Natural Hazards
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Lecture – 10
Introduction to Natural Hazards (Recent Natural Calamities in India & Worldwide)

Welcome all as this course is about Natural Hazard. And the tutor is Dr. Javed N Malik, and myself TA Ishan Shrivastav. So, as sir has already taught you about the; taught you about the different natural hazards has given you the introduction about it. This class is all about some of the recent natural calamities in India and worldwide.

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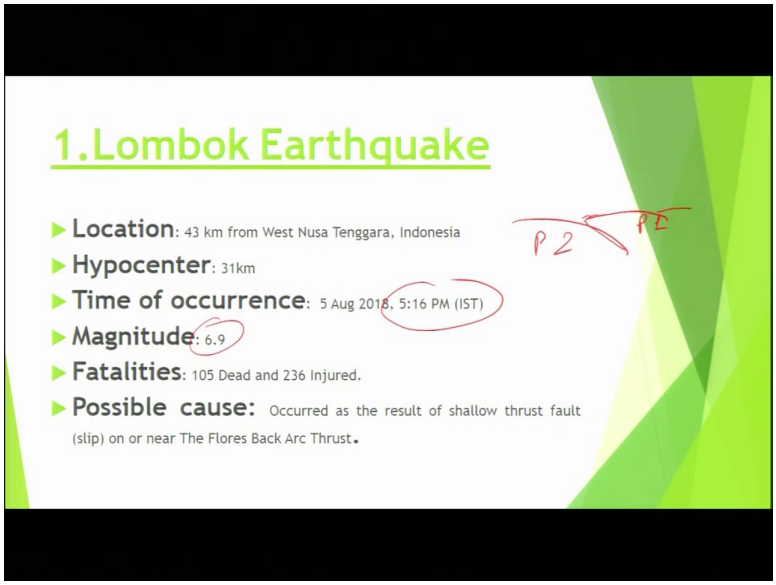

So, as we go the fault calamity or the hazard is earthquake the Lombok earthquake, whose location is around 43 kilometres from West Nusa Tenggara, Indonesia. The hypocenter, hypocenter means where the earthquake originated is around 31 kilometre depth from the earth surface. Time of occurrence was 5th August 2018. And this was the time at which this earthquake generated or originated. The magnitude of this earthquake was 6.9 which can be called as a mega earthquake. In the fatalities, the casualties involved in this earthquake was around 105 dead and 236 injured.

Possible causes occurred as the result of shallow thrust as sir has already told you about the thrust fault that one plate is overwriting the other plate. This is p 1 plate one and this

is p 2, such this plate is overwriting the other plate as you can see during subduction some stress is acting. And when it crosses the limit the force is generated and earthquake happens. So, there is a video regarding this earthquake I am going to show you.

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So, this is the Lombok area where you can see how the earthquake has created destruction in this local area of the Lombok. Shaking is happening. Depending upon the magnitude shaking also prevails. If the magnitude is high and some according to lithology of that area shaking will prevail in that area. It can be up to 30 to 40 second or up to 1 minute. And depending on the shaking, the duration of shaking the destruction will prevail or happen. So, this video is showing the destruction which happened after the earthquake houses are just got destroyed. We can see the property loss in that area with just 6.9 magnitude earthquake in Lombok area.

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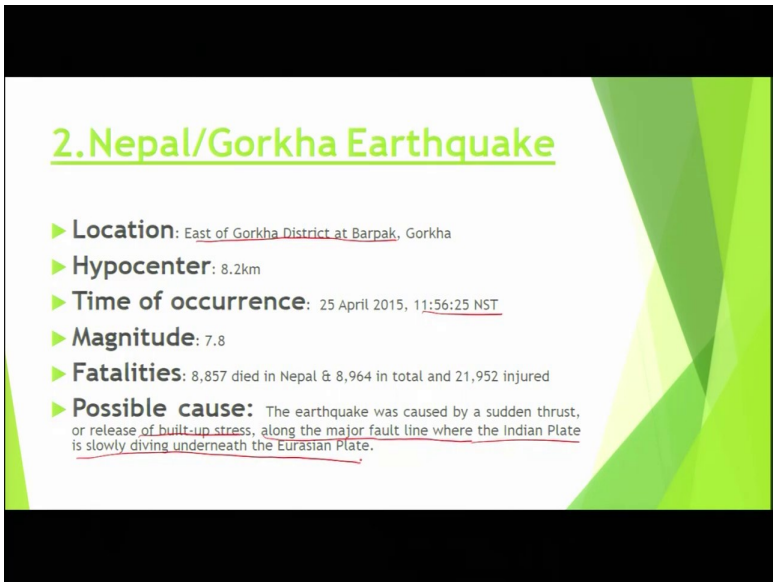

