00022*1580 km) = 135 m * 0.45 = 60 m average height

But the plateau would experience runup, as would the pyramid.

R_{max} = 0.043(0.06 km*255 km)^{½} = 0.167 km = 167 m asl

Thus, average wave runup was just shy of the pyramid mark of 172 m, which indicates that the Atlantis flood probably was responsible for a mark on the pyramid.

> Before removal of the pyramid's outer casing stones, one could see water marks on the stones halfway up the pyramid's height, at about the 240-foot level, which would be 400 feet [122 m] above the present Nile level.
>
> This flood mark appears to date construction of the Great Pyramid to before 9600 BC. Numerous arguments for later construction have been demolished, one by one.
>
> There existed a fourteen-foot layer of silt sediment around the base of the Pyramid, a layer which also contained many seashells, and the fossil of a sea cow, all of which were dated by radiocarbon methods to 11,600 ± 300 B.P. [9650 ± 300 BC].
>
> When the Pyramid was first opened, incrustations of salt an inch thick were found inside. Most of this salt is natural exudation from the chambered rock wall, but chemical analysis also shows some of the salt has a mineral content consistent with salt from the sea. (Jochmans, 2002)

Atlantic Flood from Atlantis to Western Europe

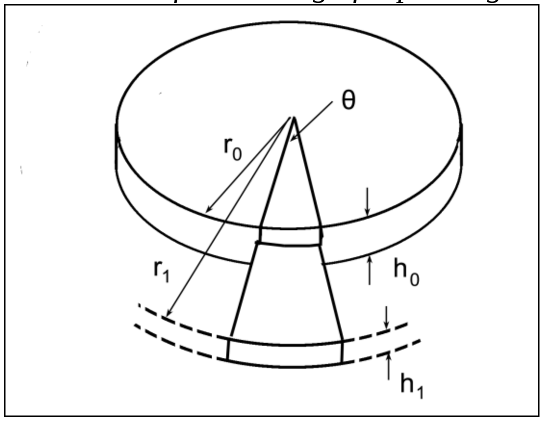
A quarter of the Atlantis tsunami radiated south from Rockall Plateau. The initial wave measured 325 km long, 300 km wide, 1600 m high, above a depth of 1 km. At a speed of 575 kilometers per hour, it took just 34 minutes to clear Rockall Plateau.

velocity = [g*(D+A)]^{½} = (9.8*2600)^{½} = 160 m/s, equivalent to 575 kph

Calculation of maximum runup

To model tsunami height going south takes some ingenuity. To simplify the math, assume sea level depth stays constant. Start by finding the height and width of the tsunami just after it cleared the plateau, when the shape changed from a pie wedge to an expanding ring (Figure 20).

Figure 20: Model of initial ring of expanding tsunami.



Within a narrow angle theta, at constant depth of the ocean, total volume of a tsunami above sea level stays constant. Using radial coordinates, the initial volume is a slice of angle θ, radius r_0, and depth h_0:

1) $V_0 = (\theta/2\pi)(\pi\, r_0^2)h_0$

Immediately after leaving the plateau, its volume is:

2) $V_1 = (\theta/2\pi)(\ \pi\, r_1^2\ -\ \pi\, r_0^2\ )h_1$

Setting the two volumes equal, θ and π drop out:

3) $V_0\ = V_1$

4) $h_0\, r_0^2 = h_1(r_1^2 - r_0^2)$, which factors into $h_1(r_1 - r_0)(\ r_1 + r_0)$

V_1 can also be estimated by modeling the intial slice as a triangle whose average height is 2/3 of the radius from the epicenter. V_2 can be estimated as a trapezoid.

5) $V_0 = (\theta/2\pi)h_0(2/3\ r_0)$

6) $V_1 = (\theta/2\pi)h_1(\ r_1 + r_0)/2$

Setting volumes (5) and (6) equal, θ and π drop out:

7) $2/3\ h_0 r_0 = ½\ h_1(\ r_1 + r_0)$

Solving for h1:

8) $h_1 = 4/3 h_0 r_0/(r_1+r_0)$

Substituting h_1 of (8) into equation (4) and simplifying, the height terms drop out:

9) $h_0\, r_0^2 = 4/3 h_0 r_0(r_1 - r_0)(\ r_1 + r_0)/(r_1+r_0)$

10) $r_0 = 4/3(r_1 - r_0)$

Now solving (10) for r_1:

11) $r_1 = 7/4 r_0$

Substituting real numbers, the width of the initial expanding tsunami ring at 1 km depth is:

$w_1 = r_1 - r_0 = (7/4 - 4/4)r_0 = ¾ r_0 = 0.75 * 325\text{ km} = 244\text{ km}$

Average radius of the expanding ring:

$r_{ave} = (r_0 + r_1)/2 = (7/8 + 4/8)r_0 = 11/8\ r_0 = 1.375 * 325$ km = 447 km

Average height of the expanding ring from (8):

$h_1 = 4/3 h_0 r_0/(r_1+r_0) = 4/3/(4/4+7/4)h_0 = 16/33 * h_0 = 0.485 * 1600$ m = 776 m

For any distance r_2, wave height h_2 varies inversly as distance at a depth of 1 km.

12) $h_2 = h_1(r_{avg}/r_2) = 776$ m (447 km / r_2)

At a far-away shore, water depth equals wave height h_3, which varies inversely as the fourth root of water depth. Initial water depth d_0 was 1000 m. To this is added the height of the wave h_1 because it is large in comparison with water depth. Normally this correction is ignored because tsunami height is trivial compared with ocean depth.

13) $h_3 = h_2[(d_0+h_1)/h_2]^{¼} = h_2\,[(1000+776)/h_2]^{¼}$

Once on dry land, the velocity of water increases as the square root of height. This speedup is not seen on ordinary, small tsunamis but is evident with a dam bursts.

