



Is the Japan Earthquake Part of God's Plan?

Matthew 24:7: (NASB) *For nation will rise against nation, and kingdom against kingdom, and in various places there will be famines and earthquakes.*



This was a tragedy. The recent earthquake, just off the coast of northern Japan, was the fifth largest ever recorded in human history. While the quake itself was not terribly damaging, the tsunamis it spawned were another story. From a personal standpoint, I have NEVER seen anything so destructive and powerful as those waves which literally engulfed everything in their path. So, what does all of this mean from a Christian standpoint? Did God make the earth quake - did God send the waves? Could God have stopped this? Stay with us as we consider these difficult and piercing questions.

What Happened?

 **Devastating Japan Earthquake, NBC Today Show March 11, 2011**

- *Tsunami swept some sixty miles inland. It started with an 8.9 quake.*

(Source: LiveScience, Stephanie Pappas, Remy Melina and Natalie Wolchover contributed to this article.) *What's the Science Behind Japan's Quake and Tsunami?* On Friday afternoon in Japan, disaster struck as a massive 8.9 magnitude earthquake generated a wall of water that surged over the east coast of the island nation, sweeping many to their deaths.

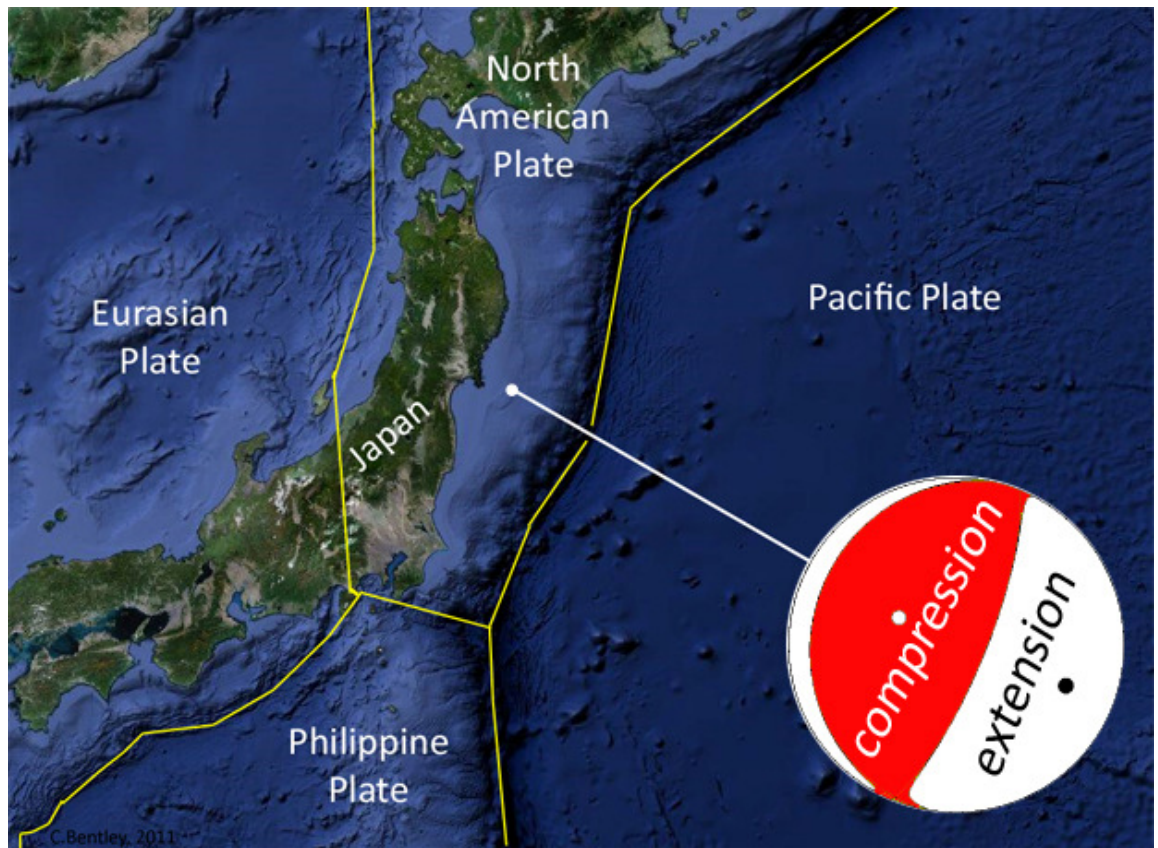
Here's what you need to know about the quake and its aftermath: Where did the earthquake come from? Japan is situated along the world's most active earthquake belt, the Pacific Ring of Fire, where rigid plates in the Earth's crust collide along the rim of the Pacific Ocean. This earthquake originated 231 miles (373 kilometers) northeast of Tokyo and 80 miles (130 km) east of Sendai, Honshu, in the Pacific Ocean. The earthquake occurred at a depth of about 15.2 miles (24.4 kilometers).

In this area, the Pacific Plate, the plate beneath the Pacific Ocean, is moving almost due west and being pushed down into the Earth's interior along a trench off Japan's east coast. On average, the Pacific Plate is moving at 3.5 inches (8.9 centimeters) per year, but this process is not continuous, according to Keith Sverdrup, a professor of geophysics at the University of Wisconsin-Madison. Movement may stop as the plates stick together for a period and energy will build up, so when the movement does finally occur, it is much more dramatic, Sverdrup said.

