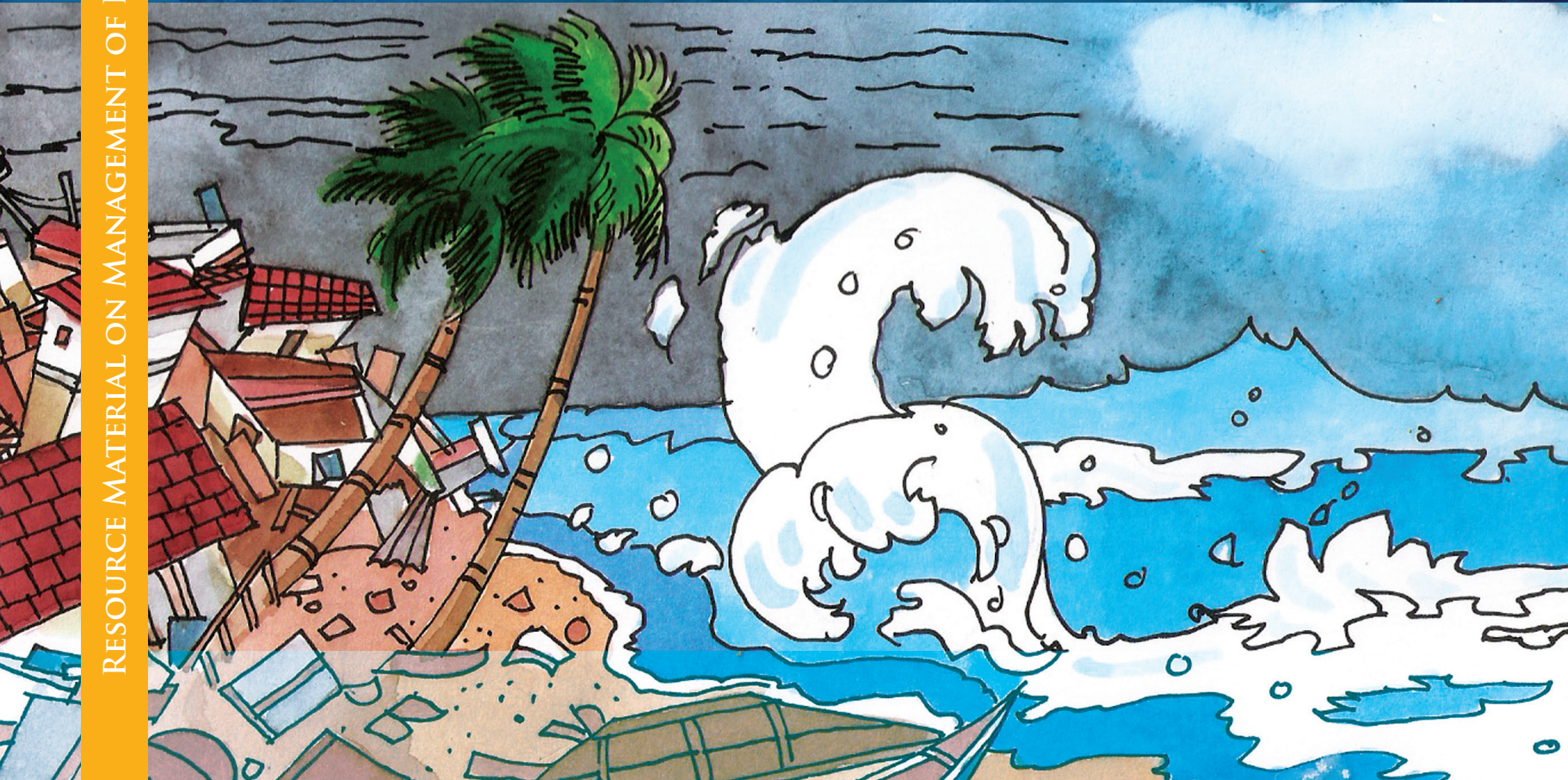


Tsunami



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About the Series

A disaster is an event caused by the sudden disruption of normalcy within society resulting into widespread damage to life and property. Sometimes we also face accidents that are so serious that they have a long term effect on life and property. To avoid such accidents we need to be cautious in our day-to-day activities.

In this series, an attempt has been made to raise awareness in order to handle these disastrous situations effectively so as to minimise losses.

This series comprises of ten booklets covering different areas such as earthquake, landslide, tsunami, flood, draught, fire and accidents, chemical hazards, epidemics like swine flu, malaria and dengue, food poisoning and cholera. You will notice that the topics selected here do not include all the issues related to disaster. These are only illustrative cases. This is because the idea is to impart necessary information to develop skills to enable people to prevent disasters or to reduce their impact by efficient handling of such situations.

Simple and communicative language has been used in the entire series so that children in the age group of 10–16 years can understand it effectively. We hope that the readers will benefit from this material and have confidence to handle such kind of situations proving to be smart and responsible citizens.

It is suggested that the teachers and facilitators use this series as an example to develop related material for school projects. The teachers could also share these projects and hold awareness programmes for the community with an aim to initiate continuous participation when such situations arise.

The Council also welcomes the suggestions from the users of this material.

Tsunami



VINOD



GAURI



AKHIL



ANANYA



VISHRUT



राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

It was the year we were visiting Port Blair during our winter vacation. All of us, my two children, my wife Gauri, and myself were eager to visit our relatives. Gauri and I are both teachers in a Delhi Government School and Akhil is studying in

Class X like his cousin Vishrut, and Ananya is in class VII two years younger than her cousin Renu. We were to visit Vikram, a police officer and his family.

After a long time all of us will celebrate Christmas together.

Welcome all of you. It is so exciting to celebrate Boxing Day together.



Are you happy Ananya?
How do you want to celebrate tomorrow?

Oh! Yes, I want somebody to become Santa Clause and bring gifts?

I shall become Santa Clause and distribute gifts to all our domestic helps, malis and Chaukidar.



Akhil: OK, I would like to have a Christmas cake.
Renu: All of us will dance till late at night on the sea beach and stay at the resort located nearby.

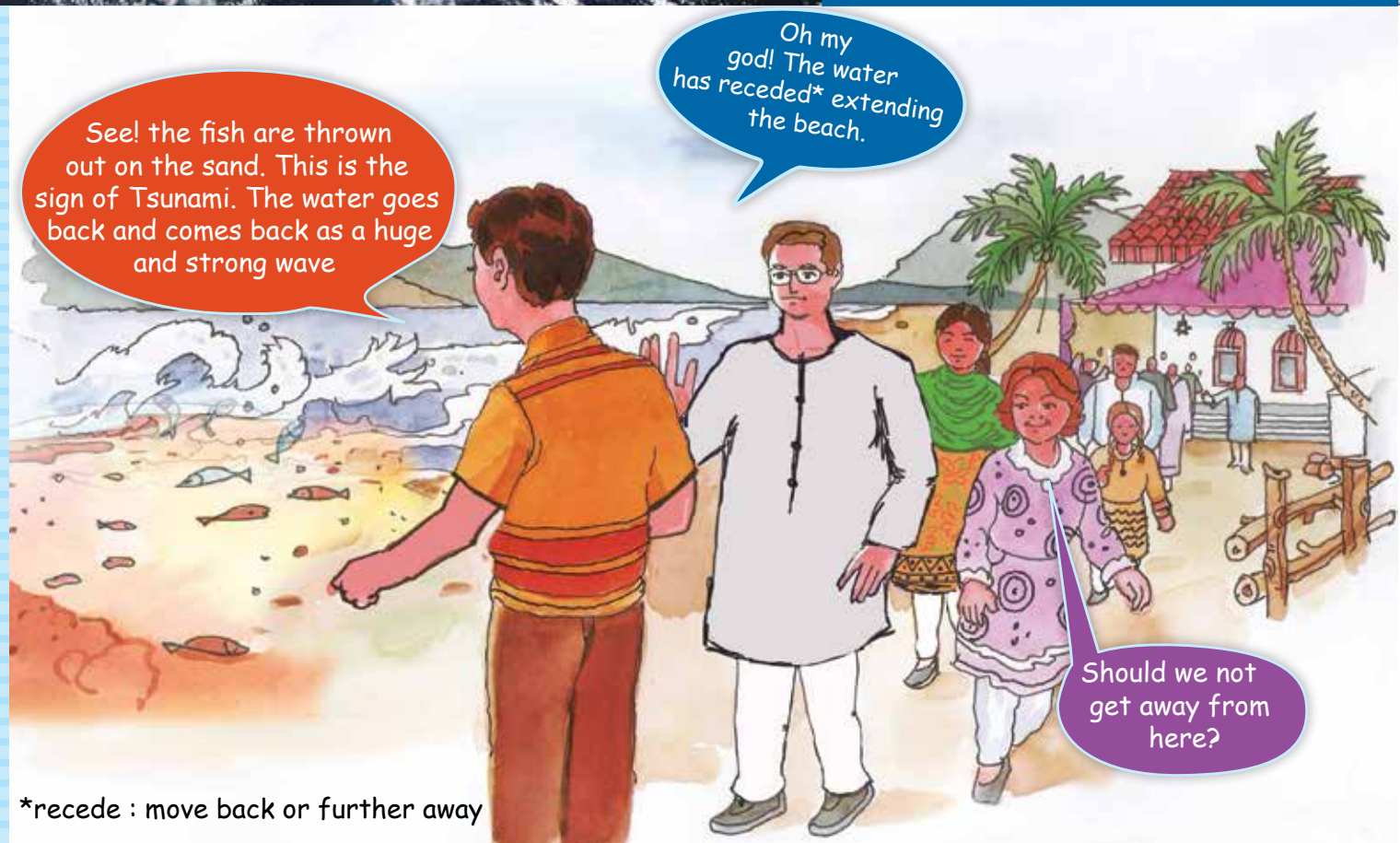
Next day, late in the evening, while celebrating the X-mas party

