2014 International Geophysical Calendar (FINAL)

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

Go to the ftp site for past calendars.

The International Geophysical Calendar contains information about:

- 2014 Solar Eclipses
- 2014 Meteor Showers

and recommended scientific programs for

- Airglow and Aurora Phenomena
- Atmospheric Electricity
- Geomagnetic Phenomena
- Ionospheric Phenomena
- Vertical Incidence sounding program
- Incoherent Scatter observation program
- Meteorology
- Global Atmosphere Watch (GAW)
- Solar Phenomena
- Variability of the Sun and Its Terrestrial Impact (VarSITI)
- Space Research, Interplanetary Phenomena, Cosmic Rays, Aeronomy
- Meteor Showers

2014 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 the key people and 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 near the middle of the month). Priority Regular World Days (PRWD) are the RWD which fall on Wednesdays. World Geophysical Intervals (WGI) are fourteen consecutive days in each season, beginning on Monday of the selected month, and normally shift from year to year. In 2014 the WGI are January, April, July, and September. Quarterly World Days (QWD) are one day each quarter and are the PRWD which fall in the WGI.

The 2014 FINAL Calendar is available in PDF format.

2014 Solar Eclipses:

The year 2014 has one annular and one partial eclipse, but no total eclipse. The area of annularity of the annular eclipse is so small and difficult to reach it is unlikely that anyone will see that phase. Maps are accessible through http://www.eclipses.info, the site for the International Astronomical Union's Working Group on Eclipses.

a. **29 Apr 2014, annular solar eclipse**. An annular eclipse with 98.7% of the sun's diameter covered would be visible from a small region in Antarctica due south of Australia, centered at 06:04:32 UTC, if anybody could get there and could detect the sun on the southwestern horizon. A partial eclipse of about 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 to New Zealand on the East or to Papua New Guinea on the North, though it barely reaches southernmost and easternmost parts of Indonesia as well as East Timor.
    - Map of annular solar eclipse 29 April 2014.
    - Interactive Google map of annular solar eclipse 29 April 2014.

b. **23 October 2014, partial solar eclipse**. A partial solar eclipse will be 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 will be favored. Partial phases will range from about 40% near the US-Mexican border up to about 65% at the Canadian border and in Alaska. Partiality will barely reach extreme northeastern Russia. In the US, 47% of the sun's diameter will be covered at sunset on the horizon at New York City; 55% of the sun will be covered in Chicago low on the western horizon; 45% of the sun will be covered at Los Angeles; and 64% of the sun will be covered in Seattle. An amateur-professional Solar Eclipse Conference (http://www.eclipse-chasers.com/SEC2014.html) will be held 23-26 October in Alamogordo, New Mexico, with eclipse observing (43% coverage) from the

nearby Sacramento Peak Observatory in Sunspot, the latest in a series held in years with no real total or annular eclipse.
    - Map of partial solar eclipse 23 October 2014.
    - Interactive Google map of partial solar eclipse 23 October 2014.

Information assembled by Jay M. Pasachoff, Williams College (Williamstown, Massachusetts), Chair, International Astronomical Union's Working Group on Eclipses, with thanks to Fred Espenak (Arizona, NASA's Goddard Space Flight Center, ret.) and Xavier Jubier (Paris) for their data and maps.

- **Eclipse References:**
    - 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.
    - Jay M. Pasachoff and Alex Filippenko, The Cosmos: Astronomy in the New Millennium, 4th ed., Cambridge University Press, 2014.
    - Leon Golub and Jay M. Pasachoff, Nearest Star: The Surprising Science of Our Sun, 2nd edition, Cambridge University Press, 2014.
    - Jay M. Pasachoff, The Complete Idiot's Guide to the Sun, Alpha Books, 2003.