The process of one plate being pushed beneath another is called subduction, and it occurs all along the Ring of Fire, producing other earthquakes, including the 7.7 magnitude quake that struck off the coast of Indonesia in October.

How does this earthquake rank in global records? While the magnitude estimate of this latest earthquake may later be revised, 8.9 is the largest Japanese quake on record and the fifth-largest quake worldwide since 1900, according to the U.S. Geological Survey (USGS).





Because the scripture says, *In the beginning, God created the heavens and the earth*, this means that God intentionally created tectonic plates. What does this mean?

 Death toll 40 and rising, *NBC Today Show March 11, 2011*

- *An event geologists call historic.*

(Source: LiveScience, Stephanie Pappas, Remy Melina and Natalie Wolchover contributed to this article, continued...) How did the earthquake generate a tsunami? The earthquake caused the seafloor at the fault to suddenly shift vertically and this motion, in turn, shifted the water



column above it. This motion then spawned a series of massive waves known as a tsunami. "It is not unlike dropping a pebble into a pond and seeing the ripple move," Sverdrup told LiveScience.com. The waves simultaneously spread toward the east coast of Japan and toward the west, on a much longer path to the west coast of North America. "Last night, Japan's tsunami was at a location at which we have had giant tsunamis in the past," said Harry Yeh, a professor at Oregon State University who was born in Japan. In 1896 and 1933, tsunamis hit in the same area...



What makes a tsunami?

Tsunami size speed - Quake moved Japan, *NBC News*

- *Water upward of 30 feet high;*
- *The largest island of Japan was jolted 8 feet further to the east!*

(Source: LiveScience, Stephanie Pappas, Remy Melina and Natalie Wolchover contributed to this article, continued...) Yeh is an expert on ocean and coastal wave dynamics, including tsunamis. "A tsunami is really an intriguing phenomenon because it rarely happens," he said. The wave itself is unique, resembling neither a storm wave nor a long, tidal wave, and it alters both the ecology and the terrain of the land it touches. Watching the footage on TV, he said he was struck by how the speed of the water surging over fields and homes resembled that of a flooded river. The highest of the waves are believed to have reached 30 feet (9.1 meters).

Deaths at 2800 and now nuke problems, *CBSNewsOnline*

- *Death tolls begin to skyrocket;*
- *Nuclear plants lose their cooling systems;*
- *Meltdown danger is now added as a third threat to the quake and the tsunami.*

Comparing this to the earthquake in Haiti in January 2010, that one was 7.0 and that area is not as accustomed to big quakes. There was little or no preparedness on their part and estimates of the death toll there are around 100,000 - 200,000. Japan, on the other hand, was very prepared for major catastrophe, and yet they have the nuclear problem on top of the others.

So, does God play a role in these things?

The 4 potential views of God related to our world:



1. God is not able to stop disaster and doesn't care to.
2. God is not able to stop disaster though He would like to.
3. God is able to stop disaster and just doesn't want to.
4. God is able to stop disaster and will absolutely stop it.

What do WE believe??? We believe that God is able and will!

Let's look at the big picture from God's perspective:

Isaiah 55:7-13: (NRSV) ⁷let the wicked forsake their way, and the unrighteous their thoughts; let them return to the LORD, that he may have mercy on them, and to our God, for he will abundantly pardon. **This shows us God's love!** ⁸For my thoughts are not your thoughts, nor are your ways my ways, says the LORD. ⁹For as the heavens are higher than the earth, so are my ways higher than your ways and my thoughts than your thoughts. **This shows us God's wisdom!** ¹⁰For as the rain and the snow come down from heaven, and do not return there until they have watered the earth, making it bring forth and sprout, giving seed to the sower and bread to the eater, **This shows us God's justice!** ¹¹so shall my word be that goes out from my mouth; it shall not return to me empty, but it shall accomplish that which I purpose, and succeed in the thing for which I sent it. **This shows us God's power!** ¹²For you shall go out in joy, and be led back in peace; the mountains and the hills before you shall burst into song, and all the trees of the field shall clap their hands. ¹³Instead of the thorn shall come up the cypress; instead of the brier shall come up the myrtle; and it shall



be to the LORD for a memorial, for an everlasting sign that shall not be cut off. This shows us God's Plan!

Okay - nice scripture, nice promise and a nice thought, but how does this address the question:

Why doesn't God use His power to stop tragedy?



