

IUWDS International Geophysical Calendar for 1970

(See other side for instructions on the use of this Calendar)

1970 JANUARY

S	M	T	W	T	F	S
				1	2	[3]
4	5	6	△7	8	9	10
11	12	⊙13	△14	⊙15	16	17
18	19	20	△21	22	23	24
25	26	27	△28	29	30	31

1970 FEBRUARY

S	M	T	W	T	F	S
1	2	3	△4	5	6	7
8	9	⊙10	△11	⊙12	13	14
15	16	17	△18	19	20	21
22	23	24	△25	26	27	28

1970 MARCH

S	M	T	W	T	F	S
1	2	3	△4	5	6	7
8	9	⊙10	△11	⊙12	13	14
15*	16*	17*	△18*	19*	20*	21*
22	23	24	△25	26	27	28
29	30	31				

1970 APRIL

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	△8	9	10	11
12	13	⊙14	△15	⊙16	17	18
19	20	21	△22	23	24	25
26	27	28	△29	30		

1970 MAY

S	M	T	W	T	F	S
					1	2
3	[4]	[5]	△6	7	8	9
10	11	⊙12	△13	⊙14	15	16
17	18	19	△20	21	22	23
24	25	26	△27	28	29	30
31						

1970 JUNE

S	M	T	W	T	F	S
	1	2	3	4	5	[6]
[7]	[8]	[9]	△10	11	12	[13]
[14]	15	⊙16	△17	⊙18	19	20
21*	22*	23*	△24*	25*	26*	27*
28	29	30				

1970 JULY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	△8	9	10	11
12	13	⊙14	△15	⊙16	17	18
19	20	21	△22	23	24	25
26	27	[28]	△29	[30]	[31]	

1970 AUGUST

S	M	T	W	T	F	S
						1
2	3	4	△5	6	7	8
9	[10]	[11]	△12	[13]	[14]	15
16	17	⊙18	△19	⊙20	21	22
23	24	25	△26	27	28	29
30	[31]					

1970 SEPTEMBER

S	M	T	W	T	F	S
						1
			2	3	4	5
6	7	8	△9	10	11	12
13	14	⊙15	△16	⊙17	18	19
20*	21*	22*	△23*	24*	25*	26*
27	28	29	△30			

1970 OCTOBER

S	M	T	W	T	F	S
				1	2	3
4	5	6	△7	8	9	10
11	12	⊙13	△14	⊙15	16	17
18	19	[20]	△21	[22]	23	24
25	26	27	△28	29	30	31

1970 NOVEMBER

S	M	T	W	T	F	S
1	2	3	△4	5	6	7
8	9	10	△11	12	13	14
15	[16]	[17]	△18	⊙19	20	21
22	23	24	△25	26	27	28
29	30					

1970 DECEMBER

S	M	T	W	T	F	S
				1	2	3
			4	5		
[6]	7	8	△9	10	11	[12]
[13]	[14]	⊙15	△16	⊙17	18	19
20*	21*	22*	△23*	24*	25*	26*
27	28	29	△30	31		

1971 JANUARY

S	M	T	W	T	F	S
				1	2	
[3]	4	5	△6	7	8	9
10	11	⊙12	△13	⊙14	[15]	16
17	18	19	△20	21	22	23
24	25	26	△27	28	29	30
31						

- ⊙ Regular World Day (RWD)
- ⊙ Priority Regular World Day (PRWD)
- △ Quarterly World Day (QWD)
- △ Regular Geophysical Day (RGD)
- [5] Day of Solar Eclipse
- [6] [7] World Geophysical Interval (WGI)

- [2] Day with unusual meteor shower activity, Northern Hemisphere
- [3] Day with unusual meteor shower activity, Southern Hemisphere
- * Micropulsation Interval Day

