

# OUR ENVIRONMENT OUR HERITAGE



## TSUNAMI: NATURAL HAZARDS IN THE PACIFIC



The most tragic and devastating tsunami in recent history occurred on the 26th December 2004 just off the Indonesian province of Banda Aceh. Waves up to 30m high battered the coastlines of Indonesia, Thailand, India, Sri Lanka and the Maldives, leaving about 300,000 people dead or missing. Whilst destructive tsunamis such as this are relatively infrequent, tsunami are common in the Pacific Ocean and can affect all of the Pacific Island countries. This is because the Pacific basin is surrounded by the "Ring of Fire", a series of tectonic plate boundaries associated with high earthquake and volcanic activity.

### WHAT IS A TSUNAMI?

A tsunami (a Japanese word meaning "harbour wave") is a series of waves, traveling at speeds of over 800 km/h in the deep ocean and often going unnoticed. They travel harmlessly until they reach the shallow water of a coastline where they slow down and steepen, cresting to heights of more than 10m and can crash with devastating force across the shore, flooding low-lying areas and causing death and severe destruction.

Any disturbance that shifts a large volume of water away from its normal position can generate a tsunami. The most common cause of a tsunami is an offshore earthquake, which can cause the sea floor to abruptly lift or subside. This can disturb the overlying water column and possibly lead to a tsunami.

Similarly, a submarine volcanic eruption creates an upward force that lifts the water column above the volcano leading to the generation of a tsunami. A submarine landslide can also generate a tsunami from the sudden down-slope movement and the slumping of sea floor sediments. These landslides are most often the result of an earthquake and are occasionally due to a volcanic cone collapses that send tons of debris spilling into the water can also result in tsunami.

### TSUNAMI HAZARDS

#### COASTAL INUNDATION AND EROSION

Tsunami can severely impact coastal areas, completely inundating low-lying coastal areas, destroying buildings, damaging infrastructure, flattening trees, churning up soil and even washing away entire villages. The inundation can also cause severe coastal erosion and affect areas upstream from the coast since tsunami waves can travel up rivers and streams from the ocean.

#### WAVE SPEED/FORCE

Tsunami waves travel at 36-54 km/h in shallow water, faster than most people can run. This enormous momentum means that the force of the waves can move large rocks weighing several tons, along with boats and other debris. People can be caught up in the

wave and tossed about, choking on seawater and suffering injuries due to the debris.

#### DEBRIS

During major tsunami, fatalities and damage result not only from the force of the waves themselves, but also from the accompanying debris churned up as the wave surges across the shore, such as broken glass, torn metal, parts of buildings and uprooted trees.

#### BACKWASH

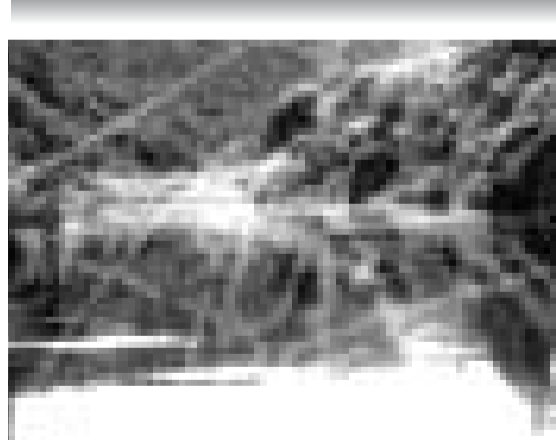
Another danger from Tsunami waves is that they bring a large volume of seawater onto the land. When the water flows back out it may carry people out to sea.

#### WRAP AROUND

Tsunamis tend to align themselves parallel to the shoreline so they wrap round headlands, sand spits and even whole islands, so that it can be just as dangerous on coasts not facing the tsunami source.

#### TSUNAMI WARNING

*The Pacific Tsunami Warning Centre (PTWC) in Hawaii detects and provides warnings of potentially damaging Pacific wide tsunami.*



### TSUNAMI FACTS:

- The 2004 Indian Ocean tsunami was caused by an earthquake as was the 2002 Port Vila, Vanuatu tsunami and the 1999 Pentecost Island, Vanuatu tsunami.
- Earthquakes triggered the submarine landslides that caused the 1998 Aitape, Papua New Guinea and the 1953 Suva, Fiji tsunami.
- In 1958 a huge landslide in Lituya bay, Alaska, generated an enormous tsunami run up of 525m and at Ritter Island, PNG, a major volcanic cone collapse caused a tsunami run up of 12-15m high, wiping out a number of villages in western New Britain, Papua New Guinea.
- 17 July 1998. Three catastrophic tsunami waves hit the coast of Aitape, Papua New Guinea, penetrating up to 1km inland, devastating villages. Along the 25km strip from Sissano to Malol, wave heights reached between 10 and 15m. Over 2000 lives were lost.

#### Key points to remember:

Tsunami can strike any coastline in the Pacific - warnings apply to YOU. For tsunami survival remember the following three warning signs:

1. An earthquake
2. Any unusual change in sea level
3. A ROARING noise

#### Upon noticing the warning signs:

- Run to a safe place
- Do not wait to be told
- Do not wait until you see the wave - that is too late because the wave travels faster than you can run.

