

# 2017 International Geophysical Calendar (FINAL)

Cooperative programs pertaining to solar activity and the Earth's environment

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The International Geophysical Calendar contains information about:

- [2017 Solar Eclipses](#)
- [2017 Meteor Showers](#)

and recommended scientific programs for

- [Airglow and Aurora Phenomena](#)
- [Atmospheric Electricity](#)
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**2017 FINAL Calendar -- [PDF version](#)**

## 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 Calendar provides links to many international programs, giving an opportunity for scientists to become involved with data monitoring and research efforts. International scientists are encouraged to contact key people and to join the worldwide community effort to understand the Sun-Earth environment.

The definitions of the designated days remain as described on previous Calendars. Universal Time (UT) is the standard time for all world days. Regular Geophysical Days (RGD) are each Wednesday. Regular World Days (RWD) are three consecutive days each month (always Tuesday, Wednesday and Thursday). Priority Regular World Days (PRWD) are the RWD which fall on Wednesdays. World Geophysical Intervals (WGI) are 14 consecutive days in each season, beginning on Monday of the selected month, and normally shift from year to year. In 2017 the WGI are January, April, July, and October. Quarterly World Days (QWD) are one day each quarter and are the PRWD which fall in the WGI.

The [2017 FINAL Calendar](#) is available in PDF format.

## 2017 Solar Eclipses:

- a) **26 February 2017:** The path of annularity on 26 February 2017 crosses land in southern Chile and southern Argentina (a few hours' drive south of Esquel, where there will be a pre-eclipse symposium: <http://sion.frm.utn.edu.ar/WDEAII/>). After traversing the south Atlantic, where it peaks in duration at 44 s with over 99% of the solar diameter covered, it passes through Angola and clips extreme southern Democratic Republic of Congo and extreme northern Zambia. Partial phases will be visible throughout southern South America south of mid-Peru and mid-Brazil and Saharan and sub-Saharan Africa.
  - [Map of annular solar eclipse 26 February 2017](#) (by Fred Espenak)
  - [Interactive Google map of annular solar eclipse 26 February 2017](#) (by Xavier Jubier)
  
- b) **21 August 2017:** The path of totality on 21 August 2017 crosses the continental United States from the west coast to the east coast for the first time since 1999. At least 2 minutes of totality will be available on the centerline, with most favorable cloudiness statistics in the northwest and the peak of about 2 m 40 s of totality in Illinois/Kentucky. Totality will be visible in a path about 70 miles wide from Oregon, Idaho, Wyoming, Nebraska, Missouri, southern Illinois, western Kentucky, southwestern North Carolina, and South Carolina. All of Canada except for its extreme north; all of Alaska and Hawaii; South America as far south as the middle of Peru and Brazil; Greenland; and Iceland will have partial phases. The sun will rise in eclipse in eastern Siberia, Russia, and set with the partial phases of the eclipse barely visible from extreme western Europe and Africa.
  - [Map of total solar eclipse 21 August 2017](#) (by Fred Espenak)
  - [Interactive Google map of total solar eclipse 21 August 2017](#) (by Xavier Jubier)
  - [Great American Eclipse website](#) (by Michael Zeiler)

We thank Fred Espenak (Arizona) (<http://EclipseWise.com>) and Xavier Jubier (Paris) (<http://xjubier.free.fr/en/>) for their data and maps; see also Michael Zeiler's <http://eclipse-maps.com> and <http://GreatAmericanEclipse.com> for maps and Jay Anderson's <http://eclipsophile.com> for weather discussions. Espenak's Thousand Year Canon of Solar Eclipses: 1501 to 2500 is available from [www.astropixels.com/pubs](http://www.astropixels.com/pubs), and is the successor to earlier Canons and the NASA website that he ran. It and other work of Espenak, much of it formerly on the NASA website, is now available at <http://EclipseWise.com>.

Information assembled by Jay M. Pasachoff, Williams College (Williamstown, Massachusetts), Chair, International Astronomical Union's [Working Group on Eclipses](#).