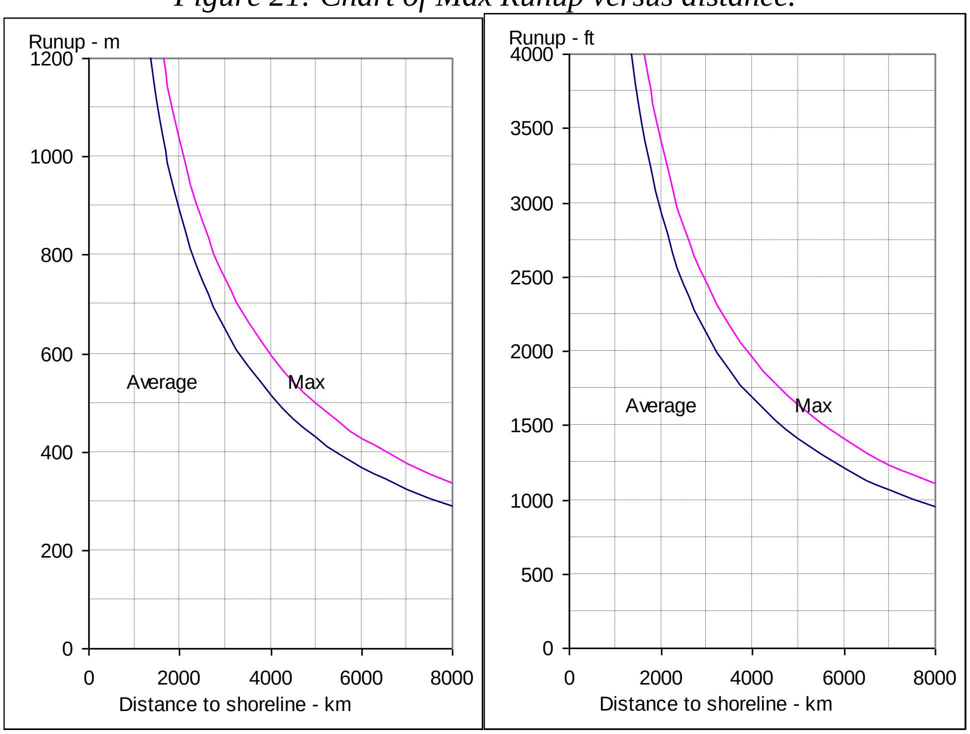
14) $v_3 = 2\ (g\ h_3)^{½}$

Hilary Stockdon et al. (2007) found experimentally that for slopes less than 10%, maximum runup is independent of slope and varies only by wave height and wave length.

15) $R_{max} = 0.043(H_0L_0)^{½}$

where H_0 = deep-sea wave height, L_o = deep-sea wave length

Figure 21: Chart of Max Runup versus distance.



Flood stopped by Pillars of Hercules

The Strait of Gibraltar lies 2800 km from the epicenter. At constant ocean depth, tsunami height diminishes inversely as distance.

$h_2 = h_1*d_1/d_2 = 776$ m * (447/2800) = 124 m

The strait averages 365 m deep, less 39 m for lower sea level, equals 326 m. Flood height increases by the fourth root of the inverse of ocean depth.

$$h_3 = 124 \text{ m} * (1776 / 326)^{1/4} = 124 * 1.53 = 189 \text{ m}$$

At an elevation of 189 m less 39 m = 150m, the Strait of Gibraltar is about 16 km wide (Figure 22). The flood through the Strait can be modeled as a thin strip measuring 240 km long x 16 km wide x 0.19 km high for a total volume of 730 cubic kilometers. Beyond the strait lies a rectangular basin 160 km wide by 300 km long by 1 km deep, which the flood filled 15 m higher.

$$h_4 = 730 \text{ km}^3/(160 \text{ km} * 300 \text{ km}) = .015 \text{ km}$$

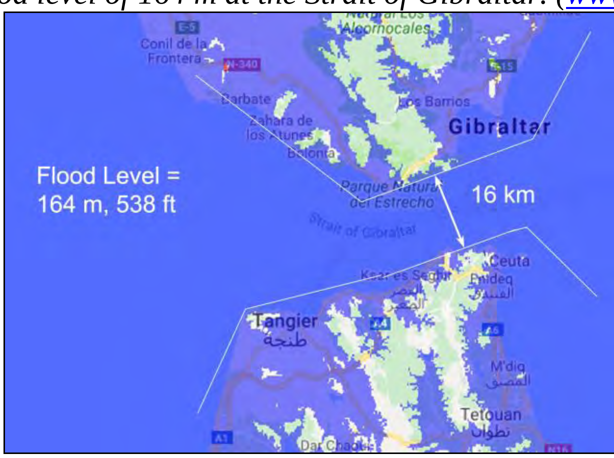
From this basin it flowed 2400 km to Athens. In open sea, height would decline to a meter.

$$h_5 = 15 \text{ m} * 150 / (2400-150) = 15 \text{ m} \times 0.066 = 0.99 \text{ m}$$

At the shore, wave height would increase to 5.6 m, a good wave but not enough to completely drown an army.

$$h_6 = h_5 (d_5/h_5)^{1/4} = 0.99 \text{ m} * (1000 \text{ m}/.99 \text{ m})^{1/4} = 0.99 \text{ m} * 5.8 = 5.6 \text{ m}$$

Figure 22: Flood level of 164 m at the Strait of Gibraltar. (www.floodmap.net)



Flood into Spain and Portugal

On the Atlantic side of the Strait of Gibraltar, the tsunami had a big impact. The highest plowed fields mark the limit of the tsunami, where the flood ponded and dropped a load of silt. Ascending the Guadalquivir River Valley in southern Spain lie increasingly higher fields (Table 2):

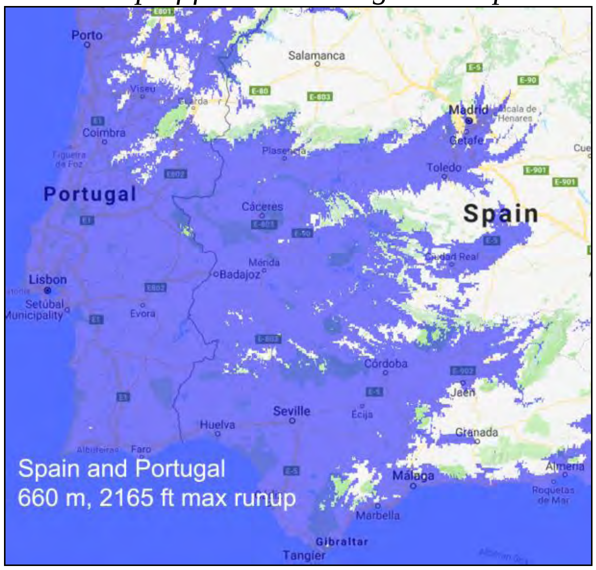
Table 2: Highest plowed fields along the Guadalquivir River going upstream.

ht (m)	ht (ft)	Location
293 m	962 ft	Valverde del Camino
398 m	1306 ft	Veracruz
446 m	1465 ft	Jaen
492 m	1615 ft	along the river east of Veracruz
629 m	2064 ft	mountain top west of Cazorla
665 m	2181 ft	mountain top southeast of El Molar

At the southeast edge of the Guadalquivir River Valley, 2900 km from the epicenter, southeast of El Molar and west of Cazorla, dense agricultural fields occupy high land, not the river valley, with elevations ranging from 1250 to 2181 ft. The highest fields lie 3000 km from the epicenter.

Calculated average value of 2125 ft runup matches the field elevation. High mountains hem in these fields. Applying this measure to all of Spain and Portugal reveals the tsunami travelled all the way to Madrid, Toledo and Granada (Figure 23).

Figure 23: Maximum runup of flood in Portugal and Spain reached 660 m asl.



Flood into Morocco

In Morocco a similar situation exists, where plowed fields lie high above river valleys, such as at Souk Larbaa Megartou with 1900-2200 ft elevation.

