

Oxford Revise | Geography | Answers

Chapter 2 Why do we have weather extremes?

All exemplar answers given are worth full marks.

1

- (a) C
- (b) Tropical storms are called cyclones in the Indian and South Pacific Oceans. In the Caribbean, North Atlantic, and the USA's Pacific coast these are called hurricanes.
- (c) The eye is the centre of the storm where there is a column of rapidly sinking cool air. Conditions here are relatively calm and there are no clouds.
- (d) strong winds; storm surges
- (e) An extended period when there is much less precipitation than is usual for an area.
- (f) El Niño and La Niña events are caused by changes in the sea surface temperature in a band across the Pacific Ocean. Weaker trade winds increase the temperature, causing an El Niño effect every three to seven years. Stronger trade winds decrease the temperature, causing a La Niña effect every three to five years.

2

- (a) The conditions necessary for tropical storm to form are only found 5–15° north and south of the equator, where ocean temperatures are above 26.5°C. This is where two Hadley Cells converge, causing hot, humid, unstable air to rise, condense, and form storm clouds. Near the equator, the spinning effect of the Earth's rotation is very high. The trade winds and westerlies determine the movements of these storms. Trade winds move them north-east to west in the northern hemisphere and south-east to north-west in the southern hemisphere. Westerlies move them from the south-west to the north-east in the northern hemisphere and west to east in the southern hemisphere.
- (b)
 - (i) 1:25
 - (ii) 1:31
 - (iii) These two storms had very different impacts, because of the differing levels of development of the two countries hit. The USA is a rich, advanced country, well prepared for hurricanes. The high value of property meant that the repair costs of damage were much larger compared with the value of the destruction caused in the emerging and developing country of the Philippines. The death tolls were much lower in the USA, because more people are mobile and could evacuate more quickly. The country has more accurate warnings, so people had more time to leave before the storm hits. The Philippines is much less prepared for a storm.
- (c) The strong winds will blow down trees, power lines, and even whole buildings. Storm surges mean that many coastal areas will be flooded. The very heavy rainfall will also cause flooding, with up to 1 000 mm falling in a single storm. Hillsides get saturated, resulting in mudflow and landslides.

(d) Both El Niño and La Niña events are caused by changes in the sea surface temperature in a band across the Pacific Ocean. Weaker trade winds increase the temperature, causing an El Niño effect, and stronger trade winds decrease the temperature, causing a La Niña effect. El Niño events occur every three to seven years, and La Niña events every three to five years. Not all El Niño and La Niña years are the same. Some years the effects are stronger than others. El Niño events have significant consequences. They cause wetter weather in East Africa, the southern states of the USA and in an equatorial band across the Pacific Ocean. In contrast, it gets drier in southern Africa, Malaysia, Indonesia, northern South America and most of Australia. The 2015 El Niño event led to Thailand experiencing one of its worst droughts, forcing food prices up, increasing poverty, and affecting the economy of the whole country. El Niño events also lead to more tropical storms in the Pacific, but fewer tropical storms in the Atlantic. La Niña events also have major consequences on the world's pattern of rainfall. Tropical storms in the Pacific get weaker, but stronger in the Atlantic. The countries of Peru and Chile in South America get more frequent droughts because of La Niña.

Level	Marks	Description
3	6–8	<ul style="list-style-type: none"> • Thorough knowledge, understanding or analysis of the issue, process or concept. • Uses well-developed ideas and line of reasoning is clear and logically structured. • Information presented is relevant and substantiated.
2	3–5	<ul style="list-style-type: none"> • Reasonable knowledge, understanding or analysis of the issue, process or concept. • Uses developed ideas and line of reasoning with some structure. • Information presented is mostly relevant and supported by some evidence.
1	1–2	<ul style="list-style-type: none"> • Basic knowledge, understanding or analysis of the issue, process or concept. • Uses simple ideas with no developed points made. • Information is basic, unstructured, and supported by limited evidence.
	0	No response or no response worth of credit.

Questions referring to previous content

3

- (a) The albedo effect refers to the amount a surface reflects the Sun's rays back into space. White polar ice and snow with a high albedo surface reflect the Sun's rays, but the low albedo surfaces of the dark green tropical rainforests absorb the Sun's rays.
- (b) In tropical latitudes, insolation from the Sun is concentrated over a smaller surface area. It has a shorter path through the atmosphere, resulting in less heat loss than at the poles. This results in the high air temperatures. Where there is dense vegetation in the ITCZ, because of its dark surface the heat from the sun is absorbed, rather than being reflected into space. The oceans will have the same effect.