

CLIMATE CHANGE WATER AND ICE

Brooklynn Dowd's Logbook

DAY 1 - NOVEMBER 23, 2023

I am in Science Fair!

My topic?

- *Chemistry?*
- *Lava Lamps?*

DAY 2 - NOVEMBER 30, 2023

Got on the CYSF Platform

Still thinking on topic (see day 1)

DAY 3 - DECEMBER 1, 2023

Got lectured on Lava Lamps.

Topic decided!!! (Lava Lamps)

What I learned about Lava Lamps:

- The glow of a lava lamp is heat*
- The heat makes the bubbles float*
- Once the bubbles get too high the heat doesn't make them rise and they fall*
- The bubbles are heat bubbles*

DAY 4 - DECEMBER 4, 2023

Talked to my partner about what I learned! (See day 3)

DAY 5 - DECEMBER 7, 2023

Topic change!!!

New topic - Climate change

I changed my topic because I found more interest in a topic that would make a difference in the world

I am no longer working with a partner. I decided to work alone because my partner was no longer interested in participating in science fair

DAY 6 - DECEMBER 8, 2023

RESEARCH!!!

What I learned:

- *Greenhouse gasses trap heat*
- *Climate change is caused by fossil fuels, logging, motorized vehicles, landfills, offshore drilling, and fracking*

DAY 7 - DECEMBER 11, 2023

Another topic change!

New topic - Climate Change: Water and Fossil Fuels

I changed because Climate Change alone was way too broad of a topic.

DAY 8 - DECEMBER 13, 2023

Another Topic Change!!

New Topic - Climate Change: Water and Weather

I changed again because I did not enjoy the topic of fossil fuels. Also I liked that Water and Weather used alliteration

DAY 9 - DECEMBER 14, 2023

Another Topic Change!!

New Topic - Climate Change - Water and Ice

This was my final topic change. I settled on this topic because I looked at water and ice as “scientific cousins” and thought the effects would be interesting to compare.

REST OF DECEMBER 2023

Collected Research on the effects of Water and Ice:

In the Arctic and Antarctic glaciers are melting causing animals to flee their homes or die. It is not just a few animals that die, it be an entire species. That species could go extinct because of losing its home but that's not all. The species that preyed on that species could go extinct due to not getting to eat food. Then the next species up the food chain would go extinct and so on. The species the first animal preyed on would overpopulate. This is bad for plants because they would not be able to grow because they would be overeaten. In addition glaciers contain bubbles of CO₂ (Carbon Dioxide) which is also a contributor to climate change. This warms the air causing more glaciers to melt and more CO₂ to be released and more glaciers to melt and so on. This becomes an awful cycle.

Glaciers have always melted; however in the past they melted only enough to provide fresh drinking water, climate change has caused glaciers to melt more rapidly.

Sea ice is also slipping away or melting. Shockingly this doesn't make sea level rise but it does have other effects. Sea ice offers protection for the country's coastline. It lowers waves and winds making it an important part of Canada's water systems. Climate change is making the ice melt faster. This is bad because sea ice keeps the climate consistent. Sea ice has another special role. As naturally melting sea ice melts nutrients are released into the water. If all the ice melts the nutrients won't be released yearly.

Did you know that if the glaciers melted it would cause streams of water to flow into oceans and seas. Did you also know in the last 100 years sea/ocean level has risen 6-8 inches. You must be wondering what makes that bad? If the sea/ocean rises then there'll be less coastline and more risk of flooding and coastal property damage causing people to lose their homes and have to find new ones but not only will they lose their homes but most of their belongings will also be victims of the flood. Not only does this damage homes but it also damages the ecosystem causing it to erode which means wear away.

In addition the large bodies of water are heating. because of this coral reefs are bleaching which means coral reefs are losing colour and life causing the colorful fish that live and feed there also die! This happens because the zooxanthellae living inside the coral are no longer able to make their own food and the coral dies.

Heating oceans also allow more algae blooms to grow. This occurs more commonly in lakes which goes to show that all bodies of water are heating. Now back to algae blooms. They may sound pretty but they are not. When an algae dwelling body of water heats the algae grows more taking up part of that body of water, this is called an algae bloom. As these grow other plants die as well as the animals living there.

The water cycle is very important for life on earth to survive. Climate change is altering the water cycle making evaporation more common causing drought to be more common. Climate change is also making precipitation more common in other places. that much precipitation can cause flooding.

Climate change is also affecting winds and waves. Climate change is altering winds to have stronger patterns. Winds cause waves and if winds are stronger waves are stronger. This can damage fragile coastline and even areas near that coastline. This would not be good because people could lose their homes. Another bad thing would be if you're at the beach swimming you could get hurt by such a rapid wave or get carried away by a strong current.

