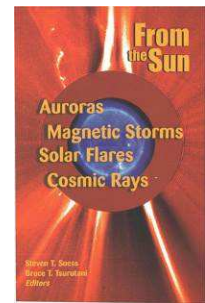


Title: *From the Sun: Auroras, Magnetic Storms, Solar Flares and Cosmic Rays*
Editors: Steven Suess and Bruce Tsurutani
Publisher: American Geophysical Union
ISBN: 0-87590-292-8
Published: 1998
Length: 172 pages in 16 chapters with glossary, acronyms and initialisms, but no index
Status: In print
Availability: Available for US\$28 (new) at <http://www.agu.org> or from used book sellers
Reviewer: Whitham D. Reeve



I came across this little book by accident at a used book seller for only US\$3.70. The title indicated many subjects in which I am interested, so I could not resist buying. This is an edited book with sixteen chapters written by experts in the subjects covered. Two authors were already familiar – Syun-Ichi Akasofu on aurora and James A. Van Allen on radiation belts. Others include S.W.H. Crowley on the magnetosphere, D.D. Sentman and E.M. Wescott on red sprites and blue jets, and B.E. Goldstein on the solar wind. As a side note, Akasofu studied geophysics under Sydney Chapman at University of Alaska – Fairbanks, which I attended a few years later and from which I obtained both my bachelor’s and master’s degrees. There is no better place to study aurora than Fairbanks and the author’s years of practical experience and knowledge are readily apparent in his chapter.

From the Sun contains concise, easy-to-read, non-mathematical descriptions of Sun-Earth phenomena and their interactions. It encompasses the entire heliosphere, which is the magnetic cavity carved out of the galaxy by the solar wind. When this book was published in 1998, it was thought that the heliosphere’s radius is 85 to 100 astronomical units (AU) and that the Voyager 1 and 2 spacecrafts launched in 1977 would reach the threshold in 2000. By one definition, the threshold is where an abrupt change in the direction of the magnetic field indicates the presence of the interstellar magnetic field and the outer edge of the heliosphere. According to a 27 June 2013 NASA news release (http://science.nasa.gov/science-news/science-at-nasa/2013/27jun_voyager/), Voyager 1 is about 120 AU and Voyager 2 is about 100 AU and neither one has yet detected that abrupt change. We learn in *From the Sun* that one of the problems is the heliosphere probably is not a sphere because of asymmetric pressures from the interstellar medium. Therefore, the yet to be detected magnetic threshold may be at different distances depending on the direction. However, by another definition, the threshold is where the plasma density increases over that expected in the heliosphere. A 12 September 2013 NASA news release (http://science.nasa.gov/science-news/science-at-nasa/2013/12sep_voyager1/) says that new analysis of Voyager 1 data indicates the density threshold to interstellar space was crossed in August 2012.

Other chapters in *From the Sun* cover magnetic storms by B.T. Tsurutani and W.D. Gonzalez and the effects on humans of solar flares and magnetic storms by J.A. Joselyn. Readers are given detailed descriptions of Earth’s ionosphere and upper atmosphere in the context of solar effects. In terms of the Sun itself, solar flares and solar flare particles are described as are the solar dynamo and solar irradiance variations on Earth’s climate. This book may be 15 years old, but it is not out of date. It mentions a number of unresolved problems in solar studies, many of which still persist.

One of the many things I liked about this book is that the chapters are not disconnected essays in which the authors expound on their vast store of technical knowledge in their own style and grammar. Instead, the editors have ensured that there is just enough overlap in each chapter to bind everything together and that the authors refer to the other related chapters as needed. References to other chapters are embedded and at the end are

additional references in the form of papers, articles and books. This not a flashy picture book; however, each chapter has several adequate illustrations, some in color. I found the glossary very helpful and ended up reading it like one of the chapters. If you are interested in the Sun and the environment it imposes on Earth, this book is for you.