A STUDY OF THE CLOUDS

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listening

A scientist who studies climate change talks to a group of students on the importance of studying clouds.

The study of clouds is interesting, once you understand how vital clouds are to our survival. Primarily, they provide cloud cover. In other words, they protect us. Clouds regulate the amount of heat reaching the earth, and also reflect radiation back into space.

Two-thirds of our planet is covered by clouds at any given time, mostly found over the oceans. As you'd observe, there are many different types of clouds. Let me tell you about two types of clouds you see in the sky that function slightly differently from each other to jointly regulate the temperature of the earth.

Low-level clouds appear less than two kilometres above sea level. These are usually thick clouds, containing more water droplets than the clouds found at higher levels. Known as the stratocumulus clouds, they reflect the heat and radiation from the sun and keep the earth cool during the day. The high-level clouds, known as cirrus clouds, are found anywhere between five and thirteen kilometres above sea level. These are the thin and wispy clouds you find floating in the sky. The cirrus clouds trap the sun's rays and reflect the heat back to the earth's surface. Such clouds insulate the earth, keeping it warm even at night when there is no sunlight.

Word Bank:

1. **expansively:** covering a wide area in terms of space or scope; extensively
2. **detrimental:** tending to cause harm
3. **verdant:** green with grass or other rich vegetation

Today, we face the possibility of losing this protection or cloud cover due to climate change, thanks to human activities. Man has started clearing land [1]expansively and intensifying air pollution through the heavy use of vehicles, releasing many greenhouse gases such as carbon dioxide, methane and nitrous oxide into the air. These are [2]detrimental to the planet's ecosystems. For example, with more carbon dioxide in the environment coupled with fewer trees left to absorb it during photosynthesis, carbon dioxide remains in the atmosphere for a longer time. As carbon dioxide traps heat, the earth's temperature rises. Just as clouds affect the climate, climate changes also affect clouds. With rising temperatures, less condensation of water vapour occurs, which means fewer clouds will form. That means we will be more vulnerable to hotter days or cold freezing nights, and more exposed to the harmful infra-red radiation from the sun. From a [3]verdant green planet, Earth will become less and less habitable.

You will realise by now that we need to actively work towards stopping our planet from destruction. I leave it to you, our successors, to brainstorm better solutions to this problem.

References

1. The science of clouds – why they matter, and why there may be fewer of them, from Newscenter, 13 March 2013.
2. The types of clouds: everything you need to know, from ZME, 20 January 2020.
3. How do clouds affect Earth's climate? from NASA ClimateKids, 18 June 2020.

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