- **Eclipse References:**

- Pasachoff website linking much eclipse reference material: <http://eclipses.info>
- Fred Espenak, Thousand Year Canon of Solar Eclipses 1501 to 2500, 2014 (ISBN-10: 194 1983006); [www.astropixels.com/pubs](http://www.astropixels.com/pubs)
- Fred Espenak, Five Millennium Canon of Solar Eclipses: -1999 to +3000, 2006 (NASA/TP-2006-214141);
- <http://eclipse.gsfc.nasa.gov>; <http://eclipse.gsfc.nasa.gov/OH/OH2014.html>
- Leon Golub and Jay M. Pasachoff, [The Solar Corona](#), 2nd ed., Cambridge University Press, 2010 (ISBN-10: 052188201X).
- [Jay M. Pasachoff](#) and Alex Filippenko, [The Cosmos: Astronomy in the New Millennium](#), 4th ed., Cambridge University Press, 2014 (ISBN-10: 049501303X).
- Leon Golub and Jay M. Pasachoff, [Nearest Star: The Surprising Science of Our Sun](#), 2nd edition, Cambridge University Press, 2014 (ISBN-10: 1107672643).
- Jay M. Pasachoff, [The Complete Idiot's Guide to the Sun](#), Alpha Books, 2003 (ISBN-10: 1592570747).

## 2017 Meteor Showers

(Selected from data compiled by Jürgen Rendtel for the [International Meteor Organization Shower Calendar](#)):

- a. **Meteor outbursts** are unusual showers (often of short duration) from the crossing of relatively recent comet ejecta. Dates are for the year 2017.
  - 05/06 October: Possibility of outbursts from a minor shower sometimes called the October Camelopardalids or OCA. Possible active interval between 05 October 2017 at 19:00 UT and 06 October 2017 at 02:00 UT.

- b. **Annual meteor showers liable to have geophysical effects:** Dates (based on UT in year 2017) are:

Dates	Peak Time (UT)	Name
December 28-January 12	January 03, 14:00	Quadrantids (QUA)
January 28-February 21	February 08, 00:30	$\alpha$ -Centaurids (ACE)
April 16-April 25	April 22, 12:00	Lyrids (LYR) <sup>1</sup>
April 19-May 28	May 06, 02:00	$\eta$ -Aquariids (ETA)
May 14-June 24	June 07	Daytime Arietids (ARI) <sup>2</sup>
May 20-July 05	June 09, 12:00	Daytime $\zeta$ -Perseids (ZPE) <sup>2</sup>
June 05-July 17	June 28, 11:00	Daytime $\beta$ -Taurids (BTA)
July 12-August 23	July 30	Southern $\delta$ -Aquariids (SDA)
July 17-August 24	August 12 14:00 to August 13 02:30	Perseids (PER)
September 09-October 09	September 28	Daytime Sextantids (DSX)
October 02-November 07	October 21	Orionids (ORI)
November 06-November 30	November 17, 16:30	Leonids (LEO) <sup>3</sup>
December 01-December 15	December 07 <sup>4</sup>	Puppis-Velids (PUP)
December 04-December 17	December 14, 06:30	Geminids (GEM) <sup>5</sup>
December 17-December 26	December 22, 15:00	Ursids (URS)

<sup>1</sup>The 22 April 2017 maxima for LYR occurs under optimal conditions.

<sup>2</sup>Daytime Arietids (ARI) and Daytime  $\zeta$ -Perseids (ZPE): Shower maxima dates are not well established and may occur up to a day later than indicated.

<sup>3</sup>Calculations by Mikhail Maslov indicate a chance for a narrow trail of brighter meteors released from the parent comet on 16 November 2017 at 17:07 UT with a maximum ZHR approximately matching that of the November 17 maximum.

<sup>4</sup>Maximum date is a reference for the radiant and is not necessarily a true maximum.

<sup>5</sup>Although strong activity has not been forecast for the 2017 shower, Jérémie Vaubillon's model calculations indicate there is an approach to a dust trail ejected in 884 AD on 22 December 2017 at 14:43 UT. Resultant activity is expected to be detectable, but not high.

- c. **Annual meteor showers which may have geophysical effects:** Dates (based on UT in year 2017) are:

Dates	Peak Time (UT)	Name
April 15-April 28	April 23	$\pi$ -Puppids(PPU) <sup>1</sup>
June 22-July 02	June 27 09:00	June Boötids (JBO) <sup>2</sup>
August 28-September 05	September 01, 02:00	$\alpha$ -Aurigids (AUR)
September 05-September 21	September 09	September $\epsilon$ -Perseids(SPE) <sup>3</sup>
October 06-October 10	October 08	Draconids (DRA)
November 15-November 25	November 21, 17:00	$\alpha$ -Monocerotids (AMO)

<sup>1</sup>The 23 April 2017 maxima for PPU occurs under optimal conditions.

<sup>2</sup>June Boötids (JBO): Some June Boötids may be visible in most years around June 20-25, but with activity largely negligible except near June 23, 2017.