Groundwater is an important source of drinking water and for 25% of Canadians that is all the water they have. Groundwater is useful for most water including things. Groundwater is found underground and can be found in different forms like an underground river or underground lake.

This water is usually found near the surface and can be refilled with rain and snow. Climate change is affecting groundwater in many different ways. First, changing precipitation patterns can lead to a water shortage but also put too much water in. Too much water can cause groundwater floods and also damage groundwater storage.

In coastal areas groundwater can be contaminated by salt water. This will happen if the sea level rises too much. If salt water gets into the groundwater it is no longer safe for drinking.

FIRST 17 DAYS OF JANUARY 2023

Climate change Information:

Climate change is also known as global warming and it occurs when our planet heats up. This is caused when greenhouse gasses like CO₂ (carbon dioxide) and CH₄ (methane) are emitted into the atmosphere. They then warm the atmosphere causing the earth to warm. This is known as the greenhouse effect.

Some things that cause climate change include burning fossil fuels. Some examples of things that do this include cars that run on gasoline. Having your car running for too long creates unnecessary greenhouse emissions. This has many negative effects on many different things such as plants and animals including humans.

Greenhouse Gas information:

The greenhouse gasses are gasses that heat our atmosphere. There are six of them: Carbon Dioxide, Methane, Ozone, Nitrous Oxide, Water Vapor and Chlorofluorocarbons.

Carbon Dioxide is created when we burn fossil fuels and when animals exhale.

Methane is created when cows burp or fart and also when fossil fuels are burned.

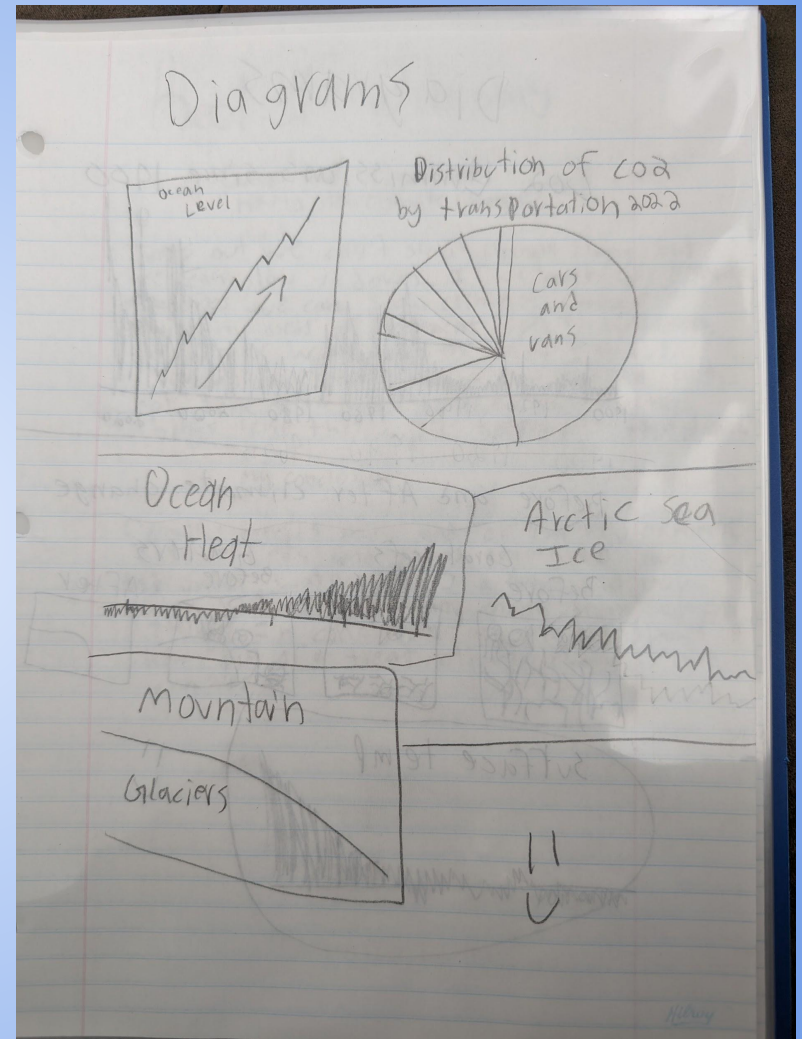
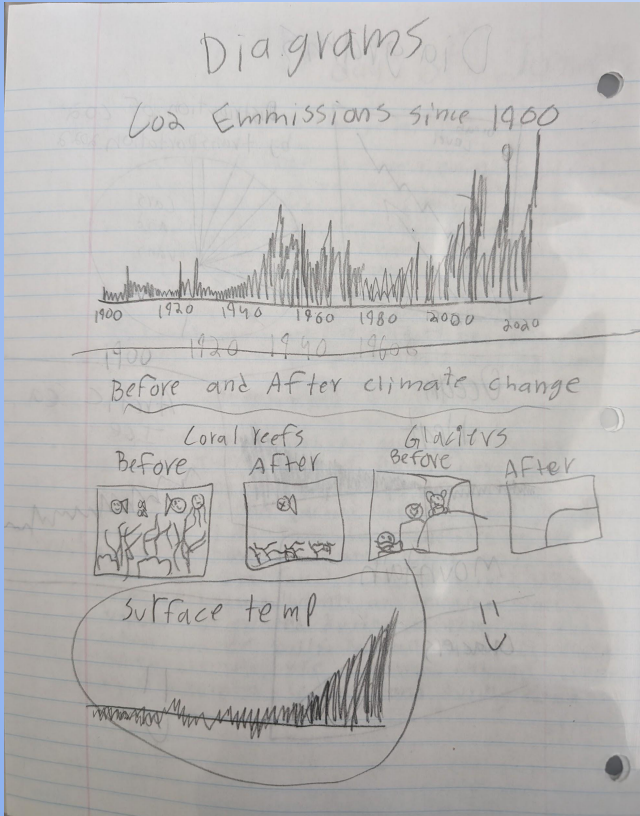
Ozone is created when pollutants are released.