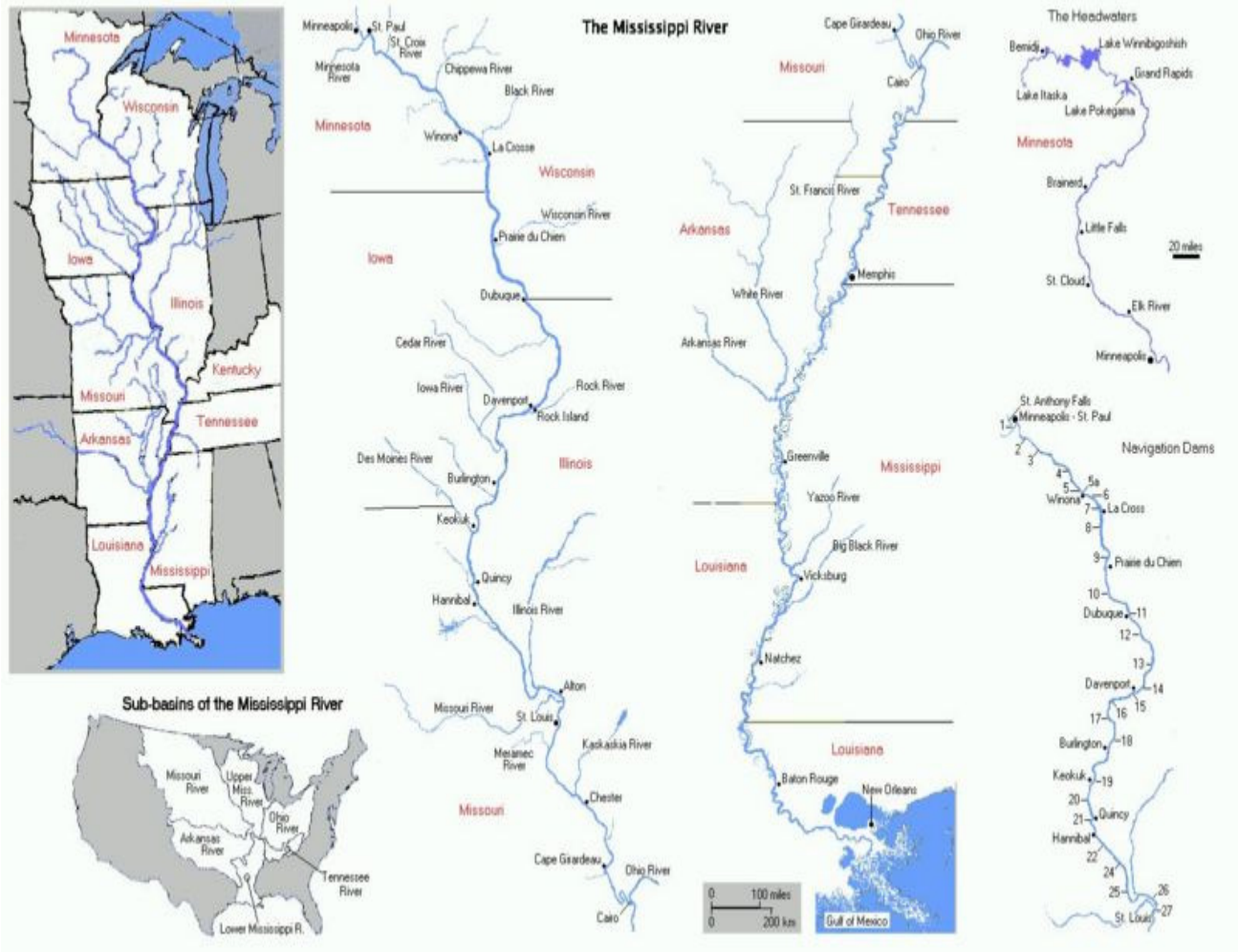
Houses are swept by a tsunami in Natori City in northeastern Japan March 11, 2011. (REUTERS/KYODO)



Buildings burn after an earthquake near Sendai Airport, northeastern Japan March 11, 2011. (REUTERS/KYODO)



Let's use the Mississippi River as an example of God's plan:



What direction does it flow? South, according to the BIG PICTURE. In reality, it flows in different directions and appears off course.

Does it always flow at the same speed? No, its width and depth vary greatly.

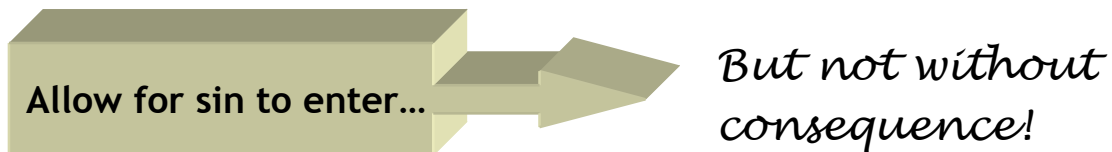
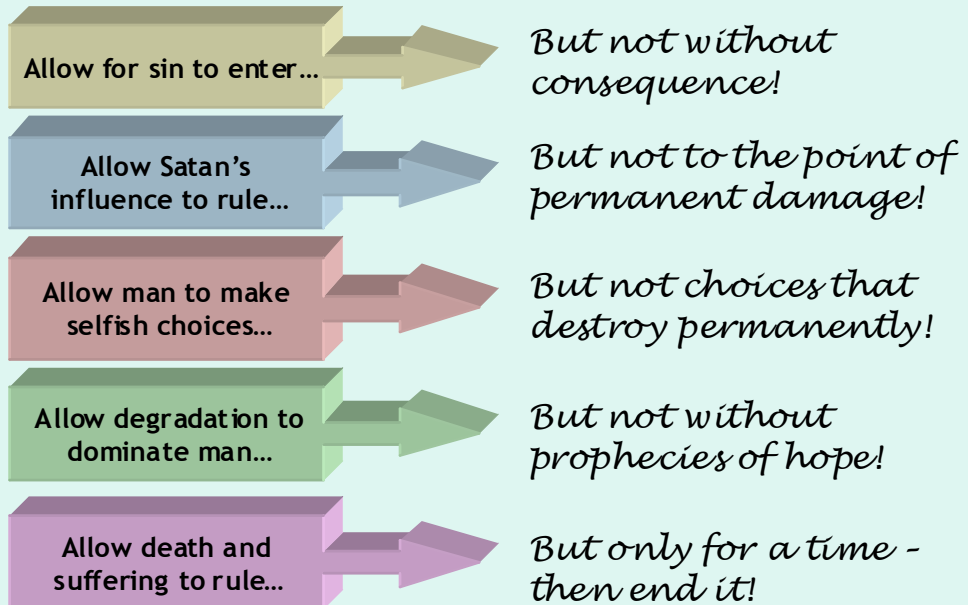
Does it take the straightest path to its destination? No, though it takes the most sensible path.

