

International Geophysical Calendar 2004 (FINAL)

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

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

- ⓪ Regular World Day (RWD)
- Ⓛ Priority Regular World Day (PRWD)
- 17 Quarterly World Day (QWD)
also a PRWD and RWD
- 7 Regular Geophysical Day (RGD)
- 8 9 World Geophysical Interval (WGI)
- + Incoherent Scatter Coordinated Observation Day

- 2005
JANUARY
- N NEW MOON F FULL MOON
- 19 Day of Solar Eclipse: Apr 19 and Oct 14 (both partial)
- 14 15 Airglow and Aurora Period
- 21* Dark Moon Geophysical Day (DMGD)

NOTES on other dates and programs of interest:

1. Days with **significant meteor shower** activity are: Northern Hemisphere 4 Jan; 21-23 Apr; 4-5 May; 6-11, 27-29 Jun; 11-13 Aug; 21-22 Oct; 13-15, 21-23 Dec 2004. Southern Hemisphere 4-5 May; 6-11, 27-29 Jun; 27 Jul-2 Aug; 21-22 Oct; 13-15 Dec 2004.
These can be studied for their own geophysical effects or may be "geophysical noise" to other experiments.
2. **GAW (Global Atmosphere Watch)** -- early warning system for changes in greenhouse gases, ozone layer, and long range transport of pollutants. (See Explanations.)
3. **CAWSES (Climate and Weather of the Sun-Earth System)** -- SCOSTEP Program 2004-2008. Theme areas: Solar Influence on Climate; Space Weather: Science and Applications; Atmospheric Coupling Processes; Space Climatology; and Capacity Building and Education. (See Explanations.)
4. + **Incoherent Scatter Coordinated Observations Days** (see Explanations) starting at 1300 UT on the first day of the intervals indicated, and ending at 1600 UT on the last day of the intervals:
8-13 Mar or 29 Mar-2Apr or 19-23 Apr **M-I Coupling**: Storm effects, **CPEA**; 17-20 May **Synoptic** (wide F-region coverage with topside and temperatures); 14-18 Jun **LTCS, MST**; 13-16 Sep **Synoptic** (wide F-region coverage with some topside or E-region); 9-13 Nov **LTCS, C/NOFS**; 6-9 Dec **Synoptic** (wide F-region coverage with some topside or E-region).
See http://people.ece.cornell.edu/wes/URSI_ISWG/2004WDSchedule.htm
where **C/NOFS**= Communications/Navigation Outage Forecasting System (O. delaBeaujardiere -- Odile.delaBeaujardiere@hanscom.af.mil);
CPEA = Coupling Processes in the Equatorial Atmosphere (S. Fukao -- fukao@kurasc.kyoto-u.ac.jp);
See <http://www.kurasc.kyoto-u.ac.jp/~yamamoto/CPEA-panf2.pdf>
LTCS = Lower Thermosphere Coupling Study (L. Goncharenko - lpg@haystack.mit.edu);
M-I Coupling = Magnetosphere-Ionosphere Coupling-Storm/Substorm Effects Mid & Low Latitude Iono. (C. Huang -- cshuang@haystack.mit.edu);
MST = Coordinated D- and E-region campaigns in high resolution MST mode (J. Chao -- chau@jro.igp.gob.pe)
Synoptic = Wide coverage of the F-region augmented with topside or E-region measurements (W. Swartz -- wes@ece.cornell.edu)

FINAL EDITION, September 2003

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 Space Environment Service (ISES)** with the advice of spokesmen for the various scientific disciplines.

The **Solar Eclipses** are:

Unusually, 2004 has no total or annular eclipses of the Sun.

a.) **19 April 2004 (partial) eclipse** will be visible from the southern part of Africa and from the coast of Antarctica facing it. The peak coverage of 75% will occur in the ocean off Antarctica. Cape Town, South Africa, will have a 60% eclipse, and the partiality will diminish to zero at a line going across the northern coast of Angola and the northeastern tip of Madagascar.

b.) **14 October 2004 (partial) eclipse** visible in northeast Asia and northern Pacific Ocean, also in western Alaska (point of greatest partiality, 93% coverage, occurs in Alaska at the terminator). The limit of 0% coverage slices across Asia from northern Siberia to the southwest through mid-Mongolia, and passes southern tips of Korea and Japan. Tokyo has ~20% coverage and Seoul ~10% coverage. The limit of 0% coverage extends as far south as the equator near the International Dateline. The top of Kamchatka Peninsula will see ~80% coverage.