TABLE OF WORLD DAYS MARKED ON THE CALENDAR

1970	RWD	PRWD	QWD	RGD	WGI	ECL.	METEORS	MICROPULSATION INTERVALS
Jan.	13, 14, 15	14		7, 14, 21, 28			3, 15	
Feb.	10, 11, 12	11		4, 11, 18, 25				
Mar.	10, 11, 12	11	11	4, 11, 18, 25	2-15	7		15-21
Apr.	14, 15, 16	15		1, 8, 15, 22, 29			22	
May	12, 13, 14	13		6, 13, 20, 27			4-6	
June	16, 17, 18	17	17	3, 10, 17, 24	8-21		6-10, 13-14	21-27
July	14, 15, 16	15		1, 8, 15, 22, 29			27-31	
Aug.	18, 19, 20	19		5, 12, 19, 26		31>	10-14	
Sep.	15, 16, 17	16	16	2, 9, 16, 23, 30	7-20	> 1		20-26
Oct.	13, 14, 15	14		7, 14, 21, 28			20-22	
Nov.	17, 18, 19	18		4, 11, 18, 25			16-17	
Dec.	15, 16, 17	16	16	2, 9, 16, 23, 30	7-20		4-6, 12-14, 22-23	20-26

IUWDS International Geophysical Calendar for 1970

EXPLANATIONS

1. **Purpose.** The International Geophysical Calendar designates days and intervals selected for special attention for geophysical observations, experiments, data interchange or analyses. It is thus a framework for worldwide interdisciplinary coordination in those programs where it is not practical or meaningful to carry out the same work for each and every day. The Calendar serves mainly the branches of geophysics dealing with the earth's atmosphere. A principal use is for the coordination of the sampling of the many phenomena which vary significantly during the course of a year. The Calendar is prepared by the International Ursigram and World Days Service (IUWDS) with the advice of spokesmen for various scientific disciplines. It is common practice for individual geophysical stations or groups of stations to arrange some of their plans for observations according to the Calendar. Thus geophysicists can expect that their colleagues in other countries, in other laboratories and in other geophysical disciplines will tend to be making increased efforts for the days and intervals marked on the Calendar; the amount of geophysical data in existence, at the World Data Centers and elsewhere, will accordingly be greater for Calendar days.

2. **Universal Time (UT)** is the standard of time for all world days on the Calendar, i.e., each begins at 0000 UT and ends at 2400 UT.

3. **Regular Geophysical Days (RGD)** are each Wednesday throughout the year. This weekly sampling schedule is particularly designed for the purposes of the meteorological program but has also been adopted for some other geophysical programs.

4. **Regular World Days (RWD)** are three consecutive days each month, always Tuesday, Wednesday, Thursday near the middle of the month. They are intended for observations, experiments or analyses which can or need be made for about 10% of days and which should be spaced (in groups of three days) throughout the year.

5. **Priority Regular World Days (PRWD)** are one day each month—the RWD which are also a RGD (Wednesday). They are for work which can or needs to be done only one day each month throughout the year.

6. **Quarterly World Days (QWD)** are one day in each quarter of the year. They are the PRWD which fall within the World Geophysical Intervals (WGI) and are also a RGD (Wednesday). The QWD serve to coordinate seasonal high-altitude rocket experiments.

7. **World Geophysical Intervals (WGI)** during 1970 are fourteen consecutive days in each season, beginning on the second Monday of the selected months. They always include the three RWD of the month and the QWD for the season. The WGI are intended for intensified programs aimed at the statistics of seasonal variations or the timing of seasonal changes. The schedule of WGI relative to the equinoxes and solstices, though usually made different from year to year, remains as in 1969 in order to cover the March 1970 eclipse.

8. **Solar Eclipses** are March 7 (total) observable from Central Pacific Ocean through Yucatan Peninsula past East Coast of U.S.A. and ends below Iceland in North Atlantic Ocean; and August 31 - September 1 (annular) observable from New Guinea into South Atlantic Ocean between Antarctica and South America. Geophysical stations in the eclipse zones and their conjugate areas treat these days as world days and undertake special programs to study eclipse effects on the earth's atmosphere. For maps of the eclipse zones and pertinent details see any standard astronomical ephemeris or yearbook.

9. **Meteor Showers** of special interest are also marked on the Calendar, including some of the important visual showers and also unusual showers observable mainly by radio and radar techniques. The dates are coded to indicate whether the shower is observable in the northern or the southern hemisphere. Attention is called to these days (selected by P. M. Millman, Ottawa) in case ionization produced by meteors may account for unusual effects in other geophysical experiments.

