Lab 12 Write Up

Global Sea Level Rise

Have you ever left a frozen bottle of water in the sun? The frozen water begins to liquefy, expand in the bottle, and condensate from the bottle. Imagine the whole earth expanding its frozen water and the whole earth is the bottle. The water begins to thaw from the ice caps and go into the ocean water, increasing the depth of the oceans. According to the National Oceanic and Atmospheric Administration (NOAA), "sea level has been rising at the rate of about 0.6 inches per decade since 1900" and "Since 1992...the rate of rise has increased to 1.2 inches per decade". This means the rate of sea level rise has doubled within the past 100 years and more than likely to increase with time.

Once ice begins to melt, more and more ice will begin to melt. Since the once frozen water is now a warmer temperature than the surrounding environment, it becomes easy for additional ice to melt. This is a postive feedback loop, which amplifies the intial change. Melting begots melting. (*National Geographic*. Stenzel, Maria)

Global sea level rise not only effects coastal areas or ocean life, but can impact the smallest of things. "Climate change impact assessments concerning agriculture, forests, water resources, and other noncoastal resources should also employ probability-based projections of regional

climate change." (James G. Titus). Climate change drives sea ice to melt, which drives sea level rise. Also, permafrost is melting and causing disruptions on land. Permafrost is solid, frozen soil or sediment and has not thawed in two or more years. Permafrost can be described as hard cement. Although cement never "thaws", but image all the hard, dry cement suddenly melting. Land would shift causing structures to slide and destroying the environment. This picture was taken in Shishmaref, Alaska, which displays the result of permafrost thaw in a localized area. (National Geographic). This house was displaced when the permafrost began to slowly thaw moving the sediment around and releasing carbon. "This carbon is released to the atmosphere in the form of methane, a powerful greenhouse gas." (Global Climate Change). As additional methane is released into the atmosphere, this creates a positive feedback, which amplifies the release of new methane gas. Methane is a key component in global warming, melting of sea ice, and decomposition of permafrost.

Although, less than two percent of Earth's water is locked in the polar ice caps, approximately seventy percent of Earth's freshwater is in these ice caps. (USGS). With the majority of freshwater in the ice caps, there is a fear of losing the world's freshwater within the next hundred years. When

freshwater makes it way into the ocean, the salty ocean water becomes less dense and does not have as much salinity. This can affect ocean life and cause disruptions throughout this environment. If humans could find a way to slow down ice caps from melting, permafrost thaw, and release of greenhouse gases that warm the atmosphere, the ice caps would be around much longer. With all these changes, we would also see a difference in sea level rise and not see islands or coasts slowly disappear.

## Works Cited

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