

# Global warming and impacts on glaciers assignment



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GLOBAL WARMING AND IT'S EFFECTS ON GLACIERS Global Warming The average global temperature has raised more than expected in the past few decades. Many prefer to use the milder term ' climate change' instead of the harsher ' global warming' to describe this change in average global temperature. The main cause of global warming is thought to be the ' greenhouse effect' that is mainly caused by us humans.

With an increase in temperature glaciers worldwide are melting faster than the time taken for new ice layers to form, sea water is getting hotter and expanding causing sea levels to rise, rivers overflow due to melting glaciers causing floods, forest fires are on the rise, and innumerable undesired effects are taking place due to global warming. The Greenhouse Effect The ' greenhouse effect' takes place when certain gases in the atmosphere of the earth trap heat. The term ' greenhouse' is used because light is allowed to reach the earth, but most of the heat generated is not allowed to escape, just as in a greenhouse.

The more the greenhouse gases in the atmosphere, the more heat will be trapped within the earth's atmosphere, causing average earth temperatures to rise. The greenhouse effect was first described by Joseph Fourier way back in 1824. The earth's temperature has increased by half a degree Celsius over the past century due to an increase in greenhouse gases. This slight increase may seem negligible, but the earth's ecosystem is very fragile, and even such small changes can prove disastrous.

Greenhouse gases are a natural part of the atmosphere and the main sources of these greenhouse gases are carbon dioxide, methane, nitrous

oxide, and fluorocarbons. Increased greenhouse gases in the past century can be attributed to human activity such as burning of fossil fuels such as coal, oil, and natural gas, reduced forest cover due to deforestation, increase in atmospheric methane gas due to mass rearing of cattle (in the process of digestion cattle and sheep produce and release methane into the atmosphere). Glaciers

Glaciers are formed by snow that gets compressed and forms a thick ice mass over time. This ice begins melting when the temperature rises, and is again replaced by a fresh layer of snow. This process goes on and the glacier keeps getting bigger over time. The problem with any glacier begins when the ice melts at a faster rate than the snow that replaces it. The glacier will keep receding over time and will finally vanish. Melting Glaciers The melting of glaciers is a natural process. Many communities worldwide depend on the fresh water from these melting glaciers for their domestic use.

Some countries depend on the melting water from glaciers for their production of electricity. Agriculture in many nations depends primarily on melting glacier water that flows in their rivers. All this melting water is constantly replaced by fresh snow that compresses into ice over time and will subsequently melt into water. This cycle goes on and on maintaining a perfect balance in the generation of fresh water and size of the glacier.

Glaciers Worldwide are Melting Fast The last century has been a problem for glaciers across the globe. They are melting, but at an alarming rate.

Fresh snow that replaces the melting ice is not able to maintain the size of almost any glacier worldwide. One of the main causes for this is thought to

be ' global warming'. As the average global temperature keeps on increasing, ice from glaciers keep melting faster. The effects of ice glaciers melting more than required can cause catastrophes of unimaginable proportions. If global warming is causing ice glaciers to melt faster, the reduced ice cover over earth in turn is causing temperatures to rise further. Ice glaciers deflect almost 80% of the heat from the sun and absorb about 20% of the heat.

When an ice glacier vanishes and exposes the earth below, 80% of the heat from the sun is absorbed by the earth, and only about 20% of this heat is deflected back. This increases the temperature of the earth, which increases the temperature of sea water. Sea water expands with an increase in water temperature and causes sea levels to rise. Melting water from glaciers will finally empty into the sea, causing a further increase in sea levels. All low lying areas near the sea will go under water and humans living here will be displaced.

At the rate at which sea levels are rising, it is estimated that many South American and Asian countries will be the first to suffer from this effect. There are many more effects that rapidly melting glaciers cause. While some areas will witness unprecedented floods, other areas will witness severe draught. Whether witnessing floods or draught, agriculture will be severely hit, causing scarcity of foodgrains. Nations depending on hydroelectricity will have to switch over to other sources to generate their electricity, in effect further polluting the atmosphere.

Forest fires will happen more frequently (they already are in Australia and the US) causing great stress to humans living in the vicinity. The bad effects of rapidly melting ice glaciers are limitless. Glaciers - What Are They?

Glaciers are snow that have been compressed over the years by more snow, finally forming into huge masses of solid ice. Glaciers - How Are They Formed? Glaciers are formed when the snow that has fallen remains long enough to get compressed by fresh snow and turn into solid ice. Almost throughout the year new layers of snow will fall and compress the layers below.

For a glacier to form it is very important that the amount of snow that falls in a given year must be more than the amount of glacier ice / fresh snow that has melted. It is only in this way that any glacier can increase in size. If the amount of fresh snow is less than the amount of melting ice / snow then the glacier will diminish in size and gradually vanish. This is exactly what is happening with almost all glaciers worldwide today. Glaciers that have taken centuries to form are melting at an alarming rate. Some well known glaciers have diminished in size and some have become extinct; all in the space of just the past 100 years.