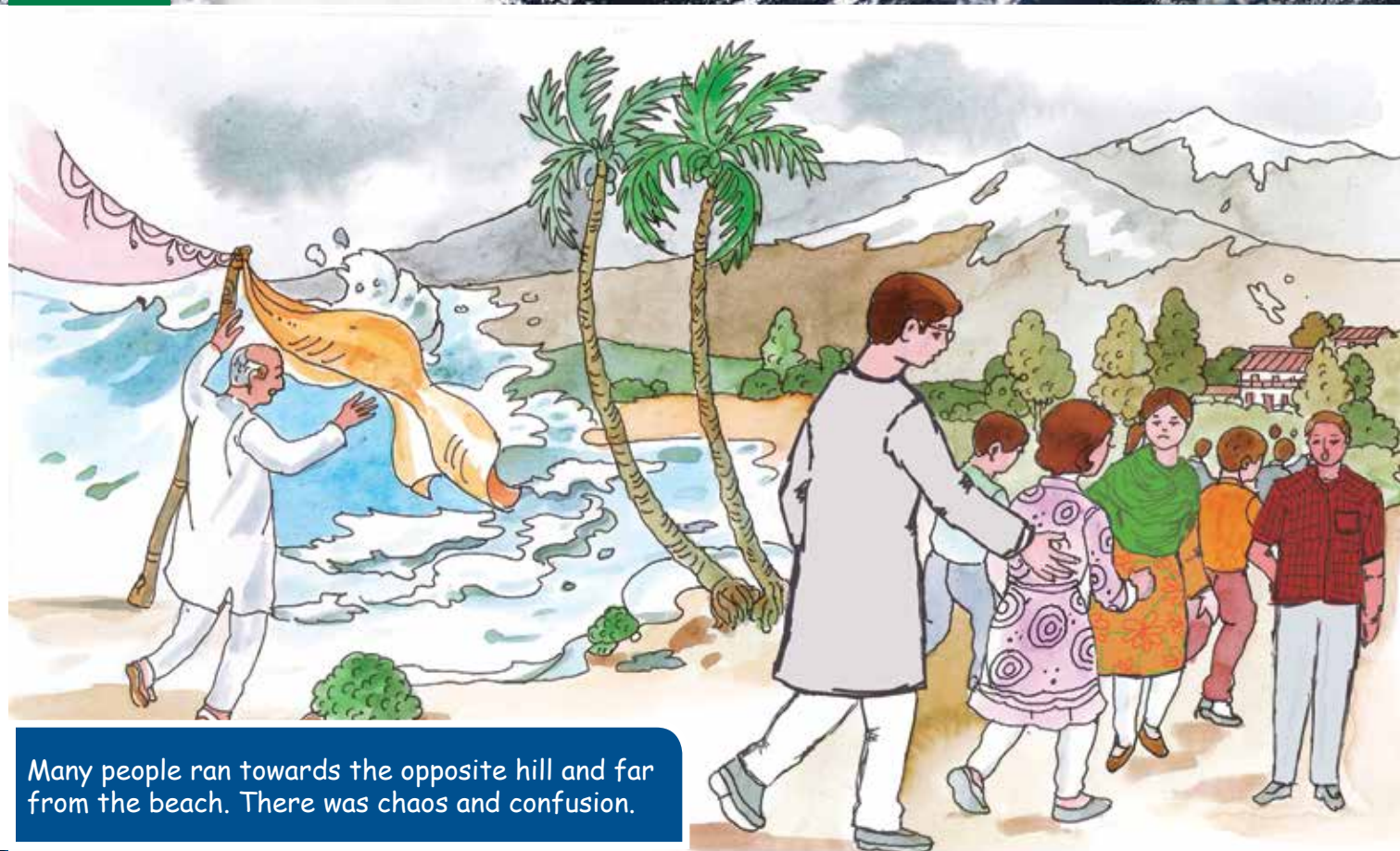


Tsunami

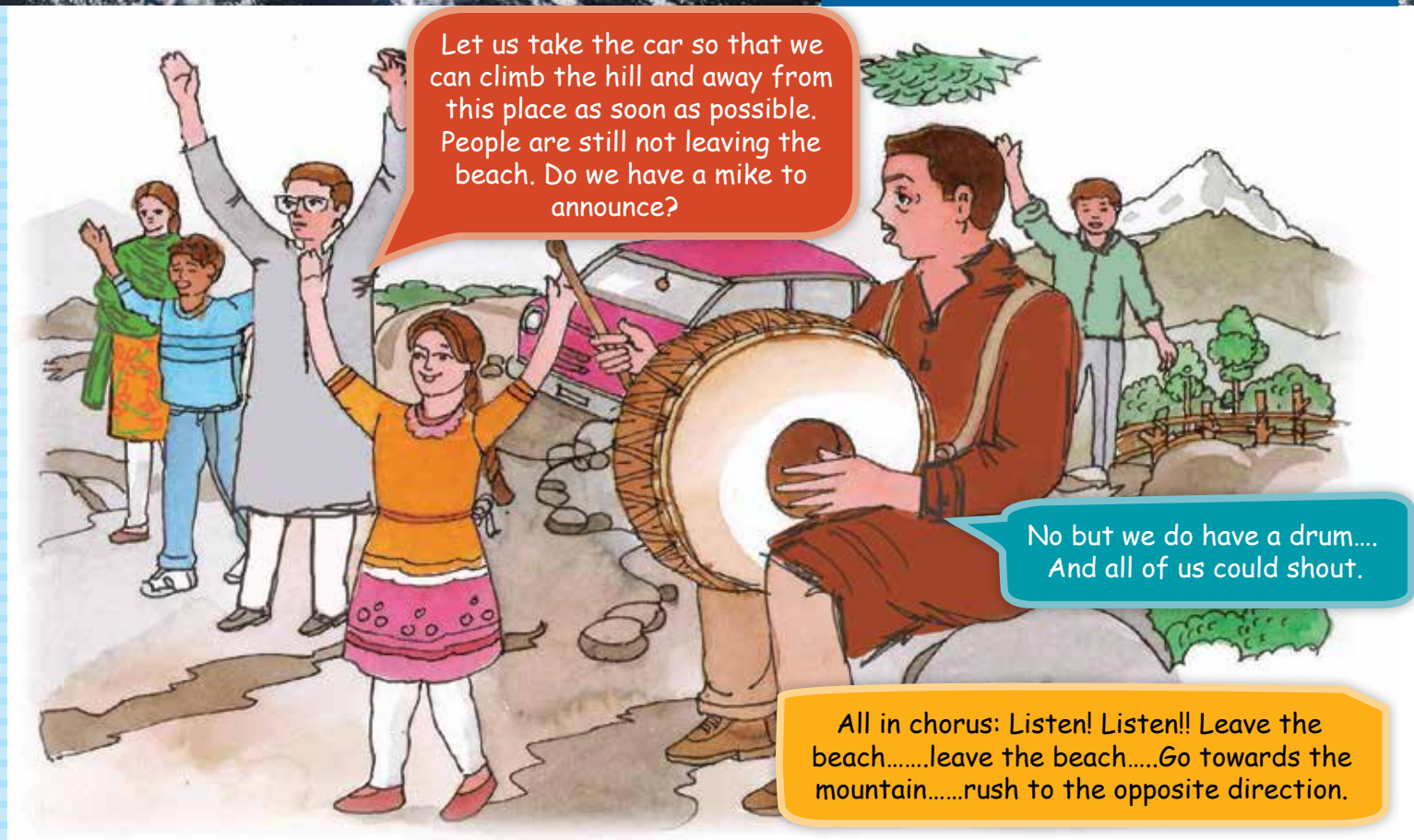
...and then suddenly...







Many people ran towards the opposite hill and far from the beach. There was chaos and confusion.



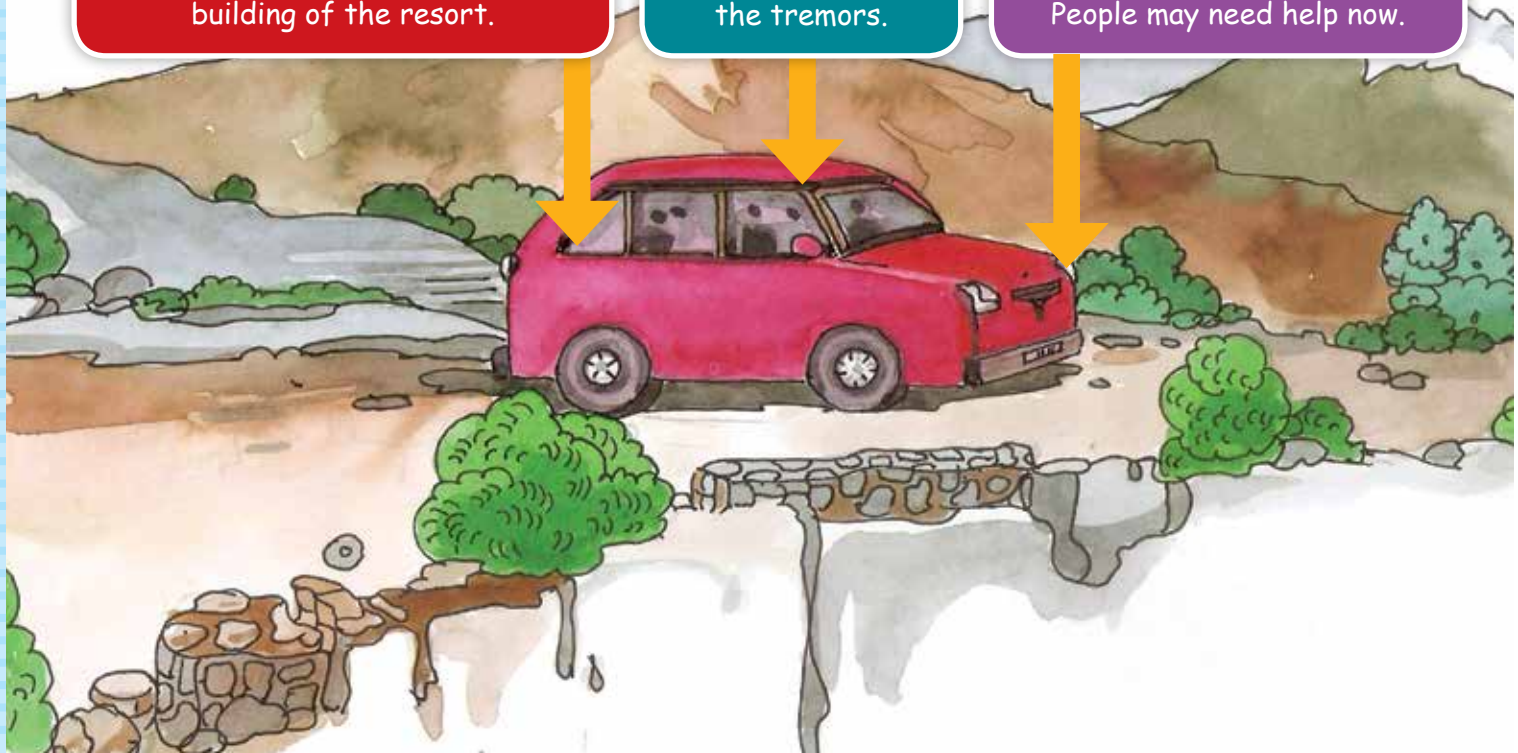
Tsunami



Many people seemed swept away into the water with that giant wave. The wave came up to the building of the resort.

It is good that we left the resort soon after we felt the tremors.

