

International Geophysical Calendar 1989

(See other side for information on use of this Calendar)

| | S | M | T | W | T | F | S | | S | M | T | W | T | F | S | |
|----------|----|----|-----|-----|-----|----|----|--|-----|-----|-----|-----|------|-----|-----|-----------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | |
| | 8 | 9 | 10 | 11* | 12* | 13 | 14 | | 2 | 3 | 4 | 5* | 6* | 7 | 8 | |
| JANUARY | 15 | 16 | 17 | 18 | 19 | 20 | 21 | | 9 | 10 | 11 | 12 | 13 | 14 | 15 | JULY |
| | 22 | 23 | 24 | 25 | 26 | 27 | 28 | | 16 | 17 | 18 | 19 | 20 | 21 | 22 | |
| | 29 | 30 | 31 | 1 | 2 | 3 | 4 | | 23 | 24 | 25 | 26 | 27 | 28 | 29 | |
| | 5 | 6 | 7 | 8* | 9* | 10 | 11 | | 30 | 31 | 1+ | 2+ | 3+ | 4 | 5 | |
| FEBRUARY | 12 | 13 | 14 | 15 | 16 | 17 | 18 | | 6 | 7 | 8* | 9* | 10 | 11 | 12 | AUGUST |
| | 19 | 20 | 21 | 22 | 23 | 24 | 25 | | 13 | 14 | 15 | 16 | 17 | 18 | 19 | |
| | 26 | 27 | 28 | 1 | 2 | 3 | 4 | | 20 | 21 | 22 | 23 | 24 | 25 | 26 | |
| | 5 | 6+ | 7+ | 8* | 9 | 10 | 11 | | 27 | 28+ | 29+ | 30+ | 31+ | 1+ | 2 | |
| MARCH | 12 | 13 | 14 | 15 | 16 | 17 | 18 | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | SEPTEMBER |
| | 19 | 20 | 21 | 22 | 23 | 24 | 25 | | 10 | 11 | 12 | 13 | 14 | 15 | 16 | |
| | 26 | 27 | 28 | 29 | 30 | 31 | 1 | | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 24 | 25 | 26* | 27* | 28 | 29 | 30 | |
| APRIL | 9 | 10 | 11+ | 12+ | 13 | 14 | 15 | | 1 | 2+ | 3+ | 4+ | 5+ | 6+ | 7 | OCTOBER |
| | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | 8 | 9 | 10 | 11 | 12 | 13 | 14 | |
| | 23 | 24 | 25 | 26 | 27 | 28 | 29 | | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
| | 30 | 1 | 2 | 3 | 4 | 5 | 6 | | 22 | 23 | 24* | 25* | 26 | 27 | 28 | |
| | 7 | 8 | 9* | 10* | 11 | 12 | 13 | | 29 | 30 | 31+ | 1+ | 2 | 3 | 4 | NOVEMBER |
| MAY | 14 | 15 | 16 | 17 | 18 | 19 | 20 | | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| | 21 | 22 | 23 | 24 | 25 | 26 | 27 | | 12 | 13 | 14 | 15 | 16 | 17 | 18 | |
| | 28 | 29 | 30+ | 31+ | 1+ | 2+ | 3+ | | 19 | 20 | 21 | 22* | 23* | 24 | 25 | |
| | 4+ | 5 | 6 | 7* | 8* | 9 | 10 | | 26 | 27+ | 28+ | 29 | 30 | 1 | 2 | |
| JUNE | 11 | 12 | 13 | 14 | 15 | 16 | 17 | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | DECEMBER |
| | 18 | 19 | 20 | 21 | 22 | 23 | 24 | | 10 | 11 | 12 | 13 | 14 | 15 | 16 | |
| | 25 | 26 | 27 | 28 | 29 | 30 | | | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| | S | M | T | W | T | F | S | | 24 | 25 | 26 | 27* | 28* | 29 | 30 | |
| | | | | | | | | | 31 | 1 | 2 | 3 | 4 | 5 | 6 | 1990 |
| | | | | | | | | | 7 | 8 | 9 | 10 | 11 | 12 | 13 | JANUARY |
| | | | | | | | | | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| | | | | | | | | | 21 | 22 | 23 | 24* | 25** | 26+ | 27+ | |
| | | | | | | | | | 28+ | 29+ | 30 | 31 | | | | |
| | | | | | | | | | S | M | T | W | T | F | S | |

- 17** Regular World Day (RWD)
- 18** Priority Regular World Day (PRWD)
- 15** Quarterly World Day (QWD)
also a PRWD and RWD
- 4** Regular Geophysical Day (RGD)
- 6 7** World Geophysical Interval (WGI)
- 6+** Incoherent Scatter Coordinated
Observation Day

- 7** Day of Solar Eclipse
- 5 6** Airglow and Aurora Period
- 11*** Dark Moon Geophysical Day (DMGD)

NOTES:

1. Days with unusual meteor shower activity are: Northern Hemisphere Jan 3-4; Apr 21-22; May 3-4; Jun 8-12; Jul 27-29; Aug 10-13; Oct 20-21; Nov 1-4, 16-18; Dec 12-15, 21-22, 1989; Jan 2-4, 1990. Southern Hemisphere May 3-4; Jun 8-12; Jul 26-30; Oct 20-21; Nov 1-4, 16-18; Dec 5-7, 12-15, 1989.
2. Solar Interplanetary Variability (SIV) Observing Program began in 1988 and runs through 1989, with in-depth data analysis in 1990.
3. Day intervals that IMP 8 satellite is in the solar wind (begin and end days are generally partial days): 29 Dec 1988-5 Jan 1989; 10-18 Jan; 24-30 Jan; 5-12 Feb; 18-24 Feb; 2-8 Mar; 15-21 Mar; 27 Mar-3 Apr; 9-16 Apr; 22-29 Apr; 5-11 May; 17-24 May; 30 May-5 Jun; 11-18 Jun; 24-30 Jun; 6-13 Jul; 19-26 Jul; 31 Jul-8 Aug; 13-20 Aug; 26 Aug-2 Sep; 7-15 Sep; 19-27 Sep; 1-10 Oct; 14-22 Oct; 26 Oct-4 Nov; 8-16 Nov; 21-29 Nov; 4-12 Dec; 16-24 Dec; 29 Dec-6 Jan 1990.