Glaciers - Do They Melt Normally? The melting of glaciers is a perfectly normal process. All glaciers worldwide melt to some extent during warmer climates. Certain glaciers melt constantly, but are replenished with the falling of more snow. Many communities worldwide depend on these melting glaciers for all their freshwater needs. Pure and fresh drinking water and water for farming is supplied by these glaciers, without which these

communities would have to move and settle down where other sources of fresh water are available.

Some nations depend on this constant flow of water from melting glaciers to produce hydroelectricity that is cheap to produce and extremely eco-friendly. This process of glaciers melting is perfectly normal as long as the amount of ice that is melting is replaced by the same or more amount of fresh snow. A serious problem occurs when things go the other way — the ice melts too fast and the fresh falling snow is not able to replace it. When this happens, the glacier will gradually begin diminishing in size and will in time vanish completely. [Glaciers - What If They Melt Totally?](#)

Many glaciers across the world are diminishing in size each year. Some well known glaciers of the past have just melted away, never to return. The speed at which glaciers are melting today is getting greater and greater with each passing year. Almost everyone today agree to one major cause for this — ‘Global Warming’. Many persons / communities that depend totally on melting glacier water for drinking and irrigation purposes have already felt the horrible effects that fast melting glaciers bring with them. Fast melting glaciers are very bad not just for us humans, but even for animals, birds, fish, and marine plants.

What if all the glaciers present today melted? It would have far reaching negative impacts on everything present on earth. [Glacier Water Formed Lakes Could Burst](#) Glaciers that are melting faster than normal create lakes on the mountainsides as they flow. The size of these lakes keep on increasing with time. The walls that hold these lakes can bear pressures only

upto certain limits. Once the water in these lakes increase to levels where these water holding limits are crossed, there is just one thing that can happen. The lake will burst. Since these lakes are huge in size, the sudden amount of water released by the bursting will be tremendous.

The force of this water will destroy anything that comes in its way; including entire villages settled on the bottom of such mountains. This is not something that we think will happen; such lake bursts are a current reality and have already happened (Nepal in Asia) causing tremendous loss to the villagers who were affected by it. Many places in Nepal and Bhutan in Asia still face grave dangers from many lakes that are increasing in size and could burst anytime. Floods When the amount of ice / snow melting on mountains increases above normal, it will cause a lot of water to be released into streams and finally the rivers it feeds.

This will cause flooding all along the river banks. All those living in low lying areas in close proximity of the rivers will be affected. The amount of havoc that floods can create is very well known worldwide. People affected will have to relocate to safer regions. Floods bring with them tremendous misery. Water borne disease will be widespread and very difficult to curtail. There will be water everywhere, but pure drinking water will not be available. Irrigated farmlands will drown and crops will be destroyed. Living in such areas will not be humanly possible. Draught

If floods can be caused by fast melting glaciers, how can draught too be a part of it. Yes, draught will be a reality in places with fast melting glaciers. Once these glaciers have completely melted the streams and rivers they

feed will run dry. People depending on these sources for all their fresh water needs will not have any source of freshwater (unless fresh groundwater is available). Entire villages will have to resettle elsewhere. Places that are abundant in the production of crops for their needs and also the needs of others will face famine. Food grains will be in short supply.

**Sea Level Rise** We are already witness to a sea level rise in the past century. This rise is of minor proportions, but if the sea continues to rise further it could have devastating effects. Persons living in low-lying areas on the seashore will be the first to be affected. Entire areas around the seashore will be flooded, making it compulsory for persons in close vicinity to relocate. All fresh groundwater in the surrounding areas will get contaminated with sea water which will be unfit for human consumption and for agriculture.

**Global Temperatures Will Rise Further**

Glaciers absorb approximately 20% heat from the sun, reflecting the remaining 80% back into space. When these glaciers melt and expose the earth below, exactly the opposite will take place. Earth will absorb 80% of heat and reflect back just 20% into space. This in turn will cause global temperatures to rise further. This increase in global temperature will help in melting the remaining glaciers faster. This is a very vicious circle that will continue.

**Animals, Birds, and Fish Will Be Affected** Many species of animals, birds, and fish that depend on the fresh melting waters of glaciers that empty into the sea will be affected.

Many fish in such areas depend for their food on the coral reefs that are in abundance. These coral reefs depend on sunlight for maintaining their



health. When sea levels rise, the sunlight that these corals receive will diminish. These coral reefs may deteriorate or even vanish. This will affect the fish that feed on it. Birds and animals that depend on these fish for survival will be affected due to a shortage of fish. Humans in such areas depending on these animals, birds, and fish for food will be affected. Who is Responsible for Vanishing Glaciers? We are. All of us are responsible for vanishing glaciers.

Almost everyone today believes that the prime cause of fast vanishing glaciers is global warming. The industrial revolution of the past century started it all, and it has just got worse with every passing year. Greenhouse gas emissions are at an all time high. We all contribute in some way to global warming. Only we can save the situation from getting any worse. We may not be able to reverse the situation, but by living in a responsible manner we may be able to drastically slow down the process of global warming. This may not help us much today, but it will surely have a positive effect on the generations to come.