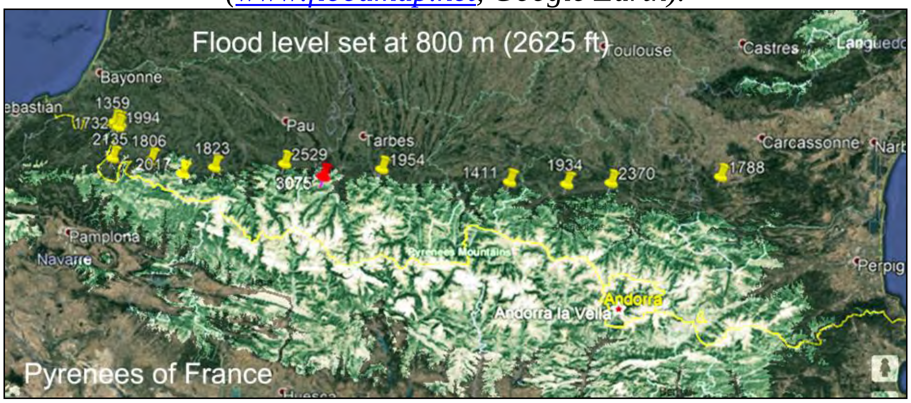
Flood into France

The mountains of Clermont-Ferrand in central France lie 1700 km from the epicenter at Rockall Plateau. At this distance, maximum runup would be 1000 m (3300 ft). These mountains ought to have few plowed fields, but just the opposite is true; farms blanket the area up to 1220 m (4000 ft). This is because a rich, deep soil from volcanic ash enables plowing. A satellite view of flood level set at 800 m shows a pattern of fields radiating away from volcanic centers (Figure 24).

Figure 24: Plowed fields in the Clermont-Ferrand volcanic region go up to 1220 m (4000 ft), far above the 1000 m flood level. Shown below is the 800 m level, the highest available on www.floodmap.net.

The Pyrenees mountains between France and Spain lie between 1900 and 2100 km from the epicenter at Rockall Plateau. At this distance, the maximum calculated flood level lies between 928 m in the west and 858 m in the east (3046 to 2816 ft). Figure 25 below sets flood level at 800 m and marks the highest plowed fields with yellow pins. A red pin marks an outlier south of Lourdes, 1960 km from the epicenter, at 937 m (3075 ft), 30 m above its calculated value of 906 m.

Figure 25: Flood level of 800 m in the Pyrenees;
just beyond lie the highest plowed fields marked with yellow pins, and beyond that glaciers
(www.floodmap.net, Google Earth).



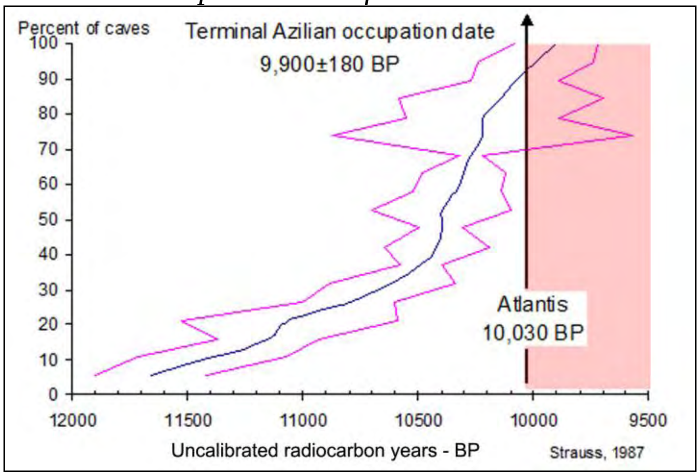
Azilian chronology ends with Atlantis tsunami

Northern Spain and southern France are famous for numerous limestone caves occupied by ice-age Neanderthals, then Chatelperron, then Homo sapiens, ending with Magdelenians and finally Azilians. At the same time Azilians died, so too did large animals.

Azilians lived from 15,500 to 11,500 cal BP. Their end date of 9550 BC is synchronous with the Atlantis tsunami of 9577 BC that drowned the Dordogne and northern Spain. Afterward, entirely different people moved in with New Stone Age tools that featured delicate slivers of flint glued into a bone handle or wood shaft. The divide is somewhat hazy because many Azilian sites also have chips of flint glued into handles. The only certain Azilian artifacts are a flat antler spearpoint and painted pebbles.

Lawrence Straus (1987) surveyed Azilian sites and provided detailed descriptions of those with radiocarbon dates. The youngest unequivocal terminal date falls within the Atlantis tsunami date (Figure 26).

Figure 26: Azilian terminal occupation dates from caves and rockshelters (Straus, 1987).



El Miron Cave, Catabria

El Miron Cave in the foothills behind Bilbao, elevation 260m asl, has Azilian artifacts in Level 11, dated 10,270±50 BP and 10,390±50 BP. It is overlain by a thin red layer, a thin grey layer, then an unconformanity of level 10.1, a thick, dark gray, ashy-clayey silt.

Los Azules I, Asturias

A small cave high in the mountains has Mousterian artifacts (level 5) capped by a sterile yellowish clay (level 4). Level 3 contains Azilian tools. A burial in Level 3 was dated 9540 ±120 BP below and 9430 ±120 BP above, but could be intrusive. Level 2 is a compact reddish clay, and Level 1 fills the cave to the top with yellowish clay. The most recent dates from the lowest part of level 3 are 10,330±190 and10,400±90 BP on bone collegen.

Rascano, Sandander

A high cave with two Azilian RC dates of 10,485±90 and 10,560±245 BP.

Arenaza, Vizcaya

A cave with painiings, inland from Bilbao, has Azilian artifacts beneath Bed III dated 10,300±180 BP on charcoal.

Abri Duruthy, Landes

The youngest RC date for Azilian tools is 11,150±220 BP on bone.

Abri Dufare, Landes

Level 3 with Azilian tools has two dates of 9,600±290 and 10,610±270 BP.

Poeymaii, Pyrenees-Atlantiques

The youngest RC date for Azilian tools is 10,420 ±230 BP on bone.

Gazel, north of Carcassonne

Azilian harpoons and decorated pebbles at 10,080±190 BP.

Abri de la Tete du Chien, Tarn

Rockshelter with an Azilian industry having a RC date of 10,140±440 BP.

La Borie del Rey, Lot-et-Garonne

Azilian artifacts in Level 3 have dates of 10,400±230 and 10,350±340 BP on bone collegen.

Pegourie, Lot

Azilian artifacts occur in levels 4 to 7. Level 4 dates are 11,390±320 BP on bone and 8,310±220 BP on shell. Two dates on shell from level 5 also measure 8,450 BC, so there is something wrong with the dating technique for shell.

Abri de Graves, Lot

Abundant Azilian lithics and decorated cobbles date to 9,900±180 BP on bone.

