

## **Tsunami- Distribution and Mapping**

Welcome students,

My name is Dixita Shingadi, Assistant Professor in Geography from Government College Quepem.

Course title is Fundamentals of Disaster Mitigation and in this module, we will be talking about Tsunami Distribution and Mapping.

This is the outline of the presentation.

Learning Outcomes.

At the end of this module, students will be able to understand the tsunamigenic zones that threatens the Indian coast. Also, they will be able to analyse the importance of tsunami mapping and tsunami hazard map in disaster management and mitigation.

### **Introduction**

In the previous module, you all have already learned about what is tsunami, what are the causes that leads to the tsunami, and the effects related to it. And now we know that whenever the tsunami occurs, it disrupts the human life. It kills a lot of human beings. It also destroys the human property.

That is why it is very important that we need to predict the tsunami. It has also created a need for assessing the tsunami hazard in vulnerable coastal areas around the world. India has also experienced many such deadly tsunami's in the past. The occurrence of disastrous Indian Ocean tsunami in 2004, has urged to have the tsunami warning system. So, for that matter the Ministry of Earth Sciences initiated action towards setting up the tsunami warning system at Indian National Centre for Ocean Information Services at Hyderabad. It was inaugurated on 15th October 2007. It consists of all the necessary computational and communication infrastructure that provides real time data from all the sensors. It analyses the data

and it also looks after the generation and dissemination of Tsunami advisories following a standard operating procedure.

This is the slide which shows the tsunami distribution in India.

There are certain tsunamigenic zones that threaten the Indian coast. There are four faults which either lies in the Bay of Bengal or in the Arabian Sea which has generated tsunami's in the past and it has disrupted the human life. The first one is the Sumatra fault, then next one is the North Andaman Fault, then third one is the Car Nicobar fault in the Bay of Bengal and 4th one is the Makran Fault in the Arabian Sea. These are the faults which have generated the tsunami's in the past, and it threatens the Indian coast tsunami prone areas in India.

There are 2 zones in India which are quite vulnerable to tsunami's. First one is the western coast of India and second one is the eastern coast of India. If you compare the both, then it is the eastern coast along with the Andaman and Nicobar Island is more vulnerable and have experienced some deadly tsunami's in the past. Government of India has also identified certain regions along the eastern coast which are highly vulnerable. They are Puri, Kakinada, Machilipatnam, Cuddalore-Puducherry, Rameshwaram, Thoothukudi, Alappuzha-Chavara and Kochi. These are some of the regions which are highly Vulnerable to tsunami's, which lies along the eastern coast.

This is the slide which shows the Tsunami, that India has experienced in the past. It shows that the major tsunami that we experienced was in the year 1819 and that affected the Gujarat coast. It was followed by in the year 1881 that affected the most of the states along the eastern coast then 1847 which affected the Great and the Car Nicobar Islands. Then 1941 Andaman Island, 1945 Gulf of Combay and in 2004 this was the major tsunami that India experienced. It is called as Indian Ocean tsunami and it affected many states of southern part of India that is Tamil Nadu, Andhra Pradesh, Odisha, Kerala and also the Andaman and Nicobar Islands.

## **Tsunami mapping**

The identification and preparation of maps of areas of potential tsunamigenic earthquakes is very important and that is considered as the first step under the tsunami disaster reduction and mitigation program. These tsunami mapping shows the tsunami's potential areas because once the major earthquake occurs with the help of that you can predict the tsunami's.

Similarly, tsunami Hazard map is also one of the very important aspect and it is considered as an effective medium for communicating tsunami risk. This tsunami hazard map shows all the essential details of the vulnerable areas. First of all, it will show the vulnerable coastal areas. It will show the land use and land cover pattern of the vulnerable areas, the elevation, cadastral land parcels, infrastructure, high tide lines and coastal regulation buffer zones. These are the details which are shown in the tsunami hazard maps. This tsunami hazard map is considered as one of the basic requirements for the development of tsunami disaster management system. It also provides a base to the stakeholders to decide the evacuation plans and to evaluate once the disaster occurs. This tsunami hazard map is also considered as a potential tool for land use planners wherein they can use this tsunami hazard map to reduce the risk by locating some of the critical facilities, like schools, hospitals, old age homes out of this potential tsunami floodplain. So both tsunami mapping and tsunami hazard maps are very important and they are used in the tsunami mitigation measures.

Finally, to conclude, I would like to say that tsunami have created a havoc in human life and it has affected many areas. That is why we need to have an early prediction system and both structural and non-structural measures need to be implemented. Coastal vegetation belt along the coast is considered one of the defence alternatives to reduce the level of damage which is incurred by the tsunami. Tsunami mapping and tsunami hazard maps are considered as an effective tool to reduce the level of damage.

These are the references.

Thankyou.