Aurora from the Suomi NPP

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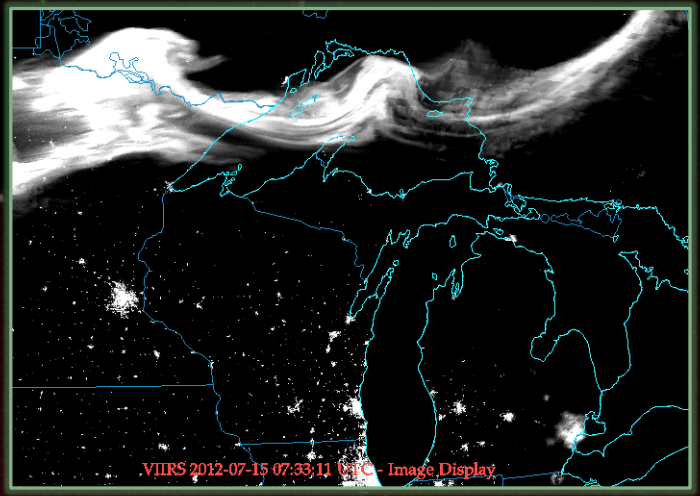
Overview

- The VIIRS instrument onboard the Suomi NPP satellite is able to observe an aurora. The primary goal of this project is to develop an algorithm to detect aurora regions using VIIRS observations.

Methods

- This project utilizes three bands on the VIIRS instrument onboard the Suomi polar-orbiting satellite.
- The 0.7 µm Day/Night band is able to observe the aurora phenomenon along with both high and low clouds.
- The 11.45 µm IR band can detect high cloud features, but is unable to "see" the aurora signature.
- The 11-3.7 µm band, or "fog/stratus product," can detect low clouds and fog but is also unable to "see" the aurora.
- Using the difference between these bands, the aurora signature can be isolated.



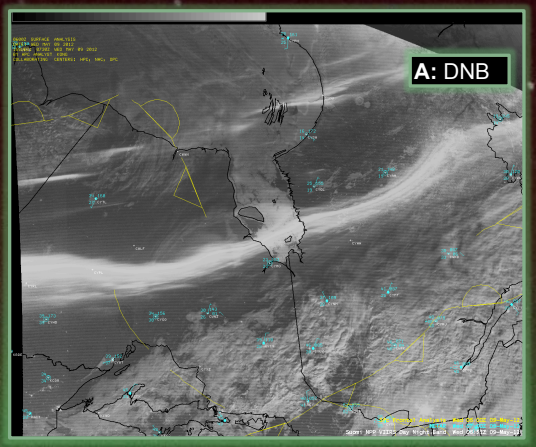
View of the Aurora Borealis using the Day/Night Band on Suomi's VIIRS instrument. From 15 July 2012 7:33 UTC. On this clear night, only the light signatures from the cities and the aurora are shown.

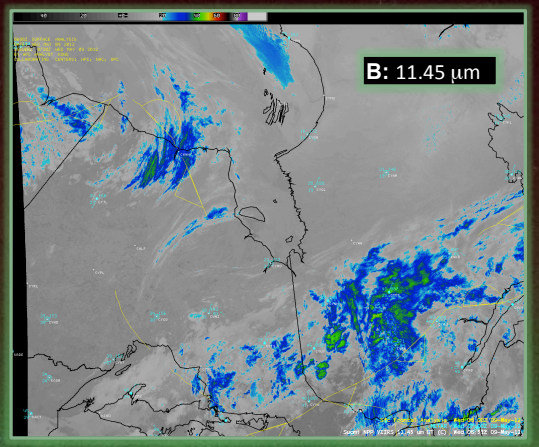
Project Progress

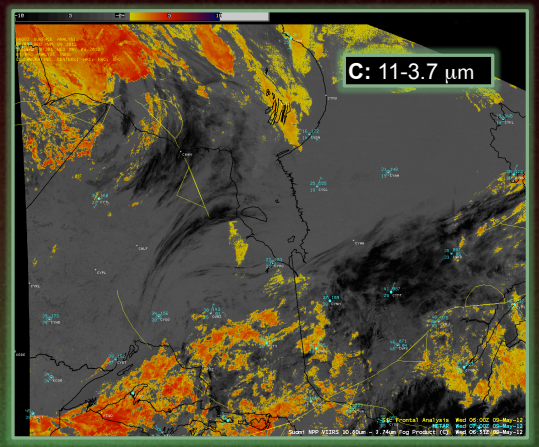
- Analyzed numerous cases and locations where the aurora occurred
- Utilized McIDAS V software to interpret data from the Suomi NPP satellite

Project Future

- Develop computer algorithm to digitally detect the aurora using the VIIRS data
- Test the algorithm using VIIRS observations from numerous aurora cases
- Compare algorithm results to other NOAA observations







A: Day/Night Band view of the Aurora Borealis over Ontario and Quebec on 9 May 2012. The linear signature of the aurora can be seen along with some cloud features to the south of it.
B: Color enhanced 11.45 micron IR band view of the high cloud features for the same time. Notice that the aurora is not visible in this image.
C: Fog/stratus product view of the low clouds and fog features for the same time. The aurora is not visible in this image either.

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