<sup>3</sup>SPE outbursts occurred in 2008 and 2013. Extra activity is not anticipated for 2017.

#### Meteor Shower Websites:

- Shower activity near-real time reports -- [International Meteor Organization](#)
- Meteor shower activity forecast from your own location -- [Meteor Shower Flux Estimator](#)
- Shower names and data -- [IAU Meteor Data Center](#)
- Announcements and reports of meteor outbursts -- [IAU Minor Planet Center](#)
- Shower outburst activity forecast -- [Institut de Mecanique celeste et de calcul des ephemerides \(IMCCE\)](#)

#### Meteor Shower References:

- [Handbook for Meteor Observers](#), edited by Jürgen Rendtel and Rainer Arlt, IMO, 2014.
- [Meteor Shower Workbook](#), edited by Jürgen Rendtel, IMO, 2014.
- [A Comprehensive List of Meteor Showers Obtained from 10 Years of Observations with the IMO Video Meteor Network](#), by Sirko Molau and Jürgen Rendtel (WGN, the Journal of the IMO 37:4, 2009, pp. 98-121).
- Peter Jenniskens, Meteor showers and their parent comets. Cambridge University Press, 2006, 790 pp.

### Real Time Space Weather and Earth Effects

The occurrence of **unusual solar or geophysical conditions** is announced or forecast by [ISES](#) through various types of geophysical "**Alerts**" (which are widely distributed via the internet on a current schedule). Stratospheric warmings (STRATWARM) were also designated for many years. The meteorological telecommunications network coordinated by the [World Meteorological Organization \(WMO\)](#) carries these worldwide Alerts once daily soon after 0400 UT. For definitions of Alerts see ISES [URSIgram Codes](#).

# **RECOMMENDED SCIENTIFIC PROGRAMS (FINAL EDITION)**

(The following material was reviewed in 2016 by the ISES committee with the advice of representatives from the various scientific disciplines and programs represented as suitable for coordinated geophysical programs in 2017.)

## **Airglow and Aurora Phenomena.**

Airglow and auroral observatories operate with their full capacity around the New Moon periods. However, for progress in understanding the mechanism of many phenomena, such as low latitude aurora, the coordinated use of all available techniques, optical and radio, from the ground and in space is required. Thus, for the airglow and aurora 7-day periods on the Calendar, ionosonde, incoherent scatter, special satellite or balloon observations, etc., are especially encouraged. Periods of approximately one weeks' duration centered on the New Moon are proposed for high resolution of ionospheric, auroral and magnetospheric observations at high latitudes during northern winter.

## **Atmospheric Electricity.**

Non-continuous measurements and data reduction for continuous measurements of atmospheric electric current density, field, conductivities, space charges, ion number densities, ionosphere potentials, condensation nuclei, etc.; both at ground as well as with radiosondes, aircraft, rockets; should be done with first priority on the RGD each Wednesday, beginning on 04 January 2017 at 0000 UT, 11 January at 0600 UT, 18 January at 1200 UT, 25 January at 1800 UT, etc. (beginning hour shifts six hours each week, but is always on Wednesday). Minimum program is at the same time on PRWD beginning with 18 January at 1200 UT. Data reduction for continuous measurements should be extended, if possible, to cover at least the full RGD including, in addition, at least 6 hours prior to the indicated beginning time. Measurements prohibited by bad weather should be done 24 hours later. Results on sferics and ELF are wanted with first priority for the same hours, short-period measurements centered around minutes 35-50 of the hours indicated. Priority Weeks are the weeks that contain a PRWD; minimum priority weeks are the ones with a QWD. The World Data Centre for Atmospheric Electricity, 7 Karbysheva, St. Petersburg 194018, USSR, is the collection point for data and information on measurements.

## **Geomagnetic Phenomena.**

It has always been a leading principle for geomagnetic observatories that operations should be as continuous as possible and the great majority of stations undertake the same program without regard to the Calendar.

Stations equipped for making magnetic observations, but which cannot carry out such observations and reductions on a continuous schedule are encouraged to carry out such work at least on RWDs (and during times of MAGSTORM Alert).

## **Ionospheric Phenomena.**

Special attention is continuing on particular events that cannot be forecast in advance with reasonable certainty. The importance of obtaining full observational coverage is therefore stressed even if it is only possible to analyze the detailed data for the chosen events. In the case of vertical incidence sounding, the need to obtain quarter-hourly ionograms at as many stations as possible is particularly stressed and takes priority over recommendation (a) below when both are not practical.