Sainte-Eulalie, Espagnac

Level 1 contains a mixture of Magdalenian and Azilian tools such as a flat harpoon, dated 10,800±200 and 10,400±300 BP.

Le Pont d'Ambon, Dordogne

This small rockshelter has an Azilian Level 3 above a Magdalenian Level 4. Level 3a dates 9,830±130 BP on bone, 9,990±250 BP on bone, and 10,350±190 BP on organic matter. Above this, Level 2 dates to 9,640±120 BP.

Thoys I, Ain

A small rockshelter has an Azilian date of 10,220±650 BP on charcoal.

Abri Gay, Ain

A huge rockshelter has an Azilian date of 11,660±240 BP on bone.

Vieille Eglise, Haute-Savoie,

A rockshelter with an Azilian Layer 7A having a date of 9,820±200 BP on collagen and 9,485±325 BP on unspecified material. Not sure if Azilian as it lacks characteristic tools and seems too warm, hunting mostly ibex, no reindeer.

Rochedane, Doubs

Levels D2 and D1 contain Azilian tools dated 11,060±470 BP on bone.

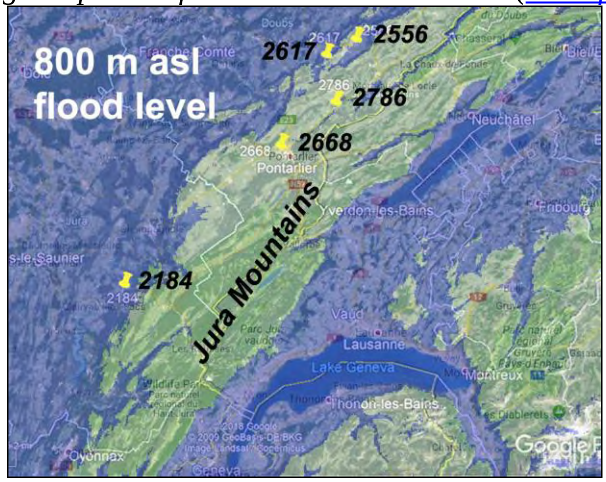
Mannlefelsen, Haut-Rhin

A rockshelter near Basel, Level S at Mannlefelsen, laid down in severe cold conditions, has Azilian artifacts dated 10,220±330 BP. Level R is sterile. Level Q was laid down in warm, humid conditions, and dates to 9,410±110 BP.

Jura Mountains between France and Switzerland

The highest plowed fields on the Jura Mountains between France and Switzerland line the French side between 800 and 850 m asl (2617 to 2782 ft) (Figure 27). The Jura Mountains lie 1950 km from the epicenter at Rockall Plateau; from the chart, average flood level was 950 m, somewhat higher than the typical field. A cluster of fields further south was at 933 m, just shy of the flood limit.

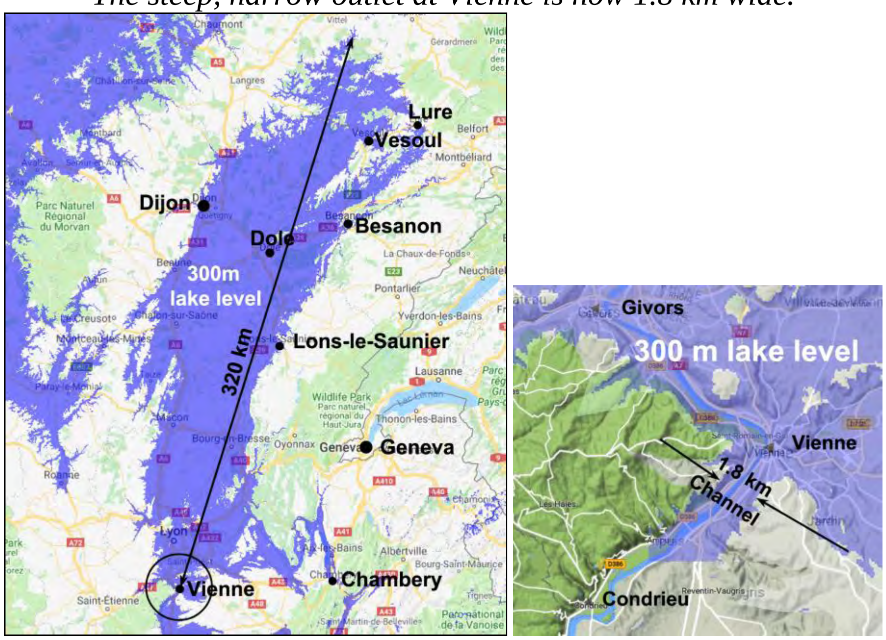
Figure 27: Highest plowed fields on Jura Mountains. (www.floodmap.net).



Saône Valley Lake at 300m asl

When the flood waters retreated from the Jura Mountains, they ponded to form an immense lake parallel to the mountains, 320 km long, with an outlet at Vienne (Figures 28 and 29). Silt dropped from the flood waters onto a gravelly plain, which created a soil suitable for deep plowing. Drained by the Saône and Doubs River, this lake has not been named, but Saône Valley Lake will suffice.

Figure 28: The initial Saône Valley Lake was 320 x 74 km, 300 m asl.
The steep, narrow outlet at Vienne is now 1.8 km wide.



Saône Valley Lake at 240 m asl

As flood waters cut the Vienne outlet deeper, a new outlet emerged at Lyon with lake level at 240 m asl (Figures 29 and 30). Now called the Bressan Plain, this entire region is nearly flat, drained by the sluggish Saône and Doubs Rivers. Low, gravelly hills emerge from a dense network of silty agricultural fields that generally grow grains (Figures 31 and 32). Villages are spaced about 13 km apart. Large cities shun the plains and locate around the periphery of the old lake.

Vineyards thrive on the Jurassic carbonate soil of south-facing hills rising from the western edge of the lake.

Figure 29: Saône Valley Lake at 240 m asl, 224 km long, 62 km wide.
The outlet at Lyon narrows from 2.0 km to 1.2 km wide.

