

International Geophysical Calendar 2014 (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 ^N	2	3	4				1	2	3	4	5	JULY
	5	6	7	8	9	10	11		6	7	8	9	10	11	12 ^F	
	12	13	14 ⁺	15 ⁺	16 ^F	17 ⁺	18 ⁺		13	14	15	16	17	18	19	
	19 ⁺	20 ⁺	21 ⁺	22 ⁺	23 ⁺	24 ⁺	25 ⁺		20	21	22	23 [*]	24 [*]	25 [*]	26 ^N	
FEBRUARY	26 ⁺	27 ⁺	28 ⁺	29 ⁺	30 ^N	31 ⁺	1 ⁺		27	28	29	30	31	1	2	AUGUST
	2 ⁺	3 ⁺	4 ⁺	5 ⁺	6 ⁺	7 ⁺	8 ⁺		3	4	5	6	7	8	9	
	9 ⁺	10 ⁺	11 ⁺	12 ⁺	13 ⁺	14 ^F	15 ⁺		10 ^F	11	12	13	14	15	16	
	16	17	18	19	20	21	22		17	18	19	20	21	22	23	
	23	24	25	26 [*]	27 [*]	28 [*]	1 ^N		24	25 ^N	26 [*]	27 [*]	28	29	30	
MARCH	2	3	4	5	6	7	8		31	1	2	3	4	5	6	SEPTEMBER
	9	10	11	12	13	14	15		7	8	9 ^F	10	11	12	13	
	16 ^F	17	18	19	20	21	22		14 ⁺	15 ⁺	16 ⁺	17 ⁺	18 ⁺	19 ⁺	20 ⁺	
	23	24 ⁺	25 ⁺	26 ⁺	27 ⁺	28 ⁺	29 ⁺		21 ⁺	22 ⁺	23 [*]	24 ^N	25 ⁺	26 ⁺	27 ⁺	
	30 ^N	31 [*]	1 [*]	2 [*]	3 ⁺	4 ⁺	5 ⁺		28 ⁺	29 ⁺	30 ⁺	1 ⁺	2 ⁺	3 ⁺	4 ⁺	OCTOBER
APRIL	6 ⁺	7 ⁺	8	9	10	11	12		5 ⁺	6 ⁺	7 ⁺	8 ^F	9	10	11	
	13	14	15 ^F	16	17	18	19		12	13	14	15	16	17	18	
	20	21	22	23	24	25	26		19	20	21	22 [*]	23 ^N	24 [*]	25	
	27	28 [*]	29 ^N	30 [*]	1	2	3		26	27	28	29	30	31	1	NOVEMBER
MAY	4	5	6	7	8	9	10		2	3	4	5	6 ^F	7	8	
	11	12	13	14 ^F	15	16	17		9	10	11	12	13	14	15	
	18	19	20	21	22	23	24		16	17	18	19 [*]	20 [*]	21 [*]	22 ^N	
	25	26	27 [*]	28 ^N	29 [*]	30	31		23	24	25	26	27	28	29	
JUNE	1	2	3	4	5	6	7		30	1	2	3	4	5	6 ^F	DECEMBER
	8	9	10	11	12	13 ^F	14		7	8	9	10	11	12	13	
	15	16	17	18	19	20	21		14	15 ⁺	16 ⁺	17 ⁺	18 ⁺	19 ⁺	20 ⁺	
	22	23	24	25 [*]	26 [*]	27 ^N	28		21 ⁺	22 ^N	23 [*]	24 [*]	25	26	27	
	29	30							28	29	30	31	1	2	3	2015
									4	5 ^F	6	7	8	9	10	JANUARY
									11	12	13	14	15	16	17	
									18	19 [*]	20 ^N	21 [*]	22	23	24	
									25	26	27	28	29	30	31	

14 Regular World Day (RWD)

12 Priority Regular World Day (PRWD)

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

1 Regular Geophysical Day (RGD)

13 14 World Geophysical Interval (WGI)

+ Incoherent Scatter Coordinated Observation Day
(The period Jan 14-Feb 15 is a StratWarm Alert interval with a fallback interval of Feb 9-15. The period March 24-April 7 is a magnetic storm alert interval with a fallback period of Sept 14-Oct 2. In the case of no magnetic storm, the run will fulfill the alternating year quiet time measurements that will start Sept 27.)