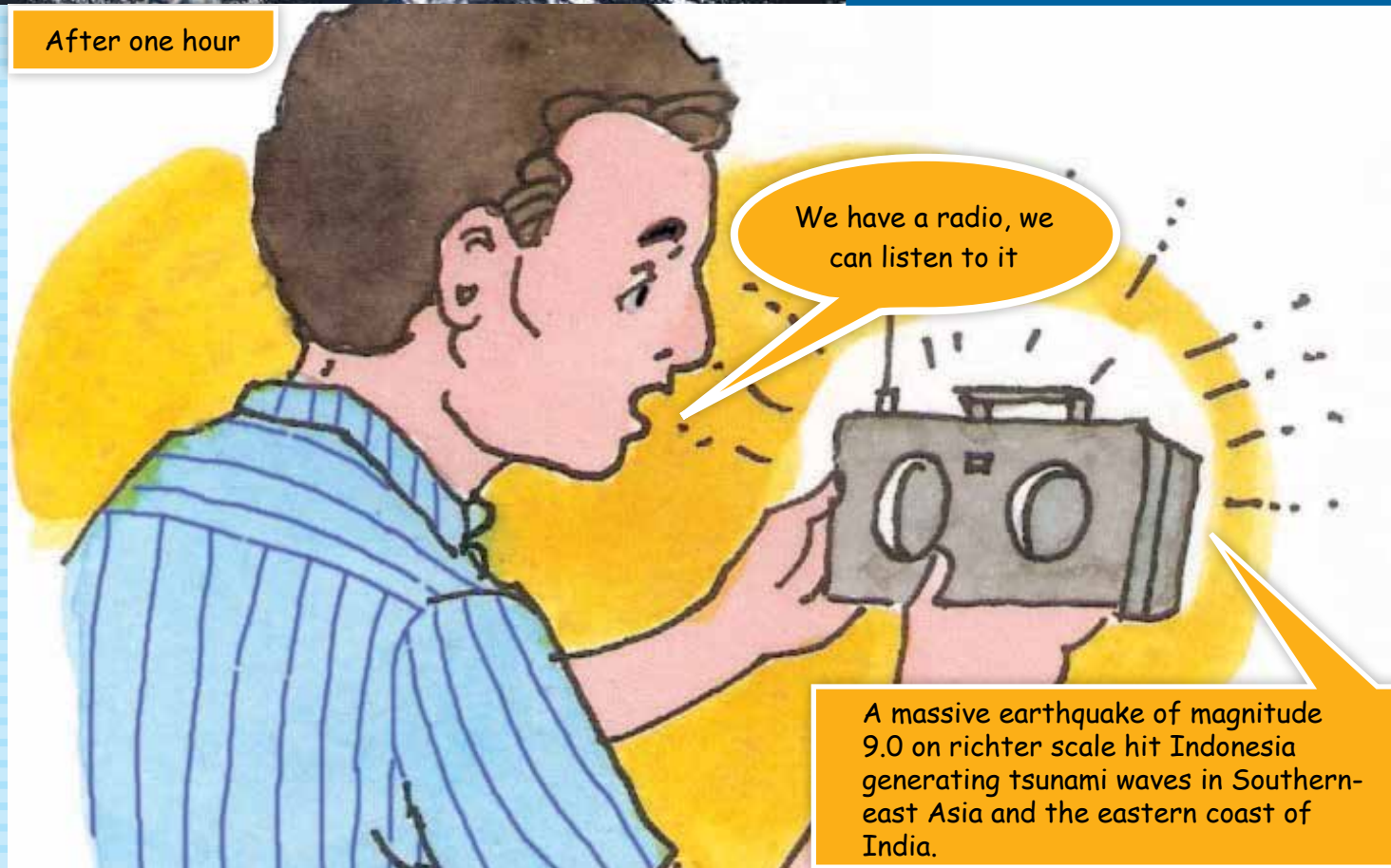
Oh! Let's call the emergency services/Disaster Management and the Police. People may need help now.



Tsunami



After one hour



Tsunami

Later at home



It was so tall and horrible. Why do we call it Tsunami?

Because, Tsunami is a series of huge waves. It is the Japanese word for "harbour wave." They are sometimes mistakenly referred to as tidal waves, but tsunamis have nothing to do with the tides. A Tsunami is generated when a huge volume of water is quickly shifted by sudden and violent underwater disturbances in the ocean due to rupture or displacement of sea floor either by earthquake, landslides, volcanic eruptions or another high-energy event.

津波

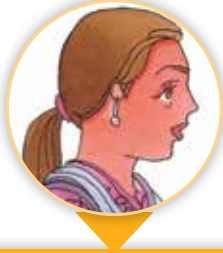
tsu = harbor

nami = wave

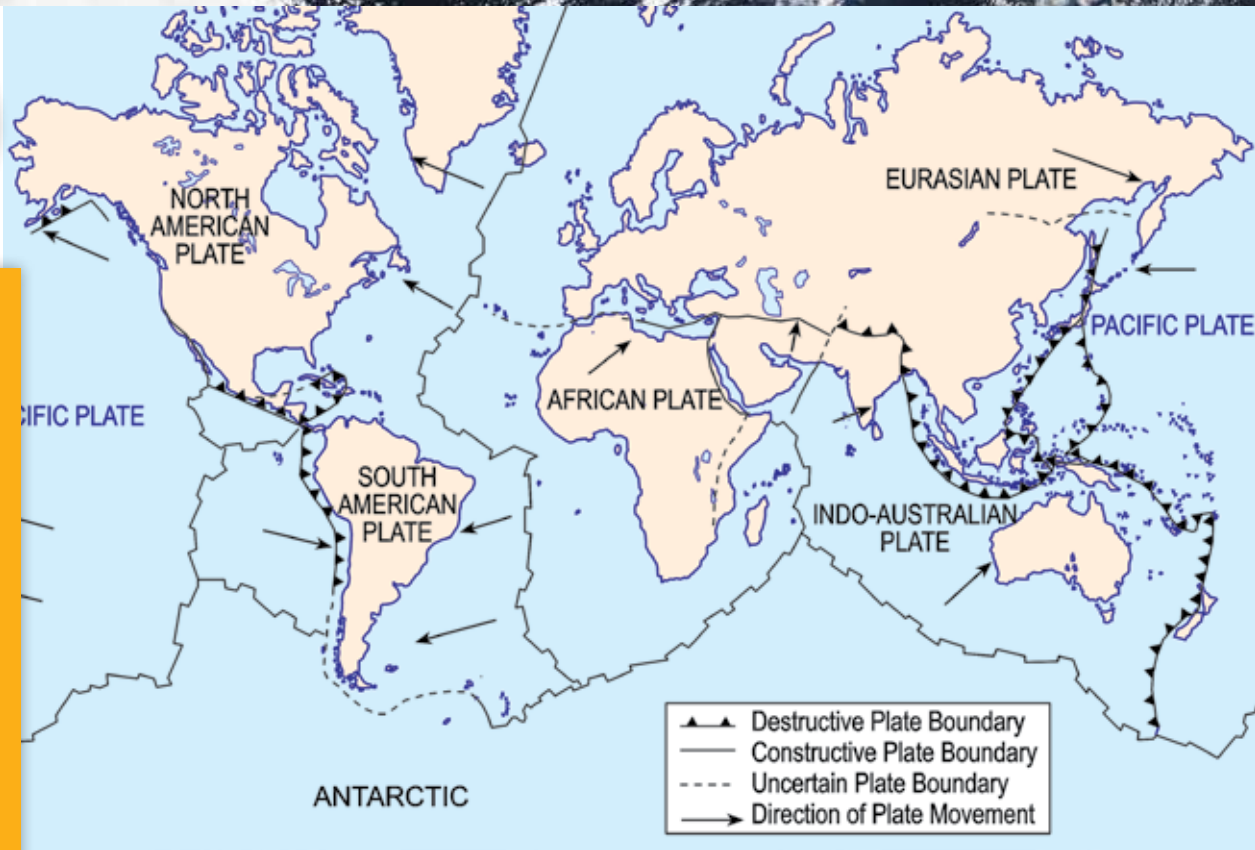
©EnchantedLearning.com



Tsunami



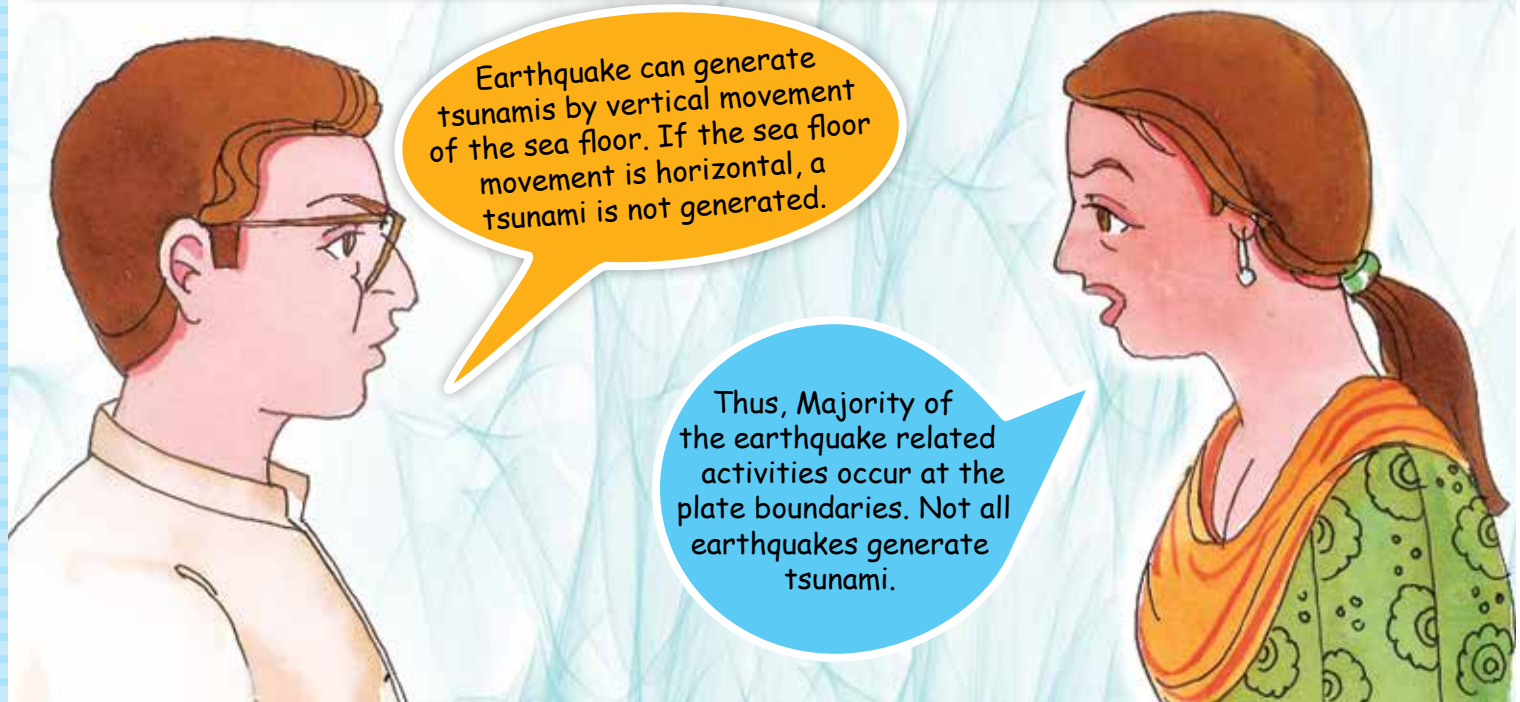
The crust of the earth has been formed out of seven major and some minor plates. The movement of these lithospheric plates lead to the formation of stress within the plates leading to folding, faulting and volcanic activity.



