

# **Earthquakes and Tsunamis**

## **Know No Boundaries**

### **Storm Waves Vs Tsunamis**

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### **Main differences and similarities**

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# Earthquakes and Tsunamis

## Know No Boundaries

### **SEA WAVES**

(Storm/ Short waves, Tidal/ Long Waves, Tsunamis)

### **Content of this presentation**

- Laws of Physics
- Wave Characteristics
- Wave Energy
- Wave Prediction

# Earthquakes and Tsunamis

## Know No Boundaries

### **LAWS OF PHYSICS**

- Gravity
- Conservation of Energy

# Earthquakes and Tsunamis

## Know No Boundaries

### WAVE GENERATION

**Storm Waves** - Wind

**Tidal Waves** - Moon – Sun

# Earthquakes and Tsunamis

## Know No Boundaries

### WAVE GENERATION

#### Tsunamis

##### Water Body Displacements

- Sea Bed Uplift
- Sub Sea Landslides
- Volcano Eruptions
- Explosions

# Earthquakes and Tsunamis

## Know No Boundaries

### EVENT DURATION

#### **Storm Waves**

Meteorological  
Dependence

#### **Tidal Waves**

Continuous

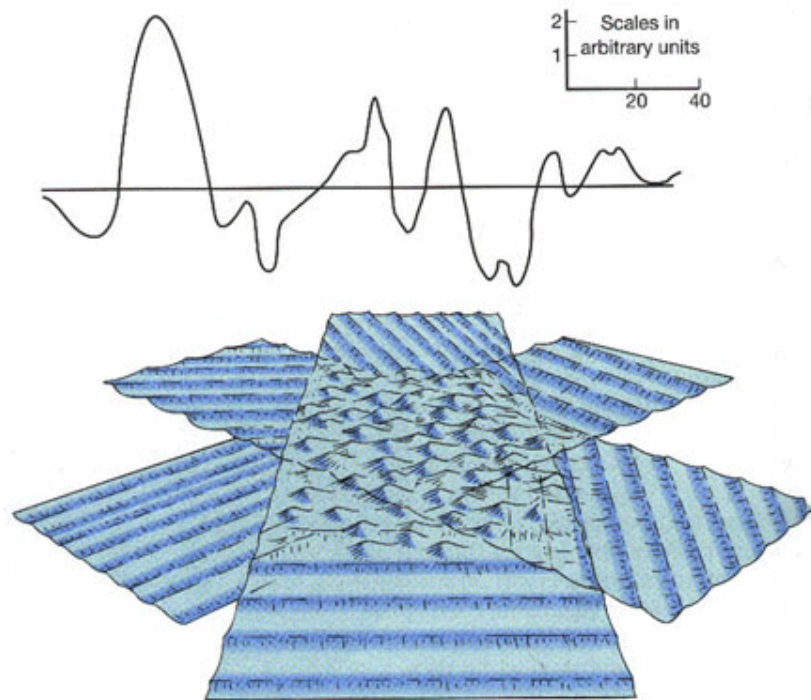
#### **Tsunamis**

- “Instant” duration at source
- Longer duration further away

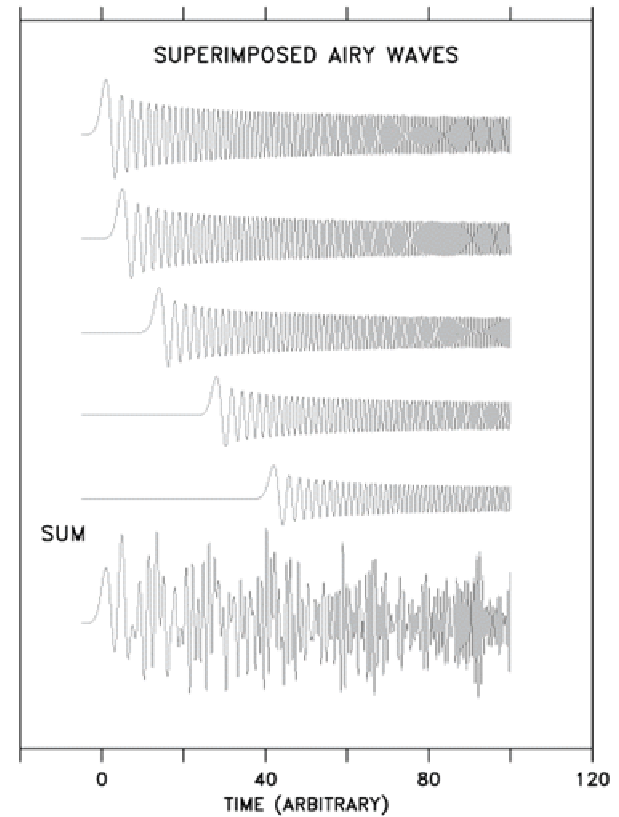
