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91007



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

SUPERVISOR'S USE ONLY

Level 1 Geography, 2018

91007 Demonstrate geographic understanding of environments that have been shaped by extreme natural event(s)

2.00 p.m. Friday 9 November 2018

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate geographic understanding of environments that have been shaped by extreme natural event(s).	Demonstrate in-depth geographic understanding of environments that have been shaped by extreme natural event(s).	Demonstrate comprehensive geographic understanding of environments that have been shaped by extreme natural event(s).

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–16 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Achievement

TOTAL

12

ASSESSOR'S USE ONLY

INSTRUCTIONS

Name ONE type of **extreme natural event**, and an **environmental case study (or studies)** of this event, that you will use to answer ALL of the questions in this booklet.

Extreme natural event: Tsunami

Environmental case study (or studies): 2004 Boxing day tsunami (Indian Ocean)

QUESTION ONE: NATURAL PROCESSES

Read the geographic concept below and refer to it when answering this question.

Geographic concept: Interaction

Interaction involves elements of an environment affecting each other and being linked together. Interaction incorporates movement, flows, connections, and interrelationships. Landscapes are the visible outcome of interactions. Interaction can bring about environmental change.

Fully explain the natural processes that operated to produce the extreme natural event in your environmental case study (or studies).

In your answer, include geographic terminology, the geographic concept of interaction, and integrated detailed supporting evidence from your environmental case study (or studies), along with supporting diagrams and/or maps.

PLANNING (OPTIONAL)

STAGE ONE → SUBDUCTION

- Indo-Australian under Eurasian
- Indian Ocean

STAGE TWO → EARTHQUAKE

- 9.3 magnitude
- Epicentre located 250 km off west coast of Sumatra, Indonesia.

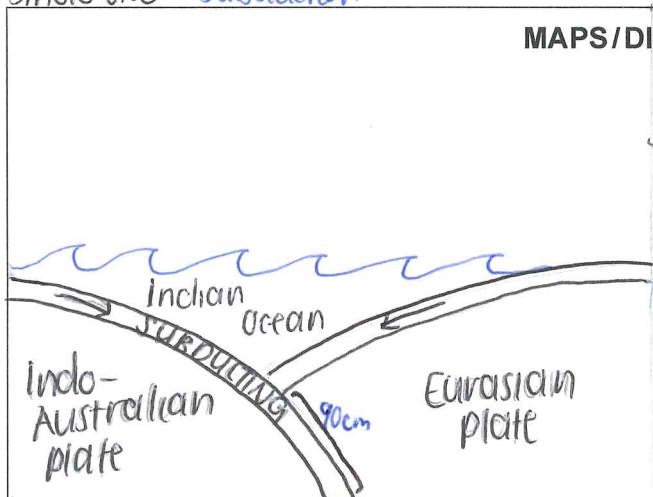
STAGE THREE → FORMATION OF WAVE

- 1100 km long rupture
- Displaced water/waves east towards Thailand & Indonesia and west towards Sri Lanka & India.
- Tsunami!

STAGE FOUR → FORMATION OF TSUNAMI

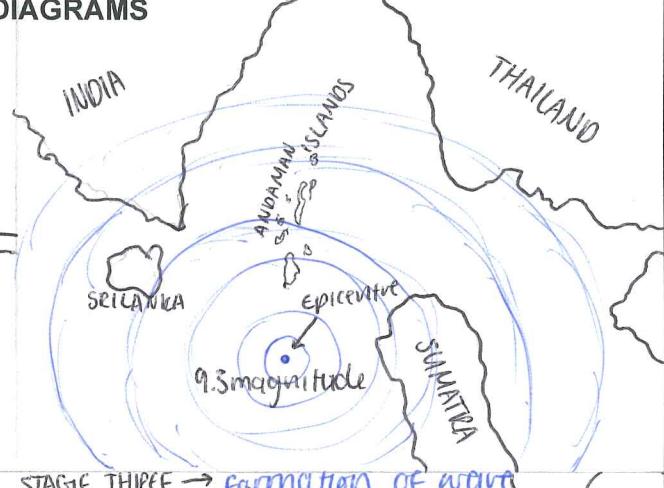
- Travelled 900 km/h
- 20m high
- from sea floor to surface.