N NEW MOON F FULL MOON

29 Days of Solar Eclipse: April 29, annular; Oct 23, partial

30 31 Airglow and Aurora Period

29* 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 2014) — 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 04-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>)
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
3. VarSITI (Variability of the Sun and Its Terrestrial Impact) – SCOSTEP Program 2014-2018. Four scientific elements: SEE (Solar evolution and Extrema), MiniMax24/ISEST (International Study of Earth-affecting Solar Transients), SPeCIMEN (Specification and Prediction of the Coupled Inner-Magnetospheric Environment), and ROSMIC (Role Of the Sun and the Middle atmosphere/thermosphere/ionosphere In Climate).
Contact: Prof. Marianna Shepherd (mshepher@yorku.ca)
http://www.yorku.ca/scostep/?page_id=1426
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.
Contact: info@ilwsonline.org.
<http://ilwsonline.org/>.
5. ISWI (International Space Weather Initiative) – Program of international cooperation to advance space weather science by a combination of instrument deployment, analysis, and interpretation of space weather data from the deployed instruments in conjunction with space data, and communicate the results to the public and students. The goal of the ISWI is to develop the scientific insight necessary to understand the science, and to reconstruct and forecast near-Earth space weather. This includes instrumentation, data analysis, modelling, education, training, and public outreach.
Contact: Dr. J. Davila - Joseph.M.Davila@nasa.gov
<http://www.iswi-secretariat.org/>.
6. + Incoherent Scatter Coordinated Observations Days - 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 of observations): January 14-February 15 alert for StratWarm; March 24-April 7 and September 14-October 2 Hemispheric; December 15-22 Northern.
<http://www.isr.sri.com/wd2014.html>
 - StratWarm = Sudden Stratospheric Warming (StratWarm): Dynamics, electrodynamics, temperature and electron density in the lower and upper thermosphere and ionosphere during a sudden stratospheric warming event (L. P. Goncharenko, lpg@haystack.mit.edu)
 - Hemispheric = Hemispheric and latitudinal stormtime behaviour: Latitudinal variations and their east-west hemispheric differences during solar storms and/or under quiet magnetic conditions (S. Zhang, shunrong@haystack.mit.edu)
 - Northern = Northern Deep Water Observations: Because of the proximity of the December 2014 New Moon to the solstice, this is a unique opportunity to capitalize on northern high-latitude measurements by optical instruments (K. Oksavik, kjellmar.oksavik@uib.no)

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.) 29 Apr 2014, annular solar eclipse. 98.7% coverage visible from a small region in Antarctica due south of Australia, centered at 06:04:32 UTC. A partial eclipse of ~60% coverage will be available in Australia from Perth, diminishing to the north (about 10% at Darwin), and farther east near sunset. The eclipse will not reach New Zealand on the East or Papua New Guinea on the North, though it barely reaches southernmost and easternmost parts of Indonesia as well as East Timor.

b.) 23 Oct 2014, partial solar eclipse. Visible from the continental United States plus Alaska (but not Hawaii in the west or extreme eastern New England in the east), all but easternmost Canada, and Mexico. Western states and provinces favoured. Partial phases range from ~40% near the US-Mexican border to ~65% at the Canadian border and Alaska. Partiality will barely reach extreme northeastern Russia. 47% coverage at sunset on the horizon at New York City; 55% coverage in Chicago low on the western horizon; 45% coverage at Los Angeles; and 64% coverage in Seattle. An amateur-professional Solar Eclipse Conference (<http://www.eclipse-chasers.com/SEC2014.html>) will be held 23-26 Oct in Alamogordo, New Mexico, with eclipse observing (43% coverage) from the nearby Sacramento Peak Observatory in Sunspot.

Information assembled by Jay M. Pasachoff, Williams College (Williamstown, MA), Chair, International Astronomical Union's WG on Eclipses (<http://www.eclipses.info>) with thanks to Fred Espenak (Arizona) and Xavier Jubier (Paris) for their data and maps.

Meteor Showers Dates selected from the International Meteor Organization Shower Calendar 2014. 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.