Source: www.rocksinmyheadtoo.com/PROFTO.jpg

The stress between any two plates is generated by the movement of these plates. Distinctive edges of these plates may run along each other leading to the occurrence of an earthquake. These edges are called faults or fault lines. Movement of plates lead

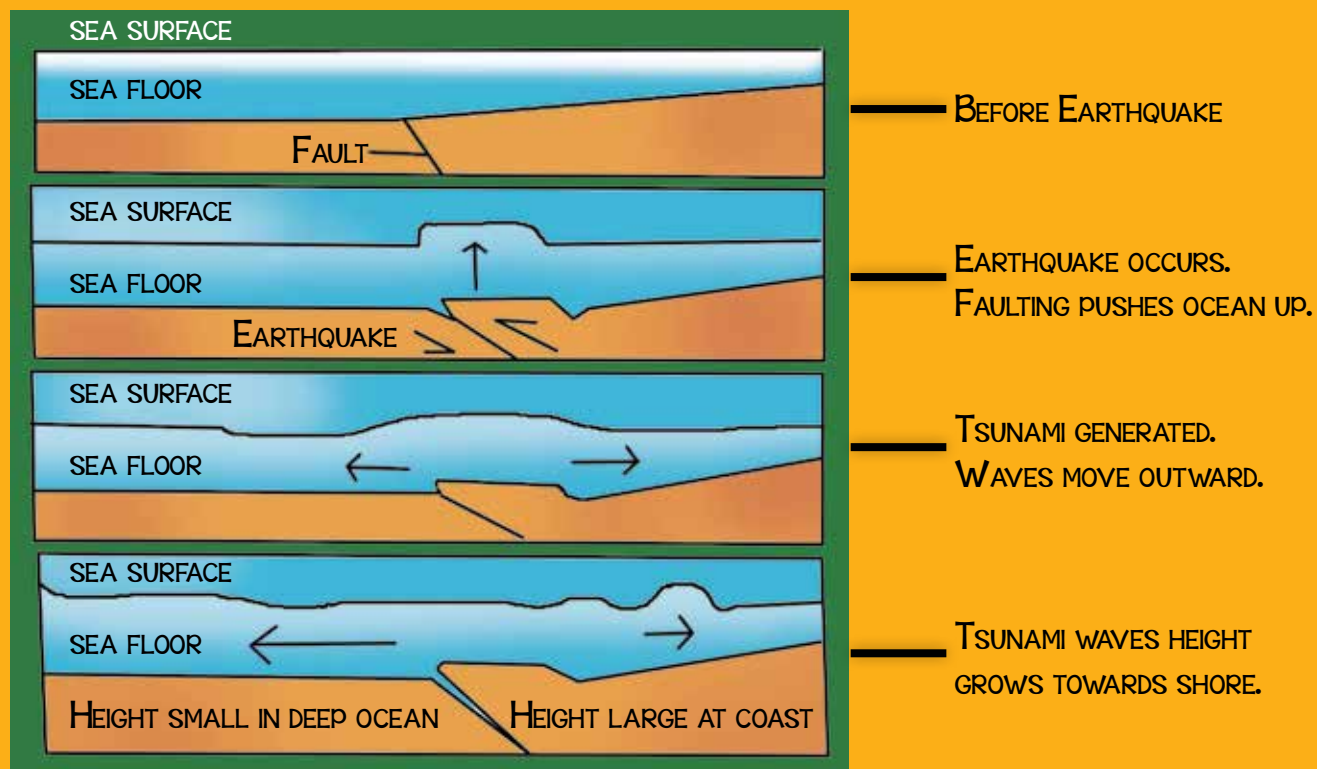
to collision and crumble, it may happen that one plate slides under the other or moves horizontally past each other. Most earthquakes and volcanoes in the world are located at the plate margins but some do occur within the plates also.



Earthquake can generate tsunamis by vertical movement of the sea floor. If the sea floor movement is horizontal, a tsunami is not generated.

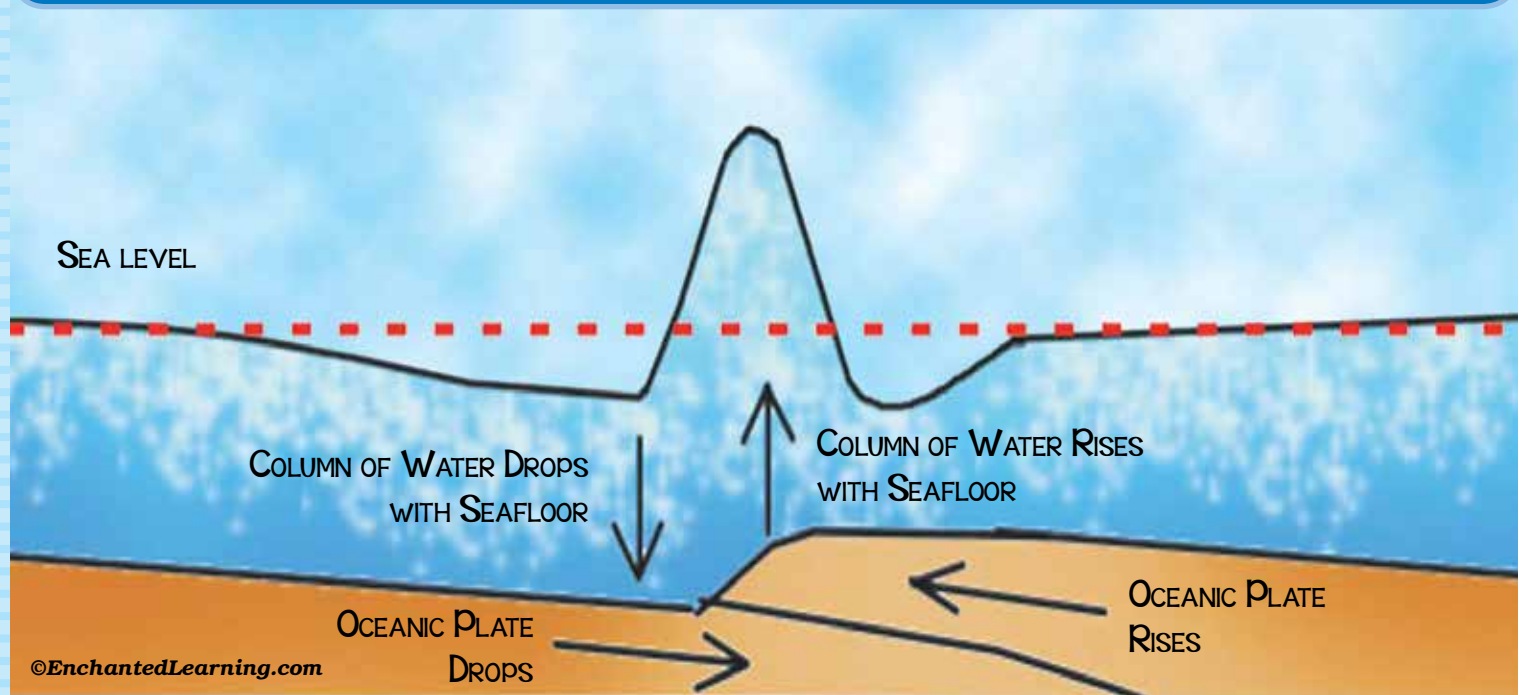
Thus, Majority of the earthquake related activities occur at the plate boundaries. Not all earthquakes generate tsunami.

EARTHQUAKE AND GENERATION OF TSUNAMI



EARTHQUAKES OF $m > 6.5$ AT RICHTER SCALE ARE CRITICAL FOR TSUNAMI GENERATION.

Plate Subduction Causes an Undersea Earthquake.
It Moves a Huge Volume of Water and Starts Tsunami.



Subduction is the process by which one tectonic plate moves under another plate. The region where this process occurs is called the subduction zone.



Landslide Triggered Tsunami

The largest tsunami ever produced by a landslide was in Lituya Bay on the Alaskan south-east coast in 1958. In this case the landslide was triggered by an earthquake with a magnitude of 8.0 on Richter Scale and caused 30 million cubic meters of rock and ice to fall into the narrow inlet of Lituya Bay. The sudden displacement of water resulted in a wave hundreds of meter high.

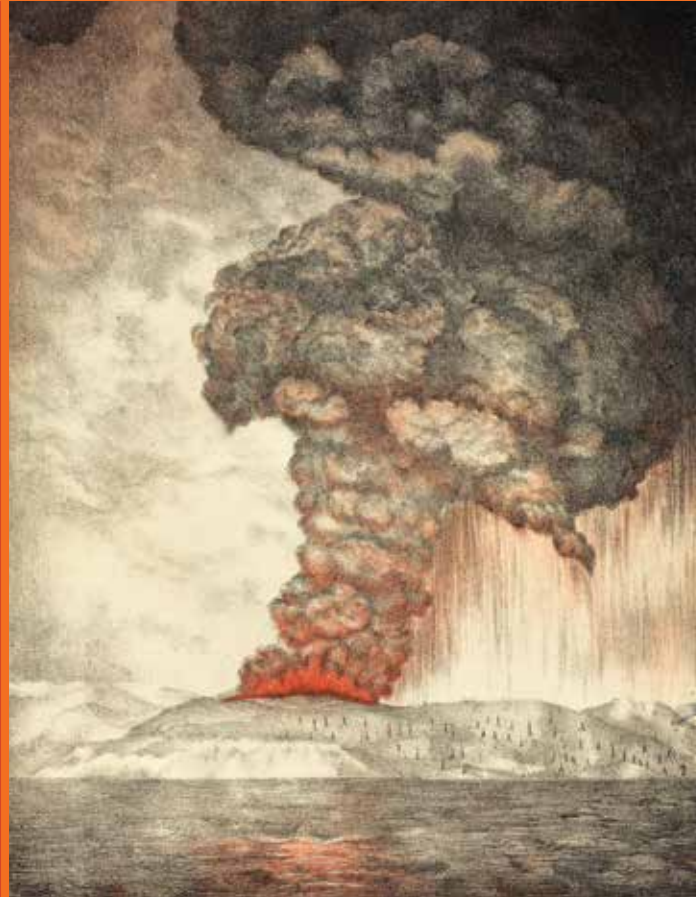
Another example of landslide induced tsunami is which occurred on July 17, 1998 along the northwest coast of Papua New Guinea in Oceania. This landslide was also due to massive earthquake of a 7.1 magnitude which ultimately caused movement of the seabed. Three waves, more than seven meters high, struck a ten kilometre stretch of coastline within ten minutes of the earthquake. Three coastal villages were completely swept away by the tsunami, killing over 2,000 people.

