

Embedding Educational Material into iSWA & Embedding iSWA into Educational Material

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iSWA and Education

- Background
- Motivations
- Results (thus far)
 - Just in Time Teaching
 - Guide Development
- Where to go with this?



ASEN-5335: Aerospace Environments

Aerospace Engineering Sciences Department

University of Colorado

We examine the various components of the solar-terrestrial system, and the interactions between them, to provide a solid understanding of the re-entry and orbital environments within which aerospace vehicles operate.*

Objectives of the course are to provide:

- (1) an understanding of the general properties and characteristics of the geospace environment, and other planetary environments, including underlying physical mechanisms;
- (2) exposure to and practical experience with existing computer codes and algorithms that provide numerical estimates of various environmental parameters; and
- (3) an introduction to environmental hazards in space to humans and equipment: particles and radiation, impact phenomena, spacecraft charging, orbital debris, aerodynamic drag, oxygen corrosion of surfaces, etc.

****A lot of self-initiated learning will be involved in this course, especially through the homework, which is intended to be challenging and will contain quantitative, analytic and computational components.***



Students

- 35 + students in survey Graduate Course in Space Environment
 - ENGINEERS
 - 1/3 are “distance” students
 - Mix of 1st yr -3rd yr grad students MS and PhD
- Students have
 - Limited background in relevant physics
 - Little familiarity with the terminology
 - Not a lot of time to absorb either of the above
- How to productively “engage” this population?
 - Get them involved with data ASAP
 - Active Learning with NOAA SWPC and NASA CCMC data

[Just in Time Teaching](#)



Results

- Dealing with
 - Space environment terminology
 - Data displays
 - And the “trees that prevent viewing the forest”
- Examples

[NOAA SWPC HOMEPAGE GUIDE.docx](#)

[NOAA SWPC Solar Xrays.docx](#)

[NOAA GOES Energetic Protons.docx](#)

[Homework 1 ASEN5335 S12.doc](#)

[ISWA Ed Nug draft.docx](#)



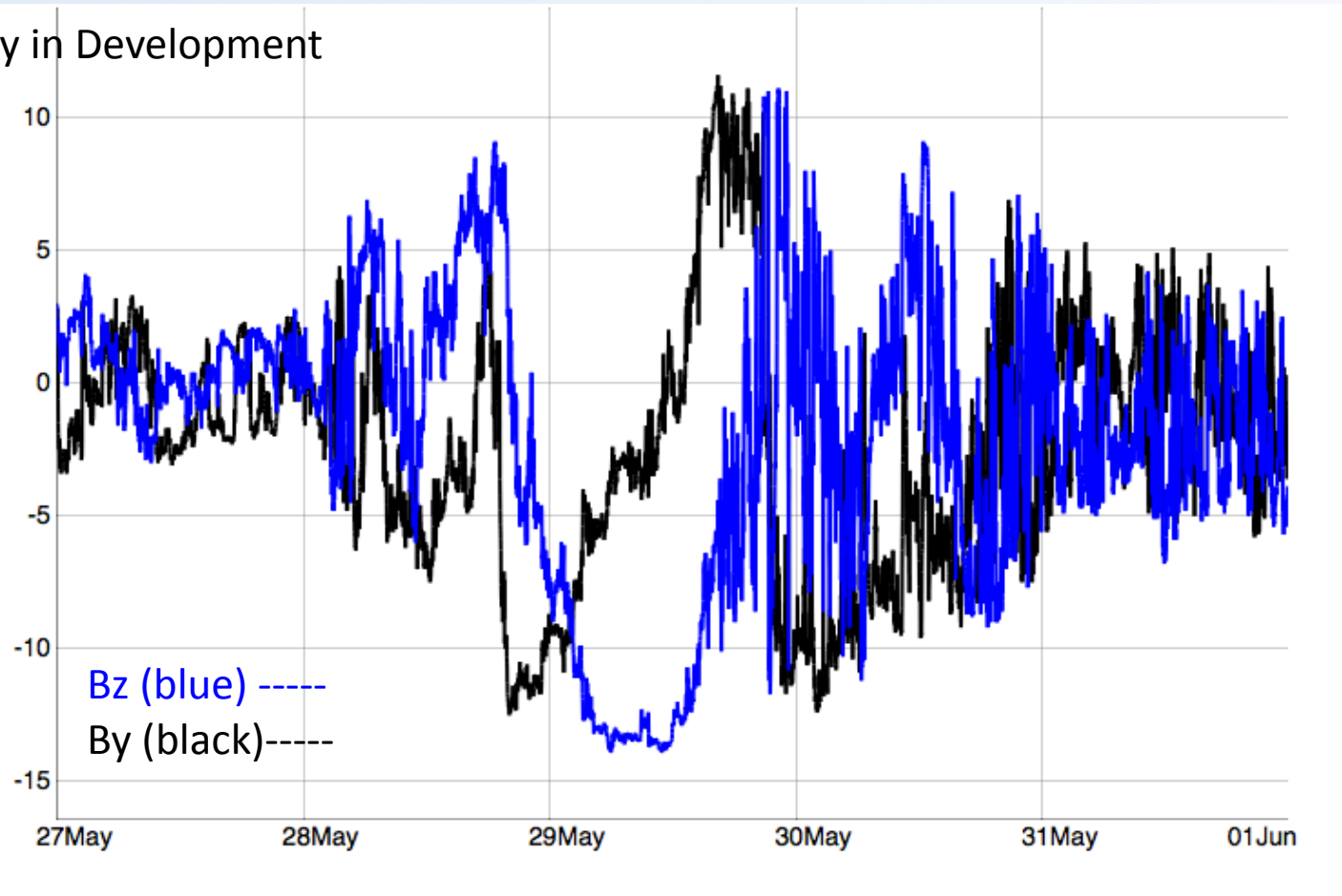
The Future?

- Harvesting NSF Educational Investment
 - Just In Time Teaching Applied to Space Environment
 - Some Development of General Question Data Base
 - Case Study Development could fit in this venue
 - Developing “Guides” to NOAA SWPC Homepage for student consumption
 - Similar, but broader effort could benefit CCMC



Coronal Mass Ejection/Magnetic Cloud (and other structures?)

Case Study in Development



iSWA timeline cygnet