Observers should note the transit of Venus across the Sun on June 8, 2004, the first transit of Venus visible since 1882.

(Description by Dr. Jay Pasachoff, Williams College, Chair of IAU WG on Solar Eclipses, jmp@williams.edu based on maps from Fred Espenak, NASA GSFC. See <http://sunearth.gsfc.nasa.gov/eclipse/SEcat/SEdecade2001.html> and www.williams.edu/Astronomy/IAU_eclipses. See also IAU Program Group on Public Education at the Times of Eclipses: <http://www.eclipses.info/>.)

Meteor Showers (selected by R. Hawkes, Mount Allison Univ, Canada (rhawkes@mta.ca)) include important visual showers and also unusual showers observable mainly by radio and radar techniques. 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**) = MONSEE study intervals

For more detailed explanations of the definitions, please see one of the following or contact H. Coffey (address below): *URSI Information Bulletin*; *COSPAR Information Bulletin*; *IAGA News*; *IUGG Chronicle*; *WMO Bulletin*; *IAU Information Bulletin*; *Geomagnetism and Aeronomy (Russia)*; *Journal of Atmospheric and Terrestrial Physics (UK)*; *ISES homepage*

<http://www.ises-spaceweather.org/>.

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 7 January 2004 at 0000 UT, 14 January at 0600 UT, 21 January at 1200 UT, 28 January at 1800 UT, etc. Minimum program is **PRWDs**.

Geomagnetic Phenomena — At the 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 ionogram scaled parameters 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. Wes Swartz, School of Electr. & Computer Eng., Cornell University, Ithaca, NY 14853 USA; tel. 607-255-7120; Fax 607-255-6236; e-mail wes@ece.cornell.edu. URSI Working Group G.5. See

http://people.ece.cornell.edu/wes/URSI_ISWG/2004WDSchedule.htm.

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**.

CAWSES (Climate and Weather of the Sun-Earth System) -- SCOSTEP Program 2004-2008. Focus on fully utilizing past, present, and future data; and improving space weather forecasting, the design of space- and Earth-based technological systems, and understanding the solar-terrestrial influences on Global Change. Contact is Su. Basu (sbasu@bu.edu), Chair of CAWSES Science Steering Group. Program "theme" areas: Solar Influence on Climate; Space Weather: Science and Applications; Atmospheric Coupling Processes; Space Climatology; and Capacity Building and Education. See <http://www.ngdc.noaa.gov/stp/SCOSTEP/CAWSESDraft.html>. In 2004 emphasis is on the CPEA campaign -- CAWSES encourages observations at all latitudes during CPEA.

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

The **International Space Environment Service (ISES)** 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). ISES adheres to the Federation of Astronomical and Geophysical Data Analysis Services (FAGS) of the International Council for Science (ICSU). The ISES coordinates the international aspects of the world days program and rapid data interchange.

This Calendar for 2004 has been drawn up by H.E. Coffey, of the ISES 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. PDF versions are available online at ftp://ftp.ngdc.noaa.gov/STP/SOLAR_DATA/IGC_CALENDAR.

Published for the International Council for Science and with financial assistance of UNESCO.

Additional copies are available upon request to ISES Director, Dr. David Boteler, Geological Survey of Canada, National Geomagnetism Program, #7 Observatory Crescent, Ottawa, Ontario, Canada, K1A 0Y3, FAX (613)824-9803, e-mail Boteler@geolab.NRCan.gc.ca, or ISES Secretary for World Days, Ms. Helen Coffey, WDC-A for Solar-Terrestrial Physics, NOAA E/GC2, 325 Broadway, Boulder, Colorado 80305, USA, Fax number (303)497-6513, e-mail Helen.E.Coffey@noaa.gov.

The calendar is available on-line at <http://www.ises-spaceweather.org/>.