For the **vertical incidence (VI) sounding** program, the summary recommendations are:

- a. All stations should make soundings on the hour and every quarter hour;
- b. On RWDs, ionogram soundings should be made at least every quarter hour and preferably every five minutes or more frequently, particularly at high latitudes;
- c. All stations are encouraged to make f-plots on RWDs; f-plots should be made for high latitude stations, and for so-called "representative" stations at lower latitudes for all days (i.e., including RWDs and WGI) (Continuous records of ionospheric parameters are acceptable in place of f-plots at temperate and low latitude stations);
- d. Copies of all ionogram scaled parameters, in digital form if possible, be sent to WDCs;
- e. Stations in the eclipse zone and its conjugate area should take continuous observations on solar eclipse days and special observations on adjacent days. See also recommendations under Airglow and Aurora Phenomena.

For the [incoherent scatter observation program](#), every effort should be made to obtain measurements at least on the Incoherent Scatter Coordinated Observation Days, and intensive series should be attempted whenever possible in WGIs, on Dark Moon Geophysical Days (DMGD) or the Airglow and Aurora Periods. The need for collateral VI observations with not more than quarter-hourly spacing at least during all observation periods is stressed.

Special programs are described by the [2017 World Day Schedule](#) which describes Incoherent Scatter coordinated observation days tabulated below. Data collection on such days starts by 1300 UT on the indicated start date and ends no later than 2000 UT the ending day (i.e., a 1 day experiment runs for at least 31 hours).

Month	Starting Date	Length (days)	Experiment
January	01 (Mon) and 24 (Tue)	3 and 3	Flow Channels
January-February	15 (Mon) - 03 Feb (Fri)	10 (Alert Window)	StratWarm <sup>1</sup>
March-April	20 (Mon) - 03 Apr (Mon)	5 (Alert Window)	CONGSS Storm <sup>2</sup>
September	13 (Wed) - 27 (Wed)	5 (Alert Window)	CONGSS Storm <sup>2</sup>
December	16 (Thu)	4	Convection and Polar Patches

<sup>1</sup>The decision to start this 10-day run will be based on the predictions of Sudden Stratospheric Warming. In the case of no SSW event, the World Day will revert to a five-day run at the end of the alert period (29th January to 3rd February). There should be five days notice for the alert.

<sup>2</sup>The decision to start this alert-based run will be based on predictions of magnetic disturbances. The alert should be announced five days before the start of the run. At least one of these two runs will be performed.

- AO -- [Arecibo Observatory](#)
- JRO -- [Jicamarca Radio Observatory](#).

Special programs: Ian McCrea, Rutherford Appleton Laboratory, UK; tel:+44(0)1235 44 6513; Fax:+44(0)1235 44 5848; email: [ian.mccrea@stfc.ac.uk](mailto:ian.mccrea@stfc.ac.uk), chair of URSI ISWG (Commission G). See the [Incoherent Scatter Coordinated Observation Days \(URSI-ISWG\)](#) webpage for complete 2017 definitions.

For the **ionospheric drift** or wind measurement by the various radio techniques, observations are recommended to be concentrated on the weeks including RWDs.

For **travelling ionosphere disturbances**, propose special periods for coordinated measurements of gravity waves induced by magnetospheric activity, probably on selected PRWDs and RWDs.

For the **ionospheric absorption** program half-hourly observations are made at least on all RWDs and half-hourly tabulations sent to WDCs. Observations should be continuous on solar eclipse days for stations in the eclipse zone and in its conjugate area. Special efforts should be made to obtain daily absorption measurements at temperate latitude stations during the period of the Absorption Winter Anomaly, particularly on days of abnormally high or abnormally low absorption (approximately October-March, Northern Hemisphere; April-September, Southern Hemisphere).

For **back-scatter and forward scatter** programs, observations should be made and analyzed at least on all RWDs.

For synoptic observations of **mesospheric (D region) electron densities**, several groups have agreed on using the RGD for the hours around noon.

For **ELF noise measurements of earth-ionosphere cavity resonances** any special effort should be concentrated during WGIs.

It is recommended that more intensive observations in all programs be considered on days of unusual meteor activity.

## **Meteorology.**

Particular efforts should be made to carry out an intensified program on the RGD -- each Wednesday, UT. A desirable goal would be the scheduling of meteorological rocketsondes, ozone sondes and radiometer sondes on these days, together with maximum-altitude rawinsonde ascents at both 0000 and 1200 UT.

During **WGI and STRATWARM Alert Intervals**, intensified programs are also desirable, preferably by the implementation of RGD-type programs (see above) on Mondays and Fridays, as well as on Wednesdays.