So, let us go to the other calamity, the Nepal Gorkha earthquake. This was a mega earthquake in that Himalayan region. And it was and the magnitude of this earthquake was around 7.8 And this earthquake was also felt in the Indo-Gangetic plain. So, the location of this earthquake was East of Gorkha District at Barpak, Gorkha that is in Nepal. The hypocenter as I have already told you the earthquake from the depth at which the earthquake generated, it is around 8.2 kilometre. Time of occurrence was 25th April 2015, and the time was this 11 hour 56 minutes NST - Nepal Standard Time. And magnitude was 7.8.

Fatalities involved where around 8,857 died in Nepal and 8,964 in total, means total means regarding the earth surrounding countries for example, India. And the injured was counted up to 21,952. Possible cause of this earthquake same as the Lombok. The earthquake was caused by a sudden thrust movement or release of built up stress. As already told you the how the subducting plate building the stress and if it sudden most then energy get generated along the major fault line, where the Indian plate is slowly diving underneath the Eurassian plate.

So, there is one video we can see to get the feel of this earthquake. This video is from Kathmandu. So, we are showing this video is the different videos of different hazards, so that you can see how this hazard can destroy the areas. As you can see this building just went down from the earthquake.

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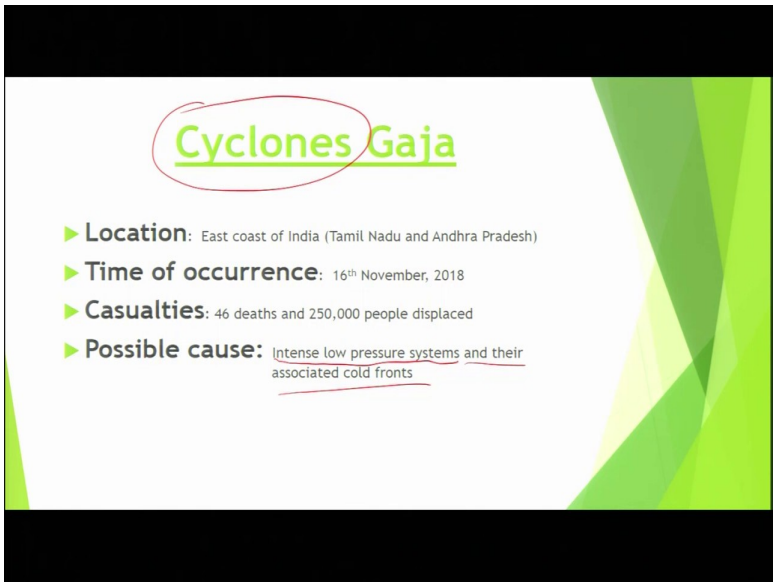

Let us move to other hazard the cyclone Gaja. I am sure sir has taught you in detail about this cyclone. Here we are just looking the four, few of the bullet points. For example, the location it was around in the east coast of India. It felled in Tamil Nadu and Andhra Pradesh. Time of occurrence was 16 November, 2018. Casualties 46 deaths, and 250,000 people were displaced because of this cyclone. And these cyclones are very much common in east coast of India.

As you can see 2016 Varda, and now cyclone Gaja. Possible cause was build up of intense low pressure system in the Bay of Bengal or the Indian Ocean. And this led to associated cold fronts. The wind which get developed with this low pressure system travelled towards the east coast of India and other parts of the Indian Ocean. So, now, a video I will be playing. All these video are in the public domain, you can also search it on that.

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As you can see this is the cyclone building coming towards the coast. Destruction caused by the cyclone, inundation of the sea, heavy rainfall. As you can this is the heavy rainfall duty to the cyclone Gaja. This is the Pamban Bridge. And you can see cyclone coming towards this bridge. Again the strong winds as you can see these are the destruction caused by cyclone Gaja. People's life gets affected with these kinds of hazards.