Lituya Bay a few weeks after the 1958 tsunami. The areas of destroyed forest along the shorelines are clearly recognisable as the light areas rimming the bay. A fishing boat anchored in the cove at lower left was carried over the spit in the foreground; a boat under way near the entrance was sunk; and a third boat, anchored near the lower right, rode out the wave. Photo by D.J. Miller, United States Geological Survey. Source: Photo by D.J. Miller, United State Geological Survey.

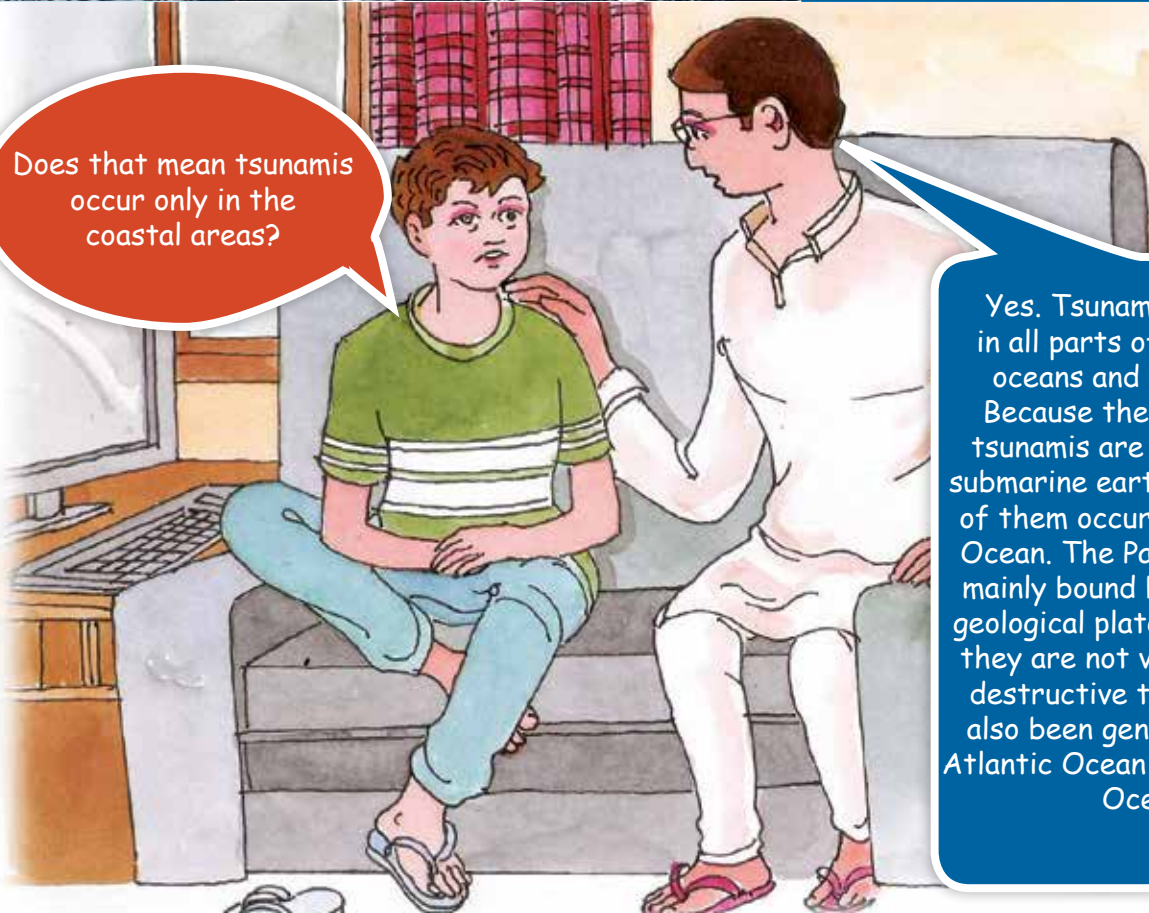


Tsunami

Volcanic eruption may also be a major cause in generating tsunami. In 1883, the Krakatau, most severe volcano explosion in Indonesia generated tsunami that battered islands of Java and Sumatra. This catastrophic volcanic eruption caused two-thirds of the island to collapse beneath the sea. This generated a series of devastating tsunami, some as high as 35 metres. Tsunami ravaged nearby coastlines of Java and Sumatra, killing close to 40,000 people. Vessels as far away as the South African coastline were affected by this event. Thousands of people died to due the tyrant giant waves.



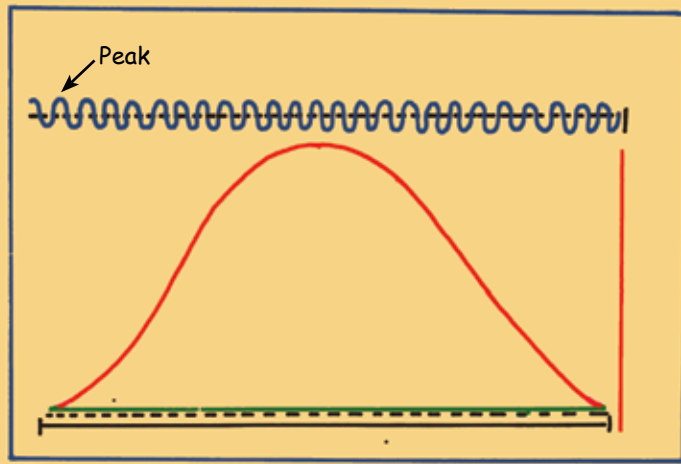
Source:
Lithograph: Parker
& Coward, Britain;
Image published
as Plate 1 in
*The eruption
of Krakatoa,
and subsequent
phenomena. Report
of the Krakatoa
Committee of the
Royal Society
(London, Trubner
& Co., 1888).*



Does that mean tsunamis occur only in the coastal areas?

Yes. Tsunamis can occur in all parts of the world's oceans and inland seas. Because the majority of tsunamis are triggered by submarine earthquakes, most of them occur in the Pacific Ocean. The Pacific Ocean is mainly bound by subducting geological plates. But even if they are not very frequent, destructive tsunamis have also been generated in the Atlantic Ocean and the Indian Ocean.

Tsunami



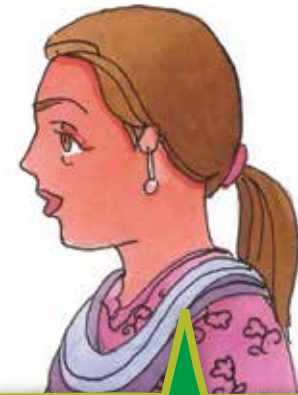
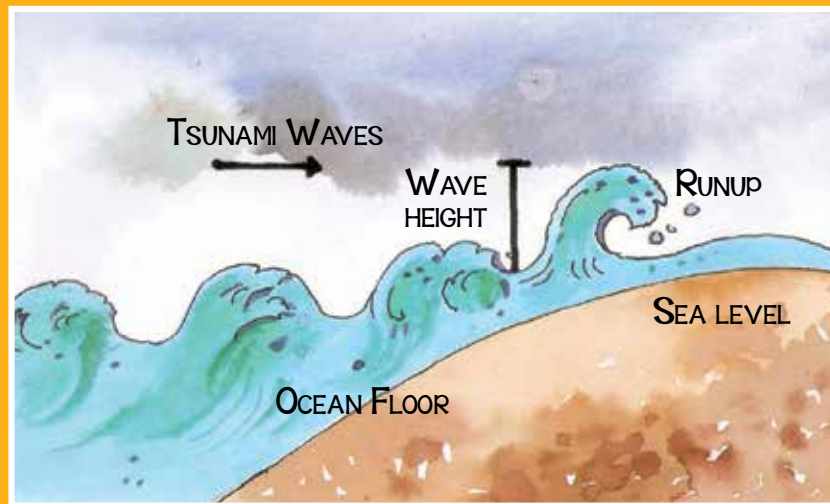
The resulting wave due to underwater disturbances in the ocean is very long. The distance from peak to peak can be hundreds of miles long. But, the waves are not very tall (roughly a meter tall). The wave spreads from the epicenter across the sea in all directions; it can travel great distances from the source at tremendous speeds in the open sea as fast as 700 km per hour. A regular wave generated by the wind travels up to 90 km/hr approximately.





But then how does it become huge and tall at the sea coast?

A CROSS SECTION OF THE COAST DURING A TSUNAMI



As these powerful waves approach the shallow water along the coast, they slow down but their height increases smashing into the shore. They can grow as high as 30 m.

Tsunami

These tall waves push a large amount of water towards the shore above the regular sea level.

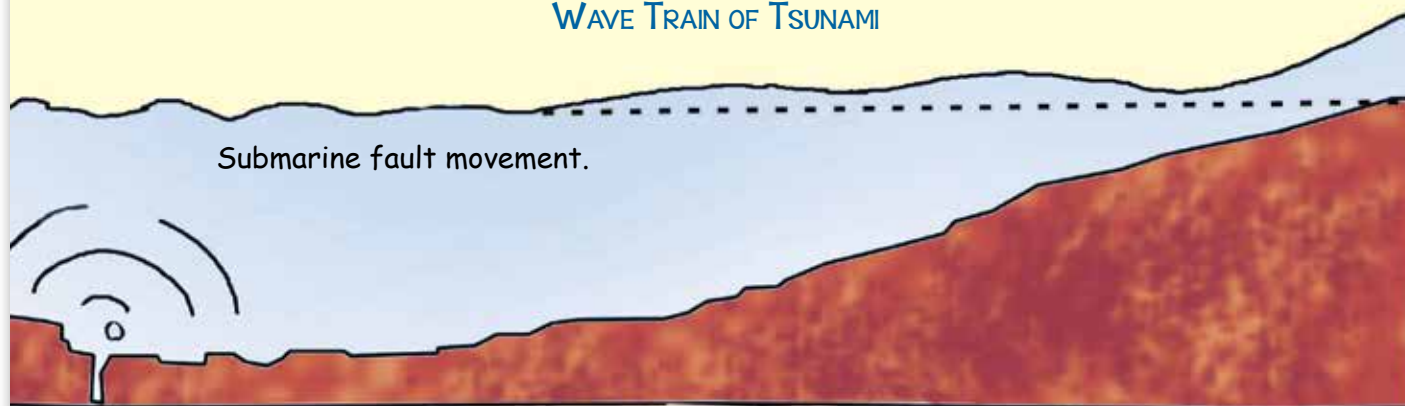
This causes tremendous damage inland, near the sea shore.