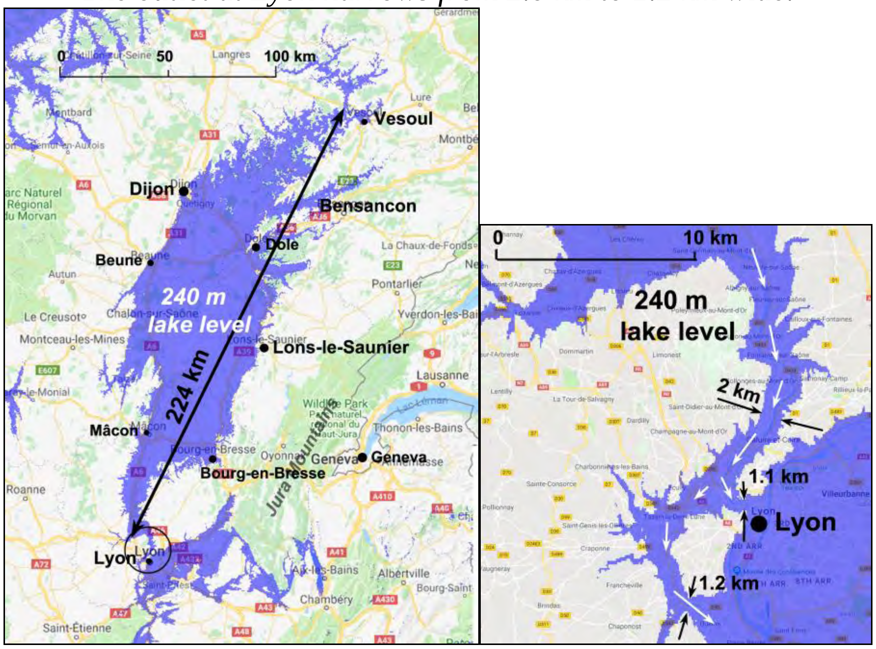


Figure 30: Soil classification of the Saône River Valley
shows islands of gravelly tertiary sediments separated by silty quaternary sediments.

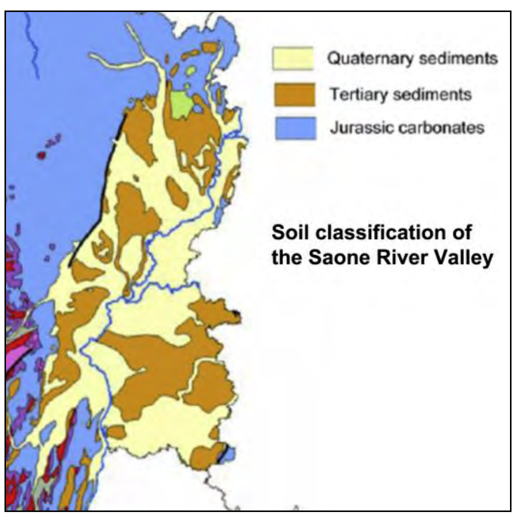
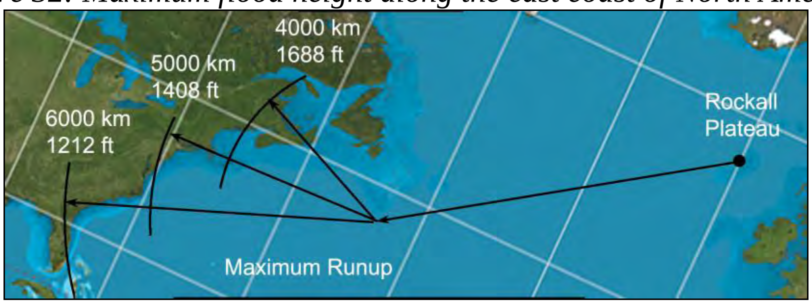


Figure 31: Traces of field consolidation in the Bressan Plain suggest that the population density was much higher in the past.

Atlantic Flood from Atlantis to North America

Maximum flood level in the Americas follows the same logic as for Gibraltar.

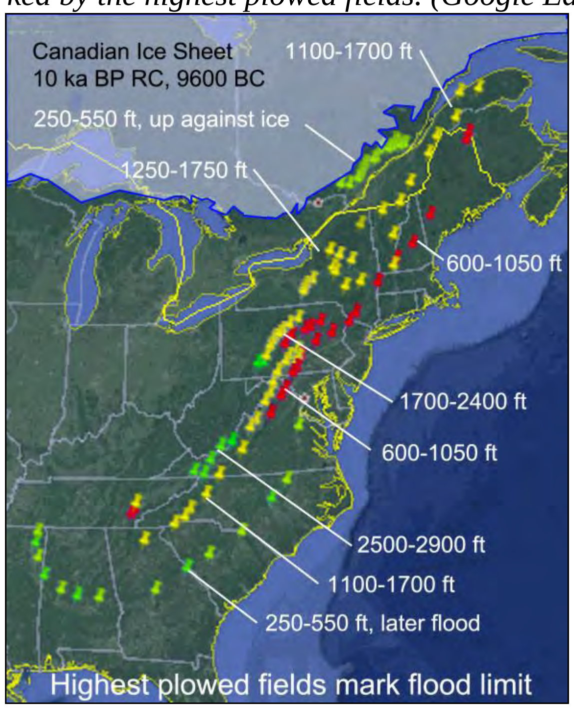
Figure 32: Maximum flood height along the east coast of North America.



Map of the highest plowed fields along the East Coast

The highest plowed fields in North America lie in several bands on the east side of mountains parallel to the coast (Figure 33).

Figure 33: Overview of the limit of the tsunami along the East Coast marked by the highest plowed fields. (Google Earth)



An earlier turbidite and flood at the Blake Escarpment

The highest plowed fields along the east coast lie within the Blue Ridge Mountains of western Virginia and North Carolina, shown as green pins in the figure below, typically 2900 ft (880 m). South of West Jefferson, a deep layer of fine sediment fills the valley along US Route 221, where contractors struggle to widen the slopes for a freeway. The highest plowed field at West Jefferson is 3100 feet above sea level, at the end of a valley. This is so much higher than the Atlantis flood level of 945 feet that it suggests another mechanism.

A glance at Google Earth reveals a huge piece of the continental shelf east of Jacksonville has slipped down into the deepest part of the Atlantic. The missing piece, between Blake Ridge and Blake Escarpment, measures 166,000 square kilometers, 90% of the size of Atlantis. At Charleston, the eastern edge of the missing turbidite begins as a 1000-foot cliff. It tapers down for 175 km to 3600 feet, then falls off a cliff at the edge of the shelf to the ocean bottom 14,000 feet deep. The original sharp edge of the Blake Escarpment has been rounded by the turbidite. Three steps are visible, later pieces lying on earlier pieces, which further raised sea level above the turbidite. From the center of the stepped pieces to West Jefferson measures 800 km. If the tsunami began 3500 ft high and crossed flat ground to West Jefferson, it would decline to 2330 ft.

