



# PROJECT SUMMARY

The shocking pink flowers on the bush in front of my house have already reached their peak bloom. So, I took a look at photos from last year, which are dated May 15th. This makes the flowers a full three weeks early. At this point, no matter how cold I still thought this winter was, I cannot deny its warmth any longer. It makes me more and more curious about climate change.

It has become common knowledge that too many things we own are made directly or indirectly from trees. Either way, deforestation provides us with what we need. Usually when we think about deforestation and climate change, we think about cutting down tropical rainforests; we do not think about other forests. It is true that deforestation of rainforests leads to loss of transpiration, which is what keeps the humidity of our atmosphere. A decrease would lead to a drier atmosphere, and gradual global warming.

However, deforestation of boreal forests, or taiga, also causes climate change and should not be ignored. At first glance, boreal deforestation leads to global cooling because the loss of tree cover leads to increased albedo, or reflective power. This will cause the ground to reflect more sunlight, and thus the albedo of the landscape combined with snow causes cooler temperatures. This happens mainly in higher latitudes [3].

Longer-term effects of this are still debatable. When boreal forests are reforested by more broadleaf species due to global warming, the global cooling from albedo can be futile due to the transpiration of the new broadleaf species. Researchers have noticed a lack of reforestation in some parts the taiga and expansion of forests in other parts, so conclusions about boreal deforestation are hard to make [1].

Other findings show that boreal deforestation causes cooler temperatures in spring and a longer snow season, but leads to warmer summers. This is due to displacement of the cooling effect by warming from carbon dioxide. The warming may increase in these high latitudes, though changes in the biome still complicate conclusions about the future of boreal regions [2].

I chose to focus on this topic because my favorite week in this course was week 7, about the various biomes. My project is a graphical interpretation of boreal deforestation and the effects it can have on the climate. I have also been inspired by creative packaging in one of my other classes recently, which is why I am incorporating the theme of a tissue box in the design. Though my project is an illustration, I hope I can take it a step further in the future and make it an actual tissue box. Someone who uses it will think twice about wasting tissues when they see the box design.

# Bibliography

1. Gorte, Ross W., and Pervaze A. Sheikh. *Deforestation and Climate Change*. Diane Publishing Co., 2010.

This source gives a general overview on the three types of deforestation – boreal, temperate, and tropical. It explains that boreal trees are cut down to provide paper, timber, and other materials, and end up dying out from wildfires, only to be reforested later. It gives information on how recent findings show that contrary to predictions, there has not been widespread expansion of forests on the way north. It also offers possibilities on the global cooling and warming effects of albedo, directly and indirectly.

Based on this source, I illustrate exactly what happens to boreal forests – the trees are cut down for paper, materials, etc. and wildfires spread from the lowered humidity. I also put in the lone palm tree at the North Pole to represent reforestation. Though the book states boreal forests are usually reforested by aspen and birch, I exaggerate the idea for a more comical effect.

2. Millennium Ecosystem Assessment. *Ecosystems and Human Well-Being: Current State and Trends: Findings of the Condition and Trends Working Group*. Island Press, 2005.

This source gives some more specific information on the cooling of winters and warming of summers in boreal forests of high latitudes. It explains that this is due to transpiration and the important hydrological effect.

The idea for the palm tree came from this source, since tropical vegetation transpires a lot more than boreal vegetation does. It is another reason for my exaggeration of reforestation. Also, the idea of more snow in winter and warmer summer comes into play – I exaggerate on how the summers are warm enough for palm trees yet it is snowing in winter.

3. Shugart, H. H., and F. I. Woodward. *Global Change and Terrestrial Biosphere: Achievements and Challenges*. Wiley-Blackwell, 2011.

This source clearly states that boreal deforestation causes global cooling, and provides some statistics on how much the earth has cooled. It notes that the cooling is a lot slower of a process than global warming. This article made aware the boreal deforestation problem, but showed numbers that clearly indicated that the little global cooling does not do much good against the rapid global warming.

This is the first source I found and I am applying it to my main concept of how the little bit of cooling from boreal forests is helpless against the major problem of global warming.