

Predicting Cloud Cover Using Daily Insolation Graphs.

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Abstract

This study is about solar insolation and cloud cover. Insolation is the shortwave solar radiation that is received in the Earth's atmosphere or at its surface. The hypothesis is that cloud cover can be predicted from the daily insolation graphs. We found days when we had collected both insolation and cloud data and we made graphs of the insolation for those days. Our hypothesis was not supported by the data. With more time and data we still think we could still support this hypothesis.

Problem Statement

We collected atmosphere data for our school last year and Mrs. Panec selected us and encouraged us to do this project. We want to know if it is possible to determine the cloud cover for a day based on the insolation graph for that day. If this is possible, then scientists will be able to use pyronometer data to keep track of clouds. Our hypothesis is that cloud cover can be predicted from the daily insolation graphs.

References & Acknowledgments

The GLOBE Teachers Guide. 2005. GLOBE Atmosphere Protocols.

Dr. Michael Pidwirny. University of British Columbia Okanagan. PhysicalGeography.net.

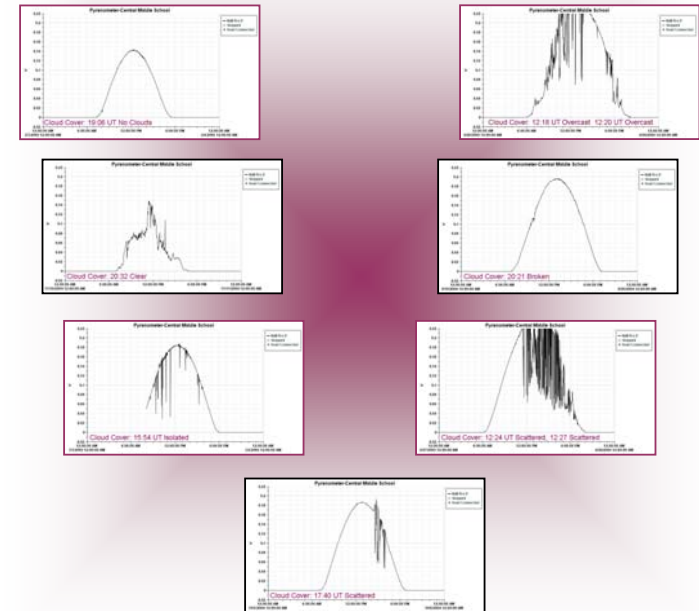
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Procedures

1. Last year, we collected atmosphere data at Central Middle School using the GLOBE Atmosphere Protocols. Central school also had a **pyronometer** on the roof automatically collecting data.
2. We met and discussed our data. We selected our topic based on the suggestion of Dr. Brooks because we knew he would be interested in the results and we were interested too.
3. We developed our hypothesis.
4. We searched through the Central Middle School data and matched up data for days with both pyronometer and cloud cover data.
5. We made daily insolation graphs for each day that had both types of data. We added the cloud cover and time the cloud cover was collected (in UT) to each graph.
6. We arranged the graphs in cloud cover order from no clouds to overcast.
7. We compared the graphs and looked for a pattern. A smaller bell shape to the graph on cloudier days would support our hypothesis.
8. We developed our conclusions.



Results



Conclusions

Our hypothesis was not supported by the data. We would like to be able to repeat the experiment with more data and have more time to process our data. After we analyzed our data we found out that we should have converted the graphs to physical units of Watts per meter squared. We also found that the season had a huge affect on the insolation values. If we repeated the project we would find a way to control for the season.

It would be helpful to have a time-lapse camera on the roof take cloud data multiple times a day (at least once an hour).