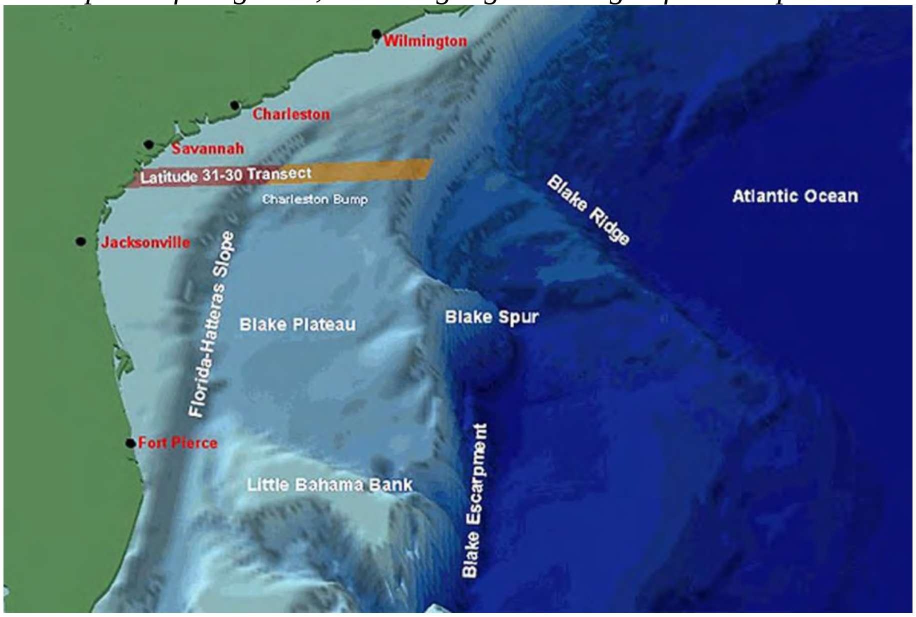
$$h_2 = h_1*10\text{^}(-0.00022*d) = 3500*0.667 = 2334 \text{ ft}$$

Offsetting this decline would be an increase in wave height by the fourth root of the ratio of water depth.

$$h_3 = h_2 * (h_0/h_2)\text{^}(1/4) = 2330 * (14{,}000/2330)\text{^}(1/4) = 2330 * 1.56 = 3652 \text{ ft}$$

This is higher than West Jefferson’s 3100 ft, which suggests that the original wave height from the stacked pieces was closer to 2850 ft, which would give a maximum field height of 3130 ft. In the 3D image below, three stacked pieces are clearly visible including their original cliff face. (Image source: P. Weinbach, SCDNR)

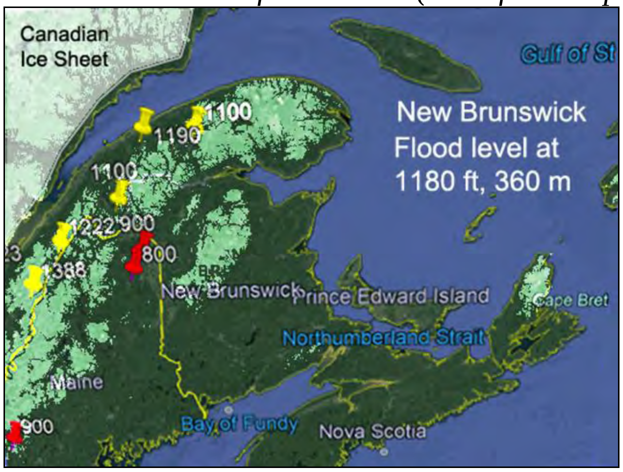
Figure 34: The area between Blake Escarpment and Blake Ridge is a turbidite that slipped off the top of Blake Plateau, leaving the Florida-Hatteras Slope behind. The two pieces fit together, including a ghost image of Blake Spur.



Flood in New Brunswick

New Brunswick lies 4500 km from the epicenter at Rockall Plateau, which gives an estimated max runup of 1534 ft by going around Newfoundland. To the north and west, the kilometer-high Canadian Ice Sheet stopped flood waters. All plowed fields are quite a bit lower, typically 1180 ft (Figure 35). Perhaps this represents a rebound from the ice sheet. A second limit of plowed fields occurs at 800 to 900 ft elevation in Maine, which must have happened after the initial wave subsided. Perhaps this level represents a rebound from the mountains of western Spain, Portugal and North Africa.

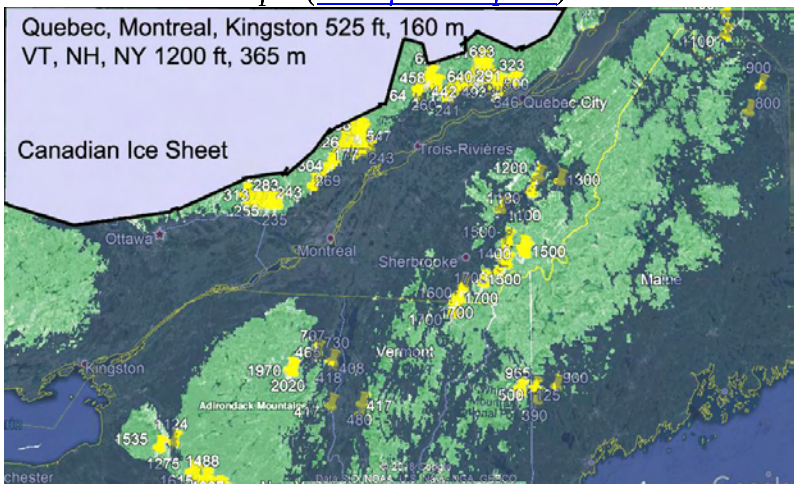
Figure 35: New Brunswick flood level at 1180 ft, which matches most of the highest plowed fields (yellow markers). Red markers indicate a second limit at 800-900 ft elevation. (www.floodmap.net)



Flood in Toronto and Montreal

The water flowed up the Hudson River and up the St Lawrence River to Toronto and Montreal. North of the St. Lawrence River, the wave was blocked by the Canadian Ice Sheet (Figure 36).

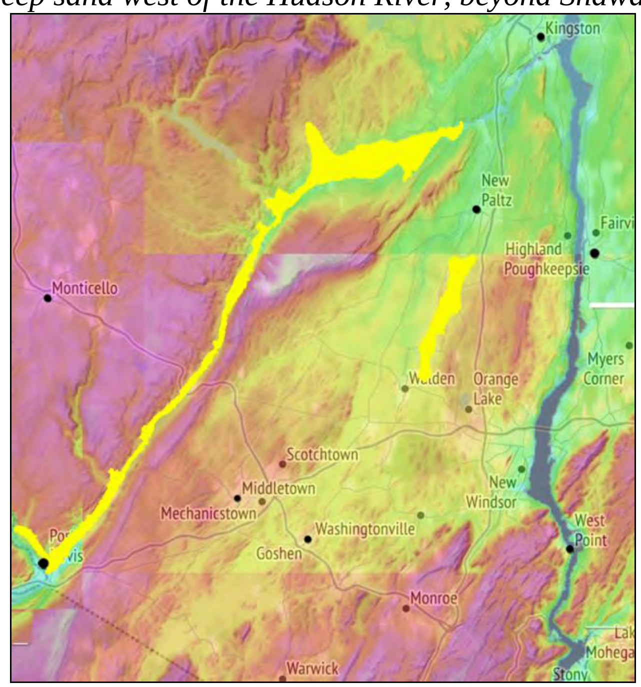
Figure 36: Eastern Canada and Adirondack Mountains flood level.
The highest plowed field is in the Adirondack Mountains at 2020 ft, but most are at 1700 ft and below. The narrow valley of Lake George may have catapulted the water higher on the western slope. (www.floodmap.net).



