

International Geophysical Calendar 2011 (FINAL)

(See information on use of this Calendar)

	S	M	T	W	T	F	S		S	M	T	W	T	F	S		
JANUARY			4 ^N	5	6	7	8		3	4	5	6	7	8	1 ^N	2	JULY
	2	3	4 ^N	5	6	7	8		3	4	5	6	7	8	9		
	9	10	11*	12*	13	14	15		10	11	12	13	14	15 ^F	16		
	16	17	18	19 ^F	20	21	22		17	18	19	20	21	22	23		
	23	24	25	26	27	28	29		24	25	26	27*	28*	29	30 ^N		
	30	31	1 ⁺	2 ⁺	3 ^{N+}	4 ⁺	5		31	1 ⁺	2 ⁺	3 ⁺	4 ⁺	5 ⁺	6 ⁺	AUGUST	
FEBRUARY	6	7	8*	9*	10	11	12		7 ⁺	8 ⁺	9 ⁺	10 ⁺	11 ⁺	12	13 ^F		
	13	14	15	16	17	18 ^F	19		14	15	16	17	18	19	20		
	20	21	22	23	24	25	26		21	22	23	24*	25*	26	27		
	27	28	1	2	3	4 ^N	5		28	29 ^N	30	31	1	2	3	SEPTEMBER	
MARCH	6	7	8*	9*	10	11	12		4	5	6	7	8	9	10		
	13	14	15	16	17	18	19 ^F		11	12 ^F	13	14	15	16	17		
	20	21 ⁺	22 ⁺	23 ⁺	24	25	26		18	19	20	21 ⁺	22 ⁺	23 ⁺	24		
	27	28	29	30	31	1	2		25	26	27 ^N	28*	29	30	1		
APRIL	3 ^N	4	5*	6*	7	8	9		2	3	4	5	6	7	8	OCTOBER	
	10	11	12	13	14	15	16		9	10	11	12 ^F	13	14	15		
	17	18 ^F	19	20	21	22	23		16	17	18	19	20	21	22		
	24	25	26	27	28	29	30		23	24	25*	26 ^N	27	28	29		
MAY	1	2	3 ^N	4*	5	6	7		30	31	1	2	3	4	5	NOVEMBER	
	8	9	10	11	12	13	14		6	7	8	9	10 ^F	11	12		
	15	16	17 ^F	18	19	20	21		13	14	15	16	17	18	19		
	22	23	24	25	26	27	28		20	21	22	23*	24*	25 ^N	26		
	29	30	31	1 ^N	2	3	4		27	28 ⁺	29 ⁺	30 ⁺	1 ⁺	2	3	DECEMBER	
JUNE	5	6	7	8	9	10	11		4	5	6	7	8	9	10 ^F		
	12	13	14	15 ^F	16	17	18		11	12	13	14	15	16	17		
	19	20	21	22*	23*	24	25		18	19	20	21*	22*	23	24 ^N		
	26	27	28	29	30				25	26	27	28	29	30	31		
	S	M	T	W	T	F	S		1	2	3	4	5	6	7	2012	

- ⑪ Regular World Day (RWD)
- ⑫ Priority Regular World Day (PRWD)
- ⑨ Quarterly World Day (QWD)
also a PRWD and RWD
- ⑤ Regular Geophysical Day (RGD)

7 8 World Geophysical Interval (WGI)

+ Incoherent Scatter Coordinated Observation Day

N NEW MOON F FULL MOON

4 Solar Eclipses: Jan 4, Jun 1, Jul 1, Nov 25 (partial)
All solar eclipses in 2011 are partial eclipses.

27 28 Airglow and Aurora Period

11* Dark Moon Geophysical Day (DMGD)

NOTES on other dates and programs of interest:

1. Days with significant meteor shower activity (based on UT in year 2011) — regular meteor showers: Jan 1-6; Apr 16-25; Apr 19-May 28; May 22-Jul 2; May 20-Jul 5; Jun 5-Jul 17; Jul 8-Aug 19; Jul 17-Aug 24; Sep 26-Oct 3; Oct 2-Nov 7; Oct 31-Nov 23; Nov 27-Dec 18; Dec 17-26. These can be studied for their own geophysical effects or may be “geophysical noise” to other experiments. (pjenniskens@mail.arc.nasa.gov)
2. GAW (Global Atmosphere Watch) -- early warning system for changes in greenhouse gases, ozone layer, and long range transport of pollutants -- http://www.wmo.ch/web/arep/gaw/gaw_home.html. (See Explanations.)
3. CAUSES (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. <http://www.bu.edu/causes> (See Explanations.) (S. Avery –susan.avery@colorado.edu)
4. ILWS (International Living With a Star) Program – International effort to stimulate, strengthen, and coordinate space research to understand the governing processes of the connected Sun-Earth System as an integrated entity. See <http://ilwsonline.org/>.
5. + Incoherent Scatter Coordinated Observations Days (see Explanations) starting at 1300 UT on the first day of the intervals indicated, and ending at 2000 UT on the last day of the intervals (minimum 31 hours observations): Feb 1-4 Synoptic; Mar 21-23 Meteors; Aug 1-11 Planetary Waves; Sep 21-23 Meteors; Nov 28-Dec 1 Synoptic.
See <http://e7.eiscat.se/Members/ingemar/schedule/WD2011.htm/view?searchterm=WD2011>
where **Meteors** = Global measurements of the meteor input function (Asta Pellinen-Wannberg – asta.pellinen-wannberg@irf.se);
Planetary Waves = Investigation of planetary-scale waves in the ionosphere (Scott England --england@ssl.berkeley.edu);
Synoptic = Synoptic experiments emphasize wide coverage of F-region (Jan Sojka – sojka@cc.usu.edu and Ingemar Haggstrom -- ingemar@eiscat.se)
AO = Arecibo Obs (<http://www.naic.edu/~isradar/is/ishome.html>) Incoherent Scatter Radar (ISR);
JRO = Jicamarca Radio Obs (http://jro.igp.gob.pe/english/radar/operation/real-time_en.php);

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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 **the ICSU World Data System (WDS)** 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:

2011 has no full or annular eclipses; it does have four partial eclipses.

a.) 4 January 2011, partial solar eclipse, throughout Europe, northern Africa, east to India; max 86% in Scandinavia; near 75% in London, near 73% Paris, 58% Madrid, 55% Cairo, 10% in Karachi.

b.) 1 June 2011, partial solar eclipse, throughout N. Alaska, N. Canada, Greenland; max 60% N. Siberia near Finland; 46% Reykjavik, 40% Greenland; 25% Prince Edward Island, 12% St Johns, 9% St. Pierre et Miquelon; just NW of Halifax and Fredricton, 3% at Fairbanks, Alaska.

c.) 1 July 2011, partial solar eclipse, visible only in the ocean off Antarctica.

d.) 25 November 2011, partial solar eclipse, in Antarctica, New Zealand, barely Cape Town, South Africa; max 90% in ocean near Antarctica south of S. America; 24% at Nelson (N.Z.), 28% Christchurch; 30% Invercargill, 6% Hobart (Tasmania), 10% Cape Town (South Africa).

Information from Jay M. Pasachoff, Williams College (Williamstown, MA), Chair, International Astronomical Union's WG on Eclipses (<http://www.eclipses.info>), based on work by Fred Espenak, NASA GSFC and provided as a Google Map by Xavier Jubier.

Meteor Showers (selected by P. Jenniskens, SETI Institute, Mountain View, CA, pjenniskens@mail.arc.nasa.gov) 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. See extended text for more details.

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 visit ftp://ftp.ngdc.noaa.gov/STP/SOLAR_DATA/IGC_CALENDAR/ or

<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 5 January 2011 at 0000 UT, 12 January at 0600 UT, 19 January at 1200 UT, 26 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 **WGIs** or **Airglow and Aurora** periods.

Special programs: Dr. Ingemar Haggstrom, EISCAT, Box 812, SE-98128 Kiruna, Sweden; tel: +46 98079155; Fax: +46 98079159; email ingemar@eiscat.se. URSI Working Group G.5. See <http://e7.eiscat.se/Members/ingemar/skedule/WD2011.htm?view?searchterm=WD2011>

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 — **WGIs**.

All Programs — Appropriate intensive observations during unusual meteor activity.

Meteorology — Especially on **RGDs**. On **WGIs** 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 Susan Avery (susan.avery@colorado.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.bu.edu/cawses/>.

ILWS (International Living With a Star) — International effort to stimulate, strengthen, and coordinate space research to understand the governing processes of the connected Sun-Earth System as an integrated entity. Contact M. Gukathakurta at madhulika.guhathakurta@nasa.gov or info@ilwsonline.org -- <http://ilwsonline.org/>.

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 2011 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/.

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Copies of earlier years' calendars are available upon request to either ISES Director, Dr. David Boteler, Geomagnetic Laboratory, Natural Resources Canada, 7 Observatory Crescent, Ottawa, Ontario, Canada, K1A 0Y3, FAX (613)824-9803, e-mail dboteler@NRCan.gc.ca, or contact ISES Secretary for World Days, Ms. Helen Coffey, e-mail hecoffey799@aol.com. Beginning with the 2008 Calendar, all calendars are available only in digital format.

Calendar information is available on-line at <http://www.ises-spaceweather.org/>. The International Geophysical Calendar and descriptive text is also available online at ftp://ftp.ngdc.noaa.gov/STP/SOLAR_DATA/IGC_CALENDAR/