STAGE ONE → Subduction

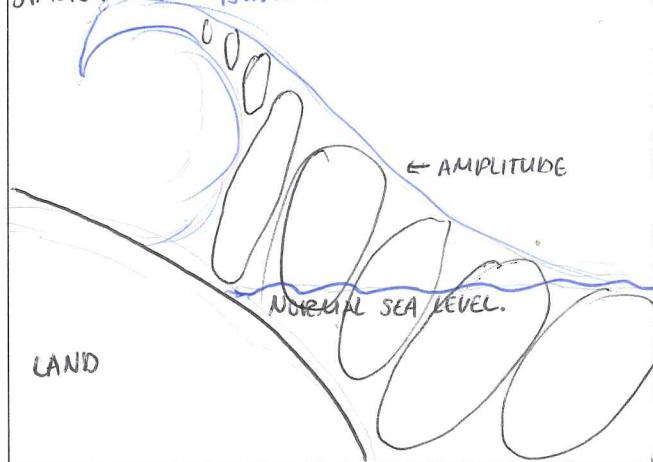


STAGE TWO → Earthquake

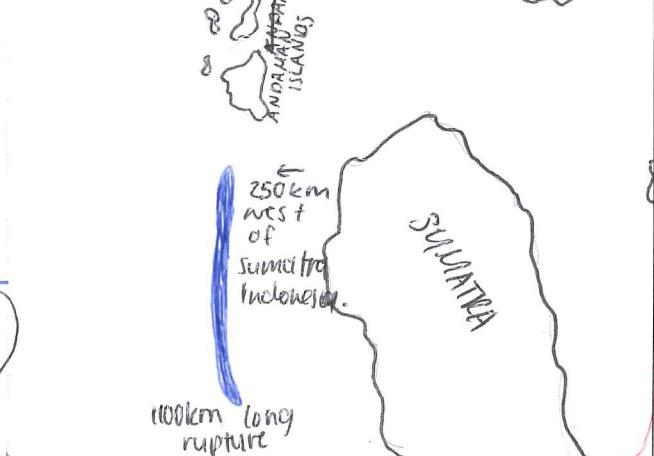
MAPS/DIAGRAMS



STAGE FOUR → Tsunami



STAGE THREE → Formation of wave



On the 26th of December 2004, in the Indian Ocean, the Indo-Australian plate subducted 90cm under the Eurasian plate. This interaction of subduction caused a 9.3 magnitude earthquake; the epicenter was located 250km off the west coast of Sumatra, Indonesia. This earthquake resulted in a rupture on the Indian ocean floor, approx 1100km long. This rupture displaced millions of tonnes of water and sent massive waves east towards Thailand & Indonesia also west towards India & Sri Lanka.

This very interaction between the two continental plates consequently resulted in a tsunami. Waves of up to 20m travelled at a speed of 900 km/ph. ~~1100~~
only ~~80~~ half an hour!

Therefore the interaction between natural landforms in this series of events natural events resulted in a destructive tsunami.

A4

QUESTION TWO: EFFECTS

Read the geographic concept below and refer to it when answering this question.

Geographic concept: Change

Change involves any alteration to the natural or cultural environment. It occurs at varying rates, at different times, and in different places. Some changes are predictable, recurrent or cyclic, while others are unpredictable or erratic. Change can bring about further change.

Fully explain ONE effect that your chosen extreme natural event has had on the natural environment in your case study (or studies).

In your answer, include geographic terminology, the geographic concept of change, and integrated detailed supporting evidence from your case study (or studies), along with supporting diagrams and/or maps.

PLANNING (OPTIONAL)

CHANGE

- ~~see~~ Banda Aceh, Indonesia.
 - 20m high wave stripped vegetation 800km inland.
- Ternessa Island.
 - Split in two.
- Andaman & Nicobar Islands.
 - Some islands fully submerged as they were only 1-3 m high on average.

LOW LYING ISLANDS

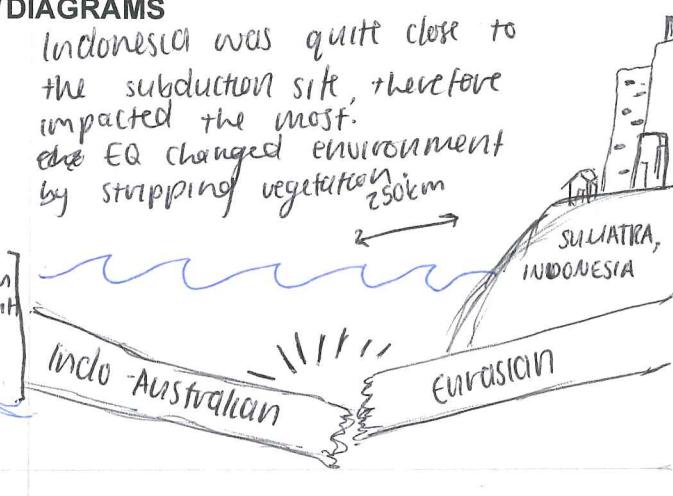
Low lying islands left fully submerged or severely damaged due to extent of waves. landscape changed to be less land or flooding.

