### THE ATMOSPHERE

Use the words in the word bank to fill in the blanks:

Insolation Hadley Climate Circulation Adiabatic

Energy Gas Equator Environmental Weather

Dry Transfers Saturated Decrease Tropo

Poles Excess Equator Constant Drops

Horizontal

The atmosphere is the layer of ……………….., moisture and solid particle matter that surrounds the earth. While the furthest limit of the atmosphere is said to be about 1000km, most of the atmosphere, and therefore our ……………. And weather, is connected within about 16km of the earth’s surface.

The sun is the earth’s prime source of ………………….. . Insolation (incoming solar radiation) is the short-wavelength energy we receive from the sun. It is this energy that controls our climate and ………………… .The amount of ……………………. we receive depends on the solar constant, the earth’s distance from the sun, the altitude of the sun in the sky, and the length of day and night.

## The global heat budget

The “global heat budget” simply means that there is a balance between incoming insolation (heat from the sun) and outgoing terrestrial radiation (heat reflected from the earth’s surface. Generally the temperature of the earth has remained ……………… over time. In some locations on earth, there is more heat received from the sun than is reflected by earth. Areas near the …………………. have a net gain of heat from the sun while those near the …………… have a net deficit. Overall, this heat budget must balance, otherwise the earth would continue to get hotter or colder. The ……………… heat from equatorial area is transferred to the cooler polar regions by winds and ocean currents. The two processes are also known as ………………… Transfers and Vertical ……………….. This global ………………………… of wind and water is largely responsible for the pattern of rainfall and temperatures across the earth.

## Lapse rates

A lapse rate means that as you get higher in the atmosphere temperatures …………….. Generally, for each rise in altitude of 1000m, the temperature ………… by 6.5oC, but this place is called the …………………….. lapse rate.

………………….: If a body of air rises but does not gain or lose heat.

………….adiabatic lapse rate: If a body of air rises and loses temperature

………….adiabatic lapse rate: If a body of air rises and cools.

## What causes air to move?

Air move within the …………..-sphere

Hot air rises at the ………………….., and moves towards the poles. A subtropical high pressure belt exists at 30C north and south of the Equator, which pushes air downwards. Some of the air then moves back toward the Equator, creating the ………………. Cells. The remaining air moves towards the poles. When the warm air meets the cooler polar air it forms a polar cell.