Deep sand west of the Hudson River

Off the coast of New Jersey, the tsunami picked up sand and dumped it on the far side of the first mountain range west of the Hudson River, Shawangunk Ridge, which varies from 300 to 500 m high (Figure 37). Thick deposits of sand support a dozen sand mines. In the 1800’s, the Delaware and Hudson Canal carried anthracite coal down the valley from Pennsylvania to Kingston, where it was loaded onto river boats that sailed the Hudson River to New York City.

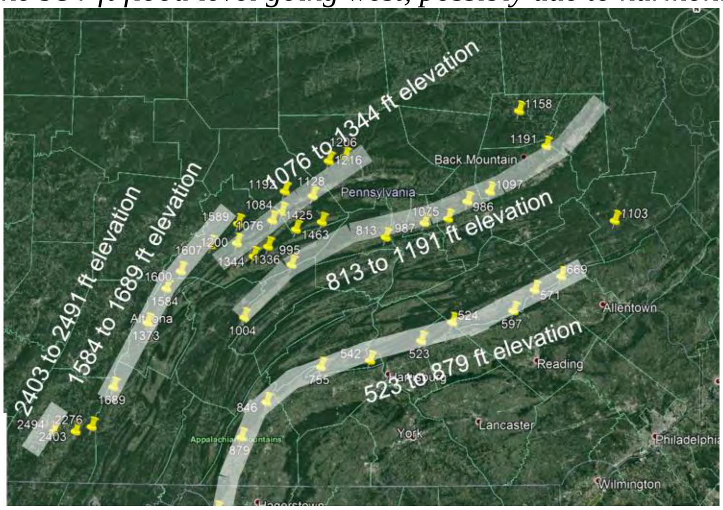
Figure 37: Deep sand west of the Hudson River, beyond Shawangunk Ridge.



Flood in Eastern Pennsylvania

Eastern Pennsylvania, 4850 km from the epicenter, should have a maximum plowed field height of 1444 ft, which it does for the first three mountain ranges, but with succeeding ranges, the elevation climbs: 879 ft, 1191 ft, 1344 ft, 1689 ft, 2491 ft (Figure 38).

Figure 38: The highest plowed fields in Eastern Pennsylvania climb above the 984-ft flood level going west, possibly due to harmonic oscillation.



A strong possibility is that this higher level came from the Blake Plateau tsunami, detailed above. From the center of the stepped pieces of the Blake Plateau to the highest plowed field south of Johnstown in Pennsylvania measures 1000 km. If the tsunami began 2850 ft high and crossed flat ground to Johnstown, it would decline to 1717 ft.

$$h_2 = h_1 * 10\text{^}(-0.00022 * d) = 2850 * 0.602 = 1717 \text{ ft}$$

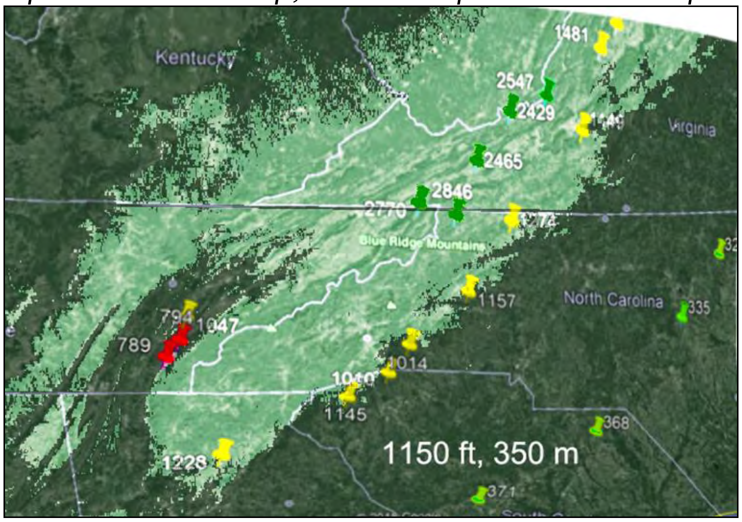
Offsetting this decline would be an increase in wave height by the fourth root of the ratio of water depth, to 2902 ft, some 400 ft above the highest field at Johnstown.

$$h_3 = h_2 * (h_0/h_2)\text{^}(1/4) = 1717 * (14{,}000/1717)\text{^}(1/4) = 1717 * 1.69 = 2902 \text{ ft}$$

Flood in Virginia, North Carolina, Georgia

The highest plowed fields of Virginia, North Carolina and Georgia, 5250 km from the epicenter, should be around 1350 feet, which they are, the highest being 1228 ft (Figure 39). Two anomalies occur. The first is a series of fields much higher, 2430 to 2846 ft, which came from the Blake Plateau tsunami, detailed above. The second is a flood level of 370 ft that must have come later.

Figure 39: The highest plowed fields of Virginia, North Carolina and Georgia are around 1150 ft, within the estimated height of 1320 ft (www.floodmap.net). Notice an earlier flood level at 2800 ft, and a later flood level at 370 ft.

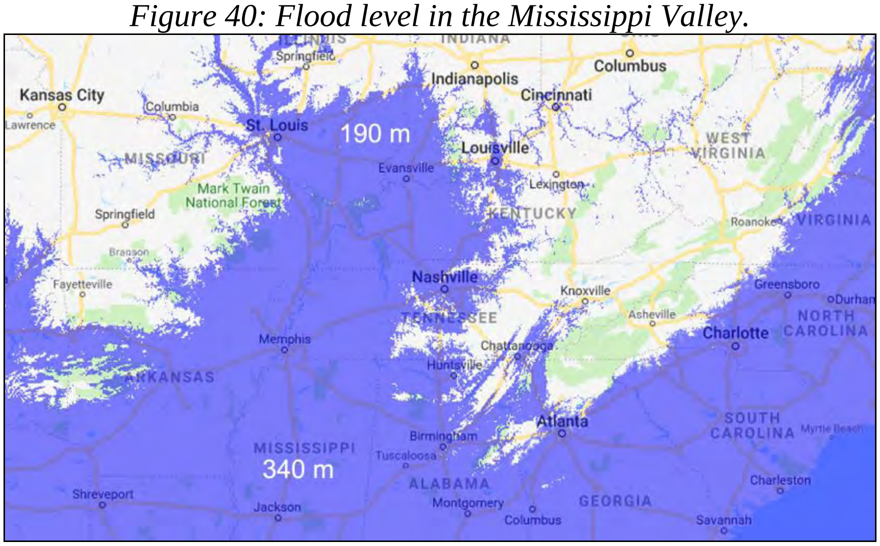


Flood in Mississippi Valley

When the flood rounded Georgia to Louisiana, it was 340m asl. A right turn requires a new calculation. It reached somewhat past St. Louis, 1100 km away.

$$h_1 = h_0*10^{(-0.00022*d)} = 340m*10^{(-0.00022*1100km)} = 340*0.57 = 195\ m$$

