

SEMINAR NOTICE

*Department of Physics and Engineering Physics
University of Saskatchewan*

- SPEAKER:** Dr. Daniel Billett, Candidate for Faculty Position
Postdoctoral Fellow, Institute of Space and Atmospheric Studies
University of Saskatchewan
- TOPIC:** A spaceship, a weather station, and an ice barge walk into a bar: The SuperDARN mission as an Earth Observer
- DATE:** **Thursday, March 27, 2025**
- TIME:** 3:30-4:30 p.m.
- PLACE:** Rm. 103, Physics Building

ABSTRACT: For three decades, the Super Dual Auroral Radar Network (SuperDARN) has revolutionised research into space weather and its impacts on the Earth's electrically charged upper atmosphere, the ionosphere. Compared to the relatively small footprint of satellites, the radars' global coverage allows for a large-scale and unmoving view of ionospheric circulation patterns that directly measure solar wind-atmosphere coupling processes. These processes are directly related to phenomena like the aurora and radio blackouts. SuperDARN radars, however, can tackle diverse science questions which go beyond their original intent as space weather monitoring instruments. SuperDARN radars are Earth observers.

In this seminar, I will present my research on SuperDARN's contributions to space weather and atmospheric dynamics research. These fields are intrinsically linked, as electromagnetic energy from the solar wind is continuously (and sometimes dramatically) deposited into the upper atmosphere through interactions between the ionosphere and the neutral air. I will highlight how recent technological advancements to the SuperDARN Canada radars, operated by the University of Saskatchewan, have ushered in a new era of research exploring space weather-atmosphere connections. Finally, I will share my vision for SuperDARN Canada and the global network, focusing on how the radars will play an essential role in upcoming projects from NASA, ESA, and others. I will also introduce an innovative new project named CryoDARN, which will enable SuperDARN Canada radars to map out sea ice extent in northern Canadian waters.

Coffee and Donuts will be served in the Physics lounge at 3:00 pm. for those attending the seminar.