BOOK REVIEWS


It is difficult for one person to fairly review a scientifically and politically charged document, crafted by some of the best minds in the field.

This publication is an attempt to put the U.S. ground-based solar physics program in perspective, including, to some degree, space-based efforts. The pursuit of solar physics has long been a ‘test-bed’ for refining our understanding of MHD, radiative transfer, and plasma physics on the ‘super-laboratory’ scale.

However, one realizes, on reading this report, that the U.S. solar physics program may be in some trouble including, perhaps, the entire U.S. (public) astronomical establishment.

It may be self-evident that a nation that aspires to leadership in a field should coordinate its efforts, supporting both research centers as well as academic institutions. Some are and some are not. However, one should be careful; major attempts to coordinate and restructure the U.S. physical science program, while well-intentioned, have often lead to an unintentioned diminution of overall support even as they may have provided a clearer view of the opportunities for younger investigators; call it ‘Catch-22’. For example, a good deal of the preface is devoted to a discussion of the needed improvements to the NSF support of solar physics. Other forms of support, from the USAF, NOAA, and NASA are not discussed in the text (but are mentioned in the Appendices). Is this not an indication of the fragmentation of support for this scientific discipline? Considerable difficulties in the field have been due to contraction of funding opportunities from these other agencies.

The few U.S. solar observatories, strongly committed to training students, are presently supported, in part, by the NSF. To close one or even two of these solar observatories, especially those heavily supported by the NSF, would reduce the opportunities to train U.S. students, both graduate and undergraduate, to the detriment of the future of solar and, to some degree, stellar physics in the U.S. It seems essential to this reviewer that the United States remain an important player in the future of a vigorous, international solar research program.

On a more mundane note, a notable omission in Table 3.1, in the capabilities of the OSL (Orbiting Solar Laboratory), relative to the LEST (Large Earth-based Solar Telescope), is the ability of OSL to have weeks or months of uninterrupted viewing at high resolution, without interference by the Earth’s atmosphere. As shown by the Lockheed group’s nearly disastrous mission in 1985, even white-light photographs, damaged by high temperatures, are changing our view of plasma behaviour in the ‘quiet’ photosphere, near to and far from sunspots. (Think what if they had obtained polariometric observations, with a diffraction-limited 30-cm telescope, but without bad ‘seeing’.)


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