

The Meteors, Meteoroids and Interplanetary Dust Program of the International Heliophysical Year 2007/9

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Abstract Under the title ‘Meteors, Meteoroids and Interplanetary Dust’, meteor research is included in the program of the International Heliophysical Year 2007/9. We list issues for coordinated meteor research within the framework of this global international program.

Keywords International Heliophysical Year (IHY) · Meteors · Meteoroids · Interplanetary dust medium

1 Introduction

The year 2007 marks the 50th Anniversary of the International Geophysical Year (IGY) and 50 years of space exploration. It also is the start of the International Heliophysical Year (IHY) 2007/9 that embraces atmospheric and solar-terrestrial physics, studies of other planets, the outer reaches of the heliosphere and interactions with the interstellar medium (Davila et al. 2001). The IHY activities described on the official IHY web site (<http://ihy2007.org>) include four key elements (1) coordinated research programs, (2) observatory/instrument development, (3) public outreach and (4) history/IGY Gold Program. IGY 1957/9 included meteor astronomy (Lovell 1954) in a direct response to the potential hazard to man-made satellites (Dubin 1960; Whipple 1958). Here we discuss science goals and programs.

2 Modern Meteor Science and Related Meteor Programs During IHY

Thanks to the effort of the first author and Discipline Coordinator, meteor research is officially included as an IHY program under the title ‘Meteors, Meteoroids and Interplanetary

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Dust'. This title emphasizes a change of emphasis away from radar and optical techniques and observations from ground-based installations for ionospheric research (Davies 1957; Kolomiyets and Sidorov 2007). The opportunities of meteor astronomy have expanded today, and it is possible to study meteoroids at new levels (among others, Baggaley 2005; Green et al. 2002; Hawkes et al. 2005; Jenniskens 2005; Jenniskens et al. 2000; Murad and Williams 2002) and chapters in this volume (Trigo-Rodriguez et al. 2008).

2.1 Preservation of the Meteor Research Heritage

Modern meteor researchers have generally no access to non-English, e.g. Russian language, peer-reviewed publications and a situation exists that already existing knowledge and experience in aspects of meteor astronomy are not shared optimally. Of concern will be the preservation of the achievements of meteor science conducted since IGY (section V 'Ionosphere and Meteors') by publishing a book or a broad-based review papers with online access. Translation into English of key research monographs and papers spanning 50 years of meteor science in the Ukraine, Russia, and the other republics of the former Soviet Union, in particular meteor radar studies and meteor astronomy. Creating a new meteor database including meteor theories and hypotheses.

2.2 Development of Meteor Science

Programs to achieve this international development will include standardization of modern meteor research data with regard to the structure of databases, the meteor radar response function to convert to orbital distributions, and information on the comparability of different methods and different observational techniques. It will include revisions of existing models using the integrated databases, the establishment of an international course and/or manual of meteor astronomy and the organization of extended, international, collaborative observational programs during IHY 2007/9. The recently held international 'Meteoroids–2007' meeting in Barcelona (Spain) (Trigo-Rodriguez et al. 2008), and other conferences, will be platforms to promote modern meteor science internationally. With regard to meteor astronomy for the Developing World IHY 2007/9 encourages the creation of international meteor centers for outreach and promotion of meteor research, if possible, with a pilot center located in Kharkiv (Ukraine).

2.3 Meteors in the Terrestrial Atmosphere and Meteoroids in the Solar System (CIP 65)

The solution to the above-mentioned goals is possible only by joint efforts of research groups from many countries through the international meteor program or through a series of such programs. Since IHY's scientific activities will be organized via Coordinated Investigation Programs (CIPs), the first step in this direction will be CIP65 that was proposed by the first author. Details on these CIP65 are posted at http://ihy2007.org.uk/CIP_list.shtm. The entire worldwide meteor science community is invited in establishing and maintaining this program as part of IHY 2007/9.

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