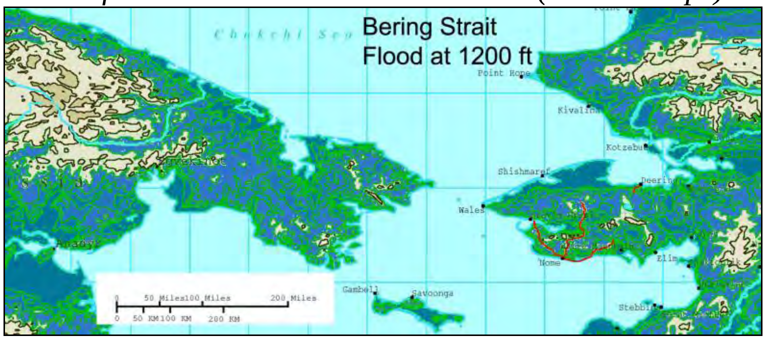
Figure 40: Flood level in the Mississippi Valley.



Flood at Bering Land Bridge

The Bering Strait, 6500 km from the epicenter at Rockall Plateau, had a calculated runup height of 346 m (1134 ft), which easily breached the Bering Land Bridge. Water flowed into the Pacific, which prevented sea life from the Pacific entering the Arctic Ocean. Six hundred years later, in 9050 BC, a narrow strait did open between the Arctic and Pacific Oceans and Pacific organisms appeared north of the Bering Land Bridge (Jakobsson, 2017).

Figure 41: A flood of 1134 ft (345 m) crossed the Bering Land Bridge. In 9600 BC, with sea level 39 m lower, the Bering Strait did not yet exist and one could walk across the Bering Land Bridge. Although the Atlantis flood breached a 400-mile section, Pacific sea life did not enter the Arctic Ocean. (Yellow Maps).



Atlantic Flood from Atlantis to Central and South America

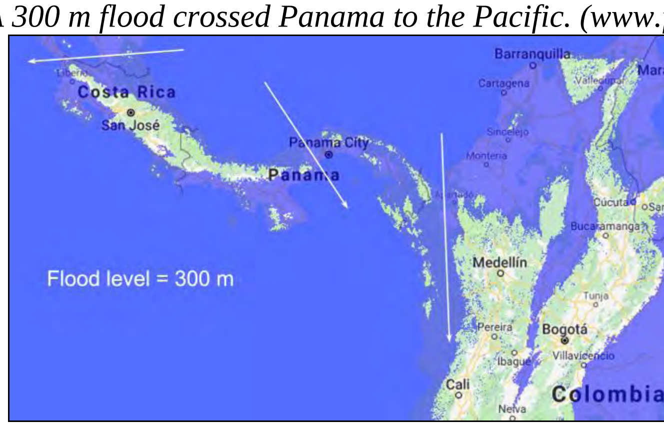
Flood in Cuba

Figure 42: Cuba, 6275 km from the epicenter, saw a wave of 356 m. Some may have survived in the mountains near Guantanamo. (www.floodmap.net)

Flood in Panama, Costa Rica, Columbia

Located 7680 km from the epicenter, the wave flooded Panama to the 300 m level (Figure 43). It also found a route past Medellin in Columbia and another through Costa Rica. The northwest coast of Columbia facing the Caribbean was completely submerged.

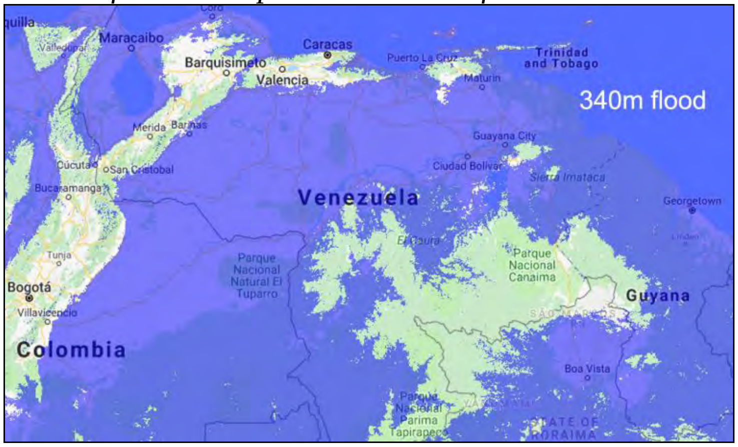
Figure 43: A 300 m flood crossed Panama to the Pacific. (www.floodmap.net)



Flood in Venezuela

Venezuela, located 6600 km from the epicenter, experienced a wave 341 m high, which flooded half the country and most of neighboring Columbia (Figure 44).

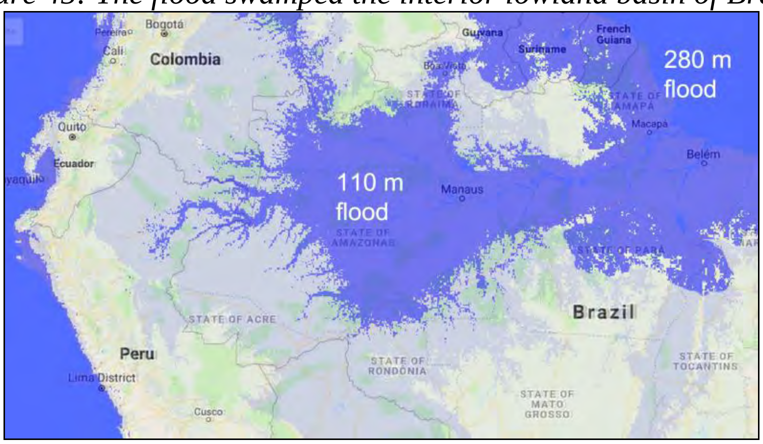
Figure 44: The flood swamped the interior of Venezuela and Columbia.



Flood in Brazil

The Amazon Basin, 8400 km from the epicenter, experienced a flood 278 m high at the entrance, but diluted down to perhaps 110 m in the interior because mountains partially guard the entrance (Figure 45).

Figure 45: The flood swamped the interior lowland basin of Brazil.



Flood at Antarctica

The north coast of Antarctica, 14,000 km from the epicenter, experienced a flood 72 m high (equations 12 and 13). Except for any habitation along the coast, it had little impact because the land rises so steeply.

However, as noted above, a simultaneous strike above north Antarctica ablated 800,000 km3 of ice, which raised sea level by 2.2 m. If any of the ice sheet slid into the ocean, the tsunami would have broken it up and allowed even more ice to slide.

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±100 BC, congruent with the Arctic Flood at 10,392 BC. Apparently, the 2-km thick sheet of ice lying on the seabed floated to the surface and drifted up against the edge of the Laptev sea in such a manner that it formed a barrier against salt water intrusion. The Lena River then filled the closed basin with fresh water, which lasted until the ice melted.

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