Water Vapour is produced during evaporation and when water boils.

Nitrous oxide is produced when chemicals are created.

Chlorofluorocarbons are released by refrigerator leakage and/or during disposal.

DIAGRAMS



REST OF JANUARY 2023

Completed Citations

How to slow climate change (Below)

Turns out we can't stop climate change but we can slow it down. If we lower our greenhouse gas emissions we can slow climate change saving hundreds of different species. We can go electric with cars or take the bus. You can drive to school with a friend and not take extra trips to the store.

Doing things like this will lower carbon emissions and help save the planet.

My conclusion:

Climate change is very big and is bad for the environment. It affects and harms animals on land and in water. It is a threat to our water sources and many many many other things. In conclusion, my project shows how big of a threat climate change is and can be.

TRIFOLD - FEBRUARY 9,10,11


CLIMATE CHANGE

WATER

Oceans Rising

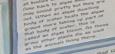


Did you know that in the western United States, the average rise in sea level is about 1 foot every 100 years? You must be wondering what causes that rise in the sea level?

Climate change is affecting the oceans in many different ways. One of the most important is sea level rise. This is caused by the melting of glaciers and ice sheets, and the expansion of seawater as it warms. The oceans are rising at a rate of about 3 millimeters per year. This is a small amount, but it is enough to cause problems for coastal areas. In some places, the sea level is rising so fast that it is already causing damage to buildings and infrastructure.





Warming Oceans

As the oceans warm, they expand. This causes sea level rise. The oceans are also becoming more acidic, which is bad for marine life. The warming of the oceans is also causing coral bleaching, which is when the coral loses its color and dies. This is a big problem for coral reefs, which are important ecosystems. The warming of the oceans is also causing the melting of glaciers and ice sheets, which is causing sea level rise.



Glaciers and Ice Sheets

Glaciers and ice sheets are melting, which is causing sea level rise. The melting of glaciers and ice sheets is also causing the oceans to become more acidic, which is bad for marine life. The melting of glaciers and ice sheets is also causing the oceans to warm, which is causing sea level rise.



What Can We Do

There are many things we can do to help reduce climate change. We can reduce our carbon footprint by driving less, using energy-efficient light bulbs, and recycling. We can also support renewable energy sources like wind and solar. We can also advocate for stronger climate change policies from our government.


Conclusion

Climate change is a real and urgent problem. It is affecting our lives in many ways, from rising sea levels to more extreme weather. We need to take action now to reduce our carbon footprint and support stronger climate change policies. We can all do our part to help protect our planet for the future.

ICE


Glaciers

Glaciers are melting, which is causing sea level rise. The melting of glaciers is also causing the oceans to become more acidic, which is bad for marine life. The melting of glaciers is also causing the oceans to warm, which is causing sea level rise.