Let's follow some of those twists and turns in God's plan and as we do, let's focus on when and how he intervenes and when and how he doesn't intervene:



The Rules of the Plan

The **apparently** "off course directions" vs. The **actual** planned progress:



God did not intervene in the entrance of sin:

Genesis 3:4-6: (NASB) ⁴The serpent said to the woman, You surely will not die! ⁵For God knows that in the day you eat from it your eyes will be opened, and you will be like God, knowing good and evil. ⁶When the woman saw that the tree was good for food, and that it was a delight to the eyes, and that the tree was desirable to make one wise, she took from its fruit and ate; and she gave also to her husband with her, and he ate.

Genesis 3:23-24: (NASB) ²³therefore the LORD God sent him out from the garden of Eden, to cultivate the ground from which he was taken. ²⁴So He drove the man out; and at the east of the garden of Eden He stationed the cherubim and the flaming sword which turned every direction to guard the way to the tree of life.

Where was God? He was there - teaching the most valuable lessons of choice and consequences.

There is a period of time where the plan of God appears to zigzag.



Allow Satan's
influence to rule...

*But not to the point of
permanent damage!*

The ruler of this world:

John 12:31: (NASB) *Now judgment is upon this world; now the ruler of this world will be cast out.*

Matthew 24:21-22: (NASB) ²¹*For then there will be a great tribulation, such as has not occurred since the beginning of the world until now, nor ever will.* ²²*Unless those days had been cut short, no life would have been saved; but for the sake of the elect those days will be cut short.*

Where was God in all this? Watching - not only watching those who usurped authority, but watching the hearts of man as well and seeing who would be corrupted and why. The initial lesson of obedience had not lost its meaning; rather its importance would become clearer and clearer as the centuries would pass. God watched - and in His hand He held the clock - for this run of godlessness would only be allowed to last for a time.



Reactor Failure Explained, *Interview Katie Couric CBS*

- *Water must continue to flow around the rods to cool them down;*
- *Backup systems failed.*

Allow man to make
selfish choices...

*But not choices that
destroy permanently!*

God allowed his chosen people to even reject Him!

1 Samuel 8:4-10: (NASB) ⁴*Then all the elders of Israel gathered together and came to Samuel at Ramah;* ⁵*and they said to him, Behold, you have grown old, and your sons do not walk in your ways. Now appoint a king for us to judge us like all the nations.* ⁶*But the thing was displeasing in the sight of Samuel when they said, Give us a king to judge us. And Samuel prayed to the LORD.* ⁷*The LORD said to Samuel, "Listen to the voice of the people in regard to all that they say to you, for they have not rejected you, but they have rejected Me from being king over them.* ⁸*Like all the deeds which they have done since the day that I brought them up from Egypt even to this day—in that they have forsaken Me and served other gods—so they are doing to you also.* ⁹*Now then, listen to their voice; however, you shall solemnly warn them and tell them of the procedure of the king who will reign over them.* ¹⁰*So Samuel spoke all the words of the LORD to the people who had asked of him a king.*

God allowed Israel their choice, though he did monitor and guide their kings:

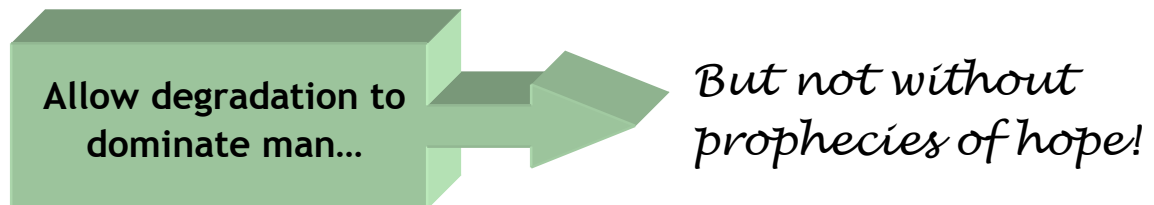


1 Samuel 15:19-23: (NASB) ¹⁹*Why then did you not obey the voice of the LORD, but rushed upon the spoil and did what was evil in the sight of the LORD?* ²⁰*Then Saul said to Samuel, I did obey the voice of the LORD, and went on the mission on which the LORD sent me...* ²¹*But the people took some of the spoil, sheep and oxen, the choicest of the things devoted to destruction, to sacrifice to the LORD your God...* ²²*Samuel said, Has the LORD as much delight in burnt offerings and sacrifices as in obeying the voice of the LORD? Behold, to obey is better than sacrifice, and to heed than the fat of rams.* ²³*For rebellion is as the sin of divination, and insubordination is as iniquity and idolatry. Because you have rejected the word of the LORD, He has also rejected you from being king.*

Saul had the same greed and ego as Satan himself! God allows man to make selfish choices, but the choices are not allowed to be permanent against the record of eternity.