Tsunami wave train formation

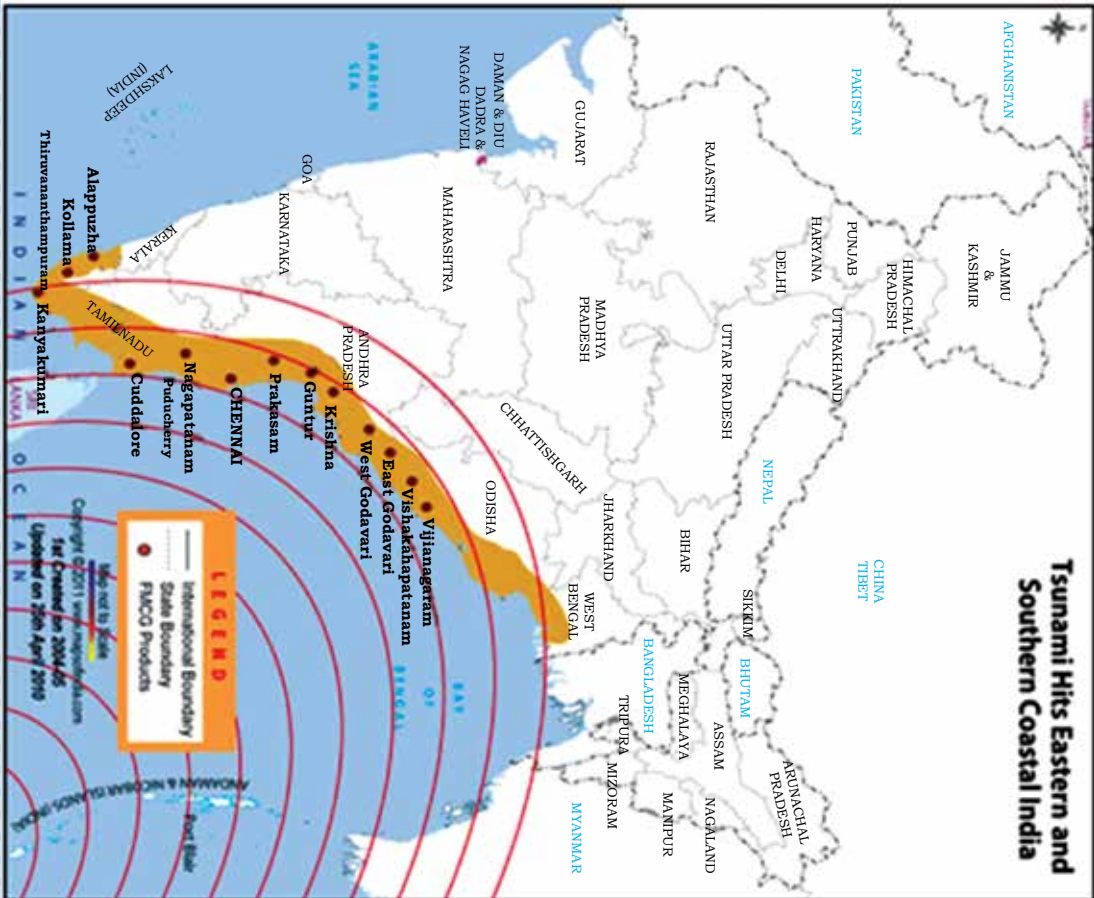
As waves approach the shore they slow down, the wave lengths shorten and amplitudes become higher

Possible bore formation on shore

WAVE TRAIN OF TSUNAMI



Source: International Tsunami Information Centre



Let's find out the areas in India that are vulnerable to Tsunami in a map.

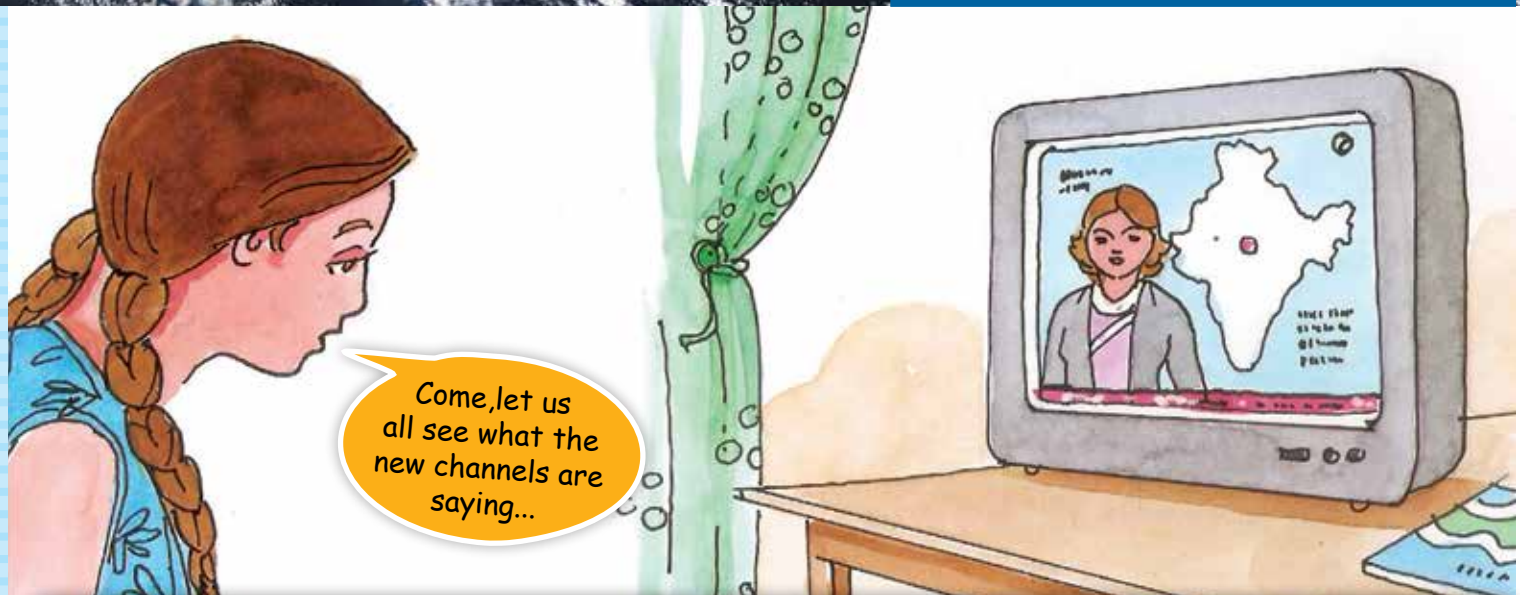


East coast is more vulnerable than the west coast due to:

1. their flat topographic status;
2. proximity to fault lines;
3. more exposure to Indian Ocean (long coastline of 7516 kilometre);
4. tapering of Deccan Peninsula protruding into vast expanse of Indian Ocean;
5. destructive plate boundaries and
6. long shallow coastline of Coromandal coast.

There are two main tsunamigenic zones* in India: the Andaman-Sumatra trench in the Bay of Bengal and the Makran coast in the Arabian Sea.

*Tsunamigenic zones are the regions that can generate tsunamis.



TV News: Tsunami occurred in Indian Ocean affecting around fourteen countries — Indonesia, Sri Lanka, India, Thailand, Maldives, Malaysia, Tanzania, Seychelles, Bangladesh, Bhutan, South Africa, Yemen, Kenya, Madagascar. The height of tsunami waves ranged from 3 to 10 m, affecting a total coastal length of 2260 km in India, In Andhra Pradesh, Tamil Nadu, Kerala,

Puducherry and Andaman and Nicobar Islands, the tsunami waves travelled upto a depth of 3 km from the coast, killing more than 10,000 people in india and abroad. It affected more than lakh of houses leaving behind a huge trail of destruction.

Tsunami

2004 Indian Ocean tsunami, Asian tsunami, Indonesian tsunami and Boxing day tsunami. *The Indian Ocean tsunami that occurred in December 2004 and was perhaps the deadliest in history*

This is one of the true stories when people saved themselves against all odds of tsunami.

Ignesious was the manager of a cooperative society in Katchall, an island of Nicobar group of islands. His wife woke him up at 6 am because she felt an earthquake. Ignesious carefully took his television set off its table and put it down on the ground so that it would not fall and break. Then the family rushed out of the house.

When the tremors stopped, they saw the sea rising. In the chaos

and confusion, two of his children caught hold of the hands of their grandfather and uncle and rushed in the opposite direction. He never saw them again. His wife was also swept away. Only the three other children who came with him were saved.

Thirteen-year-old Meghna was swept away along with her parents and Seventy-seven other people. She spent two days floating in the sea, holding on to a wooden door. Eleven times she saw relief helicopters overhead, but they did not see her. She was brought to the shore by a wave and was found walking on the seashore in a daze.

Source: https://commons.wikimedia.org/wiki/file:US_Navy_050102_N9593M_040_A_village_near_the_coast_of_Sumatra_lays_in_ruin_after_the_Tsunami_that_struck_South_East_Asia.jpg



Source: India Today

Source: Wikipedia



Almas Javed was ten years old. She was a student of Carmel Convent in Port Blair where her father had a petrol pump. Her mother Rahila's home was in Nancowry Island. The family had gone there to celebrate Christmas.

When the tremors came early in the morning, the family was sleeping. Almas's father saw the sea water recede. He understood that water would come rushing back with great force. He woke everyone up and tried to rush them to a safer place. As they ran, her grandfather was hit on the head by something and he fell down. Her father rushed to help him. Then came the first giant wave that swept both of them away. Almas's mother and aunts stood clinging to the leaves of a coconut tree, calling out to her. A wave uprooted the tree, and they too were washed away.

Almas saw a log of wood floating. She climbed on to it. Then she fainted. When she woke up, she was in a hospital in Komorta. From there she was brought to Port Blair. The little girl does not want to talk about the incident with anyone. She remained in trauma for quite a long time

Here is the story of Tilly Smith, a ten-year-old British school girl who was able to save herself and many lives when the Tsunami struck Phuket beach in Thailand

The Smith family from South-east England were celebrating Christmas at a beach resort in southern Thailand. It was 26 December 2004. Deadly tsunami waves were already on their way. They had been triggered by a massive earthquake off northern Sumatra earlier that morning.

“The water was swelling and kept coming in”, Tilly’s mother remembered. “The beach was getting smaller and smaller. I didn’t know what was happening.”

But Tilly Smith sensed that something was wrong. Her mind kept going to a geography lesson she had taken in England just two weeks before she flew out to Thailand with her family. She remembered that she had seen this in class in a video of a tsunami that had hit the Hawaiian island in 1946



Source: illvid.dk



Source: tunza.mobi

away from the beach, to the swimming pool at the hotel. A number of other tourists also left the beach with them. “Then it was as if the entire sea had come out after them. I was screaming, ‘Run!’”

The family took refuge in the third floor of the hotel. The building withstood the surge of three tsunami waves. If they had stayed on the beach, they would not have been alive.

The Smiths later met other tourists who had lost entire families. Thanks to Tilly and her geography lesson, they had been forewarned. Tilly went back to her school in England and told her classmates her terrifying tale.

Her geography teacher had shown her class the video and told them that tsunamis can be caused by earthquakes, volcanoes and landslides.

