

Foreword

The tradition of International cooperation in scientific research has its genesis in the First International Polar Year during 1882–1883, followed by the Second International Polar Year in 1932 and the International Geophysical Year (IGY) in 1957–1958, in which India participated actively. Inspired by the unprecedented success gained during the IGY as well as by the wealth of scientific knowledge gained from space missions in recent years, the scientific community is now poised to expand the concept of “geophysical” to “heliophysical” by extending the area of investigation to understand the connections from the Earth to the Sun and of the physics of the heliosphere.

The International Heliophysical Year (IHY) has four major components, viz. research on IHY related topics, exchange of instruments, public outreach and IHY schools, and preserving the history of IGY. India has actively participated (and continues to do so) in all aspects of these programmes.

Over the years since the advent of the IGY, many of the ground-based national observing facilities have been augmented for monitoring the Sun. Regular observations are being carried out at various centres to investigate processes in the solar atmosphere as well as for probing the ionosphere (using digital ionosonde). Other facilities such as the Giant Metre Wave Radio Telescope (GMRT) and the metre–decametre wave Gauribidanur radioheliograph provide radio observations. The Ooty radio telescope monitors interplanetary scintillations and the MST radar facility at Gadangi is used for probing the Earth’s neutral atmosphere. These facilities provide ground support for observations from spacecrafts. They are complemented by studies in atmospheric modelling. These facilities enable India to play a significant role in carrying out IHY programmes.

In recognition of the wide range of scientific activity taking place in the country in research fields central to IHY, India was invited to host the second UN/NASA workshop as part of the United Nations Basic Space Science Instruments (UNBSSI) programme. Organized by the Indian Institute of Astrophysics, this Workshop was held in Bangalore between November 27 and December 1, 2006 and attended by many delegates from several countries. The Workshop focussed on various programmes of IHY, solar and solar-terrestrial physics, IHY instruments involving donors and hosts, science in developing nations, astrophysical data systems and virtual observatories. It led to the initiation of several new international collaborative programmes.

I am happy that the Bulletin of the Astronomical Society of India is bringing out the workshop proceedings. The papers in this monograph focus on the range of areas

of problems needed to understand physical processes in the heliosphere and provide a valuable reference to researchers in this field.

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