With such depth of tragedy, where can we find TRUE hope?

There is always hope in the stories of rescue, but these are often clouded with sadness and despair.



 **Woman survivor hung onto a tree, Reuters**

Galatians 6:9-10: (NASB) ⁹*Let us not lose heart in doing good, for in due time we will reap if we do not grow weary.* ¹⁰*So then, while we have opportunity, let us do good to all people, and especially to those who are of the household of the faith.*

An interesting point is that most of the Japanese people are NOT Christian and most do not claim to be very religious.





Red Cross, how to help, text 90999, CNN

- 91 cents of every donated dollar goes to the relief effort.

We should help "all people" whenever we have the ability to do so.

Degradation is allowed to dominate man:

Mark 15:9-15: (NASB) ⁹Pilate answered them, saying, Do you want me to release for you the King of the Jews? ¹⁰For he was aware that the chief priests had handed him over because of envy. ¹¹But the chief priests stirred up the crowd to ask him to release Barabbas for them instead. ¹²Answering again, Pilate said to them, Then what shall I do with him whom you call the King of the Jews? ¹³They shouted back, Crucify him! ¹⁴But Pilate said to them, Why, what evil has he done? But they shouted all the more, Crucify him! ¹⁵Wishing to satisfy the crowd, Pilate released Barabbas for them, and after having Jesus scourged, he handed him over to be crucified.

Given the choice to free a righteous man, Jesus, or a criminal, Barabbas, they chose to free the criminal because he was drawing attention to God. That's what degradation does.

Degradation is not allowed to exist in God's plan without hope:

Zephaniah 3:8-9: (NRSV) ⁸Therefore wait for me, says the LORD, for the day when I arise as a witness. For my decision is to gather nations, to assemble kingdoms, to pour out upon them my indignation, all the heat of my anger; for in the fire of my passion all the earth shall be consumed. ⁹At that time I will change the speech of the peoples to a pure speech, that all of them may call on the name of the LORD and serve him with one accord.

What a turnaround! Sometimes children need to see disappointment so they can understand and learn and be blessed later. What a great ending is described here.

So, we should have GREAT HOPE for the future - through all of the pain, suffering and trouble!

Psalms 119:114-116: (NASB) ¹¹⁴You are my hiding place and my shield; I wait for Your word. ¹¹⁵Depart from me, evildoers, that I may observe the commandments of my God. ¹¹⁶Sustain me according to Your word, that I may live; And do not let me be ashamed of my hope.

Our present reaction and our future planning show what we have learned from the experience.

So, how big is this hope?

Japanese setting the example, Glenn Beck

- This is a national example of goodness. (no looting, vandalism, there is a spirit of helpfulness, etc.)

From an e-mail we received from a listener:

I also read a beautiful little account of an incident at a gas station or some kind of little store where the electricity went out while people were shopping, therefore rendering the cash register inoperable. People that were waiting on line very quietly went back to the shelves and returned to their place whatever they were holding in their hands at that time, with no complaints, no cries, no resistance. I thought this was a powerful little story of a nation that learned to stick together through good and bad. Sometimes in the U.S. we are focusing too much on what matters for "me" and forgetting about those around us.



Let's not forget those in Japan who are right now sacrificing their lives in the nuclear reactors for others.

Allow death and suffering to rule...

But only for a time - then end it!

Romans 6:23: (NASB) *For the wages of sin is death, but the free gift of God is eternal life in Christ Jesus our Lord.*

Romans 8:20,21: (NASB) ²⁰*For the creation was subjected to futility, not willingly, but because of Him who subjected it, in hope* ²¹*that the creation itself also will be set free from its slavery to corruption into the freedom of the glory of the children of God.*

Life under sin is futile because one can't overcome the reign of sin, but this is only for a certain period of time.

Daniel 2:44-45: (NASB) ⁴⁴*In the days of those kings the God of heaven will set up a kingdom which will never be destroyed, and that kingdom will not be left for another people; it will crush and put an end to all these kingdoms, but it will itself endure forever.* ⁴⁵*Inasmuch as you saw that a stone was cut out of the mountain without hands and that it crushed the iron, the bronze, the clay, the silver and the gold, the great God has made known to the king what will take place in the future; so the dream is true and its interpretation is trustworthy.*

This message of hope describes an eternal kingdom on earth.

