The research we conducted was an evaluation into the use and benefit of using the Geostationary Operational Environmental Satellite system (GOES) in predicting weather in a certain geographic area over a period of five days. Our research showed that using the satellite with local weather data offers an accurate forecast for the outlined area of focus.

### Research Question

- How do GOES satellite help predict the weather in the upper Mississippi Valley?

### Research Methods

The region we chose to study was Upper Mississippi Valley. We chose this region because we thought it was a region with varying climate that also experienced extreme weather in the months that we researched the region. It was occasionally cold and we thought there would be a possibility for blizzards and winter storms. We chose to specifically focus on extreme weather data for Minneapolis Minnesota. As instructed by our teacher Mrs. Lock, we collected weather data over a five-day period from the local GOES station, WCCO.

The following factors were recorded:

- Temperature
- Humidity
- Precipitation
- Fronts
- Dew Point
- Air Masses

Once the data was collected, it was organized into the following chart for analysis. A comparison amongst the data was done and the research team chose to focus on the two days on which the weather was the most dramatic:

- Each day, data was collected, the research team looked at and collected images of the Upper Mississippi Valley from the Geostationary Operational Environmental Satellite (GOES).
- A team was chosen to use GOES weather bands four, five, six, and nine. Each band was chosen for a specific purpose. Band four was chosen because it shows cloud cover. This is important because it helps us identify the types of clouds in the area and determine the visibility. Band five was chosen because it shows cloud cover. This band was chosen because it shows the speed of cloud development. The upper Mississippi valley often experiences fast pressure systems as thick clouds are common. It is important to record how quickly clouds condense and form to identify when a larger or more powerful storm is building towards the region. The last band, band nine, shown mid-level wind speed in the mid to upper troposphere. This band is commonly used by forecasting and can help predict severe weather events in the area, such as tornadoes. Satellite data is extremely important in weather forecasting as it gives real-time information about weather in a specific area or weather systems approaching the area.

### Results

#### Minneapolis, MN Temperature

- Temperature
- Humidity
- Precipitation
- Dew Point
- Air Masses

#### Upper Mississippi Valley

- City: Minneapolis

### References


The Geostationary Operational Environmental Satellite (GOES) is currently in operation. They are North and South America. The GOES is sponsored by National Oceanic and Atmospheric Administration (NOAA). This satellite helps with weather events across the area and helps meteorologists research and forecast weather.