Glacier & Denali Space Weather



Project Synopsis

Park visitors come to Glacier and Denali National Parks at specific times throughout the year to view the aurora borealis. The National Park Service is interested in new ways to inform park visitors about the characteristics of aurora and evaluate current predictions of aurora occurrences at Glacier and Denali National Park. By collecting data from multiple prediction models and cross-referencing them with Earth observation data, the project provides valuable insight for anyone looking to optimize their aurora viewing experience.

Project Partners

National Park Service, Glacier National Park

National Park Service, Natural Sounds and Night Skies Division

Objectives



Results





Aurora at Glacier National Park by Month from AuroraSaurus



OVATION Prime vs Suomi NPP VIIRS



- Validate current aurora prediction methods
- **Explore** new ways to predict aurora occurrences
- Create educational tools and provide guidance to the National Park Service to better inform park visitors

Study Area & Period

- ▶ December 2019 May 2024
- Start of Solar Cycle 25 solar maximum in 2025
- Understand the aurora predictability at designated National Parks





Total

202

842

1044





Conclusions

- The National Park Service can use the AE index over the Kp index (current practice) to predict aurora in the short term at midnight local time for both Glacier and Denali National Parks.
- OVATION Prime is valid by the Russell-McPherron Effect, which says aurora occurs most often during the spring and fall seasons. The NPS can continue to use OVATION Prime as a prediction model, as well as expect more park visitors during these times of year.
- The VIIRS Day/Night Band identifies aurora more accurately from space at park locations in polar regions (i.e., Denali, not Glacier). Over Denali National Park, aurora as seen through VIIRS lines up with the current prediction model (OVATION Prime) 82.5% of the time.

Methodology



Earth Observation



DEVEL@P

SUOMI-NPP VIIRS

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