

# International Geophysical Calendar 1993

(See other side for information on use of this Calendar)

	S	M	T	W	T	F	S		S	M	T	W	T	F	S		
						1	2							1	2	3	
JANUARY	3	4	5	6	7	8	9		4	5	6	7	8	9	10		JULY
	10	11	12	13	14	15	16		11	12	13	14	15	16	17		
	17	18	19	20*	21*	22+	23+		18	19	20*	21*	22	23	24		AUGUST
	24+	25+	26+	27+	28+	29+	30+		25	26	27	28	29	30	31		
FEBRUARY	31	1	2	3	4	5	6		1	2	3	4	5	6	7		
	7	8	9	10	11	12	13		8	9	10	11	12	13	14		
	14	15	16	17*	18*	19	20		15	16	17*	18*	19	20	21		
	21	22	23	24	25	26	27		22	23	24	25	26	27	28		
	28	1	2	3	4	5	6		29	30	31	1	2	3	4		SEPTEMBER
MARCH	7	8	9	10	11	12	13		5	6	7	8	9	10	11		
	14	15	16	17*	18*	19	20		12	13	14	15	16	17	18		
	21	22	23	24	25	26	27		19	20	21*	22*	23	24	25		
	28	29	30	31	1	2	3		26	27	28	29	30	1	2		OCTOBER
	4	5	6	7	8	9	10		3	4	5	6	7	8	9		
APRIL	11	12	13	14	15	16	17		10	11	12	13	14	15	16		
	18	19	20	21*	22*	23	24		17	18+	19*	20*	21	22	23		
	25	26	27	28	29	30	1		24	25	26	27	28	29	30		
	2	3	4	5	6	7	8		31	1	2	3	4	5	6		NOVEMBER
MAY	9	10	11	12	13	14	15		7	8	9+	10+	11	12	13		
	16	17	18+	19*	20*	21	22		14	15	16*	17*	18	19	20		
	23	24	25	26	27	28	29		21	22	23	24	25	26	27		
	30	31	1	2	3	4	5		28	29	30	1	2	3	4		DECEMBER
JUNE	6	7	8	9	10	11	12		5	6	7+	8+	9	10	11		
	13	14	15+	16*	17*	18	19		12	13	14*	15*	16	17	18		
	20	21	22	23	24	25	26		19	20	21	22	23	24	25		
	27	28	29	30					26	27	28	29	30	31	1		1994
									2	3	4	5	6	7	8		JANUARY
									9	10	11*	12*	13+	14+	15		
									16	17	18	19	20	21	22		
									23	24	25	26	27	28	29		
									30	31							
									S	M	T	W	T	F	S		
									21	22							

19 Regular World Day (RWD)

20 Priority Regular World Day (PRWD)

17 Quarterly World Day (QWD)  
also a PRWD and RWD

6 Regular Geophysical Day (RGD)

15 16 World Geophysical Interval (WGI)

21 Day of Solar Eclipse

21 22 Airglow and Aurora Period

20\* Dark Moon Geophysical Day (DMGD)

26+ Incoherent Scatter Coordinated  
Observation Day

#### NOTES on other dates and programs of interest:

- Days with unusual meteor shower activity are: Northern Hemisphere Jan 3; Apr 21-23; May 4-5; Jun 4-12, 26-29; Aug 10-15; Oct 20-23; Nov 16-18; Dec 12-14, 22-23, 1993; Jan 3-4, 1994. Southern Hemisphere Apr 23; May 4-5; Jun 4-12, 26-29; Jul 28-29; Oct 21-23; Nov 16-18; Dec 12-14, 1993.
- SOLTIP (Solar connection with Transient Interplanetary Processes). Observing Program 1990-1995: solar-generated phenomena and their propagation throughout the heliosphere. (See Explanations.)
- FLARES22 (FLARE RESEARCH at solar cycle 22 max). Observing Program 1990-1995: basic physical processes of transient solar activity and its coupling with solar-terrestrial environment. (See Explanations.)
- GAW (Global Atmosphere Watch). WMO program to measure atmospheric composition -- early warning system to detect changes in atmospheric concentrations of greenhouse gases, ozone, and pollutants (acid rain and dust particles).
- Day intervals that IMP 8 satellite is in the solar wind (begin and end days are generally partial days): 28 Dec 1992-5 Jan 1993; 9-17 Jan; 21-30 Jan; 3-12 Feb; 16-24 Feb; 1-9 Mar; 14-21 Mar; 26 Mar-3 Apr; 8-15 Apr; 20-27 Apr; 2-10 May; 15-22 May; 28 May-4 Jun; 9-17 Jun; 22-29 Jun; 4-12 Jul; 17-24 Jul; 30 Jul-5 Aug; 12-18 Aug; 24-30 Aug; 6-12 Sep; 18-25 Sep; 1-7 Oct; 14-20 Oct; 26 Oct-1 Nov; 8-14 Nov; 20-27 Nov; 2-10 Dec; 15-22 Dec; 27 Dec 1993-4 Jan 1994. Note that there will not necessarily be total IMP 8 data monitoring coverage during these intervals. (Information kindly provided by the WDC-A for Rockets and Satellites, NASA GSFC, Greenbelt, MD 20771 U.S.A.).
- + Incoherent Scatter Coordinated Observations Days (see Explanations) starting at 1600 UT on the first day of the intervals indicated, and ending at 1600 UT on the last day of the intervals: 20-30 Jan 1993 CADITS/MLTCS; 17-18 Mar; 18-19 May; 15-16 Jun SUNDIAL; 20-21 Jul; 18-19 Oct; 9-10 Nov GISMOS; 7-8 Dec; 11-14 Jan 1994 GISMOS

