

SCIENTISTS FAILED TO WARN VULNERABLE COASTAL PEOPLE IN TIME

The catastrophic Sumatra earthquake created destructive tsunami waves that devastated coastal areas far and wide. It is a matter of great regret that scientists and technologists of the country have failed to apprehend the impending dangers of killer tsunami waves and warn people in time. Mainfold loss of life could and should have been avoided.

Existing seismological stations in the country and international network had recorded and located the humongous event well within half an hour. The earthquake was initially estimated to be of magnitude 8.1 and its hypocenter was located about 160 km west of northern tip of Sumatra and 10 km below MSL. True, the magnitude was later revised to 9 and depth of hypocenter to 30 km below MSL, but a sub-sea earthquake of magnitude 8 in the Andaman-Java subduction zone is eminently tsunamigenic.

Further, the main shock was closely followed by 3 aftershock earthquakes in Sumatra, and 7 in the Andaman-Nicobar islands of magnitude 6-7 which were also potentially tsunamigenic. Thus, we knew that a bunch of earthquakes of 8-6 magnitude and rupture zone extending over 1000 km had occurred in the Sumatra-Andaman subduction zone. Generation of tsunami was a definite possibility.

Several earthquake shocks closely followed by unprecedented high killer waves struck Car Nicobar and also Port Blair very soon. It is likely that messages about this devastation at Car Nicobar and Port Blair in the form of SOS or in any other form might have been exchanged between the Air Force and Navy establishments or the Seismological Station authorities at Port Blair and the mainland. There had been a clear gap of 2-3 hours between tsunami waves striking Car Nicobar and Port Blair and those devastating Tamil Nadu and east coast of Sri Lanka! Given our communication facilities warning alerts could have been sounded for the vulnerable coastal states of India and Sri Lanka to leave the coastal stretches and head for higher ground. This action could have saved many lives. On the other hand, we were taken completely by surprise and from tide-gauge record at Chennai Port, and TV reportings at 9 AM started to realize that tsunami has struck the Indian coastal belt particularly its southeast sector and the devastation was unprecedented. It is noteworthy, on the other hand, that coastal areas were evacuated ahead of tsunami in the Indonesian island of Simeulue, located very close to the epicenter. Island folklore recounted an earthquake and tsunami in 1907 and the islanders fled to inland hills after the initial shaking – before the tsunami struck. On Maikhao beach in northern Phuket, Thailand, a 10 year old British

girl who had studied tsunamis in geography class at school and recognized the warning sign of the receding ocean. She and her parents warned others on the beach, which was evacuated safely.

The causative subduction zone fault rupture and its propagation is responsible for the high magnitude of the earthquake caused by upward snapping of the Burmese plate by 15 m over a strike length of about 1200 km extending from northern Sumatra to North Andaman. Thus, the tsunami waves would not radiate from a point source, as was thought by some, but from an N-S trending narrow zone of 1200 km length. Thus the greatest strength of the tsunami waves was in the east-west direction. This possibly explains why Nagapattinam-Karaikal coastal belt in Tamil Nadu, with its N-S trending coast line and located west of the tsunamigenic rupture was most severely affected. Same is the reason why the low-lying coastal areas of West Bengal and Bangladesh located north of rupture were much less affected.

Massive scale of Sumatra earthquake requires strain buildup in the Andaman-Java subduction zone over a long period. A nearby event of magnitude 8 had occurred during June 1941. One of the possible reasons for strain build up could be due to blocking of subduction activity by the northern end of the buoyant 90° E Ridge around 9° latitude as seen in the sea floor bathymetric map. The Andaman-Java subduction zone is flexed convex westward in this area.

As an aftermath of Sumatra earthquake and tsunami catastrophe, there is strong demand for installation of Tsunami Warning System in the Indian Ocean for the benefit of India and neighbouring countries. Government of India has preferred to develop an indigenous system rather than importing existing systems installed in the Pacific Rim Countries. The need for the installation of an indigenous warning system and consequent massive grant may be a valid issue. But more immediate need is to strengthen the existing system to warn the people of impending disaster that failed. Mitigation and various policy formulations generally occur in the wake of a particular disaster when public opinion is favourable, but with lapse of time, political, official and public interest in the problem diminishes. Large amount of money is generally spent on relief and rehabilitation, while preparedness and mitigation plans which are of prime need remain non-executed till the next disaster.

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