



Weather Hazards: Global Atmospheric Circulation

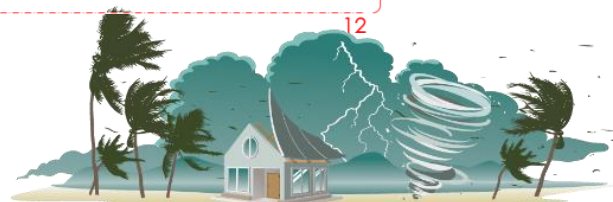
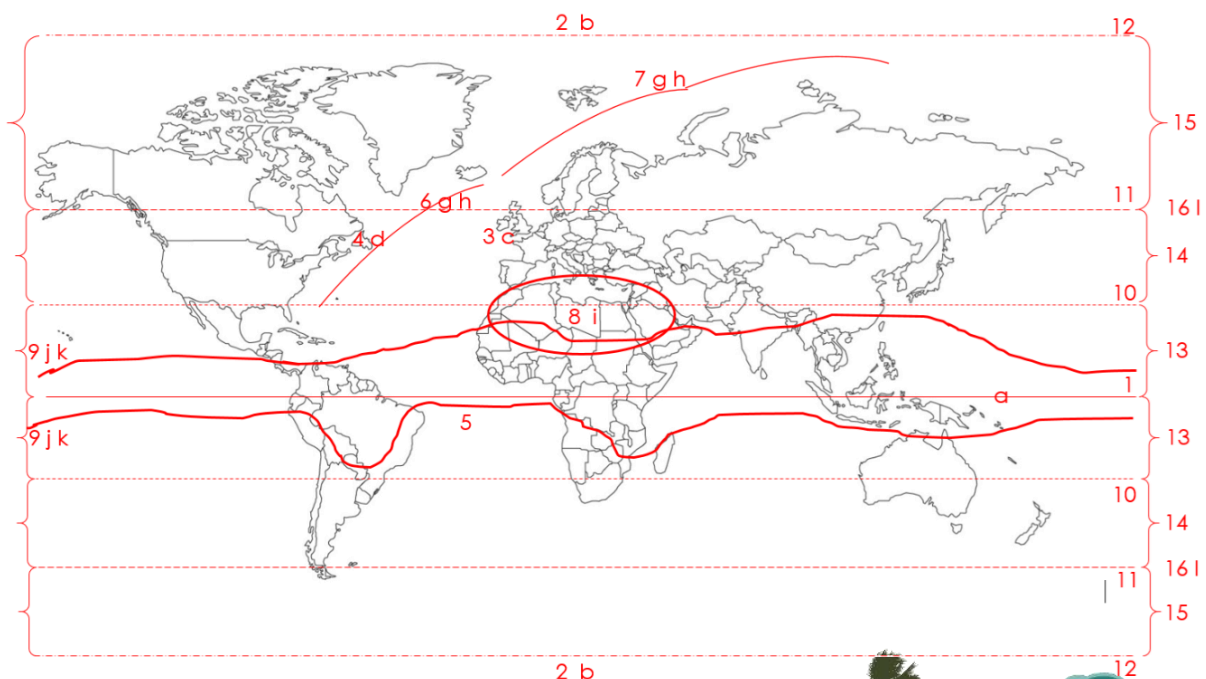
Suggested Responses

Comprehension Questions

1. Because the North Atlantic Drift brings currents of warm, tropical waters to the Scilly Isles, keeping them mild and frost-free in winter. In Newfoundland, the current of water brings cold icy waters from the Arctic Circle, chilling the island and that part of Canada.
2. Because it redistributes heat from the tropics, which would otherwise be much hotter than they are at present, towards the Poles, which would otherwise be even colder and pose even more challenges for survival.
3. a) Because the sun's angle is directly overhead at the Equator – therefore radiation or insolation is more intense.
b) Because at the Poles the sun's angle is much less, so that radiation is spread over a wider area and is less intense.
c) Because ice at the poles reflects much of the sun's radiation back into the atmosphere, without ever converting it to heat.
- 4.

