1   Introduction to Space Sciences

Reading

"A Brief History of Solar-Terrestrial Physics," by C. T. Russell
"Bracing for a Solar Superstorm," by Odenwald and Green
"The Exploration of the Earth's Magnetosphere," by David Stern, sections 1, 2, 3, 16

Problems

1. Answer Problem 1.2 at the end of Russell.

2. Calculate the same travel times for light.

3. Using Figure 1.3 in Russell, calculate the period of the sunspot cycle to 4 significant digit.

4. (a) What are the names of the four layers of the atmosphere? (b) What are their altitudes? (c) Why is the atmosphere divided in this way?

5. Calculate the circumference of the auroral oval during a typical magnetic storm.

6. From what distance (on the curved surface of the Earth) can you see an aurora if it is at an altitude of 100 km?

Report

Choose one of the superstorms listed in the article by Odenwald and Green. Write a 1-2 page report (typed, double-spaced) describing the effects of that storm on Earth systems and humans. You'll have to do some research, either online or in the ERAU library.

Due Dates

- Fri 7/2 — Problems 1, 2

- Tue 7/6 — Problems 3, 4

- Wed 7/7 — Problems 5, 6

- Tue 7/13 — Report