Tilly started to scream at her family to get off the beach. “She talked about the earthquake under the sea. She got more and more hysterical,” said her mother Penny.

“I did not know what a tsunami was. But seeing my daughter so frightened, I thought something serious must be going on,”

Tilly’s parents took her and their daughter



How do animals save themselves during such incidents?



Very few animals are believed to have died in tsunami. Some anecdotal evidence about animal behaviour suggests they take action to save themselves during tsunamis.



- ✧ Elephants in Sri Lanka and Sumatra moved to high ground before the giant waves struck.
- ✧ According to a villager in Bang Koey, Thailand, a herd of buffalo were grazing by the beach when they "suddenly lifted their heads and looked out to sea, ears standing upright." They turned and stampeded* up the hill, followed by bewildered* villagers, whose lives were thus saved.
- ✧ At Ao Sane beach, near Phuket, dogs ran up to the hill tops.
- ✧ At Galle in Sri Lanka, dog owners were puzzled by the fact that their animals refused to go for their usual morning run on the beach.
- ✧ In Cuddalore District in South India, buffaloes, goats and dogs escaped, and so did a nesting colony of flamingos that flew to higher grounds.
- ✧ In the Andaman Islands "stone age" tribal groups moved away from the coast before the disaster, alerted by the behaviour of the animals.
- ✧ The Yala National Park in Sri Lanka is home to a variety of animals including elephants, leopards and 130 species of birds. Sixty visitors were washed away from Patanangala beach inside the park; but no animal carcasses were found, except for two water buffaloes. About an hour before the tsunami hit, people at Yala National Park had observed three elephants running away from the Patanangala beach.

STAMPEDE: A sudden, headlong flight of a herd of frightened animals

BEWILDERED: Confused

The 2011 Tohoku (Japan) Tsunami

A powerful earthquake of 9.0 magnitude occurred on 11 March 2011 at 11.16 IST in the north-western Pacific Ocean at a relatively shallow depth of 32 km with its epicenter approximately 72 km east of Oshika Peninsula of Tohoku, Japan, lasting about six minutes.

Sendai was the nearest major city to the earthquake, 130 km from the epicenter, Tokyo was 373 km away. The main earthquake was preceded by number of large foreshocks, with hundreds of aftershocks. The first major foreshock was of 7.2 magnitude. The aftershocks tapered off with time, but could continue for years.

One minute before the earthquake was felt in Tokyo, the Earthquake Early warning system of Japan Meteorological agency sent out warning of impending strong shaking to millions and saved many lives.

The earthquake moved portions of north-eastern Japan by as much as 2.4 m closer to North America, making portions of Japan's landmass wider than before. It also shifted the Earth's axis by estimates of between 10 cm and 25 cm. This deviation led to a number of small planetary changes, including length of a day by 1.8 microseconds and tilt of the Earth's axis due to the redistribution of Earth's mass.



Source: USGS

Tsunami

The tsunami waves generated by the earthquake had many devastating effects in many parts of Japan. As reported by Japanese National Police Agency there were 15,854 deaths, 26,992 people injured and 3,167 people missing; 1,25,000 buildings totally collapsed.

Heavy damage to roads and railways as well as fires in many areas were observed due to the earthquake and tsunami. A dam was also reported to have collapsed.

Around 4.4 million households in north-eastern Japan were left without electricity and 1.5 million without water.

The tsunami caused nuclear accidents at three in the Fukushima Daiichi Nuclear Power Plant complex and the associated evacuation zones affecting hundreds of thousands of residents. Three nuclear reactors suffered explosions due to hydrogen had built up after cooling system failure.

However, people of Japan faced the disastrous situations with great courage and patience, which was highly appreciated all over the world.

The giant waves destroyed cities and rural areas alike, sweeping away cars, homes, building, boats, and even aeroplanes from the airports.



Source: thestar.com

Source: Zare M. and Ghagchi A. 2012. Crisis Management of Tohoku; Japan Earthquake and Tsunami. Iran J. Public Health 41(6):12-20.

LET US LEARN FROM THE JAPANESE



Print illustrating the tsunami that followed the 7.2 magnitude Meiji Sanriku earthquake of 1896. Source: UBC Library

In coping with a disaster like tsunami, Japanese have taught the rest of the world very valuable lessons. The tsunami of March 2011 destroyed some cities of Japan completely, but the Japanese faced this ordeal with admirable conduct and dedicated themselves unitedly in the reconstruction of their country. Within a year they were contrived to make their world a better place. Let us look at the qualities of these people.

✠ **PEACE:** Immediately after the disaster, in no television programme were the Japanese seen crying and shouting. Their pain was no less than any other but they maintained calm and avoided panic.

✠ **DIGNITY:** During emergency distribution of water and other provisions they stood patiently in queues and did not show any misbehaviour. The patience of Japanese is really admirable.

- ❖ **TECHNOLOGY:** Smaller houses were uprooted from their foundation, bigger buildings were tilted but none of them came crashing. If the construction of these building were technically deficient the damage would have been manifold.
- ❖ **SELFLESSNESS:** People bought only necessary provisions. Thus, everybody was able to get what he /she needed. There was no black-marketing.
- ❖ **PUBLIC MANAGEMENT:** Shops were not ransacked. There were no jams on the roads. Everybody understood eachother's needs and cooperated accordingly.
- ❖ **SACRIFICE:** Without worrying about death by radiation exposure, 50 workers pumped water out of the nuclear plant into the sea.
- ❖ **FEEL FOR OTHERS:** During the crises, restaurants reduced their rates. Even unguarded ATM machines remained safe. Prosperous people cared for the needs of the deprived.
- ❖ **TRAINING:** Everybody from children to the elderly knew what was to be done in the event of a disaster like an earthquake or tsunami. And they followed the same exactly.
- ❖ **MEDIA:** In their broadcast the media showed admirable restraint and control. No reporter was seen asking insensitive questions and displaying crude behaviour. Only confirmed news were shown. The politicians did not malign their opponents in order to gain political advantage.
- ❖ **CONSCIENCE:** During a power failure all the customers put the goods back on the shelves of a shopping centre and walked out calmly.



WHAT DEVASTATION CAN A TSUNAMI CAUSE?

The damages may further be classified as follows —

❖ **PHYSICAL DAMAGE** — Local tsunami events or those less than 30 minutes from the source cause the majority of damage. The waves are so powerful that they raze everything that comes in their path. It is their flooding effect, that most greatly damages human settlements including homes, shop, roads, bridges,

telephone and electricity poles, ships, fishing boats, nets etc. near the coast.

❖ **ENVIRONMENTAL DAMAGE** — This includes generation of tones of debris on account of structural collapse of weaker buildings, release of toxic chemicals into the environment on account of chemical leaks, spillage, etc. The effected landscape and ecosystem are completely destroyed.

❖ CASUALTIES AND PUBLIC HEALTH

Deaths due to drowning are prevalent in the flooded areas, people tend to get washed out into the sea or be crushed by the giant tsunami waves. There may be injuries from battering by debris and wounds tend to become infected.

Sewage pipes may get damaged causing major sewage disposal problems.

❖ WATER SUPPLY

Drinking water shortage may arise due to breakage of water mains and contamination. Open wells and ground water may become unfit for drinking due to salt water and debris.

❖ STANDING CROPS AND SUPPLIES

Flooding by tsunami causes damage to standing crops and also to food supplies in storage facilities. The land effected may be rendered infertile due to salt water incursion from the sea.



Miyako, Iwate, Japan (March 20, 2011). A large ferry boat rests inland amidst destroyed houses after a 9.0 magnitude earthquake and subsequent tsunami struck Japan on 11 March. As part of Operation Tomodachi, the 31st Marine Expeditionary Unit delivered much-needed relief supplies to the Japanese citizens in the area. (U.S. Marine Corps photo by Lance Cpl. Garry Welch/Released) This image was named "AICHI, Japan" when up-loading it. But, It is an aerophotograph of Minatomachi area, Miyako, Iwate. (U.S. Marine Corps photo by Lance Cpl. Garry Welch/released)

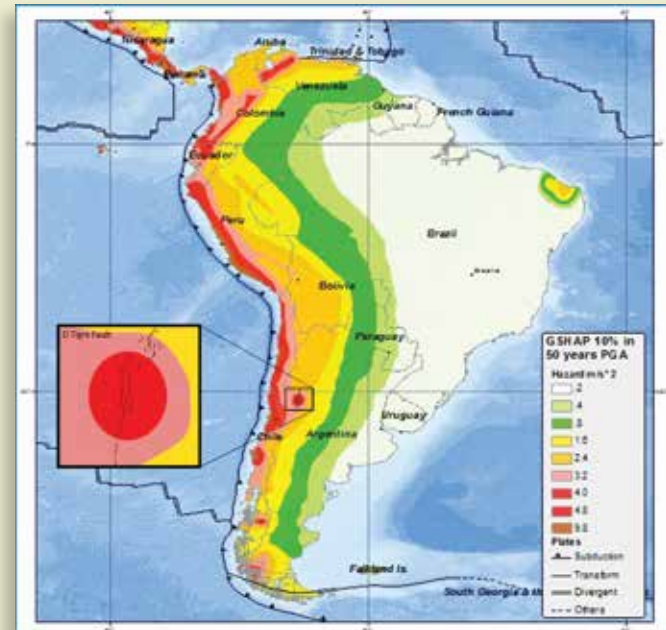
WHAT ARE THE PREPAREDNESS MEASURES?

HAZARD MAPPING

- ❖ Preparation of a hazard map with designated areas likely to get damaged by flooding due to tsunami waves.
- ❖ Historical data could be of help in showing areas inundated in the past.
- ❖ Keeping in mind the vulnerable areas, evacuation routes should be constructed and mapped.
- ❖ The plan should be followed by evacuation drills.

EARLY WARNING SYSTEMS

- ❖ A well networked system when in place, can warn communities living in coastal areas when threat is perceived.
- ❖ Tsunami warning should be disseminated to local, state, national as well as the international community to warn them of the danger.



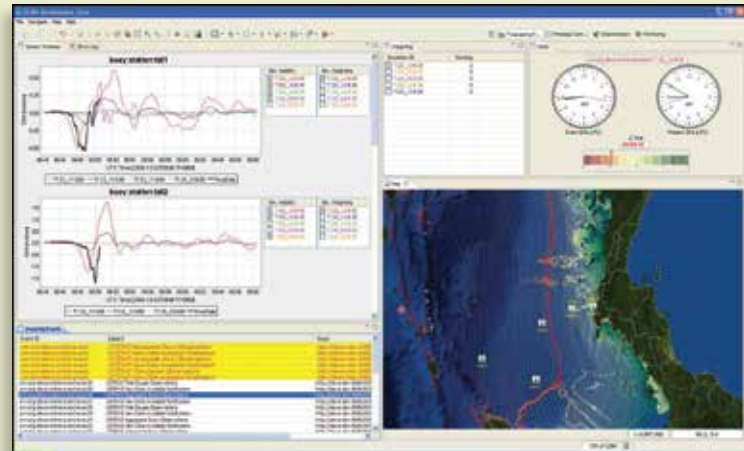
Example of hazard mapping, Source: U.S. Geological Survey
Department of the Interior/USGS

- ❖ Information can be broadcasted to local emergency officers and to the general public.
- ❖ On receiving the warning, action should be taken to evacuate the place as per the evacuation plan.

