

METEOR SCIENCE AND THE INTERNATIONAL HELIOPHYSICAL YEAR 2007/9.
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Meteors have appeared extremely important in numerous aspects for International Geophysical Year (IGY1957-1959) taking into account the incoming space era and revolutionary implementation of radar methods in scientific researches. Meteor particles in the terrestrial atmosphere together with the Sun influence the conditions in the ionosphere. Meteor researches were included into the section V "The Ionosphere. Meteors" in the International Geophysics Year Program (IGY 1957). Meteors have appeared extremely important in numerous aspects for International Geophysical Year (IGY1957-1959) taking into account the incoming space era and revolutionary implementation of radar methods in scientific researches. Meteor particles in the terrestrial atmosphere together with the Sun influence the conditions in the ionosphere. Meteor researches were included into the section V "The Ionosphere. Meteors" in the International Geophysics Year Program (IGY 1957). At the same time the meteor science is science directly connected with launching the first space satellites of the Earth and the decision of problems of meteoroid danger to space missions (above all in the USSR and the USA). The IGY 1957 was also directly responsible for the UN General Assembly's interest in the outer space and for the establishment of the United Nations Committee on the Peaceful Uses of Outer Space (UN-COPUOS), the UN's primary committee that deals with the use of outer space for peaceful purposes.

New geophysical year is named the International Heliophysical Year [1-3]. That means broadening of the concept "geophysical," extending the connections from the Earth to the Sun & Interplanetary space.

On the 50th anniversary of the International Geophysical Year, the 2007 IHY activities will be based on the success of IGY 1957 by continuing its legacy of system-wide studies of the extended heliophysical domain. Today opportunities of meteor astronomy have extended [4], and it is possible to study meteoroids at a new level using both ground-based methods (both classical: visual, optical and radar and new: infrasonic, CCD, etc) in the Earth atmosphere and direct modern methods for meteoroid studies at different distances from the Earth and the Sun (space vehicles, ISS, etc). Besides scientists use modern achievements in mathematical modeling, computer technique and methods of the analysis. The IHY Conveners have officially included the meteor researches into the IHY program under the title "Meteors, Meteoroids and an Interplanetary Dust". This title emphasizes the change of an object of research in new Heliophysical year.

During the Geophysical year 1957 the meteors (the phenomena caused by meteor particles in terrestrial atmosphere) were studied. The first registration of particles by the dust counters established on rockets and space vehicles, were very expensive and had insignificant small statistics. During the incoming Heliophysical year meteor particles (meteoroids) and an interplanetary dust will be an object of study and will be studied on all an the length from the Sun up to borders of Solar system, actually on all an length of a heliosphere.

Besides, interstellar meteoroids both in the terrestrial atmosphere and in an interplanetary space may be also an object of research. Investigations of meteors in the Earth atmosphere continue be the actual. The IHY Conveners hope that the continuation and development of the IGY meteor research traditions will receive support on all levels inside all countries during IHY. The IHY Secretariat appointed the Discipline Coordinator for the "Meteors, Meteoroids and an Interplanetary Dust" research area of the IHY <http://ihy2007.org.uk/DisciplineCoordinators.shtm>

International Heliophysical Year Conveners are Secretariat of the American Geophysical Union, 2000 Florida, Ave. NW, Washington, DC 20009-1277, USA, <http://ihy2007.org>. Among Conveners we can see famous scientists of the USA: Joseph M. Davila, Nat Gopalswamy, Barbara J. Thompson. The Solar and Heliosphere Division II (with Donald B. Melrose (Australia) as the current President) of the International Astronomical Unit (IAU) provides a forum for studying a wide range of phenomena STSC (Science and Technology Subcommittee of Committee for the Peaceful Uses of Outer Space) related to the structure, radiation and activity of the Sun, and its interaction with the Earth and the rest of the Solar system. David F. Webb (USA) is the IAU representative at the IHY. Now Hans J. Haubold (Austria) leads the IHY effort for the UN in this direction: United Nations Basic Space Science Initiative, United Nations Office for Outer Space Affairs, P.O. Box 500, 1400 Vienna, Austria.

The four key elements of IHY are: 1) Science (coordinated investigation programs, or CIPs, conducted as campaigns to investigate specific scientific questions), 2) Observatory/Instrument Development (the IHY/UNBSS program), 3) Public Outreach (to demonstrate the relevance and significance of space science to the general public and students), and 4) History/IGY Gold Program (to identify and honor all those scientists who worked for the IGY program). One of the IHY goals is the preservation of historical heritage of IGY-1957. It includes a certification of historical places and "founding fathers" of the IGY research, and the preservation of historical and scientific knowledge. The IGY has given an impetus to the development of meteor research all over the world and, most of all,

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in the republics of the former Soviet Union in Russian language.

