

11.6 *Data*

World Data Center A has published, in addition to regular monthly solar and geophysical data, several compilations on special events (1970–1972).

12. PRIORITIES

We believe that the major direction in which priority should be placed to facilitate the understanding of solar activity lies in the provision of space and ground based observatories specifically designed to complement each other's capabilities. Only with such a facility could we most efficiently obtain the data needed to clarify the basic phenomena underlying the different manifestations of solar activity, and so begin to understand the nature of the forces controlling the environment of the Earth in the solar system, an environment whose significance to our planet we are only now beginning to appreciate.

Major advances in space instrumentation during the past few years have increased the achievable spatial, spectral, and temporal resolution of solar satellite observations to the point where they can now match ground based equipment. Correspondingly, it is now possible to design coordinated experiments using these two approaches as equal partners in attacks on basic problems in solar activity. These facts provide at once the motivation and the force behind this recommendation.

We believe, too, that the need is immediate – unless the concept is begun soon and pursued vigorously the opportunity to study the next maximum will be lost. If that were to happen it would be 20 yr from now before an efficient, incisive, and comprehensive attack on solar activity could be launched. This would surely lead to a loss of the vigor that has characterized solar physics, especially during the past decade. We believe also that the *need* for an understanding of the basis of solar activity will become clear and, to satisfy this, hastily drafted and poorly planned expedients will be brought into being unless an adequate plan is created now and sufficient commitment given to allow it to become a reality.

As a part of such a program we believe great emphasis should be given to maximizing the achievable spatial resolution on both ground and satellite borne instrumentation since recent studies have left many workers convinced that the origin of solar activity will become clear only when we can study the Sun's atmosphere for extended periods in as fine detail as we can now achieve only rather fleetingly.

J. T. JEFFERIES

President of the Commission

WORKING GROUP ON SOLAR ACTIVITY COOPERATIVE

Although worldwide cooperation in surveying activity has had a long history, the continuation of international programs in this area is compromised by several factors, in particular by an overall decrease of financial support which has led to concentration of our limited resources and efforts on the large research instruments. In such a situation we believe it important not to lose sight of the fact that systematic data on the 'full disk' state of solar activity is still, and will remain, of great significance to students both of the Sun and of the Earth and its environment. As examples, we note that the large quantity of space data (e.g., on X-rays, EUV particles, and fields) cannot be fully studied without the supporting data obtained in classical ground-based optical and radio surveys; the same applies to magnetospheric observations.

Nor can we always know what critical future needs will be satisfied by our systematic daily surveys. An obvious example is the daily measure of sunspot area, others are provided by the Cartes de la Chromosphère and the Mount Wilson magnetograms which for years at a time have attracted little interest and quite suddenly have emerged as source data of inestimable value in quite unanticipated studies. Thus, while we should always be cautious in expanding the scope of solar activity

studies, we must be equally careful not to let exigencies of the moment too quickly dictate the termination of a long series of observations of basic indicators of solar activity.

During the past three years the following international cooperative programs were undertaken:

a. *Catalogue of solar particle events for 1956–1969*

This has a threefold aim; to record all known particle events, to review the identification of their solar sources, and to publish data on the characteristics of the well established solar sources (flares, plagues). Chairman is Dr Z. Švestka.

b. *Spray patrol*

This working group (Chairman, Dr Y. Öhman) was set up to organize a patrol of spray phenomena. A trial patrol was carried out from April to June, 1971 with about a dozen optical and radio observatories participating in a cooperative program.

c. *CINOF (Campaign for Integrated Observations of Solar Flares)*

About 130 scientists have agreed to participate in this attempt to observe at least one flare with a wide variety of techniques (visible, UV and X-ray spectra, solar magnetic field pattern, particle flux, etc.) During an initial observing period (5–29 June 1972) about 75 flares or sub-flares occurred but only for ten events has the planned program been completed. Study of the material is being planned under the chairmanship of Dr C. de Jager.

A new publication reporting solar survey data is the *Preliminary Report and Forecast of Solar Geophysical Activity* (edited at NOAA in Boulder): thanks to data supplied promptly to the IUWDS, preliminary data are available on a weekly basis. Two new Japanese publications are also welcome: *Solar Activity Charts* from Toyokawa (ed. by H. Tanaka) and *Solar Terrestrial Activity Charts* from Tokyo (ed. by T. Obayashi).

As Xanthakis (1971) has urged, the representation of solar activity by spot number could be improved by computation of spot and faculae areas corrected for foreshortening. Falciani and Rigutti (1972) have pointed out a systematic error in the current evaluation of flare importance. Report UAG 14 from WDC-A in Boulder deals with a computation of a comprehensive flare index for 1955–69; while a later report (UAG-19) presents a reevaluation of the 1967 flare data intended to provide homogeneous material covering the 20th activity cycle. The large scale distribution of magnetic field is now inferred through H α chromospheric data (McIntosh, 1972).

The last Guide for International Exchange of Data in Solar Terrestrial Physics (STP Notes 6) was published by IUCSTP in October, 1969. The WDC-A continues to follow both of its programs of prompt (one month delay) and comprehensive (various delays) reports of *Solar and Geophysical Data*. According to its annual catalogue of September, 1972, the solar community continues to contribute regularly to the flow of data into the new WDC offices in Boulder. This group has begun to publish special compilations of solar and geophysical data devoted to specific events. Already covered (in UAG Reports numbered 8–12, available from WDC-A Boulder) are data on events or periods October 24–November 6, 1968; November 18, 1968; March 8, 1970; November 2, 1969; January 24 and September 1, 1971. We should also report that brief summaries of solar activity are given in 'Condensed Calendar Record's in STP Notes, and 'Abbreviated Calendar Record' in SGD, Part II.

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P. SIMON

Chairman of the Working Group