Goddard Space Flight Center 2009 Sample Student Projects

Required Academic Level

Freshman/Sophomore
Undergraduate, Junior/Senior
Undergraduate, Graduate/Masters

Category

Space Science

Subcategory

Heliophysics

Project Title

Determination of Extreme States of the Magnetosphere

Project Description

The goal of the project is to determine the driver (due to solar wind and interplanetary magnetic field) and response (due to geomagnetic activities) conditions that are characteristics of different phases of extreme geomagnetic storms in the magnetosphere. The student will (1) learn about different magnetospheric driver and response parameters,(2) download time-series data of those parameters, and (3) perform cluster and/or time-series analysis to determine the parameter clusters that may be characteristics of different phases of extreme storms. Student may choose to write his/her own analysis programs or use commercial software packages (e.g., Mathematica), as appropriate.

Mentor's Expectation of Student

To be successful, interns must want to learn and be able to work independently and self-motivated. Intern must document all project-related work and products.

Discipline of Project and/or Background Needed to successfuly complete the project

Databases; Analysis; Statistics; Astronomy; Physics; Heliophysics

Skills

Critical Writing, Listening/Note Taking, Oral/Presentation, Analysis, Research, Teamwork, Technical Writing, Macintosh, Windows, Excel, Word, Powerpoint, C, C++, FORTRAN, Java, IDL, Mathematica