Natural Hazards
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Lecture – 26
Volcano & Related Hazard Part II

So welcome back.

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Now, this was the example which we discussed of 1815 Tambora earthquake of Indonesia where almost 10000 people who have been killed.

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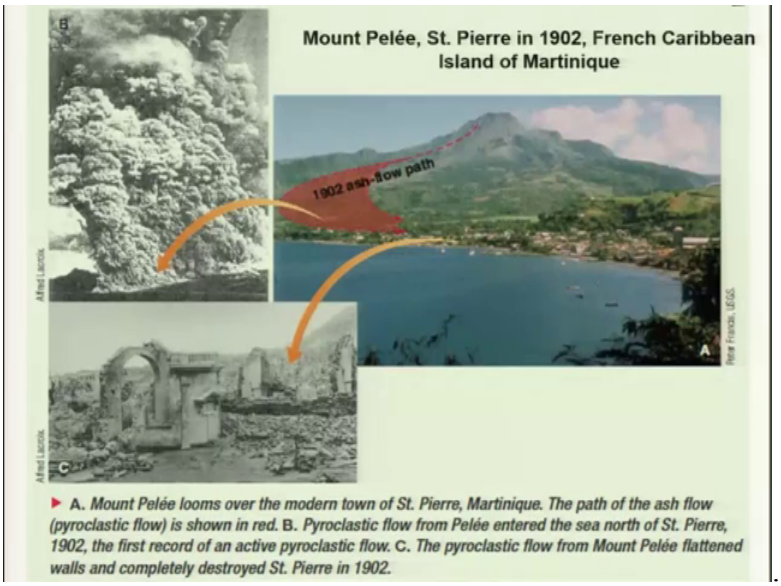

So, example another example from the French Caribbean Island Mount Saint Helens before the event of 1980; after the event.

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So, you can you can see this the amount of material which was been blown up completely. If you compare this photograph here this whole portion was been blown up.

So, it says that during the eruption much of the northern side, this is the northern side of the composite volcano was blown away and the altitude of the summit was reduced

approximate [vocalized noise] approximately by 400 meters. So, you can think of that 400 meters material was been completely blown off,. So, the elevation or the height was almost 9677 feet before and 8363 feet was after that.

So, this much amount of material was been removed in terms of the height.

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This is in Krakatau. As I was talking that this island, this volcano is close to the ocean. So, whenever there is an volcanic eruption here, it results into the local landslide resulting into the Tsunami. So, 1883 Krakatau eruption of Indonesia; one of the deadliest event in Indonesia until now. It occurred on 26 August 1883 started to emit ash and then exploded. This is also an indication as soon as the ash has been started coming up, ok; people will start to evacuate the areas

See explosion was heard as far as 4600 kilometers; so this was you can understand that what was the amount of material which was blown out as well as the energy which worked in. So, it resulted in Tsunami because of the landslide effect was felt worldwide and again almost like 20 cubic kilometer of debris was ejected during the eruption.

So, it was a massive volcano. Temperature around the globe was dropped by 1 degree. So, such volcanic eruptions will have an regional impact even if you are sitting away from the region where the volcanoes, active volcanoes are located.

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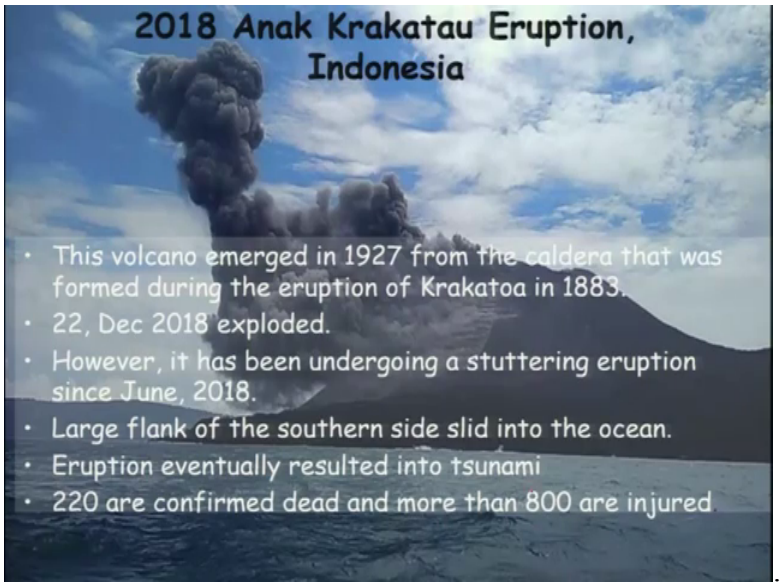

So, this is an another example from the region of Indonesia and this volcano is named as Anak Krakatau eruption. Anak is what they call a local language son. The son of Krakatau eruption and this volcano was like it emerged in 1927 from the caldera that was formed during the eruption of 1883. On 22nd December 2018 it exploded, however it has been undergoing stuttering eruption since 2018 June. Large flank which has been seen here of the certain side, slide into the ocean which resulted into the Tsunami.