10. **"World Days" not appearing on Calendar.** The occurrence of unusual solar or geophysical conditions are announced or forecast through various types of geophysical "Alerts" which are widely distributed by telegram and radio broadcast on a current schedule. The types of Alerts are: magnetic storm (in telegrams MAGSTORM), solar activity (SOFLARE, PROTONFLARE or SOFLARE FLARES), and cosmic ray event (COSMIC EVENT). Sudden and unusual stratospheric warmings (STRATWARM) are also designated. These Alerts are issued by the IUWDS World Warning Agency or under certain circumstances by one of the solar-geophysical Regional Warning Centers. The meteorological telecommunications network coordinated by WMO carries these worldwide Alerts once daily soon after 0400 UT. Many geophysical stations in the various disciplines increase their programs or carry on special experiments to take advantage of the special solar or geophysical conditions during the period of Alert. Selections of **Retrospective World Intervals** are later announced in suitable publications. An additional service of the Regional Warning Centers is to notify geophysical and solar stations promptly (Ursigrams) with summary details of immediately significant geophysical observations and of major solar events which have important and sometimes long-lasting geophysical effects. The telegraphic addresses of the Regional Warning Centers are as follows: SOLTERWARN BOULDER (USA); DEMPJA TOKYO (JAPAN); IZMIRAN MOSCOW (USSR); IONOSPHERE DARMSTADT (GFR) or CNETAGI MEUDON (FRANCE); IPSO SYDNEY (AUSTRALIA). Associate RWC operate in some other localities.

Retrospective World Intervals. Attention is called to the Retrospective World Intervals, which are announced in STP Notes and elsewhere to provide additional analyzed data for particular events studied in the IUCSTP projects. The detailed data called for will be determined by the IUCSTP project leaders and exchanged through the WDCs.

RECOMMENDED SCIENTIFIC PROGRAMS OPERATIONAL EDITION

(The following material was reviewed in 1969 by spokesmen of IUCSTP for the various scientific disciplines as suitable for coordinated geophysical programs in 1970 and at the 12th Meeting of COSPAR).

11. **Meteorology.** Particular efforts should be made to carry out an intensified program on the RGD—each Wednesday, UT. A desirable goal would be the scheduling of meteorological rocketsondes, ozone sondes and radiometer sondes on these days, together with maximum-altitude rawinsonde ascents at both 0000 and 1200 UT.

During WGI and STRATWARM Alert intervals, intensified programs are also desirable, preferably by the implementation of RGD-type programs (see above) on Mondays and Fridays, as well as on Wednesdays.

Atmospheric Electricity. Not-continuous measurements and data reduction for continuous measurements of atmospheric electric current density, field, conductivities, space charges, ion number densities, ionosphere potentials, condensation nuclei, etc.; both at ground as well as with radiosondes, aircraft, rockets; should be done with first priority on the RGD each Wednesday, beginning on 7 January 1970 at 0600 UT, 14 January at 1200 UT, 21 January at 1800 UT, 28 January at 0000 UT, 4 February at 0600 UT, etc., (beginning hour shifts six hours each week, but is always on a Wednesday.) Minimum program is at the same time on PRWD beginning with 14 January 1970 at 1200 UT. Data reduction for continuous measurements should be extended, if possible, to cover at least the full RGD including, in addition, at least 6 hours prior to indicated beginning time. Measurements prohibited by bad weather should be done 24 hours later. Results on sferics and ELF are wanted with first priority for the same hours, short-period measurements centered around the minutes 35-50 of the hours indicated. The World Data Centre for Atmospheric Electricity, 7 Malaya Spasskaya, Leningrad K-18, USSR, is the collection point for data and information on measurements. Intensification Intervals of the Atmospheric Electricity Ten-Year Program will be announced separately.

12. **Geomagnetic Phenomena.** It has always been a leading principle for geomagnetic observatories that operations should be as continuous as possible and the great majority of stations undertake the same program without regard to the Calendar. Special efforts recommended are:

(a) **Micro-pulsations:** to improve the cooperation between observatories in the analysis of worldwide distribution of different types of micro-pulsations, it is recommended both to the fixed observatories as well as to research groups making special investigations of micro-pulsations to conduct quick run registrations of pulsations in the following time intervals during the year: March 15-21, June 21-27, September 20-26, December 20-26.

(b) Stations equipped for making magnetic observations, but which can not carry out such observations and reductions on a continuous schedule are encouraged to carry out such work at least on RWD (and during times of MAGSTORM Alert).