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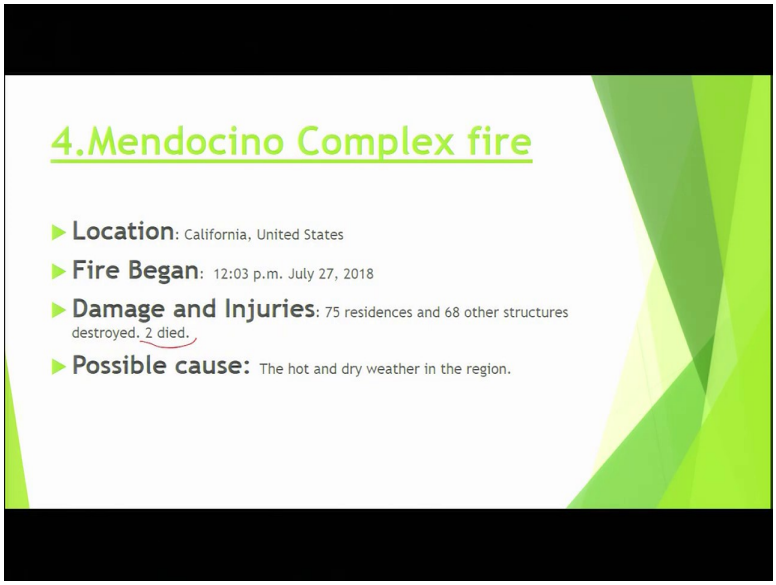

So, let us move to other natural hazard. This is the Mendocino Complex Fire. Different natural hazard that is a complex fire a wild fire which broke out in West Coast of US

mainly in California, the fire began around 12.03 pm, July 27, 2018. Damage 75 residences and 68 other structure destroyed and only two get died. This shows that this country was prepared for this kind of hazards with seeing the casualties in due to this complex fire. Possible cause; the hot and dry weather in the region. So, there is a video.

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So, what is that wild fire is burning in the state Mendocino Complex, then we are talking river and ranch fires. So, (Refer Time: 11:19) more than 300000 acres that is about 10 times the size of San Francisco, 221 structures destroyed, and fire is 47 percent contained. And now authority say the fire is suspected to burn until September reported John Blackstone is a (Refer Time: 11:35).

More than 4000 fire fighters continue to battle Mendocino Complex Fires almost 2 weeks after the blazes began. So, this is one of your Alliances in Defence team, yeah this is the second day on earth (Refer Time: 11:51). Fighting these fires has been like waging a war. From (Refer Time: 11:57), we are trying to make sure (Refer Time: 12:00) to safe, but we are also trying to save people's lives and property. This is one place where fire crews have been victorious cutting the fire blaze, stopping these planes as they came down these bridge, but can lead many more of these (Refer Time: 12:11) before the fire result. Crews have been setting up multiple lines in defence (Refer Time: 12:16).

But the fire might spread (Refer Time: 12:23) cannot get too much more (Refer Time: 12:27) like that is what helps is fire grown so much.

Absolutely (Refer Time: 12:32), and fire is off (Refer Time: 12:38). Again the (Refer Time: 12:39) for make sure these fire is quite thousands of people have been evacuated, but not everyone has decided to leave their homes.

No, I am going to stay. And I felt like as soon as the fire (Refer Time: 12:49) homes near, the I will leave, but I do not feel (Refer Time: 12:52) right now.

(Refer Time: 12:54) this fire already destroyed 75 residences and more than 10,000 structures and still considered threatening as the battle here it is far from over. Fire officials do not believe that this fire will be fully contained until September, John Blackstone CBS News, Chicago California.

Camp fire and the US forest service are holding a virtual community meeting on Facebook tonight at 6, school was suppose to start today and then county but that is been put off for 2 weeks because of smoke damage.

So, that was Mendocino complex fire. And you can see how this fire has destroyed the Northern California region.

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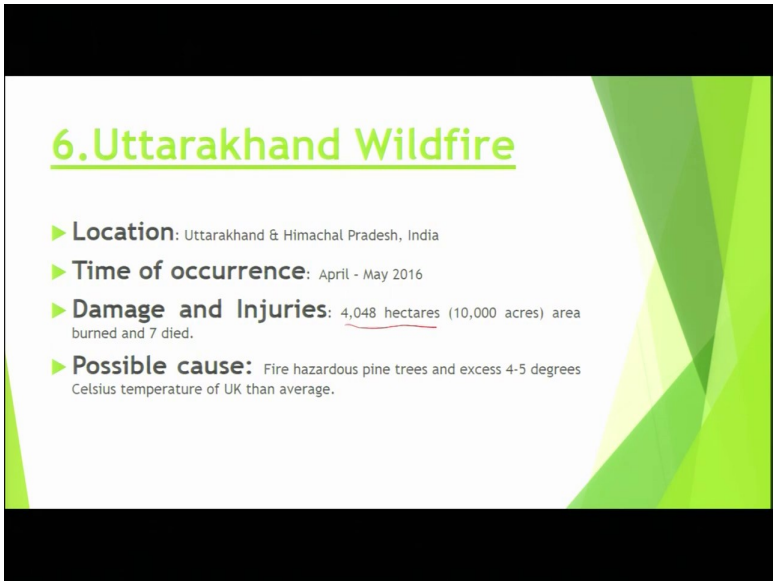