From trouble comes prosperity:

Micah 4:1-5: (KJV) ¹*But in the last days it shall come to pass, that the mountain of the house of the LORD shall be established in the top of the mountains, and it shall be exalted above the hills; and people shall flow unto it.* ²*And many nations shall come, and say, Come, and let us go up to the mountain of the LORD, and to the house of the God of Jacob; and he will teach us of his ways, and we will walk in his paths: for the law shall go forth of Zion, and the word of the LORD from Jerusalem.* ³*And he shall judge among many people, and rebuke strong nations afar off; and they shall beat their swords into plowshares, and their spears into pruninghooks: nation shall not lift up a sword against nation, neither shall they learn war any more.* ⁴*But they shall sit every man under his vine and under his fig tree; and none shall make them afraid: for the mouth of the LORD of hosts hath spoken it.* ⁵*For all people will walk every one in the name of his god, and we will walk in the name of the LORD our God for ever and ever.*

From trouble, comes perfection:

Revelation 21:4: (KJV) *And God shall wipe away all tears from their eyes; and there shall be no more death, neither sorrow, nor crying, neither shall there be any more pain: for the former things are passed away.*

There is something so much greater than the immediate tragedy. Focus on helping where we can and on the goodness and glory that God has planned through Jesus.

*So is the Japan Earthquake Part of God's Plan?
For Jonathan and Rick and Christian Questions...
Think about it...!*





*And now even more to think about...
only in the Full Edition of CQ Rewind!*

On Japan and their religious perspective:

(Source: Wikipedia) Japan grants full religious freedom, allowing minority religions such as Christianity, Islam and Sikhism to be practiced. Figures that state 84% to 96% of Japanese adhere to Shinto and Buddhism are not based on self-identification but come primarily from birth records, following a longstanding practice of officially associating a family line with a local Buddhist temple or Shinto shrine. About 70 percent of Japanese profess no religious membership, according to Johnstone (1993:323), 84% of the Japanese claim no personal religion.

(Source: Yahoo7answers) Most Japanese are both Shintoist and Buddhist, some are Shintoist and Christian, and a few are some other combination. However, if you were to ask them they would likely say they don't belong to a religion. That's because the word used to translate "religion" into Japanese (literally "sect member") has the same meaning as cult in English (most English speakers would answer "no" if you asked them if they belong to a cult--even they were cult members). This translation problem has caused a lot of confusion and leads many Westerners to think that most Japanese have no religion--even though they very likely prayed at their kamidana or butsudan just that morning, took their new car to the local Inari jinja to get purified before driving and went to a jinja during the five days of New Years.

(Source: <http://www.theatlantic.com/infocus/2011/03/earthquake-in-japan/100022/>) What's the Science Behind Japan's Quake and Tsunami? On Friday afternoon in Japan, disaster struck as a massive 8.9 magnitude earthquake generated a wall of water that surged over the east coast of the island nation, sweeping many to their deaths. Here's what you need to know about the quake and its aftermath:

Where did the earthquake come from? Japan is situated along the world's most active earthquake belt, the Pacific Ring of Fire, where rigid plates in the Earth's crust collide along the rim of the Pacific Ocean. This earthquake originated 231 miles (373 kilometers) northeast of Tokyo and 80 miles (130 km) east of Sendai, Honshu in the Pacific Ocean. The earthquake occurred at a depth of about 15.2 miles (24.4 kilometers). In this area, the Pacific Plate, the plate beneath the Pacific Ocean, is moving almost due west and being pushed down into the Earth's interior along a trench off Japan's east coast. On average, the Pacific Plate is moving at 3.5 inches (8.9 centimeters) per year, but this process is not continuous, according to Keith Sverdrup, a professor of geophysics at the University of Wisconsin-Madison. Movement may stop as the plates stick together for a period and energy will build up, so when the movement does finally occur, it is much more dramatic, Sverdrup said. The process of one plate being pushed beneath another is called subduction, and it occurs all along the Ring of Fire, producing other earthquakes, including the 7.7 magnitude quake that struck off the coast of Indonesia in October. How does this earthquake rank in global records? While the magnitude estimate of this latest earthquake may later be revised, 8.9 is the largest Japanese quake on record and the fifth-largest quake worldwide since 1900, according to the U.S. Geological Survey (USGS). How did the earthquake generate a tsunami? The earthquake caused the seafloor at the fault to suddenly shift vertically and this motion, in turn, shifted the water column above it. This motion then spawned a series of massive waves known as a tsunami. [Tsunami Hits Japan after Massive 8.9 Earthquake] "It is not unlike dropping a pebble into a pond and seeing the ripple move," Sverdrup told LiveScience.com. The waves simultaneously spread toward the east coast of Japan and toward the west, on a much longer path to the west coast of North America. "Last night, Japan's tsunami was at a location at which we have had giant tsunamis in the past," said Harry Yeh, a professor at Oregon State University who was born in Japan. In 1896 and 1933, tsunamis hit in the same area.