Note: Since scientists continuously monitor seismic activity and changes in sea level, Tsunami warning systems exist in many places around the world. Unfortunately, since tsunamis are not very tall in height when they are in the sea, detection is not easy and there may be many false alarms. These however, should not be ignored.

❖ COMMUNITY PREPAREDNESS

- ❖ Communities in the coastal areas face the wrath of cyclones, storm surge and tsunami waves.
- ❖ It is important that the community is prepared through regular drills so they



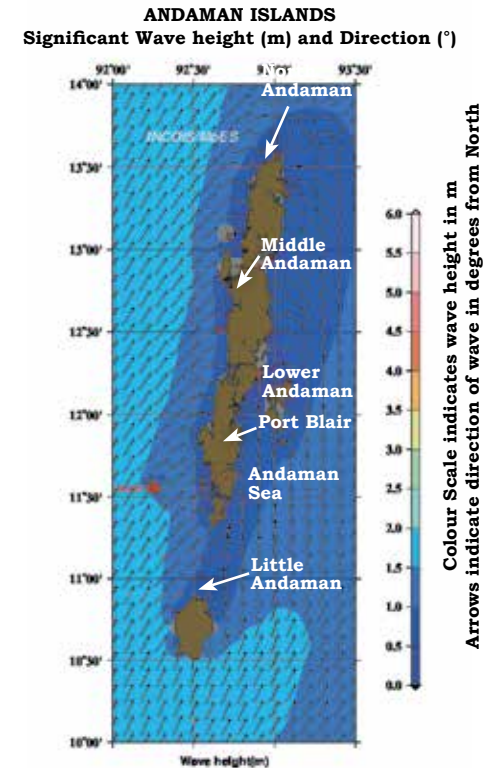
A screenshot of DEWS – Distant Early Warning System for Tsunamis: A Multi-hazard Approach

may be able to take suitable actions on receiving of a threat and are able to follow emergency evacuation plans and procedures.

- ❖ A community that chooses to ignore warning may get severely affected.

The Earth System Science Organisation - Indian National Centre for Ocean Information Services (ESSO-INCOIS) established the integrated INDIan Ocean FOrecasting System (INDOFOS), for predicting surface and subsurface features of the Indian Ocean reasonably well in advance (5 to 7 days presently) for a wide spectrum of users ranging from fishermen to offshore industries include fisher and coastal populations.

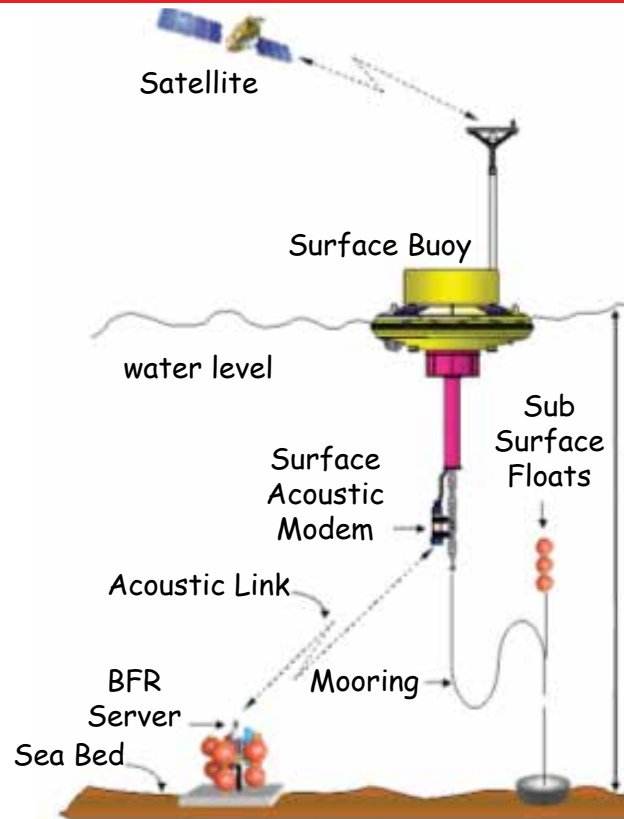
- Height, direction and period of all types of waves.
- Sea surface currents.
- Sea surface temperature.
- Mixed Layer Depth (the well mixed upper layer of the sea).
- Depth of the 20 degree isotherm (a measure of the depth of the thermocline*).
- Astronomical tides.
- Wind speed and direction
- Oil-spill trajectory



TSUNAMI BUOY SYSTEM

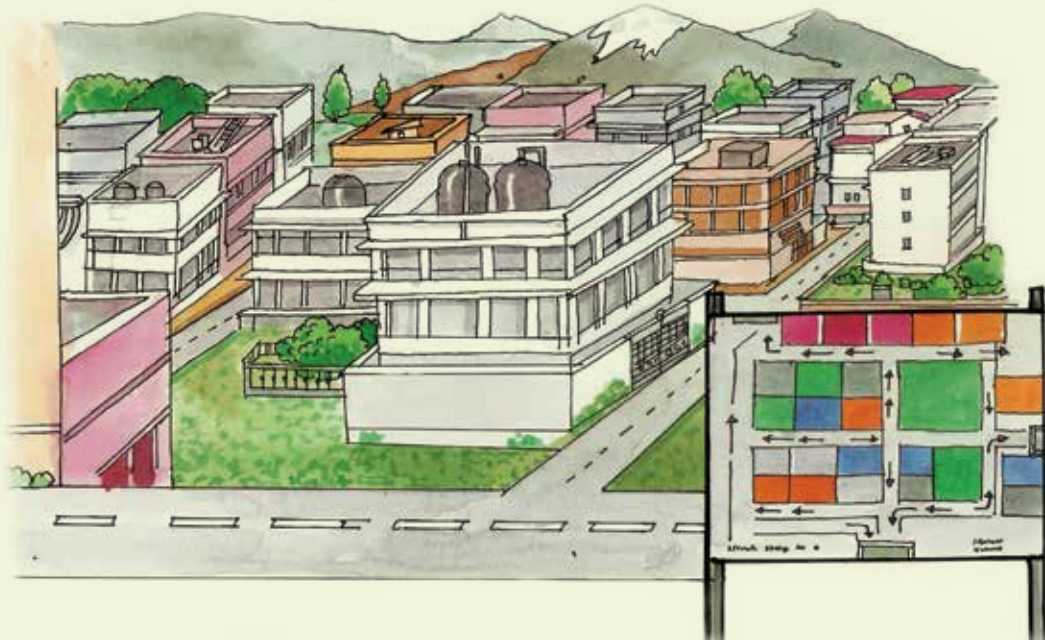


It is a tall, thin system that floats upright in the water. It can detect sudden changes in undersea water pressures and thus can be used as a part of Tsunami warning system.



HOW TO ACT BEFORE AND DURING A TSUNAMI

- ❖ Find out if your home is in a danger zone.
- ❖ Know how high your street/house is compared to sea level and also its distance from the coast.
- ❖ Make an evacuation plan and a safe route for evacuation.
- ❖ People living along the coast should consider an earthquake or a strong ground rumbling as a warning signal.



HOW TO ACT BEFORE AND DURING A TSUNAMI

- ❖ Listen to the radio or television to get the latest information and be ready to evacuate if asked to do so.
- ❖ Never go down to the beach to watch a tsunami coming.
- ❖ If you see the water recede quickly and unexpectedly from a beach (this is called drawback), run towards higher ground or inland, away from the sea — there may be a tsunami coming.
- ❖ Try and climb a raised platform or climb the highest floor of any house or building in sight.
- ❖ Some beaches have tsunami warning sirens — do not ignore them.
- ❖ The first wave in a tsunami is often not the largest; if you experience one abnormally huge wave, go inland quickly — even bigger waves could be coming soon.



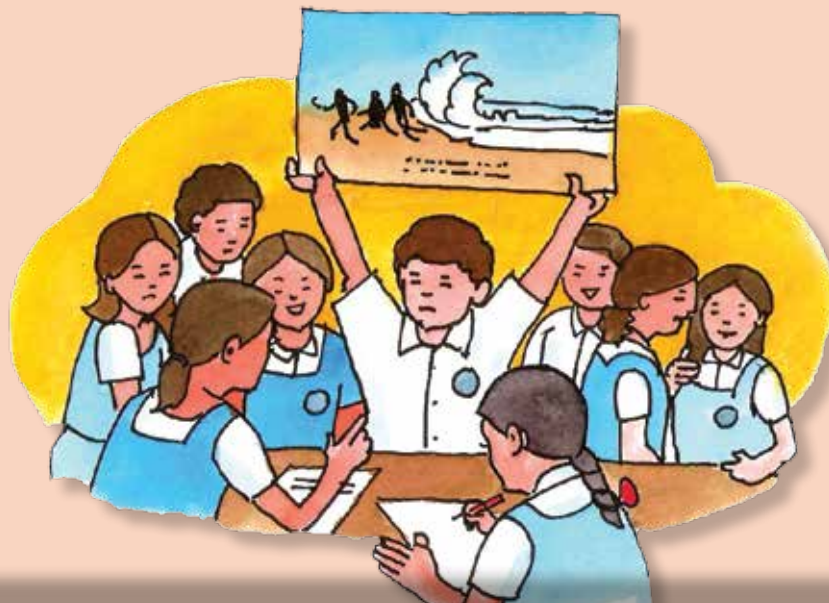
David Rydevik, Stockholm Sweden

AFTER A TSUNAMI

- ✦ Stay tuned to battery-operated radio for the latest emergency information.
- ✦ Help injured and trapped persons.
- ✦ Stay away from flooded and damaged areas until official declare it safe to return.
- ✦ Enter your home with caution.
- ✦ Use flash light when entering damaged houses. Check for electrical short circuit and live wires.
- ✦ Check food supplies and test drinking water.



ACTIVITY IN SCHOOL



Distribute maps of India in the class and let the students shade the areas with red colour which are particularly prone to tsunami disaster or the places which were the affected worst during the December 2004 Tsunami.



The Great Wave off Kanagawa (Kanagawa-oki nami ura?, "Under a wave off Kanagawa"), also known as The Great Wave, is a woodblock print by the Japanese ukiyo-e artist Hokusai. It was published sometime between 1830 and 1833 in the late Edo period as the first print in Hokusai's series Thirty-six Views of Mount Fuji. Source: Metropolitan Museum of Art, Online database:entry 45434 H.O. Havemeyer Collection, Bequest of Mrs. H.O. Havemeyer, 1929

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