But of course it was not as large as what we were discussing of 1883 Krakatau eruption. So, around 220 people were killed and more than 800 were injured during this volcano.

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So, this is a short video of son of Krakatau.

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So, if you look at the if you watch the video again what things have been pointed out is that the Indonesia was not having the early warning system for the landslide which was been triggered because from this volcanic eruption and that is your son of Krakatau volcano Krakatau volcano.

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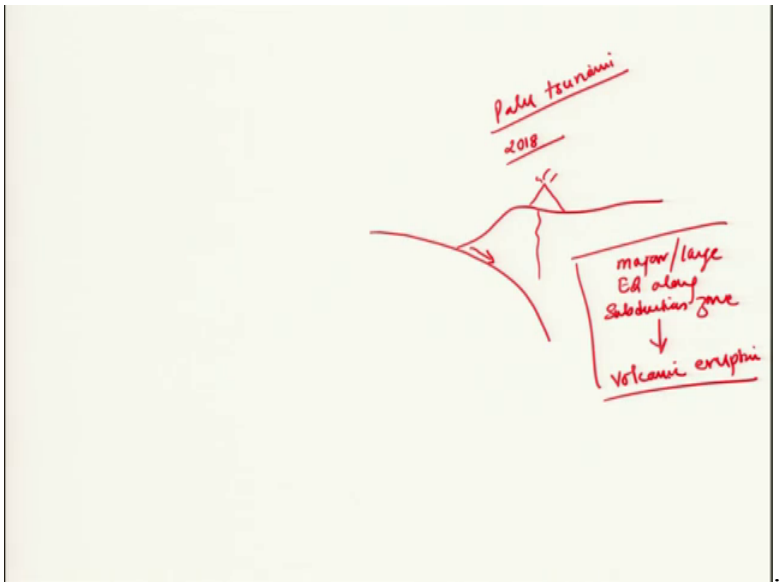

Now, the point here which I would like to emphasize is this event of the volcanic eruption it occurred after the Tsunami which was again a devastating Tsunami of 2018; so, Lava sea or Palu tsunami. So, Palu tsunami event was triggered recently. We will come to this later on. So, this moved or slipped this plate and the because of the major earthquake here of this activity was been triggered that is an volcanic activity.

So, there has been also learned that sometime if there is a major or large earthquake along subduction zone, it may result in to volcanic eruption and this tells us or teaches us the lesson that is of course the large earthquake will be followed by a major or minor volcanic eruption in the region.

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Now moving ahead let us see more examples and then so Pinatubo Philippines earthquake again it was and they were sitting one.

So, mostly what happened here was that it ejected vast amount of volcanic ash and sulfur dioxide and then very fine particle what we also call as an aero aerosols from the eruption remained in the upper atmosphere and circled the earth for more than a year. This was in another sense was devastating not only in the nearby area, but also effected the world wide areas, ok. So, this dust cloud temporarily lowered the global temperature as we were talking about almost like in 1 degree and then Mount Pinatubo eruption was the 2nd largest in 20th century.

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And another one was this one from Iceland as we have already talked about this that this again poured lot of ash in the atmosphere and affected many flights around the Britian and the European side Northern Europe where no flight was been almost for a week, no flight was been allowed to take off or land.

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So, beautiful example from Fuji, Mount Fuji from Japan with steep conical mound and this volcano has been is famous to in like in a wave emitting or rejecting tephra and lava, but since several years nothing has happened here and this will be very much similar to

what we have been talking about 1980 mount Saint Helens. Why? Because this is covered with the peak is been no cap is there. So, if volcanic eruptions take place, the surrounding areas definitely this whole area will be affected.

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So, the height is almost like 3776 meters last erupted in 1707. So, of course, there will be a next eruption because this is one of the active volcano in Japan, but the most important point which I would like to mention here is that they are continuously monitoring the activities, volcanic activities in terms of the movement of magma as well as in terms of the earthquakes which are triggered because of the movement of magma.