Places	Where they form
Areas of high pressure	Forms where air is cooler than surrounding places
	Forms over land in winter
	Forms over sea in summer
Areas of low pressure	Forms where air is warmer than surrounding places
	Forms over land in summer
	Forms over sea in winter

Map It Out





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Suggested Responses

Section 1

- 1-8. The Equator, North and South Poles, Scilly Isles, Newfoundland, Atlantic Ocean, Gulf Stream, North Atlantic Drift, Sahara Desert should all be located using an atlas.
9. The ITCZ should be shown broadly across the Equator.
13. The area covered by circulation of the Hadley cell is between 0° to 30° north and south of the Equator.
14. The covered by circulation of the Ferrel cell is between 30° to 60° north and south of the Equator.
15. The covered by circulation of the Polar cell is between 60° to 90° north and south of the Equator.
16. The Polar front should be along the boundary between the Ferrel and Polar cells, i.e. at about 60° north and south of the Equator.

Section 2

- a) Should be located around the Equator and the tropics
- b) Should be located around the Poles
- c) The Scilly Isles
- d) Newfoundland
- e) The Scilly Isles
- f) Newfoundland
- g) The Gulf Stream OR North Atlantic Drift
- h) The Gulf Stream OR North Atlantic Drift
- i) The Sahara
- j) ITCZ
- k) ITCZ
- l) Polar Front



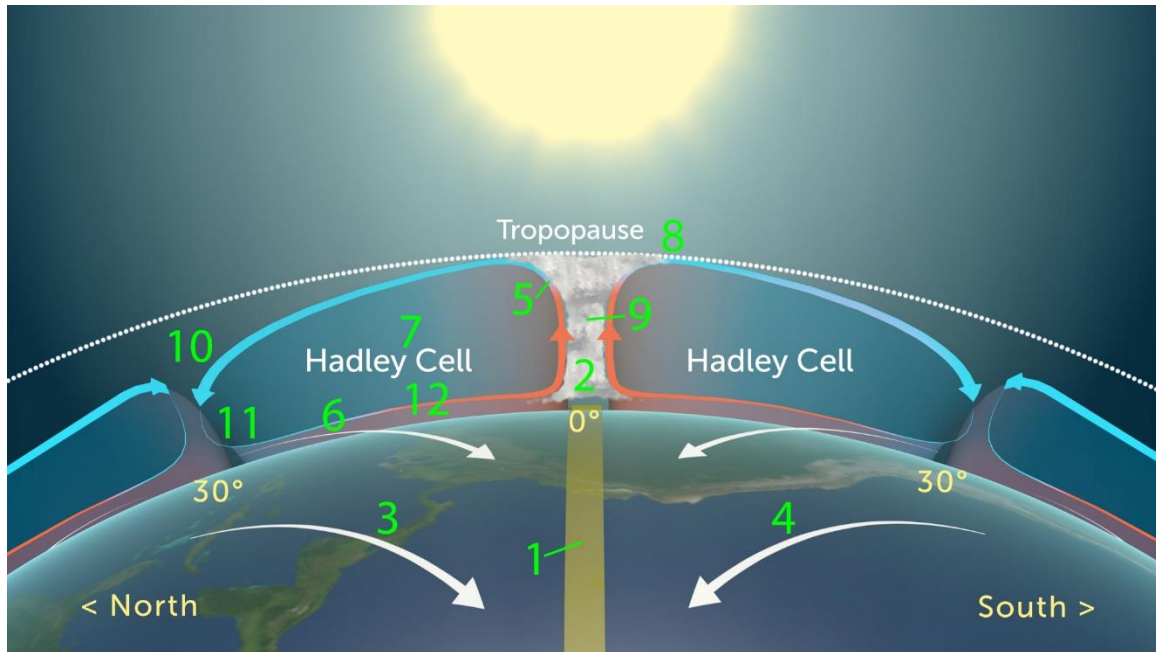


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Suggested Responses

Understanding the Hadley Cell

Section 1



Legend

1. the Equator
2. warm air over the Equator causes evaporation
3. northeast trade winds from the northern hemisphere
4. southeast trade winds from the southern hemisphere
5. warm, moist air rises into the troposphere
6. cooler, heavier surface air blows from the north to replace this air
7. a convection current is created.
8. air is cooler at higher levels, which causes condensation
9. intense rainfall forms, together with thunderstorms
10. heavier, cooler air in the upper atmosphere sinks
11. sinking heavy air creates a high pressure area, with little moisture
12. air is drawn back to the Equator, where it heats again

Section 2 Extension – answers may vary