2014 Meteor Showers

(Selected from data compiled by Alastair McBeath 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 2014.
    - May 24, possible peaks estimated at 07:03 UT, 07:21 UT, or 07:40 UT, Comet 209P/LINEAR. Peak activity may be of short duration (a few minutes to a fraction of an hour), but it is possible there will be multiple maxima. Lower activity may persist for several hours around the expected maxima.

b. **Annual meteor showers liable to have geophysical effects:** Dates (based on UT in year 2014) are:

Dates	Peak Time (UT)	Name
Dec 28-Jan 12	Jan 03 19h35m	Quadrantids (QUA)
Apr 16-Apr 25	Apr 22 17h45m	Lyrids (LYR)
Apr 19-May 28	May 06 07h10m	η-Aquariids (ETA)
May 22-Jul 02	Jun 07 18h	Daytime Arietids (Ari)
May 20-Jul 05	Jun 09 17h	Daytime ζ-Perseids (Zeta Per)

Jun 05-Jul 17	Jun 28 16h	Daytime β-Taurids (Beta Tau)
Jul 12-Aug 23	Jul 30 (possibly Jul 28-30)	Southern δ-Aquariids (SDA)
Jul 17-Aug 24	Aug 13 00h15m to 02h45m	Perseids (PER)
Sep 09-Oct 09	Sep 27 17h	Daytime Sextantids (Sex)
Oct 02-Nov 07	Oct 21 (possible strong sub-peak Oct 17-18)	Orionids (ORI)
Nov 06-Nov 30	Nov 17 22h05m (possibly 16h)	Leonids (LEO)
Dec 04-Dec 17	Dec 13 19h30m - Dec 14 16h45m	Geminids (GEM)
Dec 17-Dec 26	Dec 22 20h25m	Ursids (URS)

c. **Annual meteor showers which may have geophysical effects:** Dates (based on UT in year 2014) are:

Dates	**Peak Time (UT)**	**Name**
Apr 15-Apr 28	April 23 22h45m	η-Puppids(PPU)
Jun 22-Jul 02	June 27 15h10m	June Bootids (JBO)
Aug 28-Sep 05	Sep 1 07h30m	α-Aurigids (AUR)
Sep 05-Sep 21	Sep 9 20h55m - 21h35m	September ε-Perseids(SPE)
Oct 06-Oct 10	(see note below)**	Draconids (DRA)
Nov 15-Nov 25	Nov 21 22h25m	α-Monocerotids (AMO)

**Draconids: Their usual potential maximum interval, probably at some point between ~15h UT on October 8 to 08h on October 9 (the nodal crossing point is at 23h30m UT on the 8th), will be very badly affected by full Moon also on October 8, although no activity has been predicted for these dates. However, Jeremie Vaubaillon has suggested the Earth may encounter two Draconid dust trails on October 6 instead, the first from 1900 AD at 19h10m UT, which could, based on the 2011 Draconid activity, produce ZHRs up to ~30, the second from 1907 at 19h53m UT, which might yield ZHRs around 10. Mikhail Maslov's calculations made some time earlier, and apparently not taking the actual more recent events into account, had indicated these two trail encounters could happen at 20h10m and 20h16m UT instead, with ZHRs of ~10-15, the meteors possibly very faint, so maybe detectable only by radio/radar. October 6 thus has the possibility of being a very interesting meteoric day, despite the reduced dark-sky interval then thanks to the waxing Moon! The post-moonset period would allow full coverage of the ~19h-20h30m interval then from northern-hemisphere sites at east Asian longitudes especially, although the importance of confirming what, if anything, occurs means all observers at suitable locations with clear skies that night should be on alert.

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)

References:

- 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 2013 by the ISES committee with the advice of representatives from the various scientific disciplines and programs represented as suitable for coordinated geophysical programs in 2014.)

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 1 January 2014 at 0000 UT, 08 January at 0600 UT, 15 January at 1200 UT, 22 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 15 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 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 RWD (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 WGIs) (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 2014 **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 include:

- Sudden Stratospheric Warming (StratWarm): Dynamics, electrodynamics, temperature and electron density in the lower and upper thermosphere and ionosphere during a sudden stratospheric warming event
    - Key objectives:
        - To extend studies of stratospheric warming effects to the lower and upper thermosphere and investigate coupling with the ionosphere
        - To document variations in multiple thermospheric and ionospheric parameters in response to different stratospheric sudden warming events
        - To capture and document ionospheric response to stratospheric sudden warmings during the rising solar activity
        - To measure electric field, neutral wind, electron and ion temperatures and electron density in the ionosphere and lower and upper thermosphere before and during sudden stratospheric warming
        - To compare variations in ionospheric and thermospheric parameters observed during SSW to average wintertime behavior of ionosphere and thermosphere
        - To compare variations in temperatures and winds to mesospheric response as given by MF and meteor radars and lidars
        - To examine mechanisms responsible for variations in lower and upper thermospheric dynamics, temperatures, electric field, and ionospheric electron density and investigate to what degree they can be related to sudden stratospheric warming
    - Background condition: The observations need to be made before and during the sudden stratospheric warming. A 10-day campaign is requested.
    - Primary parameters to measure: LTCS mode - electron and ion temperatures from lowest possible altitudes throughout the F-region, zonal and meridional components of the neutral wind in the lower thermosphere (95-140km), E×B drift, F-region meridional wind. Temporal resolution can be sacrificed and data integration period increased in order to obtain data at lower altitudes.
    - Need for simultaneous data: The idea is to measure how variations in temperatures, electric field and winds associated with sudden stratospheric warming change with latitude and altitude and relate to variations in electron density.
    - Principle investigator: Larisa P. Goncharenko, lpg@haystack.mit.edu, MIT Haystack Observatory, Westford, MA 01886, USA. Larisa is responsible for issuing the alert. She anticipates one week's notice.

    - Co-investigators: Jorge Chau (Leibniz-Institute for Atmospheric Physics, Rostock University, Germany), Hanli Liu (NCAR, USA), Peter Hoffmann (Institute for Atmospheric Physics, Germany).
- Hemispheric and Latitudinal Stormtime Behavior
    - Scientific focus: The latitudinal variations and their east-west hemispheric differences during solar storms and/or under quiet magnetic conditions.
    - Need for simultaneous data: This coordinated observation involves ISR world day participants as well as the Chinese Meridian Project facilities. This major Chinese project for science and technology infrastructure provides comprehensive ground-based space weather observing in the Eastern Hemisphere, in particular along the 120E longitude where 15 observatories distributed from northern China to the South Pole are established. They are equipped with, among other instruments, ionospheric radio sensors (digisonds, GPS receivers, MF radars, coherent radars, etc) and optical sensors (Lidars, FPIs, all-sky imagers). For this campaign, intensive observational modes will be adopted for most of the instruments.
    - Principle investigator: Shunrong Zhang (MIT Haystack Observatory), email: shunrong@haystack.mit.edu
    - Co-investigators: Guotao Yang and Zhaohui Huang (National Space Science Center, China), and John Foster (MIT Haystack Observatory).
    - Time: Four days in the alert period from March 24 - April 6 or September 14 - October 01.
    - Modes: Synoptic for all radars, except for Millstone Hill where low elevation azimuth scans are preferred.
- Northern Deep Winter Observations
    - Scientific focus: 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. This could be a prime time to study the formation, evolution, and decay of SAPS (Sub-Auroral Polarization Streams) and SED (Storm-Enhanced Densities) by measuring the penetration electric fields at low latitudes, the formation of SAPS electric fields and SED at mid-latitudes, and the motion of enhanced electron densities across the polar cap at high latitudes. This period will also be in high demand at the high-latitude ISRs, so proposals will be accepted up through the 2014 CEDAR Workshop for other science goals as well.
    - Principle investigator: Kjellmar Oksavik (University of Bergen, Norway), email: kjellmar.oksavik@uib.no
    - Co-investigators: TBD
    - Need for simultaneous data: Geomagnetic storms are known to impact the ionosphere on a global scale. Penetration electric fields occur at low latitudes, enhanced SAPS flows occur at mid-latitudes, the plasma flow is enhanced in the polar cap, and dense F-region plasma is transported all the way from lower latitudes, into and across the polar cap. Therefore, all radars should be operating at the same time.

- AO -- Arecibo Observatory
- JRO -- Jicamarca Radio Observatory.

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; email: mary.mccready@sri.com, chair of URSI ISWG Commission G. See the 2014 Incoherent Scatter Coordinated Observation Days (URSI-ISWG) webpage for complete 2014 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 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.

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), 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.

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 J. Davila at Joseph.M.Davila@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) and International Meteor Organization (visual@imo.net). The activity curve, mean orbit, and particle size distribution of minor annual showers need to be characterised 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.

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 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, 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 rfiori@NRCan.gc.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.