

Oxford Revise | Geography | Answers

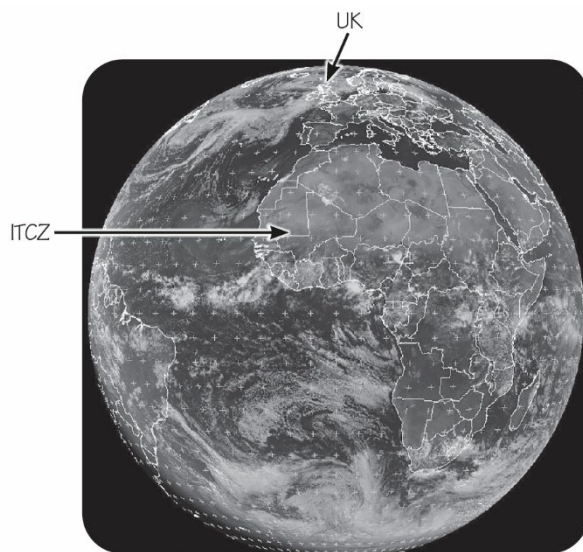
Chapter 1 Global atmospheric circulation and weather

All exemplar answers given are worth full marks.

1

(a)

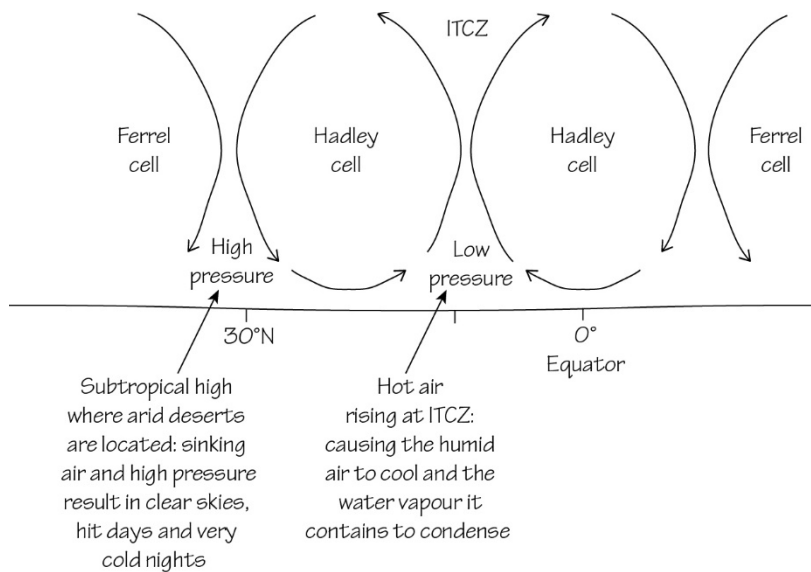
(i), (ii) The image should be completed as below:



(iii) The cloud cover on the satellite image shows there is heavy rain associated with the ITCZ. The low latitude (from 5° north to 5° south of the equator) ensures very high temperatures throughout the year.

(b) The global circulation system explains why the rainfall in West Africa is concentrated along a narrow band from 5° north to 5° south of the equator. This is explained by the ITCZ, where surface winds forming the lower parts of the Hadley Cell either side of the equator meet. At this low latitude, direct solar insolation from the overhead Sun ensures powerful heating of the Earth's surface. This causes hot, humid air to rise from the surface, cool, and condense into towering cumulonimbus clouds from which heavy convective rain falls daily.

(c) Students should draw a diagram such as the below:



2

(a) D

- (b) Average annual precipitation exceeding 3 000 mm is mainly found 5° north to 5° south of the equator in South America, West Africa and South East Asia.
- (c) Arid areas are often found 30° north and 30° south of the equator. This is where the cool descending limbs of the Hadley Cell fall to Earth, creating a belt of high pressure. As the air descends, it becomes warmer and drier, creating the hot deserts.
- (d) Antarctica is the coldest place on Earth. Temperatures are so low because the Sun's rays hit this high latitude at an angle. This spreads the heat over a larger area and there is less insolation because the rays must penetrate a thicker layer of atmosphere by approaching at such an angle. Antarctica also has a high albedo effect, with the white surfaces of polar ice and snow reflecting the Sun's rays back into space.