where CADITS= Coupling and Dynamics of the Ionosphere-Thermosphere System;  
GISMOS= Global Ionospheric Simultaneous Measurements of Substorms;  
MLTCS= Mesosphere, Lower-Thermosphere Coupling Study;  
SUNDIAL= Coordinated study of the ionosphere/magnetosphere.

## EXPLANATIONS

This Calendar continues the series begun for the IGY years 1957-58, and is issued annually to recommend dates for solar and geophysical observations which cannot be carried out continuously. Thus, the amount of observational data in existence tends to be larger on Calendar days. The recommendations on data reduction and especially the flow of data to **World Data Centers (WDCs)** in many instances emphasize Calendar days. The Calendar is prepared by the **International Ursigram and World Days Service (IUWDS)** with the advice of spokesmen for the various scientific disciplines.

The **Solar Eclipses** are:

a.) **21 May 1993** (partial) visible in N. America northwest of line that passes from mid-Baja, CA through Buffalo, NY; in Europe northeast of line crossing from England-Scotland border through southern Poland; and in northeastern Asia. Maximum magnitude is 0.74.

b.) **13 November 1993** (partial) visible near sunrise in all of Australia and New Zealand except for northern rims; near sunset in S. America south of middle of Chile and Argentina; in Antarctica where maximum magnitude is 0.93. (Description by Dr. Jay Pasachoff)

**Meteor Showers** (selected by R. Hawkes, Canada) include important visual showers and also unusual showers observable mainly by radio and radar techniques. These can be studied for their own geophysical effects or may be "geophysical noise" to other experiments. The dates are given in Note 1 under the Calendar.

### Definitions:

Time = Universal Time (UT);  
Regular Geophysical Days (RGD) = each Wednesday;  
Regular World Days (RWD) = Tuesday, Wednesday and Thursday near the middle of the month (see calendar);  
Priority Regular World Days (PRWD) = the Wednesday RWD;  
Quarterly World Days (QWD) = PRWD in the WGI;  
World Geophysical Intervals (WGI) = 14 consecutive days each season (see calendar);  
**ALERTS** = occurrence of unusual solar or geophysical conditions, broadcast once daily soon after 0400 UT;  
**STRATWARM** = stratospheric warmings;  
Retrospective World Intervals (RWI) = intervals selected by MONSEE for study.

For more detailed explanations of the definitions, please see one of the following or contact H. Coffey (address below): *IUWDS Synoptic Codes for Solar and Geophysical Data: Solar-Geophysical Data*, November issue; *URSI Information Bulletin: COSPAR Information Bulletin: IAGA News: IUGG Chronicle: WMO Bulletin: IAU Information Bulletin: Journal of the Radio Research Laboratories (Japan): Geomagnetism and Aeronomy (Russia): Journal of Atmospheric and Terrestrial Physics (UK): EOS Magazine (AGU/USA).*

**Priority recommended programs for measurements not made continuously** (in addition to unusual **ALERT** periods):

**Aurora and Airglow** — Observation periods are New Moon periods, especially the 7 day intervals on the calendar;

**Atmospheric Electricity** — Observation periods are the RGD each Wednesday, beginning on 6 January 1993 at 0000 UT, 13 January at 0600 UT, 20 January at 1200 UT, 27 January at 1800 UT, etc. Minimum program is **PRWDs**.