Ice Sheets

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Sea Ice

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


TRIFOLD - FEBRUARY 9,10,11

WATER

Oceans Rising

Did you know that if the glaciers melted in south coast streams of water to flow into oceans and seas. Did you also know in the last 100 years sea level has risen 8-9 inches. You must be wondering what makes that sea? If the sea/ ocean rises then there'll be less coastline and more risk of flooding and coastal property damage causing people to lose their homes and have to find new ones but not only will they lose their homes but all of their belongings will also be victims of the flood. But only once the damage has been done it also damages the ecosystem causing it to evolve which means we as humans



Sea level rise from 1993 to 2010. The graph shows a steady upward trend from approximately 0.5 inches in 1993 to about 1.5 inches in 2010.


Climate Change is affecting lots of things in lots of places. Stay tuned to learn about the effects on water.

Water Cycle

The water cycle is very important for life on earth to survive. It starts with evaporation. This is when the heat of the sun causes air to form into a gas and float. From there condensation takes place. This is where the gas forms into a cloud. This precipitation then falls. Here the water falls to the ground. It is usually in the form of rain or snow. The final stage is collection. Here the rain or snow provides run off into a lake where the cycle starts over.

Climate change is affecting the water cycle making evaporation more common causing drought to be more common. Climate change is also making precipitation more common in other places that mean precipitation can cause flooding.

Sea Level Rise




Sea level rise is causing coastal erosion and flooding. This is a major threat to coastal communities and infrastructure.

Greenhouse Effect

Greenhouse is an important source of energy and it is all the water! They have greenhouse a great for most water including deep. Greenhouse is found underground and can be found in a process called an underground river. The water is usually found near the surface and can be used for many different uses. Some of the uses are: drinking water, irrigation, and power. The water is usually found near the surface and can be used for many different uses. Some of the uses are: drinking water, irrigation, and power.


Heating Ocean

In addition the large bodies of water are heating. Because of water's specific heat, it can store a lot of heat. This means that the oceans are heating up and this is causing the water to rise and flood. This is a major threat to coastal communities and infrastructure.



Heating the oceans is causing coral bleaching. This is a major threat to marine life and the ecosystem.

After



After the flooding, the water has receded, leaving behind mud and debris. This is a major threat to coastal communities and infrastructure.

CLIMATE CHANGE

What is Climate Change?

Climate change is a long-term change in the average weather conditions that we experience in our region. It is caused by the greenhouse effect, which is when the sun's rays hit the earth and are reflected back to the earth by the atmosphere. This causes the earth to heat up and the weather to change.

Causes of Climate Change

The main cause of climate change is the greenhouse effect. This is when the sun's rays hit the earth and are reflected back to the earth by the atmosphere. This causes the earth to heat up and the weather to change.

Effects of Climate Change

Climate change is causing a wide range of effects, including rising sea levels, more frequent and severe weather events, and changes in the timing and amount of precipitation. These effects are having a major impact on the environment and on human society.

What Can We Do?

There are many things we can do to help reduce climate change. Some of the most important things we can do are to reduce our energy consumption, to use public transportation, and to recycle. We can also plant trees and other vegetation, which can help absorb carbon dioxide from the atmosphere.

Conclusion

Climate change is a real and present danger. It is causing a wide range of effects, including rising sea levels, more frequent and severe weather events, and changes in the timing and amount of precipitation. These effects are having a major impact on the environment and on human society. We need to take action now to reduce our greenhouse gas emissions and to adapt to the changes that are already occurring.

GLACIERS

Glaciers

Glaciers are massive bodies of ice that have formed over time. They are found in many parts of the world, including the Arctic and Antarctic regions. Glaciers are important for the environment because they store a large amount of fresh water. They also play a role in the water cycle and in the regulation of the earth's climate.

Glaciers are melting

Glaciers are melting at an alarming rate. This is due to the warming of the earth's atmosphere. As the glaciers melt, they release a large amount of fresh water into the oceans. This is causing sea level rise, which is a major threat to coastal communities and infrastructure.


Glaciers are important

Glaciers are important for the environment because they store a large amount of fresh water. They also play a role in the water cycle and in the regulation of the earth's climate. As the glaciers melt, they release a large amount of fresh water into the oceans, which is causing sea level rise.

Sea Level Rise

Sea level rise is a major threat to coastal communities and infrastructure. It is caused by the melting of glaciers and the thermal expansion of the oceans. Sea level rise is causing flooding and erosion, which is a major threat to coastal communities and infrastructure.

Before and After



The 'Before' photo shows a large glacier extending to the edge of the land. The 'After' photo shows the glacier has retreated significantly, leaving behind a large body of water and a new shoreline.

TRIFOLD - FEBRUARY 9,10,11



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TRIFOLD - FEBRUARY 9,10,11

BEFORE



AFTER

