

EXPLORATION IDEA PROFILE: Geomagnetic Storm Detection with Smartphone Technology

EXPLORATION IDEA

Magnetic storms drive aurora and are an indication of space weather events. This project attempts to validate smartphone magnetometer sensors to determine whether they are sensitive enough to detect geomagnetic storms that produce dramatic auroral displays in the Northern Hemisphere.

TARGET AUDIENCE(S)

This is both a Citizen Explorer and a Citizen Science project—the former if the sensor data is of low-quality for scientific purposes, and the latter if it is of high-enough quality. It can be used under classroom conditions to teach about Earth’s magnetic field and basic statistics.

POTENTIAL IMPACT

This project, if successful, can be partnered with on-going Citizen Science projects, such as Aurorasaurus, to provide a second-dimension to crowd-sourcing auroral studies. It can also be used to provide hands-on and real-world science experiences for participants in formal education where data-taking and analysis skills would be reinforced with a novel application of simple and ubiquitous smartphone technology.



RELATED IDEAS/INNOVATIONS

- Develop a mobile interface for Android and iPhone cell phones.

MATERIALS/EQUIPMENT

- Various smartphone models to establish detection thresholds across popular platforms and apps.

EXPLORATION IDEA TEAM

- **Team Lead:** Dr. Sten Odenwald (NSSEC)
- **Affiliated Contributors:** Dr. Elizabeth MacDonald (Aurorasaurus), Dr. Manoj Nair (NOAA, CrowdMag)
- **Team Members:** Crowdsourced population of individuals and schools

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Exploration Idea Profiles are developed through a guided process involving a step-by-step guide/worksheet where participants are invited to consider additional topics that include:

- Connections to other technologies
- Connections to existing information/research
- Connections to educational standards
- Connections to existing activities/projects
- Universal design
- Next steps

HOW TO CONNECT

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