

A Memorandum on the United States Program for the
International Geophysical Year

International Relationships

Scientific Aspects

The fields of science that make up the general discipline of geophysics and are the subject of the international effort called the "International Geophysical Year," are characterized by their global nature. The chemist and physicist can perform an experiment in a laboratory, establishing and controlling the conditions of the experiment. In contrast, the laboratory of the geophysicist is the earth itself, and the experiments are performed largely by nature. The task confronting the geophysicist is to observe these natural phenomena with suitable techniques and instruments, on a global basis, if he is to secure solutions to his problems and to develop adequate understanding, thus providing for the best and most efficient exploration of his environment. The compelling reasons, therefore, for the world-wide program include the following: to observe phenomena simultaneously and to secure geophysical data from all parts of the earth, and to conduct this effort on a coordinated basis by fields and in space and time so that the results secured not only by American observers but by others can be correlated in a technically meaningful and productive manner.

Historical Background

That problems of a geophysical type could benefit from international cooperation was recognized in 1882-83 when the First Polar Year was launched and, again, in 1932-33 when the Second Polar Year was undertaken. Both of these ventures were limited in space and in scope: regions of the North Pole were the sole subject of study. Though the results that accrued were therefore limited (in contrast to expectations from the current global program), one can cite that a single area yielded rewards far exceeding expectations: the studies during the Second Polar Year of the ionosphere, by techniques then recently developed by two American scientists, gave rise to communications data that have been estimated to have a value in the hundreds of millions of dollars.

International Geophysical Year

Several factors led to the proposal of an International Geophysical Year. The solution to various problems in geophysics requires data synchronously taken over the earth. Such problems include the better prediction and perhaps even the eventual control of weather and the better prediction of radio "weather" needed in modern communications and navigation. The nature of cosmic rays may be established through