



THE GLOBE PROGRAM
A Worldwide Science and Education Program

DIRTY SNOW IN SHISHMAREF

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ABSTRACT

This project took place in Shishmaref, Alaska. We did this project from February to March 2021. We collected the snow and filtered it to find out: How dirty is the snow? Which site is the dirtiest?

We were taught how to do this project by Christi Buffington and Carl Schmitt. We had Zoom classes with other scientists and citizen scientists, students like us.

We learned that the West Runway site was the dirtiest out of five sites. The snow is dirty, but which site is dirtiest? It's important to know because the snow becomes our drinking water here in Shishmaref.

RESEARCH QUESTIONS

How dirty is the snow? Which site is the dirtiest? Why is it dirty? Why did we do this project? Which site is the cleanest?



WATER SOURCE INTRODUCTION

The snow provides us water for Shishmaref. It feeds the plants and berries for cooking. We use the water for surviving life. We need it for the plants. We have a water source because we don't have running water and fresh water sources like a lake or river.

RUNWAY



BIBLIOGRAPHY

Buffington, C., Schmitt, C. and Sparrow, E. (2021). Dirty Snow Pilot Project Data Sheet. University of Alaska Fairbanks.

GLOBE. (2014). Solid Precipitation Protocol.

Qian, Y., and Coauthors. (2015). Light-absorbing particles in snow and ice: Measurement and modeling of climatic and hydrological impact.

RESEARCH METHODS

We used the GLOBE Cloud Observer from NASA to tell what clouds we had while collecting the samples. We used white and grey tiles in the pictures to see what color the snow was.

To collect the snow samples, we used snow collection protocols given to us by Christi Buffington and Carl Schmitt. We measured snow depth three places at each site, then collected snow from a 30 cm by 30 cm square. We took 0-3 cm in depth for the surface sample and for subsurface, 3-10 cm in depth. We tested five sites: North, East and West of Runway, and East and West of our water source.



Shishmaref

CONCLUSIONS

This study was important and it was fun collecting the samples. Our snow is dirty and it is important to keep on studying the snow to see if it'll get dirtier or cleaner. This research should continue and check if the snow depth regularly because the snow might blow away and take the dirtiness with it. Having a project mentor helped us a lot with our work and it felt great.

RESULTS & DISCUSSION

The results show that the West Runway was the dirtiest, 32.6 ug/L on filter, while the water source is the cleanest, .0959 ug/L on filter.

The results support our hypothesis that the dirtiest and most disturbed site was the Runway and the least disturbed, and cleanest was the Water Source.

Dirty Snow Sampling and Processing Data Sheet
Date: Feb 22, 2021
Location: West Runway
Observer: [Name]
Sample 1: [Data]
Sample 2: [Data]
Sample 3: [Data]
Total Volume of Melted & Filtered Snow: [Data]
Filter Volume: [Data]
Filter Volume of Melted & Filtered Snow: [Data]
Filter Volume of Melted & Filtered Snow: [Data]

WEST RUNWAY

Atmosphere Investigation Integrated 1-Day Data Sheet
Date: Feb 22, 2021
Location: East Fence
Observer: [Name]
Sample 1: [Data]
Sample 2: [Data]
Sample 3: [Data]
Total Volume of Melted & Filtered Snow: [Data]
Filter Volume: [Data]
Filter Volume of Melted & Filtered Snow: [Data]
Filter Volume of Melted & Filtered Snow: [Data]

EAST FENCE



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