**YOU ARE SAFE FROM THE WAVE AS LONG AS YOU ARE SEVERAL KILOMETERS FROM THE WATER'S EDGE OR ARE ON HIGH GROUND.**

For more information contact our  
- Meteorology Division -  
Disaster Management Office  
at Mulinuu, ph# 20855/20856



# OUR ENVIRONMENT OUR HERITAGE

## CHILDREN'S CORNER

Children aged 9-15 are invited to answer the following corner. The name of 3 students with top scores at the end of every month will be posted under the "Children's Corner" for special prizes. "2008 Young Environmentalist Star Awards" will be given to 10 students with top total scores at the end of the year.



### FILL-IN-GAPS



A \_\_\_\_\_ (a Japanese word meaning "harbour \_\_\_\_\_") is a series of waves, traveling at \_\_\_\_\_ of over 800 km/h in the deep \_\_\_\_\_ and often going unnoticed. They travel harmlessly until they \_\_\_\_\_ the \_\_\_\_\_ water of a coastline where they slow down and steepen, cresting to heights of more than 10m and can \_\_\_\_\_ with devastating \_\_\_\_\_ across the shore, flooding low-lying areas and causing \_\_\_\_\_ and severe destruction.



### DEFINITIONS

- Write definitions for the following words

Inundation

Fatal

Hazard

Damage

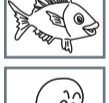
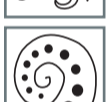
Danger

Sediment

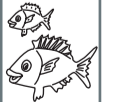
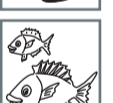
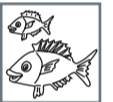
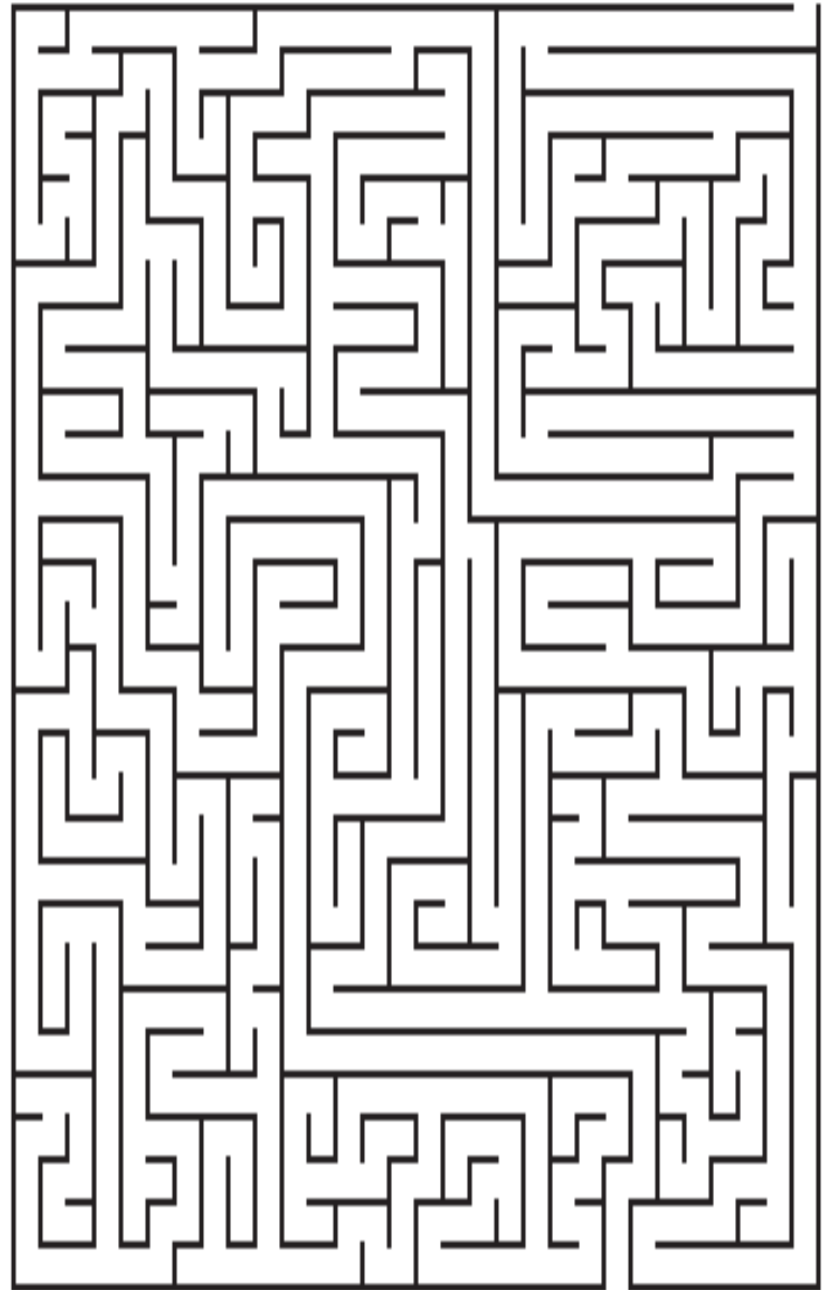
Evacuate

Shallow

Coastal



### MAZE



### CONGRATULATIONS!!!

To our last month winners - please uplift your prizes (Friday 10 Oct) from our office - DBS building - level 3

★ Edith Faolotoi

★ Faith Crawley

★ Palepua Solaese

### ACKNOWLEDGEMENTS

We wish to acknowledge and thank the following companies for sponsoring our children's corner prizes

● STRICKLAND BROS

● DIGICEL

**Digicel**

The Bigger. Better Network.

● McDONALD'S RESTAURANT

● BUSINESS SYSTEM

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