

# International Geophysical Calendar 2012 (FINAL)

(See information to follow on the use of this Calendar)

	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
JANUARY	1	2	3	4	5	6	7	1	2	3 <sup>F</sup>	4	5	6	7	JULY
	8	9 <sup>F</sup>	10	11	12	13	14	8	9	10	11	12	13	14	
	15 <sup>+</sup>	16 <sup>+</sup>	17 <sup>+</sup>	18 <sup>*</sup>	19 <sup>*</sup>	20 <sup>+</sup>	21 <sup>+</sup>	15	16	17	18 <sup>*</sup>	19 <sup>N</sup>	20	21	
FEBRUARY	22 <sup>+</sup>	23 <sup>N</sup>	24 <sup>+</sup>	25 <sup>+</sup>	26 <sup>+</sup>	27 <sup>+</sup>	28 <sup>+</sup>	22	23	24	25	26	27	28	AUGUST
	29 <sup>+</sup>	30 <sup>+</sup>	31 <sup>+</sup>	1 <sup>+</sup>	2 <sup>+</sup>	3 <sup>+</sup>	4 <sup>+</sup>	29	30	31	1	2 <sup>F</sup>	3	4	
	5 <sup>+</sup>	6 <sup>+</sup>	7 <sup>F</sup>	8 <sup>+</sup>	9 <sup>+</sup>	10 <sup>+</sup>	11 <sup>+</sup>	5	6	7	8	9	10	11	
MARCH	12 <sup>+</sup>	13 <sup>+</sup>	14 <sup>+</sup>	15 <sup>+</sup>	16 <sup>+</sup>	17	18	12	13	14	15 <sup>*</sup>	16 <sup>*</sup>	17 <sup>N</sup>	18	SEPTEMBER
	19	20	21 <sup>N</sup>	22 <sup>*</sup>	23	24	25	19	20	21	22	23	24	25	
	26	27	28	29	1	2	3	26	27	28	29	30	31 <sup>F</sup>	1	
APRIL	4	5	6	7	8 <sup>F</sup>	9	10	2	3	4 <sup>+</sup>	5 <sup>+</sup>	6 <sup>+</sup>	7 <sup>+</sup>	8	OCTOBER
	11	12	13	14	15	16	17	9	10	11	12	13	14	15	
	18	19	20	21 <sup>*</sup>	22 <sup>N</sup>	23	24	16 <sup>N</sup>	17	18 <sup>*</sup>	19 <sup>*</sup>	20	21	22	
MAY	25	26	27	28	29	30	31	23	24	25	26	27	28	29	NOVEMBER
	1	2	3	4	5	6 <sup>F</sup>	7	30 <sup>F</sup>	1	2	3	4	5	6	
	8	9	10	11	12	13	14	7	8	9	10	11	12	13	
JUNE	15	16	17	18 <sup>*</sup>	19 <sup>*</sup>	20	21 <sup>N</sup>	14	15 <sup>N</sup>	16 <sup>*</sup>	17 <sup>*</sup>	18	19	20	DECEMBER
	22	23	24	25	26	27	28	21	22	23	24	25	26	27	
	29	30	1	2	3	4	5	28	29 <sup>F</sup>	30	31	1	2	3	
2013 JANUARY	6 <sup>F</sup>	7	8	9	10	11	12	4	5	6	7	8	9	10	2013 JANUARY
	13	14	15	16	17	18	19	11	12	13 <sup>N</sup>	14 <sup>*</sup>	15	16	17	
	20 <sup>N</sup>	21	22 <sup>*</sup>	23 <sup>*</sup>	24	25	26	18	19	20	21	22	23	24	
2013 JANUARY	27	28	29	30	31	1	2	25	26	27	28 <sup>F</sup>	29	30	1	2013 JANUARY
	3	4 <sup>F</sup>	5	6	7	8	9	2	3	4	5	6	7	8	
	10	11	12 <sup>+</sup>	13 <sup>+</sup>	14 <sup>+</sup>	15 <sup>+</sup>	16	9	10	11 <sup>+</sup>	12 <sup>*</sup>	13 <sup>N</sup>	14 <sup>+</sup>	15	
2013 JANUARY	17	18	19 <sup>N</sup>	20 <sup>*</sup>	21	22	23	16	17	18	19	20	21	22	2013 JANUARY
	24	25	26	27	28	29	30	23	24	25	26	27	28 <sup>F</sup>	29	
	30	31	1	2	3	4	5	30	31	1	2	3	4	5	
2013 JANUARY	6	7	8	9	10	11 <sup>N</sup>	12	6	7	8	9	10	11 <sup>N</sup>	12	2013 JANUARY
	13	14	15 <sup>*</sup>	16 <sup>*</sup>	17	18	19	13	14	15 <sup>*</sup>	16 <sup>*</sup>	17	18	19	
	20	21	22	23	24	25	26	20	21	22	23	24	25	26	
2013 JANUARY	27 <sup>F</sup>	28	29	30	31			27 <sup>F</sup>	28	29	30	31			2013 JANUARY
	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
									N	NEW MOON	F	FULL MOON			

17 Regular World Day (RWD)

18 Priority Regular World Day (PRWD)

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

4 Regular Geophysical Day (RGD)

12 13 World Geophysical Interval (WGI)

+ Incoherent Scatter Coordinated Observation Day  
(The period Jan 15-Feb 16 is a Stratwrm Alert interval with a fallback interval of Feb 7-12.)

