Climate zones

Worksheet 1 Teacher's notes

1. What is climate ?

Climate is defined as an area's long-term weather patterns. The simplest way to describe climate is to look at average temperature and precipitation over time.

2. What are five factors which affect climate?

Latitude *Temperature range increases with distance from the equator. Also, temperatures decrease as you move away from the equator. This is because the sun rays are dispersed over a larger area of land as you move away from the equator. This is due to the curved surface of the earth. In addition polar regions are colder because the sun rays have further to travel compared to place on the equator.*

Altitude *Temperatures decrease with height. The air is less dense and cannot hold heat as easily.*

Winds *If winds are warm - they have been blown from a hot area - they will raise temperatures. If winds have been blown from cold areas they will lower temperatures.*

Distance from the sea (continentality) *Land heats and cools faster than the sea. Therefore coastal areas have a lower temperature range than those areas inland. On the coast winters are mild and summers are cool. In inland areas temperatures are high in the summer and cold in the winter.*

Aspect *Slopes facing the sun are warmer than those that are not. Thus south facing slopes in the northern hemisphere are usually warm. However, slopes facing north in the southern hemisphere are warmest.*

3. What are climate zones?

Climate zones *are areas with distinct climate, which occur in east-west direction around the earth, and can be classified using different climatic parameters. Generally, the climate zones are belt-shaped, and circular around the Poles. In some areas, climate zones can be interrupted by mountains or oceans.*

4. How many major climate zones are there and what are they characteristics?

There are 4 major climate zones:

Tropical zone from 0°–23,5° (between the tropics)

In the regions between the equator and the tropics (Equatorial region) the Solar radiation reaches the ground nearly vertically at noontime during almost the entire year. Thereby, it is very warm in these regions. Through the high temperatures, more water evaporates, so that the air is often moist. The resulting frequent and dense cloud cover reduces the effect of solar radiation on ground temperature .

Subtropics from 23,5°–40°

The subtropics receive the highest radiation in the summer, since the sun's angle at noon is almost vertical to the earth, whilst the cloud cover is relatively thin. These regions receive less moisture

(see Trade winds), and that increases the effect of radiation. Therefore, most of the deserts in the world are situated in this zone. In the winter, the radiation in these regions decreases significantly, and it can be temporarily very cool and moist .

Temperate Zone from 40°–60°

In the temperate zone, the solar radiation arrives at a smaller angle, and the average temperatures here are much cooler than in the subtropics. The seasons and day length differ significantly in the course of a year. The climate is characterised by less frequent extremes, a more regular distribution of the precipitation over the year and a longer Vegetation period - therefore the tame "temperate".

Cold Zone from 60°–90°

The polar areas between 60° latitude and the poles receive least heat through solar radiation, since the sun has a very flat angle to the ground. Because of the changes of the earth axis angle to the sun, the daylength varies most in this zone. In the summer, polar days occur. The Vegetation is only possible during few months per year and even then often sparsely. The conditions for life in these regions are very hard.

5. Go online and watch a video about climate zones: http://www.bbc.co.uk/learningzone/clips/climate-zones-across-the-globe/11182.html .

6. In groups go to https://sites.google.com/site/climatetypes and prepare a presentation to the rest of the class about one of the climate types.

students' answers are included in the information found on the website

other sources:

http://www.geography.learnontheinternet.co.uk/topics/climatezones.html
http://www.meteoblue.com/en/content/438
https://sites.google.com/site/climatetypes/
http://www.kbears.com/climates.html
https://www.classzone.com/books/earth_science/terc/content/investigations/es2101/es2101page01.cfm?chapter_no=investigation