



Space Weather Information and Aurora Chasers



Tanya Melnik^{1,2,*}, Christian Harris, MaryBeth Kiczenski¹,
Tony Williams³, Vincent Ledvina⁴

¹Millersville University, ²University of Minnesota, ³Auburn University, ⁴University of Alaska Fairbanks

* Corresponding author: solov003@umn.edu



Introduction

Public interest in space weather is growing with recent geomagnetic storms. A knowledge gap exists between operational space weather communication and non-industry stakeholders

- Mass media and social media have covered solar events and space weather forecasts with varying accuracy
- Forecasts are used by aurora chasers: members of the public who spend significant time and resources viewing and/or photographing aurora
- The scientific community and public have different needs with regard to communication of forecast uncertainties



October 10, 2024 G4 Forecast. Image: NOAA

Methodology

We created a Qualtrics survey to be distributed to aurora chasing groups via Facebook

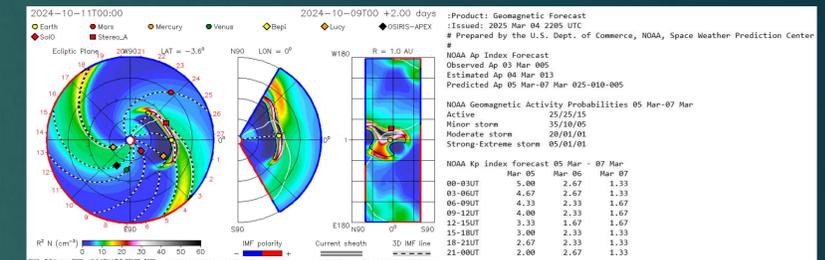
- Wide distribution of the survey is planned to target aurora chasers across a broad range of latitudes in both hemispheres
- Survey reminders will be posted following significant events that often generate additional traffic in aurora chasing groups
- Survey of the aurora chasing community will allow to capture a full range of data use and communication preferences within aurora chasing community
- IRB approval pending



Aurora forecasts in news media. Images: ABC News

Aurora chasing groups on Facebook (sampled on 3/7/25)

Facebook Group	Region	Membership
Northern Light Alert	Global	1.4 million
Aurora Borealis	Global	338.3 thousand
Aurora Australis Tasmania	Australia, New Zealand	334 thousand
Alberta Aurora Chasers	Canada: Alberta	286 thousand
Michigan Aurora Chasers	USA: MI	127 thousand
Aurora Borealis Washington State	USA: WA	101 thousand
Aurora Hunters UK and Iceland	UK, Iceland	64.8 thousand



Space weather data products: NASA M2M, NOAA SWPC

Study Goals

Our survey is designed to assess space weather communication preferences among non-scientist stakeholders

- Project is designed and will be carried out by an independent, grassroots, volunteer effort led by the members of the aurora chasing community
- Current patterns of space weather data and forecast use for decision support will define the needs of aurora chasers as non-industry consumers
- Preferences for the way forecast uncertainty is communicated will be evaluated
- Survey design was guided by both space weather professionals and aurora chasers

Conclusion

Aurora chasers are non-industry stakeholders in space weather forecasting and have unique communication needs

- Our work is one step in identifying space weather data use and communication preferences in the aurora chasing community
- Survey data will have several important applications:
 - It can lead to development of communication strategies for non-industry users of space weather data
 - It will identify opportunities for further research into public perceptions of space weather information

Future Plans

Our work will expand the knowledge of space weather data use in non-industry consumers of space weather data

- Previous survey of a single aurora chasing group identified preferences for specific space weather information (manuscript in progress)
- Planned survey will determine broader data preference patterns and knowledge gaps in aurora chasers.
- Survey will evaluate the impact of latitude, experience, and perceived knowledge of space weather on their decision making process
- We plan to publish our findings to share them with the professional space weather community, as well as the general public