20 Days of Solar Eclipse May 20 annular & Nov 13/14 total

18 19 Airglow and Aurora Period

18\* 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 2012) — regular meteor showers: Dec 28-Jan 12; Apr 16-25; Apr 19-May 28; May 22-Jul 02; May 20-Jul 05; Jun 05-Jul 17; Jul 12-Aug 23; Jul 17-Aug 24; Sep 09-Oct 09; Oct 02-Nov 07; Nov 06-Nov 30; Dec 07-Dec 17; Dec 17-26. These can be studied for their own geophysical effects or may be “geophysical noise” to other experiments (<http://www.imo.net/calendar/2012>).
2. GAW (Global Atmosphere Watch) -- early warning system for changes in greenhouse gases, ozone layer, and long range transport of pollutants.  
[http://www.wmo.int/pages/prog/arep/gaw/gaw\\_home\\_en.html](http://www.wmo.int/pages/prog/arep/gaw/gaw_home_en.html). (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.  
<http://www.bu.edu/cawses> (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.  
<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): January 15-31 Alert for Stratospheric warmings; February 1-15 – same as January; June 12-15 Synoptic; September 04-07, Synoptic; December 11-14 Synoptic.  
<http://e7.eiscat.se/Members/ingemar/skedule/WD2012.htm>

**Stratospheric Warmings** = Dynamics of lower thermosphere during stratospheric warming (L. Goncharenko -- [lpg@haystack.mit.edu](mailto:lpg@haystack.mit.edu))

**Synoptic** = Synoptic experiments emphasize wide coverage of F-region (Jan Sojka – [sojka@cc.usu.edu](mailto:sojka@cc.usu.edu))

**AO** = Arecibo Observatory Incoherent Scatter Radar (ISR)  
(<http://www.naic.edu/~isradar/is/ishome.html>)

**JRO** = Jicamarca Radio Observatory  
([http://jro.igp.gob.pe/english/radar/operation/real-time\\_en.php](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 **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:

**a.) 20 May 2012, annular solar eclipse**, magnitude 0.944, maximum duration 05m46s, eclipse visible in Asia, the Pacific, and N. America; (annular: China, Japan, Pacific, w U.S.).

**b.) 13/14 November 2012, total solar eclipse**, magnitude 1.050, maximum duration 04m02s, eclipse visible in Australia, NZ, s Pacific, s S. America (total: n Australia, s Pacific).

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** Dates selected from the International Meteor Organization Shower Calendar 2012. Peak times provided by A. McBeath. Includes important visual showers and unusual showers observable mainly by radio and radar techniques. The dates are given in Note 1 on the previous page. See extended text for more details.

### Definitions:

Time = Universal Time (UT)  
Regular Geophysical Day (RGD) = each Wednesday  
Regular World Day (RWD) = Tuesday, Wednesday and Thursday near the middle of the month (see calendar)  
Priority Regular World Day (PRWD) = the Wednesday RWD  
Quarterly World Day (QWD) = PRWD in the WGI  
World Geophysical Interval (WGI) = 14 consecutive days each season (see calendar)  
**ALERT** = 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/publications/igc\\_calendars/](ftp://ftp.ngdc.noaa.gov/STP/publications/igc_calendars/) 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 4 January 2012 at 0000 UT, 11 January at 0600 UT, 18 January at 1200 UT, 25 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. Ingemar Haggstrom, EISCAT, Box 812, SE-98128 Kiruna, Sweden; tel: +46 98079155; Fax: +46 98079159; email [ingemar@eiscat.se](mailto:ingemar@eiscat.se). URSI Working Group G.5. See <http://e7.eiscat.se/Members/ingemar/skchedule/WD2012.htm/>

**Ionospheric Drifts** — During weeks with **RWDs**.

**Travelling Ionospheric Disturbances (TIDs)** — special periods, probably **PRWDs** 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** — **RGDs** 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, 7 bis avenue de la Paix, P.O. Box 2300, CH-1211 Geneva 2, Switzerland. See [http://www.wmo.int/pages/prog/arep/gaw/gaw\\_home\\_en.html](http://www.wmo.int/pages/prog/arep/gaw/gaw_home_en.html).

**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](mailto: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 [info@ilwsonline.org](mailto:info@ilwsonline.org). See <http://ilwsonline.org/>.

**Space Research, Interplanetary Phenomena, Cosmic Rays, Aeronomy** — **QWDs**, **RWDs**, **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 2012 has been drawn up by R. Fiori and 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/publications/igc\\_calendars/](ftp://ftp.ngdc.noaa.gov/STP/publications/igc_calendars/).

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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, 2617 Anderson Road, Ottawa, Ontario, Canada, K1A 0E7, FAX (613)824-9803, e-mail [dboteler@NRCan.gc.ca](mailto:dboteler@NRCan.gc.ca), or contact ISES Secretary for World Days, Ms. Robyn Fiori, e-mail [rfiori@NRCan.gc.ca](mailto:rfiori@NRCan.gc.ca). Beginning with the 2008 Calendar, all calendars are available only in digital format.**

The website for the International Geophysical Calendar, including recent versions, can be found at <http://www.ises-spaceweather.org/>. Archived calendars from 1957 to present are available at [ftp://ftp.ngdc.noaa.gov/STP/publications/igc\\_calendars/](ftp://ftp.ngdc.noaa.gov/STP/publications/igc_calendars/).