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 (IAU) and the International Union of Geodesy and Geophysics (IUGG). IUWDS adheres to the Federation of Astronomical and Geophysical Data Analysis Services (FAGS) of the International Council of Scientific Unions (ICSU). The IUWDS coordinates the international aspects of the world days program and rapid data interchange.

This Calendar for 1993 has been drawn up by H.E. Coffey, of the IUWDS Steering Committee, in association with spokesmen for the various scientific disciplines in SCOSTEP, IAGA, URSI and other ICSU organizations. Similar Calendars are issued annually beginning with the IGY, 1957-58, and are published in various widely available scientific publications.

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**Additional copies are available upon request to IUWDS Chairman, Dr. Richard Thompson, IPS Radio and Space Services, Department of Administrative Services, P.O. Box 5606, West Chatswood, NSW 2057, Australia, Fax number (61)(2)414 8331, e-mail richard@ips.oz.au or IUWDS Secretary for World Days, Miss Helen Coffey, WDC-A for Solar-Terrestrial Physics, NOAA E/GC2, 325 Broadway, Boulder, Colorado 80303, USA, Fax number (303)497-6513, e-mail 34367:hcoffey.**

**Geomagnetic Phenomena** — At minimum, need observation periods and data reduction on **RWDs** and during **MAGSTORM Alerts**.

**Ionospheric Phenomena** — Quarter-hourly ionograms; more frequently on **RWDs**, particularly at high latitude sites; f-plots on **RWDs**; hourly ionograms to **WDCs** on **QWDs**; continuous observations for solar eclipse in the eclipse zone. See **Airglow and Aurora**.

**Incoherent Scatter** — Observations on Incoherent Scatter Coordinated Days; also intensive series on **WGI**s or **Airglow and Aurora** periods. **Special programs:** Dr. J. Holt, M.I.T. Haystack Observatory, Route 40, Westford, MA 01886 U.S.A., URSI Working Group G.5 (617)981-5625; e-mail AMES: "jmh@chaos.haystack.edu". **Ionospheric Drifts** — During weeks with **RWDs**.

**Traveling Ionosphere Disturbances** — special periods, probably **PRWD** or **RWDs**.

**Ionospheric Absorption** — Half-hourly on **RWDs**; continuous on solar eclipse days for stations in eclipse zone and conjugate area. Daily measurements during Absorption Winter Anomaly at temperate latitude stations (Oct-Mar Northern Hemisphere; Apr-Sep Southern Hemisphere).

**Backscatter and Forward Scatter** — **RWDs** at least.

**Mesospheric D region electron densities** — **RGD** around noon.

**ELF Noise Measurements of earth-ionosphere cavity resonances** — **WGI**s.

**All Programs** — Appropriate intensive observations during unusual meteor activity.

**Meteorology** — Especially on **RGDs**. On **WGI**s and **STRATWARM** Alert Intervals, please monitor on Mondays and Fridays as well as Wednesdays.

**GAW (Global Atmosphere Watch)** -- WMO program to integrate monitoring of atmospheric composition. Early warning system of changes in atmospheric concentrations of greenhouse gases, ozone, and pollutants (acid rain and dust particles). WMO, 41 avenue Giuseppe-Motta, P.O. Box 2300, 1211 Geneva 2, Switzerland.

**Solar Phenomena** — Solar eclipse days, **RWDs**, and during **PROTON/FLARE ALERTS**.

**FLARES22 (FLARE RESEARCH at the maximum of solar cycle 22)** — observations of basic physical processes of transient solar activity and its coupling with the solar-terrestrial environment, including times of the various solar **ALERTS**. Coordinate satellite and ground-based observations. Contact Dr. M. Machado, Dept of Physics, Univ of Alabama, Huntsville, AL 35899 USA. (205)895-6676; SPAN SSL::MACHADO; FAX (205)895-6790.

**SOLTIP (Solar connection with Transient Interplanetary Processes)** -- 1990-95 observations and analyses of solar-generated phenomena propagating through heliosphere, including times following the various solar **ALERTS**. Includes Interplanetary Scintillation observations of radio galaxies and telemetry signals to/from interplanetary spacecraft. Also coordination of spacecraft IMP8, ICE, Giotto, Sakigake, Voyager 1/2, Pioneer 10/11, Ulysses, Relict, Wind, SOHO, Galileo and ACE. Contact Dr. M. Dryer, NOAA R/E/SE, 325 Broadway, Boulder, CO 80303 USA. (303)497-3978; SPAN e-mail address SELVAX::MDRYER; FAX (303)497-3645.

**Space Research, Interplanetary Phenomena, Cosmic Rays, Aeronomy** — **QWDs**, **RWD**, and **Airglow and Aurora** periods.