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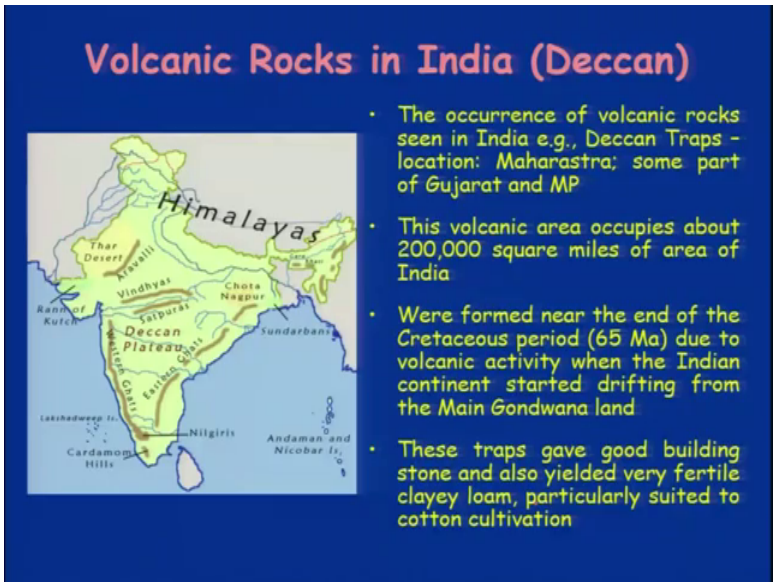

So, volcanic rocks in India if you look at it will remind you that a very large part of the Indian plate has been occupied by Deccan Plateau and this Deccan Plateau is nothing, but the cup made up of volcanic rocks.

So, the occurrence of the volcanic rocks seen in India example, Deccan Traps locations Maharashtra, some part of Gujarat and MP. So, this volcanic area of almost occupied 2000 square miles of the Indian region and they were formed near the end of the cretaceous period when there was large volcanic activities around the globe due to volcanic activities when the Indian continent started drifting from the main Gondwana land.

So, you need to refer back to the Plate Movement or the Continental Drift Theory which was been discussed in the lecture of Plate Tectonics which will explain and help you in understanding that what exactly happened at around 665 million years back. These are also termed as Deccan Traps and this Deccan Traps gave good building stones and also yielded very fertile clayey loam particularly suited for the cotton cultivation.

So, do we have an advantage and disadvantages also from the volcanic eruption? So, if you are if you are close to the ocean, then you will have a very good aquatic life there as well as very fertile land because of the minerals which have been poured onto the surface from because of the lava flow.

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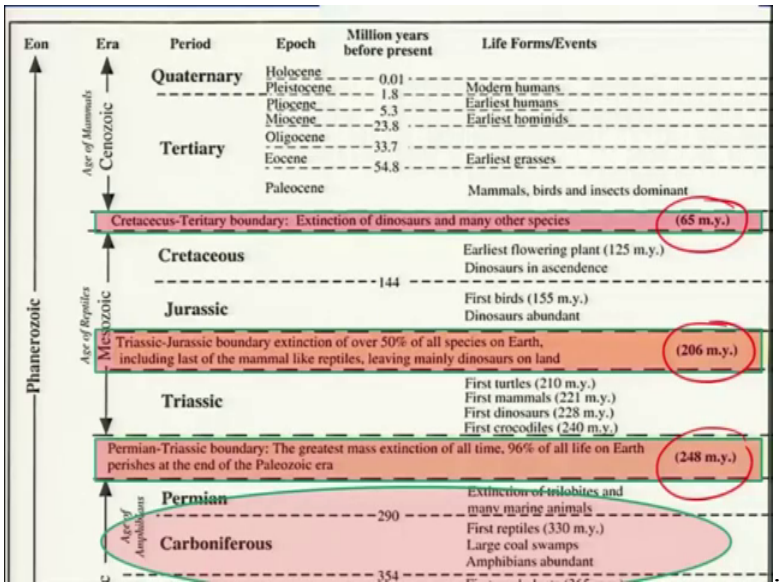

Now, these are a few events in terms of if you take the geological period.So, we have one around 65 million years back and this is at the time of cretacean and tertiary boundary, extinction of dinosaurs and many other species. So, this was one of the time then we have like in Permian and Triassic boundary, but before that will we you see that there is a there is a boundary where again the volcanic eruption was there, but during Triassic and Jurassic period extinction of over 50 percent of all species on the Earth including the last of the mammals like reptiles leaving many dinosaurs on land and this was been in 65.

Now, this cretaceous tertiary extinction of dinosaurs many other species in Permian Triassic boundary, the greatest mass extinction of all time; 96 percent of all life on the earth at the end of it was completely extinct. So, you can in another part which you can look at that we have very major phases where we the large volcanic eruptions where have been experienced around the globe which resulted into the extinction of many species on the earth. So, I would like to thank that we do not have such deadly volcanoes in India. We are fortunate enough for that.

Thank you so much