There will not be total IMP 8 data monitoring coverage during these intervals. (Information kindly provided by the WDC-A for Rockets and Satellites, NASA GSFC, Greenbelt, MD 20771 U.S.A.).
4. + Incoherent Scatter programs start at 1600 UT on the first day of the intervals indicated, and end at 1600 UT on the last day of the intervals.
5. Incoherent Scatter world days: 890306-07; 890411-12; 890509-10; 890530-890604 LTCS; 890801-03 GISMOS; 890828-890901 WAGS; 891002-06 GITCAD and SUNDIAL; 891031-891101; 891127-28; 900125-29 GISMOS.

where GISMOS= Global Ionospheric Simultaneous Measurements of Substorms;
GITCAD= Global Ionosphere-Thermosphere Coupling and Dynamics;
LTCS= Lower Thermosphere Coupling Study;
SUNDIAL= Coordinated study of the ionosphere/magnetosphere;
WAGS= Worldwide Acoustics Gravity Wave Study.

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 Ursigram and World Days Service (IUWDS) with the advice of spokesmen for the various scientific disciplines.

The Solar Eclipses are:

a.) *7 March 1989* (partial) beginning in the Hawaiian Islands, crossing northwestern North America, Greenland, extreme N.E. Asia, and the Arctic regions. Maximum magnitude 0.83. Eclipse begins at 1616.8 UT N17 W149, is greatest at 1807.7 UT N61 W169, and ends at 1958.2 UT N73 W44.

b.) *31 August 1989* (partial) beginning in the extreme south-eastern Africa, crossing Madagascar, and part of Antarctica. Maximum magnitude 0.63. Eclipse begins at 0333.6 UT S22 E40, is greatest at 0530.8 UT S61 E23, and ends at 0727.6 UT S74 E124.

Meteor Showers (selected by P.M. Millman, Ottawa) include important visual showers and also unusual showers observable mainly by radio and radar techniques. The dates for Northern Hemisphere meteor showers are: Jan 3-4; Apr 21-22; May 3-4; Jun 8-12; Jul 27-29; Aug 10-13; Oct 20-21; Nov 1-4, 16-18; Dec 12-15, 21-22, 1989; and Jan 2-4, 1990. The dates for Southern Hemisphere meteor showers are: May 3-4; Jun 8-12; Jul 26-30; Oct 20-21; Nov 1-4, 16-18; and Dec 5-7, 12-15, 1989.

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) = intervals selected by MONSEE for study.

For more detailed explanations of the definitions, please see one of the following or contact H. Coffey (address below): *Solar-Geophysical Data*, November issue; *URSI Information Bulletin*; *COSPAR Information Bulletin*; *IGA News*; *IUGG Chronicle*; *WMO Bulletin*; *IAU Information Bulletin*; *Solar-Terrestrial Environmental Research in Japan*; *Journal of the Radio Research Laboratories (Japan)*; *Geomagnetism and Aeronomy (USSR)*; *Journal of Atmospheric and Terrestrial Physics (UK)*; *EOS Magazine (AGU/USA)*.

The International Ursigram and World Days Service (IUWDS) is a permanent scientific service of the International Union of Radio Science (URSI), with the participation of the International Astronomical Union and the International Union of Geodesy and Geophysics. IUWDS adheres to the Federation of Astronomical and Geophysical Data Analysis Services (FAGS) of the International Council of Scientific Unions (ICSU). The IUWDS coordinates the international aspects of the world days program and rapid data interchange.

This Calendar for 1989 has been drawn up by H.E. Coffey, of the IUWDS Steering Committee, in association with spokesmen for the various scientific disciplines in SCOSTEP, IAGA and URSI. Similar Calendars are issued annually beginning with the IGY, 1957-58, and are published in various widely available scientific publications.

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Additional copies are available upon request to IUWDS Chairman, Dr. R. Thompson, IPS Radio and Space Services, Department of Science, P.O. Box 702, Darlinghurst, NSW 2010, Australia, or IUWDS Secretary for World Days, Miss H.E. Coffey, WDC-A for Solar-Terrestrial Physics, NOAA E/GC2, 325 Broadway, Boulder, Colorado 80303, USA.

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 1989 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 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 ionograms 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 or Airglow and Aurora periods. **Special programs:** Dr. V. Wickwar, Utah State Univ., Center for Atmospheric and Space Sciences, Logan, UT 84322-4405 U.S.A., URSI Working Group G.5 (801)750-3641.

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 a round 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.

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

*****Solar Interplanetary Variability (SIV)** — observations of transition phenomena solar minimum to solar maximum (1988-1989), with in-depth analysis in 1990. Contact Dr. E.J. Smith, JPL, MS169/506, 4800 Oak Grove Dr., Pasadena, CA 91109 U.S.A.

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