Let us together with you remember some "fathers" of the IGY meteor research. Famous meteor investigators were from Former ČSSR (Czech Republic): F. Link, Former ČSSR (Slovakia): V. Guth, UK: B. Lovell, J. Gill, J. Davies; US: F. Whipple, Belgium: M. Nikolet..., Canada: Millman, Former USSR: V. Fedynskiy, V. Tsesevich, Ye. Kramer, B. Kascheyev and many others.

In the post-Soviet countries meteoric centers still exist, with the theoretical and experimental potential of powerful meteoric scientific schools of Soviet Union. These centers are the historical places related to the third international geophysical year. Besides, these centers possess unique databases of long-term monitoring, saved up since IGY 1957, and also enjoy thoroughly developed techniques of monitoring and data processing, and contain numerous monographs and publications in Russian.

All this knowledge of the past years can be lost because of the lack of financing, if, during carrying out the international program IHY 2007/9 on preservation of this heritage, the financial assets from the international and national funds, will not be, firstly, allocated to the new international meteoric programs, and secondly, the programs themselves will not be created and realized.

Brief description of necessary new meteor program [5]:

Part1. Preserving of the Meteor heritage

1. To recall a history of carrying out of Meteor year 1957 – 1959 (first of all Russian-speaking) within the framework of International Geophysical Year 1957 (section V "Ionosphere and Meteors"), which allowed to create the first model of meteor substance and had given impetus to a development of meteor astronomy all over the world (and first of all in the countries of former Soviet Union in Russian language).

To underline the special and extremely important role of the meteor radar astronomy and the IGY1957 project (with subsequent geophysical projects from the first meteor observations for geophysics). To certificate names of fathers of the meteor research in the frame of the IGY 1957 (in particular, the meteor research in Russian language).

2. To create the new meteor database including data obtained during last years

3. To summarize modern meteor theories and views

4. To translate into the English language and other languages of main fifty-years Russian-speaking meteor knowledge

5. To publish a book/wide review papers about the Meteor heritage (with on-line access)

Part2. The development of meteor science

6. To standardize modern meteor researches (databases, functions of the selectivity, functions of

the comparability of different methods and different techniques)

7. The collaborative efforts on creation of modern level meteor-atmosphere interaction models based on all accessible and open knowledge. Models: a) for research of interaction of sun radiation with the interplanetary environment and the atmosphere of the Earth, b) for needs of direct measurements on space vehicles; c) for detail study of meteor input into the atmosphere

8. To create an international course/manual of meteor astronomy

9. To organize the international cooperation for extending observational program during new Meteor year of the IHY2007/9 and after. For the creation of observational programs International Geophysical Calendar 2007 can be use ftp://ftp.ngdc.noaa.gov/STP/SOLAR_DATA/IGC_CALENDAR/2007/ thanks the site <http://www.ises-spaceweather.org/index.html>.

Using meteor monitoring in the frame of the International Year Planet Earth (IYPE) together with preserving orbital data in the frame of the Electronics Geophysic Year (eGY) is discussed. The coordinated investigation program CIP with number 65 "Meteors in the Earth atmosphere and Meteoroids in the Solar system" in the list of the IHY is presented <http://www.ukssdc.ac.uk/cgi-bin/ihy/cip-filter.pl>.

References: [1] Harrison R. et al. (2007): International Heliophysical Year *A&G. June 2005*, 3.27-3.20. [2] Davila J.M. et al. (2001) International Heliophysical Year. *In IHY publication: <http://www.ihy2007.org/img/ihy.pdf> Cited 15 Feb 2001, 8 p.* [3] International Heliophysical Year IHY2007. Developing National Participation in International Global Studies of the Sun-Earth System through the United Nations (2005) *Reprint. Printed in Austria V05-88760-October 2005, 4p.* [4]. Modern Meteor Science. An Interdisciplinary View (2005) Edited by R. Hawkes, I. Mann, P. Brown. *Reprinted from Earth, Moon, and Planets, Volume 95, Nos.1-4, 2004 (Published by Springer, www.springer.com), 732 p.* [5] Kolomiyets S.V., Slipchenko M.I. (2007) The Meteors, Meteoroids and Interplanetary Dust Program of the International Heliophysical Year 2007/9 *In the Proceeding Meteoroids 2007/ Springer: Moon, Earth and Planets No 9209, (Trigo-Rodriguez, J.M., Rietmeijer F.J.M., Llorca J., eds.), 2 p* <http://www.springerlink.com/content/3006n7230j21g416/?p=e87eddc6dd484147a8b491ac4dc70bfl&pi=8>