Weather Hazards: Global Atmospheric Circulation

Understanding the Hadley Cell

Follow the instructions below to label the diagram.
Figure 1 shows the Hadley Cell. The large cloud shown below forms where two lots of air meet, bringing heavy rain. This is called the ITCZ – the Intertropical Convergence Zone. This activity will show how it forms.

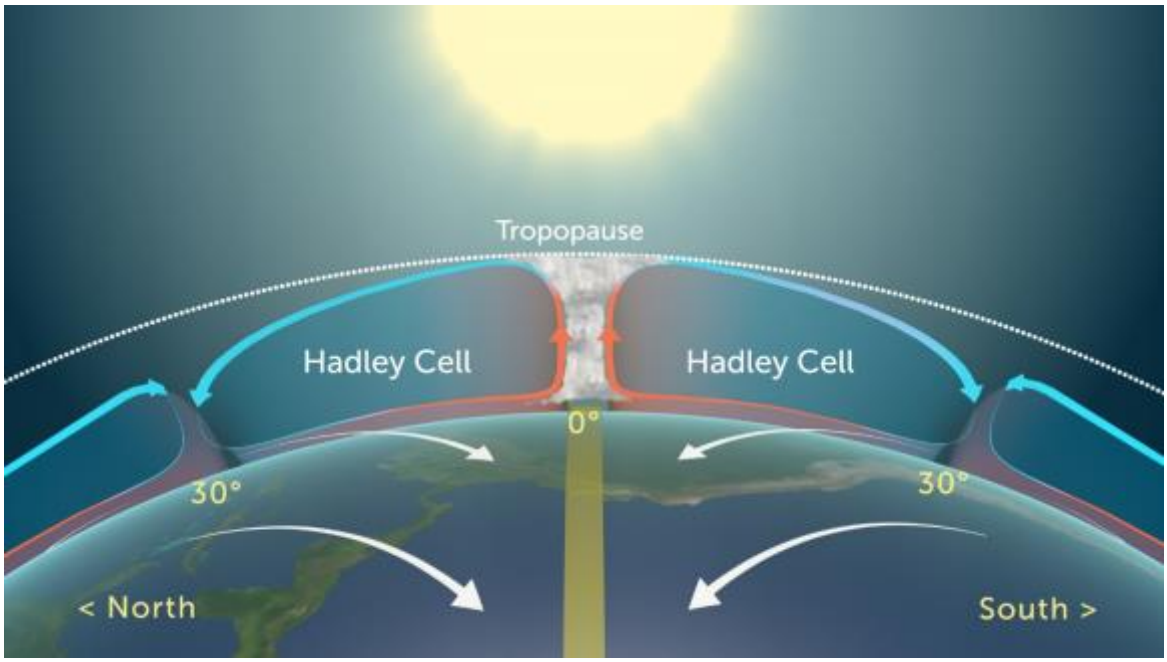

Figure 1 – The Hadley Cell

Label the following in the right places in Figure 1 to show how the ITCZ forms, and how the Hadley Cell works.

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

Extension

a) Research global satellite photos showing the ITCZ in a) July, and b) January.
b) Research and explain why the ITCZ moves between the seasons, with different positions at different times of the year