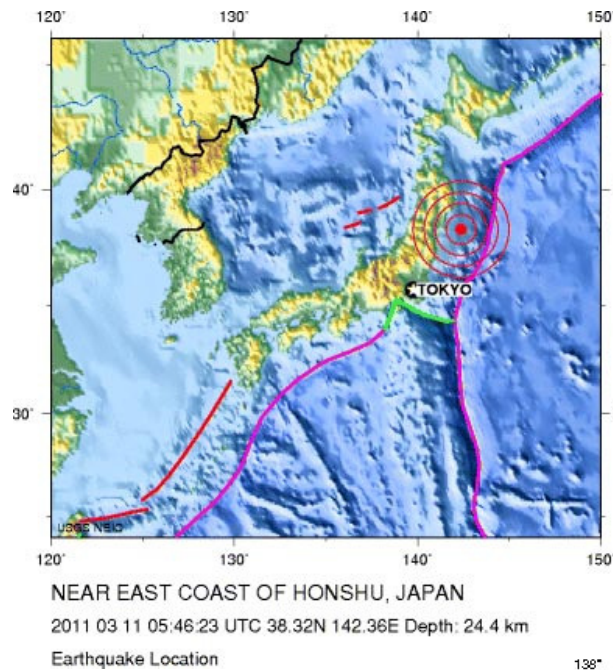
Yeh said his family in Tokyo is fine. "My father is 91 years old and he and my 92-year-old mother were taking a walk, and walking around they felt some kind of ground shaking," he said. "He thought he had a stroke." Yeh is an expert on ocean and coastal wave dynamics, including tsunamis. "A tsunami is really an intriguing phenomenon because it rarely happens," he said.



The wave itself is unique, resembling neither a storm wave nor a long, tidal wave, and it alters both the ecology and the terrain of the land it touches. Watching the footage on TV, he said he was struck by how the speed of the water surging over fields and homes resembled that of a flooded river. The highest of the waves are believed to have reached 30 feet (9.1 meters). How well can we predict events like this? "Earthquake prediction is something we haven't really been able to master yet," Sverdrup said. "With earthquakes, the best we can say is these are areas where earthquakes are likely to occur and this is our best estimate of the statistical probability of an earthquake of a certain size happening within a certain period of time."

Once an earthquake like this one has occurred, it's possible to assess whether or not it will generate a tsunami by determining whether a vertical shift occurred at the fault and by looking at measurements of water height recorded around the Pacific Ocean basin by the Tsunami Warning Network. The warning network alerts people living in the area that will possibly be hit by a tsunami. "Unfortunately, the closer you get to the earthquake, the less time you have. Clearly in the case of the country of Japan, they would not have had much warning at all," Sverdrup said. With the westbound wave traveling at about 500 mph (804.7 kilometres per hour), roughly the speed of a commercial flight, Hawaii and the west coast of North America were better off. In Japan, the tsunami warning went out about five minutes after the earthquake and included an estimated height for the waves, Yeh said. Reports of the time between the warning and the arrival of the giant waves varied, and as of Friday (March 11) afternoon, the death toll was still uncertain, with hundreds reported missing. Yeh said the island nation was as well-prepared as it could have been for the disaster. "It's a real problem in Japan, so they are always worried about tsunamis, they have tsunami drills and they have tsunami warnings," he said. Why do some earthquakes cause tsunamis while others don't? A few factors come into play: the strength of the quake, the direction of the temblor's motion and the topography of the seafloor. First, the magnitude of the quake — which is a measure of the amplitude of the largest seismic wave recorded for the earthquake — must exceed a certain threshold. The 8.9-magnitude of Japan's earthquake was enough to trigger a tsunami, but the magnitude-7.7 earthquake that struck Indonesia in October 2010 just surpassed the threshold for causing a tsunami. "Earthquakes below 7.5 or 7.0 usually do not trigger tsunamis," said geophysicist Don Blakeman of the U.S. Geological Survey's National Earthquake Information Center. Earthquakes trigger tsunamis when the seismic activity causes the land along fault lines to move up or down. When parts of the seafloor shift vertically, either becoming raised or lowered, entire water columns become displaced. This creates a "wave" of energy, which propels the water, Blakeman explained.

Earthquakes that push land mainly in the horizontal direction are less likely to cause the devastating waves, according to USGS geophysicist John Bellini. When energy pushes the plates horizontally, the land does not raise or lower the water above it enough to cause a tsunami, Bellini said. The height of a tsunami wave is influenced by the ground's vertical movement, so changes in the seafloor's topography can either amplify or dampen a wave as it travels along. Why is there a danger of radiation leaks at two Japanese nuclear reactors? The cooling systems have failed at the two facilities as a result of power loss in the region. Even though the reactors have been shut down, a small, base level of nuclear decay is still happening, and that means a small amount of residual heat is still coming off the nuclear fuel rods. Under normal conditions, the cooling systems use water to surround the nuclear fuel rods and dissipate that heat, but power loss means the plants aren't able to pump water around the rods. If the fuel rods get exposed, they could melt, and in that case their containers may not be able to contain the radiation emitted from them. Dangerous leaks could occur. Why did a whirlpool form in a Japanese harbor after the tsunami hit? As a tsunami hits the coastline, the force of the water interacts with the shape of the coast and seafloor. The resulting chaos can cause all sorts of underwater vortexes that often scar the ocean bottom, according to "Tsunami: The Underrated Hazard" (Cambridge University Press, 2001) by Edward Bryant of Wollongong University in Australia. Whirlpools don't leave much of a geological record, but eyewitness accounts suggest they're relatively common after large tsunamis.



March 11, 2011, Japan M8.9 quake + tsunami (Blog by "Callan")

I'm not usually the "report on current events" type of geoblogger, but someone needs to throw a few details up ASAP for those who are interested in the details of the big Japanese earthquake and resulting tsunami that is currently crossing the Pacific Ocean.