Definitions:

Time = Universal Time (**UT**)
Geophysical Day (**RGD**) = each Wednesday
Regular World Day (**RWD**) = Tuesday, Wednesday and Thursday near middle of month
Priority Regular World Day (**PRWD**) = the Wednesday **RWD**
World Geophysical Interval (**WGI**) = 14 consecutive days each season (see calendar)
Quarterly World Day (**QWD**) = **PRWD** in the **WGI**
ALERT = occurrence of unusual solar or geophysical conditions, broadcast once daily soon after 0400 UT
STRATWARM = stratospheric warmings

For more detailed explanations of the definitions, please visit 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):

Airglow and Aurora — 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 1 Jan 2014 at 0000 UT, 8 Jan at 0600 UT, 15 Jan at 1200 UT, 22 Jan 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: Mary McCready, Center for Geospace Studies, SRI International, 333 Ravenswood Avenue, Menlo Park, CA 94025, USA; tel:+1-650-859-5084; Fax:+1-650-322-2318; e-mail: mary.mccready@sri.com, chair of URSI ISWG Commission G. See <http://www.isr.sri.com/wd2014.html>

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 — **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, 7 bis avenue de la Paix, P.O. Box 2300, CH-1211 Geneva 2, Switzerland. http://www.wmo.int/pages/prog/arep/gaw/gaw_home_en.html.

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

VarSITI (Variability of the Sun and Its Terrestrial Impact) – SCOSTEP Program 2014-2018. The VarSITI program will strive for international collaboration in data analysis, modeling, and theory to understand how the solar variability affects Earth. The VarSITI program will have four scientific elements that address solar terrestrial problems keeping the current low solar activity as the common thread: SEE (Solar evolution and Extrema), MiniMax24/ISEST (International Study of Earth-affecting Solar Transients), SPeCIMEN (Specification and Prediction of the Coupled Inner-Magnetospheric Environment), and ROSMIC (Role Of the Sun and the Middle atmosphere/thermosphere/ionosphere In Climate). Contact is Prof. Marianna Shepherd (mshepherd@yorku.ca), President of SCOSTEP. Co-chairs are Katya Georgieva (SRTI, Bulgaria) and Kazuo Shiokawa (STEL, Japan). See http://www.yorku.ca/scostep/?page_id=1426.

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. See <http://ilwsonline.org/>.

ISWI (International Space Weather Initiative) – Program of international cooperation to advance space weather science. The goal of the ISWI is to develop the scientific insight necessary to understand the science, and to reconstruct and forecast near-Earth space weather. Contact: Dr. J. Davila - Joseph.M.Davila@nasa.gov. See <http://www.iswi-secretariat.org/>.

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

The International Space Environment Services (ISES) is a space weather service organization currently comprised of 14 Regional Warning Centers around the globe, three Associate Warning Centers (China), and one Collaborative Expert Center (European Space Agency). ISES is a Network Member of the International Council for Science World Data System (ICSU-WDS) and collaborates with the World Meteorological Organization (WMO) and other international organizations, including the Committee on Space Research (COSPAR), the International Union of Radio Science (URSI), and the International Union of Geodesy and Geophysics (IUGG). The mission of ISES is to improve, to coordinate, and to deliver operational space weather services. ISES is organized and operated for the benefit of the international space weather user community.

ISES members share data and forecasts among the Regional Warning Centers (RWCs) and provide space weather services to users in their regions. The RWCs provide a broad range of services, including: forecasts, warnings, and alerts of solar, magnetospheric, and ionospheric conditions; extensive space environment data; customer-focused event analyses; and long-range predictions of the solar cycle. While each RWC concentrates on its own region, ISES serves as a forum to share data, to exchange and compare forecasts, to discuss user needs, and to identify the highest priorities for improving services.

ISES works in close cooperation with the World Meteorological Organization, recognizing the mutual interest in global data acquisition and information exchange, in common application sectors, and in understanding and predicting the coupled Earth-Sun environment.

This Calendar for 2014 has been drawn up by Dr. R. A. D. Fiori of the ISES Steering Committee, in association with spokesmen for the various scientific disciplines in the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP), the International Association of Geomagnetism and Aeronomy (IAGA), URSI and other ICSU organizations. Similar Calendars are issued annually beginning with the IGY, 1957-58. PDF versions of the past calendars are available online.

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Copies of earlier years' calendars are available upon request to either ISES Director, Dr. Terry Onsager, NOAA Space Weather Prediction Center, 325 Broadway, Boulder, CO, 80305, USA, telephone +1-303-497-5713, FAX +1-303-497-3645, e-mail Terry.Onsager@noaa.gov, or contact ISES Secretary for World Days, Dr. Robyn Fiori, telephone +1-613-837-5137, FAX +1-613-824-9803, e-mail 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/.