



UPPSALA
UNIVERSITET

Department of Physics
and Astronomy

Anders.Eriksson@ifu.se

018-4715945
0701-713029

Space Physics I HAND-IN PROBLEM

2011-10-12

Space weather

Compare the space weather situations on your birthday in 2002 to your most recent birthday (2010 or 2011)! Look at

<http://www.spaceweather.com>

and use the "archives" column at the right of the page (be sure to click the "view" button after giving the date!). If there is any problem with the data for exactly your birthday in any of the two years, pick some other date for which you find useful data for both years. You will then find the actual space weather data in the left column of the page.

Answer **all** the following questions, including the "why/why not" pieces, and add your own comments and reflections. Hand-in by **10:00 in Thursday, October 20**. We will discuss the results in the last problem session (Fri 21 Oct).

1. What is your date of birth?
2. What was the sunspot number on your birthday in 2002 and 2010/11?
3. Is it meaningful to compare the 2002 and 2010/11 values? Why/why not? Is the difference an expected result? If so, why? If not, what would you have expected?
4. Why is the sunspot number of interest for space weather?
5. Solar wind speed and density are given for some particular time during the day (not daily averages). What values are given for your dates? Is it meaningful to compare the 2002 and 2010/11 values? Why/why not?
6. What was the total magnitude and the z component of the interplanetary magnetic field on your 2002 and 2010/11 birthdays? Which of these two quantities is of most interest for space weather studies? Why? Is any of your two birthdays more likely to have seen space weather perturbations in the magnetosphere?
7. Why does the page have a picture titled "Coronal holes"? Why are they of interest? Were there any interesting (from a space weather perspective) coronal holes for your birthdays in 2002 or 2010/11?
8. At the bottom of the left column, you find a forecast for solar flare activity, based on analysis of SOHO images of the sun, and close to the top you find values what the largest flares were in the last 24 hours. Why are flares of interest? Was there any flares on your birthdays in 2002 and 2010/11? How did the flares actually seen (top of column) compare to what was forecasted the day before (i.e., June 19 if your birthday is June 20)? Was the forecast succesful?
9. Did you note anything else of space weather interest going on on your birthdays in 2002 and 2010/11, from this web page or elsewhere?