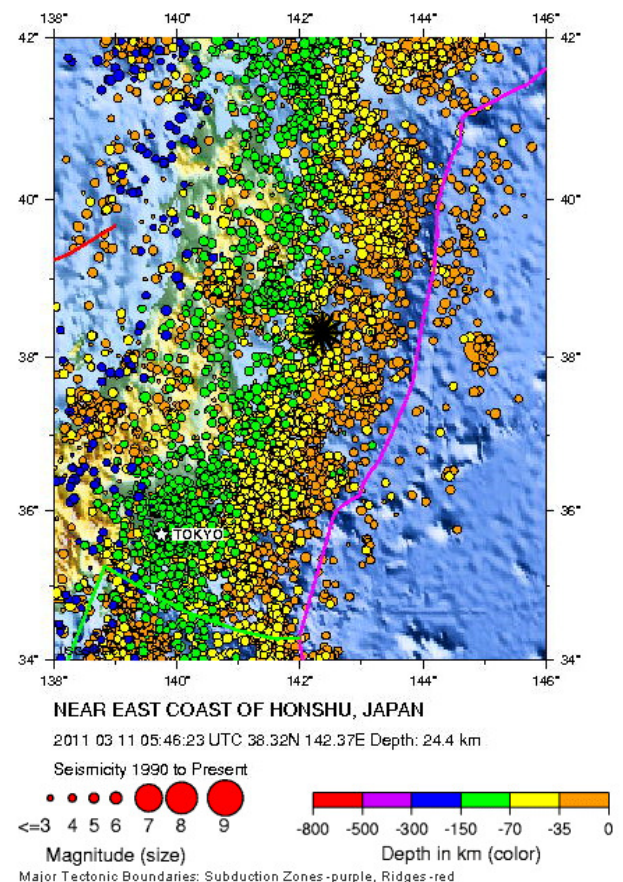
Context - If the 8.9 magnitude is confirmed, this is the fifth largest earthquake ever recorded. It is claimed (by the BBC) to be the largest earthquake to strike Japan in more than 140 years.

The earthquake was located at a depth of 17 km (relatively shallow, hence its capacity to generate a tsunami) just east of Japan's main island, Honshu. This is a

near a complicated tectonic meeting place, where four plates meet (pardon my rough sketch of the boundaries):

However, key to understanding the quake is that deep trench to the east of the epicenter. This marks the spot where the Pacific Plate is "diving" down into the Earth beneath the overriding plate, the North American Plate. This subduction zone is also the cause of northern Japanese volcanism, as dewatering of the subducted slab of oceanic crust triggers melting, and the resulting magma rises to the surface to erupt.

The focal mechanism is a classic "center segment compression" which suggests reverse faulting, which is what we would expect at a subduction zone most of the time. The map of historical seismicity in the area shows that today's quake took place in an area where there have historically been many other shallow (<35 km) foci, but also deeper quakes (between 35 and 70 km depth), and some that are even deeper than that:



The yellow and green dots are the epicenters of past earthquakes with depths that correspond to the subduction zone fault complex, while today's quake was above those (at a shallower depth). I suppose you could say it's *part* of the subduction zone fault "complex" in general, but my point is that it's not likely the "edge" of the North American Plate *per se* — though such an "edge" is a somewhat artificially-designated notion anyhow. The shallow depth suggests that this earthquake is a signal of deformation taking place within the North American Plate itself.

The footage of the tsunami is striking to watch – I was surprised to see some structures burst into flame as they were being carried inland on the massive wave. Here's a screenshot from the best video I have so far seen (BBC), annotated by me:



If there is anything worse than being hit by a tsunami, it's being hit by a flaming tsunami. You can see that at that point, we were still calling it an 8.4; the quake has since been upgraded, as is typical for really large magnitude events.

Of course, we will all be learning more about this event, and the damage it caused, over the course of the next hours and weeks. In the meantime, the key thing is for people in low-lying areas in the Pacific Basin to move towards higher ground. The forecast shows the potential for some damaging waves.

(Source: CBS News, Fukushima 50 not afraid to die) Since the disaster struck in Japan, about 800 workers have been evacuated from the damaged nuclear complex in Fukushima. The radiation danger is that great. However, CBS News

correspondent Jim Axelrod reports that a handful have stayed on the job, risking their lives, to try to save the lives of countless people they don't even know. Although communication with the workers inside the nuclear plant is nearly impossible, a CBS News consultant spoke to a Japanese official who made contact with one of the 50 inside the control center.

The official said that his friend, one of the Fukushima 50, told him that he was not afraid to die, that that was his job. Cham Dallas, who led teams responding to the Chernobyl disaster, said that kind of response is not out of the normal for some workers in the nuclear energy sector. "(In) my experience of people in the action area of nuclear power is much like that," Dallas said.

The 50 are working amid decreasing but still dangerously high levels of radiation. "The longer they stay the more dangerous it becomes for them," said expert Margaret Harding. "I think it is a testament to their guts for them to say, 'We'll stay and if that means we go, we go.'" If the contamination threat isn't contained in a few weeks, finding enough workers willing to face the risks could become

a crucial challenge. Dallas said he expects that in that scenario, the Japanese energy authorities may have to find volunteers willing to undergo similar dangers, which will be hard to do, but not impossible. Keep in mind they'd be volunteering to head into a place so potentially dangerous, that anyone within 20 miles of it was just asked to evacuate.