So, now we move to the other hazard. Same kind of wildfire broken Uttarakhand region of India and also in Himachal Pradesh. The time of occurrence was April to May means same the dry winds hot and dry winds during this period may have caused this fire. Damage and injuries around 4048 hectares of land got burned and 7 died. Possible

causes: fire hazardous pine trees and access 45 degrees Celsius temperature of Uttarakhand than average. So, again a video is there.

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Multiple of wildfires incidents.

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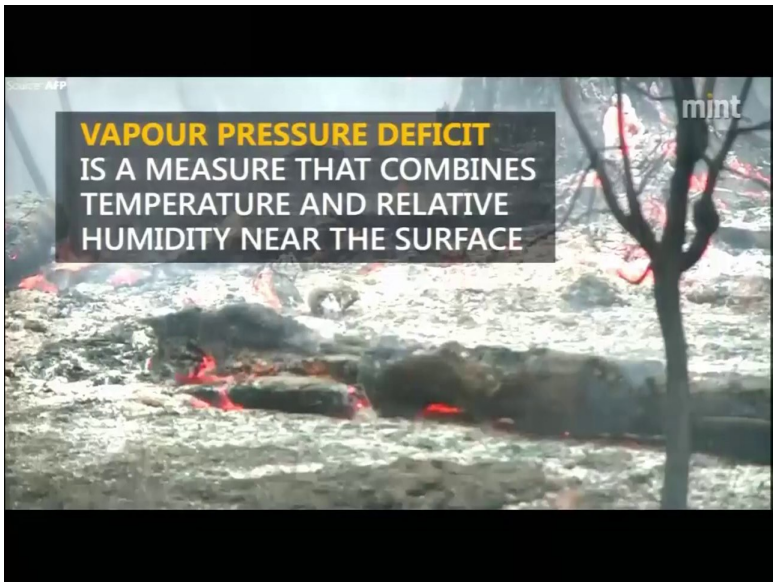

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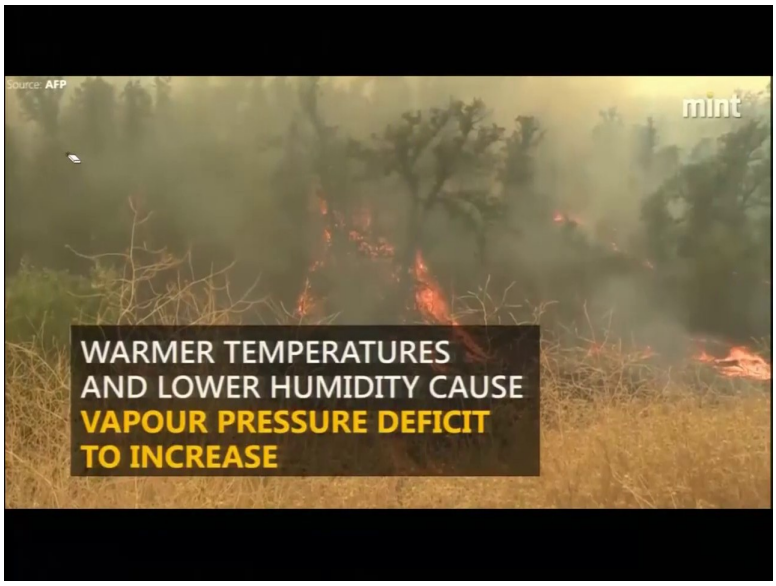

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So, that was Uttarakhand wildfire.