## **Global Atmosphere Watch (GAW).**



The [World Meteorological Organization \(WMO\) Global Atmosphere Watch \(GAW\)](#) integrates many monitoring and research activities involving measurement of atmospheric composition, and serves as an early warning system to detect further changes in atmospheric concentrations of greenhouse gases, changes in the ozone layer and in the long range transport of pollutants, including acidity and toxicity of rain as well as of atmospheric burden of aerosols (dirt and dust particles). Contact WMO, 7 bis avenue de la Paix, P.O. Box 2300, CH-1211 Geneva 2, Switzerland or [wmo@wmo.int](mailto:wmo@wmo.int).

## **Solar Phenomena.**

Observatories making specialized studies of solar phenomena, particularly using new or complex techniques, such that continuous observation or reporting is impractical, are requested to make special efforts to provide to WDCs data for solar eclipse days, RWDs and during PROTON/FLARE ALERTS. The attention of those recording solar noise spectra, solar magnetic fields and doing specialized optical studies is particularly drawn to this recommendation.

### **Variability of the Sun and Its Terrestrial Impact ([VarSITI](#)).**

Program within the [SCOSTEP](#) (Scientific Committee on Solar-Terrestrial Physics): 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 ([mshepher@yorku.ca](mailto:mshepher@yorku.ca)), President of SCOSTEP. Co-chairs are Katya Georgieva (SRTI, Bulgaria) and Kazuo Shiokawa (STEL, Japan).

**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).

**ISWI ([International Space Weather Initiative](#))** -- a 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. N. Gopalswamy at [nat.gopalswamy@nasa.gov](mailto:nat.gopalswamy@nasa.gov).

## **Space Research, Interplanetary Phenomena, Cosmic Rays, Aeronomy.**

Experimenters should take into account that observational efforts in other disciplines tend to be intensified on the days marked on the Calendar, and schedule balloon and rocket experiments accordingly if there are no other geophysical reasons for choice. In particular it is desirable to make rocket measurements of ionospheric characteristics on the same day at as many locations as

possible; where feasible, experimenters should endeavor to launch rockets to monitor at least normal conditions on the Quarterly World Days (QWDs) or on RWDs, since these are also days when there will be maximum support from ground observations. Also, special efforts should be made to assure recording of telemetry on QWDs and Airglow and Aurora Periods of experiments on satellites and of experiments on spacecraft in orbit around the Sun.

### **Meteor showers.**

Of particular interest are both predicted and unexpected showers from the encounter with recent dust ejecta of comets (meteor outbursts). The period of activity, level of activity, and magnitude distributions need to be determined in order to provide ground truth for comet dust ejection and meteoroid stream dynamics models. Individual orbits of meteoroids can also provide insight into the ejection circumstances. If a new (1-2 hour duration) shower is observed due to the crossing of the 1-revolution dust trail of a (yet unknown) Earth threatening long-period comet, observers should pay particular attention to a correct determination of the radiant and time of peak activity in order to facilitate predictions of future encounters. Observations of meteor outbursts should be reported to the I.A.U. Minor Planet Center ([mpc@cfa.harvard.edu](mailto:mpc@cfa.harvard.edu)) and International Meteor Organization ([visual@imo.net](mailto:visual@imo.net)). The activity curve, mean orbit, and particle size distribution of minor annual showers need to be characterized in order to understand their relationship to the dormant comets among near-Earth objects. Annual shower observations should be reported to national meteor organizations, or directly to the [International Meteor Organization](#). Meteoroid orbits are collected by the [IAU Meteor Data Center](#).

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The [International Space Environment Service \(ISES\)](#) is a space weather service organization currently comprised of globally distributed Regional Warning Centers, Associate Warning Centers, 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 2017 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, and are published in various widely available scientific publications. PDF versions of the [past calendars](#) are available online.

Published for the International Council of Scientific Unions and with financial assistance of [UNESCO](#) for many years.

Copies are available upon request to 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](mailto:Terry.Onsager@noaa.gov), or ISES Secretary for World Days, Dr. Robyn Fiori, Geomagnetic Laboratory, Natural Resources Canada, 2617 Anderson Road, Ottawa, Ontario, Canada, K1A 0E7, telephone +1-613-837-5137, e-mail [robyn.fiori@canada.ca](mailto:robyn.fiori@canada.ca). Beginning with the 2008 Calendar, all calendars are available only in digital form.

The website for the International Geophysical Calendar, including recent versions, can be found [here](#).