

## **Geohazards Video Answers**

### **Wednesday 29 April**

#### **1. The Cook Strait Earthquake Sequence**

Drive south of Blenheim to Lake Grassmere to find out more about the 2013 Cook Strait earthquakes

1. How deep was the Lake Grassmere earthquake and what magnitude was it?
  - 8 kilometres deep at a magnitude of 6.6
2. Where was the first large earthquake in this sequence centered?
  - In Cook Strait
3. What impacts did these earthquakes have?
  - Damage to roads and buildings in Seddon, some landslides, some damage in Wellington

Next step learning: Find out more about this sequence of earthquakes and compare this sequence with the Canterbury sequence.

#### **2. Past Tsunami at Big Lagoon**

Get permission from the farmer and drive out to Big Lagoon to learn about tsunami in this area.

1. How have geologists collected samples in this area?
  - By taking core samples
2. What do these layers tell us?
  - When there has been subsidence from earthquakes and deposits from tsunami
3. What happened to the first settlement in this area?
  - It was wiped out by a tsunami

Next step learning: Find out where else in New Zealand there have been tsunamis.

#### **3. Researching the Vernon Fault**

Take a look at the trench that has been excavated through part of the Vernon Fault and find out what geologists can learn from this.

1. What can be seen in the trench?
  - Layers of deposits such as mudstone, gravels and soil and how they have been moved by earthquakes
2. How do geologists know from these layers when there have been earthquakes?
  - They can see when layers have been displaced and they can date organic material in these layers
3. Why is it helpful to know when past earthquakes have happened?
  - Because it gives scientists an idea of when the next large earthquake will be

Next step learning: Find out about other fault lines in Marlborough.

#### 4. Active Faults

Drive north of Blenheim up the Wairau Valley to find out more about the Wairau Fault.

1. When did the Wairau Fault last rupture in a large earthquake?
  - 1800 years ago
2. How do geologists know how big an earthquake on a particular fault is going to be?
  - By looking at the displacement along the fault caused by previous earthquakes (the bigger the movement the bigger the earthquake)
3. How quickly are the Alpine Fault and Wairau Fault moving each year and what does this mean?
  - The Alpine Fault is moving at 27mm/year and the Wairau Fault is moving at only 4mm/year. The faster the movement the less time there is between large earthquakes because stress is building up faster.

Next step learning: Find out how geologists measure slow movement along fault lines.