

The International Geophysical Month

Short periods of cooperative study can consolidate the gains of the International Geophysical Year.

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The need for concentrated studies of geophysical phenomena at selected intervals through the solar cycles has suggested the concept of International Geophysical Months, which we believe would facilitate and enhance the value of international cooperative research. International Geophysical Months are envisaged as periods of research lasting about 4 weeks, at different times and in different seasons throughout the solar cycle. The actual time and duration would be chosen by international agreement.

Experience in geophysical research has shown the exceptional advantages of establishing simultaneous and intensive studies in more than one discipline, so that study of the interrelations between the phenomena observed can be a means of evaluating alternative interpretations and of discovering new and unexpected relationships. The world-wide cooperation of the IGY proved remarkably valuable for making extensive studies of the morphology of many geophysical phenomena, both old and new. There are, however, many projects in which even more intensive observation is required to establish the characteristics of common phenomena and the detailed interrelations with associated fields. Such studies demand a concentration of effort which is not easily obtained in long-term programs and are complementary to studies more easily carried out through long-term programs of the IGY type.

Intensive observations of geophysical phenomena for periods of 3 or 4 weeks, followed by detailed analysis of the data, are usually very fruitful scientifically. Most scientific institutions can

mount and support a short-period field operation from existing resources, whereas in many cases they have neither the personnel nor the resources to carry out a long program. In the case of experiments involving cooperation between different institutions or different countries, the comparative ease with which short-term programs can be planned and carried out can lead to very successful work. Many of the facilities available in universities and other institutions cannot be efficiently deployed on relatively long-term projects. In fact, too great a stress on such projects is likely to be incompatible with the main objectives of the institutions. Intensive short-term efforts, however, can usually be made without prejudice to the long-term programs, which involve different people and equipment.

Advantages of the Concept

The advantages of the IGM concept are many, and we shall consider them under the following headings.

Quality of research. An important advantage of the IGM is that it could make better use of personnel and equipment than is now being made. New and complex experiments could be planned and carried out, and high-caliber research teams could be made available for the entire period, bringing with them advanced equipment and new ideas. Laboratory equipment can often be loaned for field operations lasting only 1 month. A further advantage is that the equipment would not have to be as reliable or as foolproof as that required for long periods of observa-

tion in the field. The opportunity it would give to evaluate new ideas which might have been formulated only a few months prior to the start of an IGM would also be an important factor.

Data reduction. The data obtained from experiments carried on during an IGM could be processed almost immediately by people closely connected with the observational phases of the program. In almost all cases it should be possible to reduce the data in time to publish the results before the succeeding IGM.

Equipment and lead time. Long lead times would not be necessary for programs of 1 month's duration where the equipment would be under the care of senior technical personnel. It must be remembered that the requirements of reliability and maintenance are not severe for short-term programs. In many cases equipment may be built by small groups on a prototype basis and operated in the field by the same group; in such instances the field researchers would have an intimate knowledge of their equipment.

Broadened participation. Important contributions to international research programs could probably be made by industrial and government enterprises which ordinarily do not participate. These groups might be glad to participate in a program lasting only 1 month and thus not seriously interfering with their normal activities. Participation in an IGM would provide a challenge to their personnel, and it would have the great advantage of bringing the problems and results of research more directly into the areas in which the results might ultimately be applied. The resulting interchange of data, ideas, and techniques would accelerate the dissemination and use of new knowledge.

A further advantage is that small research groups would be able to play a principal and active role in such short-term experiments as are envisaged in the IGM program. This should make the program especially attractive to those countries where support of scientific endeavor is restricted by limitations either of resources or of personnel.

Student participation. Perhaps the most important aspect of this proposal for International Geophysical Months

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lies in the area of education. During the summer months an IGM program could use the best available students without interfering with their educational program. Students would make preparations for 1 month, participate for 1 month, and work on data reduction for 1 month. Such an arrangement could lead to special credit in many graduate programs and might attract many of the participating students to a career in geophysical research. One of the greatest problems in research in the atmospheric sciences is that of attracting high-caliber, well-trained students. It is our experience that there is no better way to interest and attract new people than to have them participate in exciting experiments extending over a relatively short period of time.

The senior scientist. International Geophysical Months would provide a practical means of enabling senior scientists to participate in field research and would be ideally suited to the "leave" policies of most research groups. It is often possible for a faculty member or a senior scientist of a government laboratory to obtain leave for 1 month to undertake research. In an IGM program such people could accompany their assistants and work with them in performing experiments and making initial interpretations of data. In the case of educational institutions, the beneficial effect on students and faculty alike would be enormous, and in our opinion, this alone would justify the entire program.

International meetings. Since many of the top people actually working in various disciplines would be traveling to field sites, it would be possible to

organize extremely effective international gatherings at suitable times and places in connection with such field activities. Thus, an IGM in the Antarctic might be followed by a short meeting in New Zealand or Australia, at which the problems of that particular IGM could be considered. This would allow scientists to gather together while interest was high and before they had become involved in other activities.

Summary

For convenience, we summarize below some of the main advantages of the IGM concept.

1) Most organizations can mount and support intensive field operations for short periods.

2) High-quality data would be obtained, and the data could be processed more promptly than in long-term projects.

3) Laboratory equipment could in many instances be made available for field operations.

4) Top-caliber researchers would be available for field operations.

5) The participation of small research groups and of research workers from government and industry would be fostered.

6) Student participation would improve educational programs in, and attract needed talent to, the geophysical sciences.

7) Ship, satellite, and rocket observations could be scheduled for IGM's.

8) International scientific conferences scheduled to follow IGM's would attract working scientists.

It is not suggested that these short-term exercises should replace the long synoptic programs characteristic of the IGY. Rather it is proposed that they supplement and guide any such future long-term program. If adopted, they would produce many data of value for the planning and timing of the International Year of the Quiet Sun. To bring emphasis on special observations during the IQSY, International Geophysical Months might well be scheduled to coincide with the June and December solstices, to be followed by an IGM at an equinoctial period. This would provide periods for concentrated sampling—periods in somewhat the same category as the Regular World Intervals adopted during the IGY. The more elaborate experiments could be confined to the International Geophysical Months, so that only those studies for which continuous observations are essential would be scheduled for the entire period. The duration of an International Geophysical Month would be sufficient for carrying out experiments requiring moving platforms such as ships, rockets, or satellites.

It is recommended that every effort be made to schedule the first IGM during the June solstice in 1962. This initial effort could well be followed by the scheduling of IGM's during the December solstice in 1962 and the March equinox in 1963. These exercises would provide information important to the planning and scheduling of the IQSY (1).

Note

1. We acknowledge the helpful comments of W. R. Piggott and Hugh Odishaw in the preparation of this article.