

# Textbook series on "Heliophysics"

*Edited by Karel Schrijver and George Siscoe.*

These books resulted from three successive summer schools (ongoing for at least another 3-year series, being taught from these books; where soon problem sets will be available to complement the material in the textbooks). The Heliophysics books aim at the advanced undergraduate and starting graduate-level students, taking the perspective of heliophysics as a single intellectual discipline. The books touch on most branches of heliophysics, with particular emphasis on universal processes and on the multi-disciplinary character of many of its diverse range of specialties.

The three books are subtitled '*Plasma physics of the local cosmos*', '*Space storms and radiation: causes and effects*', and '*Evolving solar activity and the climates of space and Earth*'.

**Online supporting materials including the problem sets and solutions,  
will be available on this website towards the end of 2011.**

## Why Textbooks?

The sub-disciplines within Heliophysics have a rich variety of available textbooks, but no textbooks have existed until now that present the diverse materials from their common physical principles, and help teachers well-versed in one discipline to teach the directly related areas within other disciplines.

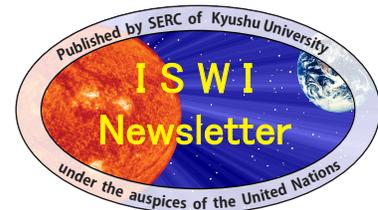
## Heliophysics I:

*"Plasma physics of the local cosmos"*

[Cambridge Press: Hardback \(ISBN-13: 9780521110617\)](#)  
[Published August 2009](#)

[Cambridge Press: Paperback \(ISBN: 9781107403222\)](#)  
[Published August 2011](#)

- 1) Prologue
- 2) Introduction to heliophysics
- 3) Creation and destruction of magnetic field
- 4) Magnetic field topology
- 5) Magnetic reconnection



This pdf circulated in  
Volume 3, Number 107,  
on 20 Dec 2011.

- 6) Structures of the magnetic field
- 7) Turbulence in space plasmas
- 8) The solar atmosphere
- 9) Stellar winds and magnetic fields
- 10) Fundamentals of planetary magnetospheres
- 11) Solar-wind magnetosphere coupling: an MHD perspective
- 12) On the ionosphere and chromosphere
- 13) Comparative planetary environments

**On-line Appendices [under development]:**

- 1) Data archives, modeling sites, space weather forecasts
  - 2) Descriptions on packages for numerical modeling
  - 3) Problem sets
  - 4) [Collected textbook figures](#)
- 

**Order Today!**

## **Heliophysics II:**

*"Space storms and radiation: causes and effects"*

[Cambridge Press: Hardback \(ISBN-13: 9780521760515\)](#)  
[Published May 2010](#)

[Cambridge Press: Adobe eBook Reader \(ISBN: 9780511730955\)](#)

***Published May 2010***

- 1) Perspective on heliophysics
- 2) Introduction: space storms and radiation
- 3) In situ detection of energetic particles
- 4) Radiative signatures of energetic particles
- 5) Observations of solar and stellar eruptions, flares, and jets
- 6) Models of coronal mass ejections and flares
- 7) Shocks in heliophysics
- 8) Particle acceleration in shocks
- 9) Energetic particle transport
- 10) Energy conversion in planetary magnetospheres
- 11) Energization of trapped particles
- 12) Flares, CMEs, and atmospheric responses
- 13) Energetic particles and manned spaceflight
- 14) Energetic particles and technology

**On-line Appendices [under development]:**

- 1) Data archives, modeling sites, space weather forecasts
- 2) Descriptions on packages for numerical modeling
- 3) Problem sets
- 4) [Collected textbook figures](#)

## **Heliophysics III:**

### *"Evolving solar activity and the climates of space and Earth"*

[Cambridge Press: Hardback \(ISBN-13: 9780521112949\)](#)  
[Published November 2010](#)

[Cambridge Press: Adobe eBook Reader \(ISBN: 9780511903922\)](#)

- 1) Interconnectedness in heliophysics
- 2) Long-term evolution of magnetic activity of Sun-like stars
- 3) Formation and early evolution of stars and protoplanetary disks
- 4) Planetary habitability on astronomical time scales
- 5) Solar internal flows and dynamo action
- 6) Modeling solar and stellar dynamos
- 7) Planetary fields and dynamos
- 8) The structure and evolution of the three-dimensional solar wind
- 9) The heliosphere and cosmic rays
- 10) Solar spectral irradiance: measurements and models
- 11) Astrophysical influences on planetary climate systems
- 12) Assessing the Sun–climate relationship in paleoclimate records
- 13) Ionospheres of the terrestrial planets
- 14) Long-term evolution of the geospace climate
- 15) Waves and transport processes in atmospheres and oceans
- 16) Solar variability, climate, and atmospheric photochemistry

**On-Line Appendices [under development]:**

- 1) Data archives, modeling sites, space weather forecasts
  - 2) Descriptions on packages for numerical modeling
  - 3) Problem sets
- 

<http://www.vsp.ucar.edu/Heliophysics/post-about-over.shtml>

## **Jack Eddy Postdoctoral Fellowships**

# The Heliophysics Postdoctoral Fellowship Program has been renamed to the Jack Eddy Postdoctoral Fellowship.

*John "Jack" Eddy  
1931 – 2009*

John "Jack" Eddy was a pioneering solar researcher, and he is being honored with the debut of the Jack Eddy Postdoctoral Fellowship.

Among his many contributions to solar research, Jack served as editor of *The Sun, the Earth, and Near-Earth Space: A Guide to the Sun-Earth System*, published by NASA and the International Living with a Star program shortly before his death in 2009.

- [The "Eddy Cross-Disciplinary Symposium on Sun-Climate Research"](#)
  - Jack Eddy Workshop where postdocs were renamed to Eddy Fellows
- ["The Sun, The Earth, and Near Earth Space" A Guide to the Sun-Earth System](#)
  - Jack's last contribution to society