# Earthquakes and Tsunamis

## Know No Boundaries

### STORM WAVES



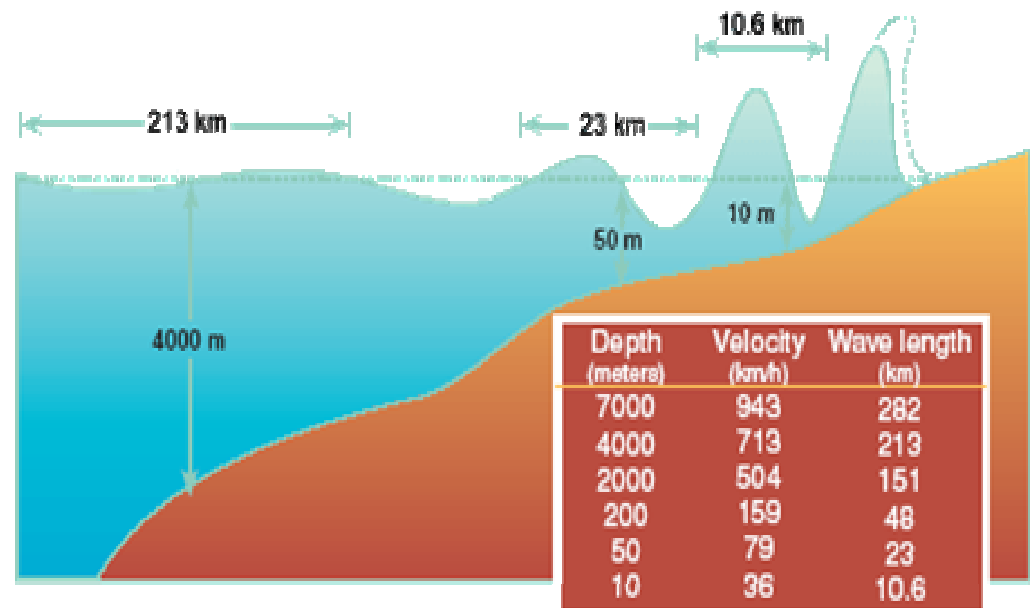
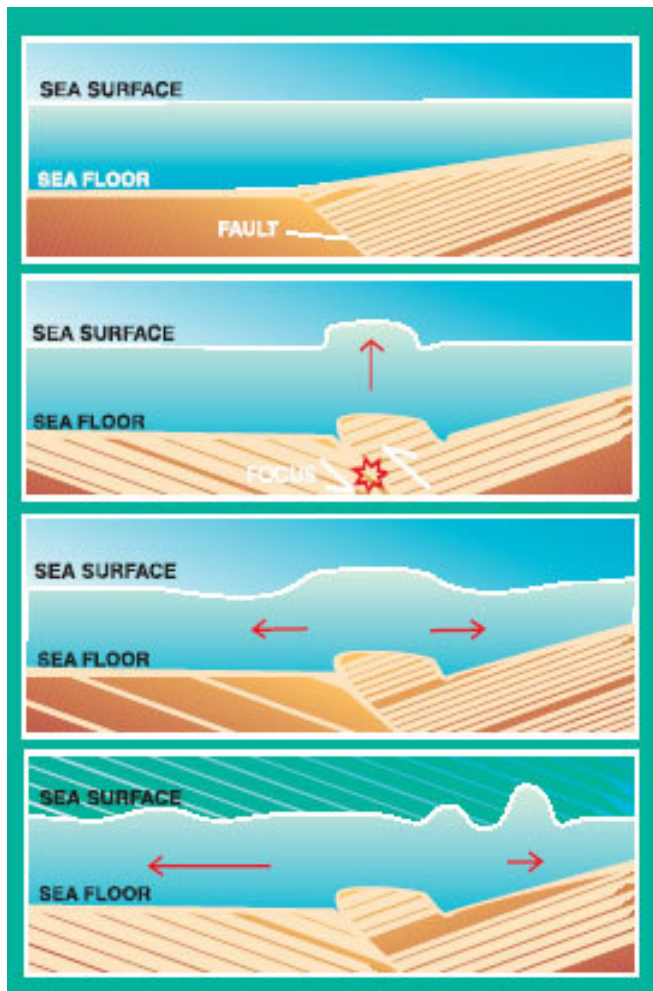
The ocean waves that we observe are a complex of many different sets of waves of different wave lengths, periods and heights.



# Earthquakes and Tsunamis

## Know No Boundaries

### TSUNAMI WAVES





# Earthquakes and Tsunamis

## Know No Boundaries

### WATER PARTICLE MOTION

#### Storm Waves

Orbital Motion

#### Tsunami

Bore – River Flow

# Earthquakes and Tsunamis

## Know No Boundaries

### WAVE ENERGY

#### Storm Waves

Energy Conservation

Shoaling

Wave Breaking/  
Run-up

#### Tsunami

Energy Conservation

Shoaling

Run-up

# Earthquakes and Tsunamis

## Know No Boundaries

### WAVE PREDICTION

#### **Tidal Waves**

Periodic Variation of Sea Level

Predicted Accurately Enough

#### **Storm Waves**

Random Variation of Water Surface Form

Statistically Evaluated: Height, Period

# Earthquakes and Tsunamis

## Know No Boundaries

### WAVE PREDICTION

#### **Tsunami**

Rise of Sea Level

Run-up : water flow

Prediction ?

# Earthquakes and Tsunamis

## Know No Boundaries

### SEA WAVES

**KNOW NO BOUNDARIES**

# Earthquakes and Tsunamis

## Know No Boundaries

**NATURE KNOWS NO BOUNDARIES**



**THANK YOU**