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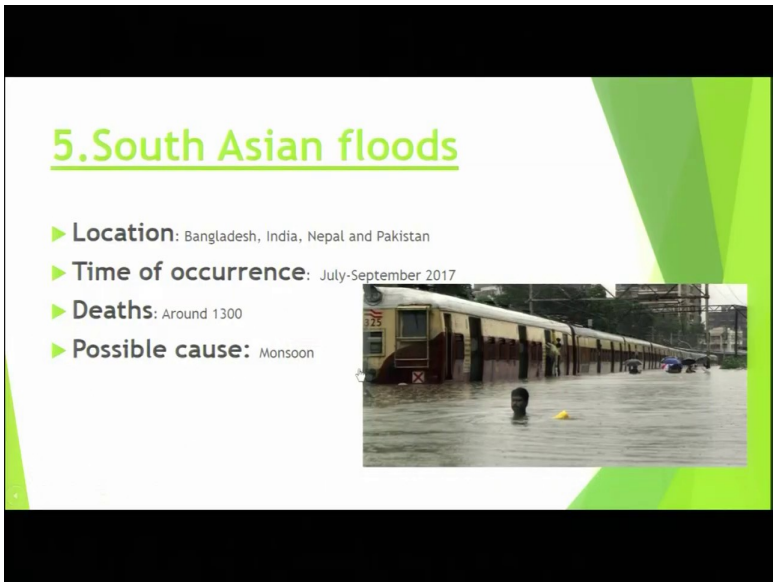

Now, the next hazard is South Asian floods. So, this is the next hazard that is South Asian floods which we Indians face every year due to the monsoon from July to September. Location is Indian subcontinent which comprises of Bangladesh, India, Nepal and Pakistan; time of occurrence July to September 2000. Every year July to September, but some year the rainfall increases from its average and due to that flood occurs in the several parts of Indian subcontinent. The 2017 flood was hazardous one which took

death of around 1300, and as I have already told you the possible cause was South Asian monsoon. So, there is a video.

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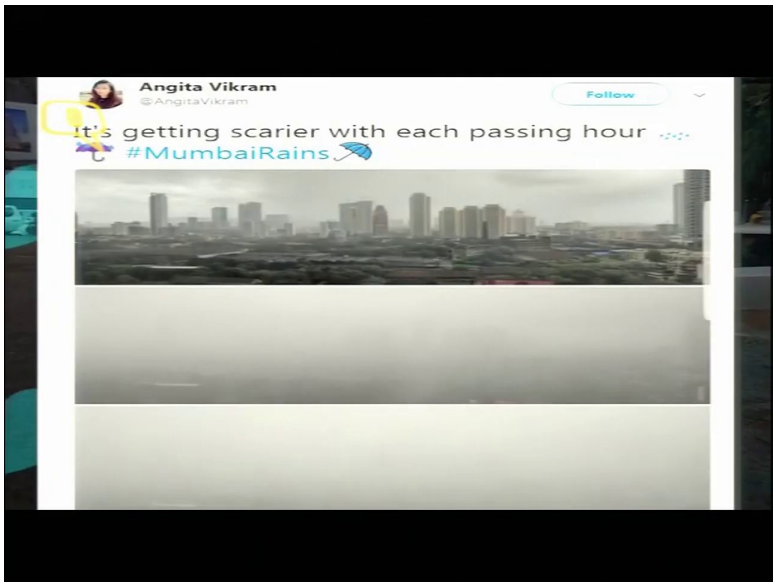

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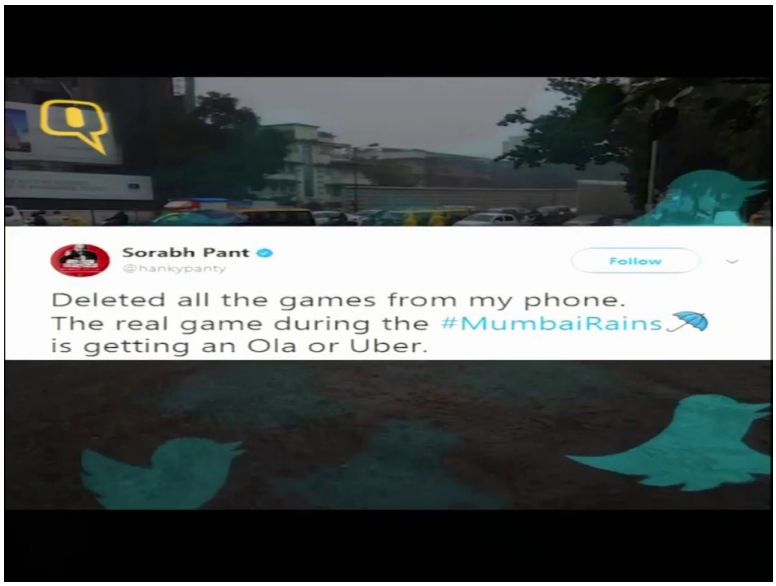

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I am sure from all these videos you have understand how this hazards are dangerous, and taking up lives in many numbers, and there is huge loss of property is involved.

Thank you.