Andaman & Nicobar Islands.



MAPS/DIAGRAMS

Indonesia was quite close to the subduction site, therefore impacted the most. ~~the~~ EQ changed environment by stripping vegetation 250km



Many countries in the Indian Ocean were impacted and changed naturally and culturally, by the effects of the Boxing day tsunami, these effects have ~~left~~ long and short-term consequences / changes to these countries. The natural environment of these countries was changed because the damage ~~ext~~ and extent of the destruction from the waves left some places flooded, submerged, stripped of trees and ~~stripped~~ damaged landscapes. For example, in Banda Aceh, Indonesia, the 20m high wave stripped vegetation 800km inland. This left Banda Aceh with a damaged coast and changed the mass of greenery by destroying it and washing it away. ~~Also~~ Also in the lower lying islands, such as the Andaman & Nicobar,

they only reached heights of up to 1-3 m, therefore the tsunami, (20m high) washed right over them. Consequently this left these islands like Teressa island split into & some completely destroyed. In conclusion, the effect of the BDT on the natural environments of countries in the Indian ocean were drastic changes in landscape, vegetation and coastlines, likely to be damaged or destroyed //

A4

QUESTION THREE: LONG-TERM RESPONSE

Read the geographic concept below and refer to it when answering this question.

Geographic concept: Sustainability

Sustainability involves adopting ways of thinking and behaving that allow individuals, groups, and societies to meet their needs and aspirations without preventing future generations from meeting theirs. Sustainable interaction with the environment may be achieved by preventing, limiting, minimising, or correcting environmental damage.

Examples of long-term responses to extreme natural events include:

- rebuilding (houses, business, infrastructure, etc.)
- relocating (moving in order to avoid the potential effects of future events)
- researching (causes, reasons for damage, ways to minimise the potential effects of future events, etc.).

Fully explain at least ONE way in which people responded, in the long term, to the extreme natural event in your environmental case study (or studies).

In your answer, include geographic terminology, the geographic concept of sustainability, and integrated detailed supporting evidence from your case study (or studies).

PLANNING (OPTIONAL)

Oxfam → Indonesia.

- responded by re-building schools, roads, houses, bridges and re stored livelihoods.
- Built around 500-400 wells.
- Gave resources such as boats & fishing equipment.

Many responses were made towards the effects of the BDT, whether it was from big organisations or small groups of people, they all had an effect. In Indonesia, an organisation called Oxfam responded to this natural event by re-building infrastructure such as schools, houses, roads and bridges, ~~giving~~ ~~restoring the citizen~~ in attempt to give the people a sustainable living environment for the future. Oxfam also restored the livelihoods of many people by giving them resources such as boats and nets for fishing, so ~~people's~~ ~~citizen's~~ ~~house~~ ~~for~~ the sustainability of an income and job was restored for some families.

Estimated to have re-built 500-400 wells to provide a sustainable, clean water source.

These responses left a long-term impact on Indonesia as they now have sustainable infrastructure and resources to get them back on their feet and to help them in the future.

A4

Achievement Exemplar 2018

Subject	Geography		Standard	91007	Total score	12
Q	Grade score	Annotation				
1	A4	The candidate has fully described the natural processes that operated to produce the Indian Ocean Tsunami. Supporting evidence (e.g. Sumatra, Banda Aceh, 250km) has been included and there is a clear sequence of events. In order to fulfil the requirements for an M5 grade, parts of the process need to be explained. The diagram and written response are descriptive but lack the explanation required to receive an M5.				
2	A4	The candidate has described the effect of the Indian Ocean Tsunami on natural environments (vegetation damaged, islands submerged) with supporting evidence (20m wave, Andaman and Nicobar Islands). There is an attempt to explain these effects; however, the response lacks accuracy (800km inland), and the explanations lack the clarity or structure required for an M5 grade. An example of this is the annotation about stripped vegetation and the associated diagram showing an urban area.				
3	A4	The candidate has described the long-term response of Oxfam to the Indian Ocean Tsunami. Supporting evidence about the work of Oxfam is accurate but quite general in nature, although they have included Indonesia and 400–500 wells. Some additional supporting evidence and an explanation of the reasons for this response would have shifted the grade to an M5				