13. **Ionospheric Phenomena.** During the IASY period special attention will be concentrated on particular events which cannot be forecast in advance with reasonable certainty. These will be identified by Retrospective World Intervals. The importance of obtaining full observational coverage is therefore stressed even if it is only possible to analyse the detailed data for the chosen events. In the case of vertical incidence soundings, the need to obtain quarter-hourly ionograms at as many stations as possible is particularly stressed and takes priority over recommendation (a) below when both are not practical.

For the vertical incidence (VI) sounding program, the summary recommendations are: (a) soundings to be made at five minute intervals on RWDs for stations normally making observations every quarter hour; all other stations are recommended to make at least quarter-hourly observations on RWDs; (b) f-plots are made for high latitude stations and for the so-called "representative" stations at lower latitudes for all days (i.e., including RWDs and WGIs). (Continuous records of ionospheric parameters are acceptable in place of f-plots at temperate and low latitude stations); (c) profile parameters h_p , q_p or recommended similar parameters to be determined and sent to WDCs for RWDs for all stations except those undertaking full profile programs or producing monthly median profiles; (d) copies of hourly ionograms with appropriate scales for RWDs are to be sent to WDCs; (e) stations in the eclipse zone and its conjugate area should take continuous observations on solar eclipse days and special observations on adjacent days.

For Thomson scatter program, every effort should be made to obtain measurements at least on all RWDs and intensive series should be attempted whenever possible in WGIs. The need for collateral VI observations with not more than quarter-hourly spacing at least during all observing periods is stressed.

For the ionospheric drifts program, observations are made at least on all RWDs, on all WGIs, on every Wednesday (RGDs) and on every Thursday. It is essential that sufficient observations be made to determine the diurnal variations. Hourly tabulations for all days mentioned are sent to the WDCs.

For the ionospheric absorption program, hourly observations are made at least on all RWDs and hourly tabulations sent to WDCs. Observations should be continuous on solar eclipse days for stations in eclipse zone and in its conjugate area. Special efforts should be made to obtain additional absorption measurements at temperate latitude stations during the period of Absorption Winter Anomaly, particularly on days of abnormally high or abnormally low absorption (approximately November-March, Northern Hemisphere; May-September, Southern Hemisphere.)

For back-scatter and forward-scatter programs, observations should be made and analyzed on all RWDs at least.

For synoptic observations of mesospheric (D region) electron densities, several groups have agreed on using the RGD for the hours around noon.

For ELF noise measurements involving the earth-ionosphere cavity resonances any special effort should be concentrated during the WGIs.

It is recommended that more intensive observations in all programs be considered on days of unusual meteor activity.

14. **Solar Phenomena.** Observatories making specialized studies of solar phenomena, particularly using new or complex techniques, such that continuous observation or reporting is impractical, are requested to make special efforts to provide to WDCs data for solar eclipse days, RWDs, and during SOFLARE PROTON FLARE Alerts. The attention of those recording solar noise spectra, solar magnetic fields and doing specialized optical studies is particularly drawn to this recommendation.

15. **Space Research, Interplanetary Phenomena, Cosmic Rays, Aeronomy.** Experimenters should take into account that observational effort in other disciplines tends to be intensified on the days marked on the Calendar, and schedule balloon and rocket experiments accordingly if there are no other geophysical reasons for choice. In particular it is desirable to make rocket measurements of ionospheric characteristics on the same day at as many locations as possible; where feasible, experimenters should endeavor to launch rockets to monitor at least normal conditions on the Quarterly World Days (QWD) or on RWDs, since these are also days when there will be maximum support from ground observations. Also, special efforts should be made to assure recording of telemetry on QWD of experiments on satellites and of experiments on spacecraft in orbit around the sun.

The International Ursigram and World Days Service (IUWDS) is a permanent scientific service of the International Union of Radio Science (URSI), with the participation of the International Astronomical Union and the International Union Geodesy and Geophysics. IUWDS adheres to the Federation of Astronomical and Geophysical Services of the International Council of Scientific Unions. The IUWDS coordinates the international aspects of the world days program and rapid data interchange, and also publishes subsequently **Abbreviated Calendar Records** of solar and geophysical indices and events.

This Calendar for 1970 has been drawn up by A.H. Shapley, Chairman, and J. V. Lincoln, Deputy Secretary, of the IUWDS Steering Committee, in close association with the IUCSTP Commission and the Reporters and spokesmen for the various scientific disciplines and COSPAR. Similar Calendars have been issued annually beginning with the IGY, 1957-58, and have been published in various widely available scientific publications.

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