

## Explanation of the Information in SWPC Solar and Geophysical Event Reports

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(Corrections made to out-of-date URLs)

**Event** - This is an arbitrary event number assigned by SWPC. It groups several reports into a single event, as determined by the SWPC forecaster.

- + - A plus sign (+) after the event number indicates that more than one report was received for this event, and the forecaster has selected this report to represent those received.

### **Begin, Max, End** -

The UTC Time (Coordinate Universal Time, same as UT) of the beginning, maximum, and end of the event as reported by the observing site.

"/" indicates a missing time.

The UTC day of the event's begin time is the UTC day of the list.

The UTC day of the maximum and/or end times may or may not be the same as the begin time. Most solar events are several hours in duration. If the maximum or end time is less than the begin time, then assume the times are for the next UTC day. A single letter can precede a Begin, Max, or End time. A=after, B=before, U=uncertain. For example the begin time A0146 means the event began after 0146.

The begin time of an x-ray event is defined as the first minute, in a sequence of 4 minutes, of steep monotonic increase in 0.1-0.8 nm flux. The x-ray event maximum is taken as the minute of the peak x-ray flux. The end time is the time when the flux level decays to a point halfway between the maximum flux and the pre-flare background level.

The begin time of an SXI flare (XFL) is minutes following the associated x-ray event. The maximum time is the most intense period in the brightest region of the SXI image. The end time is the last SXI image before the X-ray event end time.

**Obs** - The reporting observatory.

CUL - Culgoora, Australia

HOL - Holloman AFB, NM, USA

PAL - Palahua, HI, USA

SAG - Sagamore Hill, MA, USA

LEA - Learmonth, Australia

RAM - Ramey AFB, PR, USA

SVI - San Vito, Italy

Events from GOES satellites data show the SWPC Primary or Secondary GOES spacecraft for the observatory, e.g. G12

**Q** - Quality

For radio bursts at fixed and sweep frequencies, and for storms, this shows the quality of the data

C = Corrected report

G = Good

U = Uncertain

For optical flares, this shows the quality of observing conditions, from 1 to 5, where: 1 = very poor and 5 = excellent

X-ray events and SXI flare have a quality of 5 (meaning excellent).

**Type** - Type of report, see <https://www.swpc.noaa.gov/content/space-weather-glossary>

BSL = Bright surge on the limb

DSF = Filament disappearance

EPL = Eruptive prominence on the limb

FIL = Filament

FLA = Optical flare observed in H-alpha  
 FOR = Forbush decrease (cosmic ray decrease)  
 GLE = Ground-level event (cosmic ray increase)  
 LPS = Loop prominence system  
 PCA = Polar cap absorption  
 RBR = Fixed-frequency radio burst  
 RNS = Radio Noise Storm  
 RSP = Sweep-frequency radio burst  
 SPY = Spray  
 XFL = SXI X-ray flare from GOES Solar X-ray Imager (SXI)  
 XRA = X-ray event from SWPC's Primary or Secondary GOES spacecraft

**Loc/Frq** - Location or frequency.

Location is in degrees latitude, north or south, and degrees longitude, east or west, from central meridian. The location is the spherical, heliographic coordinates of the solar region, as a distance in degrees from a line extending from the solar equator (heliographic latitude), and distance in degrees from a line extending from the north solar rotational pole to the south solar rotational pole through the center of the solar disk, as viewed from Earth (central meridian) in H-alpha.

Frequencies are in Mhz.

**Particulars** - Additional information from the report, chosen on the basis of the report type.

XRA: X-ray event from SWPC's Primary or Secondary GOES spacecraft

X-ray Class:

Class	x = peak flux in the 0.1 to 0.8 nm range In mks system Wm-2	In cgs system erg cm-2 s-1
A	x < 10 <sup>-7</sup>	x < 10 <sup>-4</sup>
B	10 <sup>-7</sup> <= x < 10 <sup>-6</sup>	10 <sup>-4</sup> <= x < 10 <sup>-3</sup>
C	10 <sup>-6</sup> <= x < 10 <sup>-5</sup>	10 <sup>-3</sup> <= x < 10 <sup>-2</sup>
M	10 <sup>-5</sup> <= x < 10 <sup>-4</sup>	10 <sup>-2</sup> <= x < 10 <sup>-1</sup>
X	10 <sup>-4</sup> <= x	10 <sup>-1</sup> <= x

Integrated flux from start to end, in joules m E-2.

FLA: Optical flare observed in H-alpha

Flare importance, brightness, and characteristics:

Importance is the corrected area of the flare in heliospheric square degrees at maximum brightness, observed in the H-alpha line (656.3 nm).

S - Subflare (area < or =2.0 square degrees).

1 - Importance 1 ( 2.1 <= area <= 5.1 square degrees)

2 - Importance 2 ( 5.2 <= area <= 12.4 square degrees)

3 - Importance 3 (12.5 <= area <= 24.7 square degrees)

4 - Importance 4 ( area >= 24.8 square degrees)

Brightness is the relative maximum brightness of flare in H-alpha.

F - faint

N - normal

B - brilliant

Flare Characteristics

VWL = Visible in white light

UMB = Greater than or equal to 20 percent umbral coverage  
PRB = Parallel ribbon  
LPS = Associated Loop Prominence (LPS)  
YSR = Y-shaped ribbon  
ERU = Several eruptive centers  
BPT = One or more brilliant points  
HSS = Associated high speed dark or bright surge  
DSD = Dark surge on the disk  
DSF = Flare followed the disappearance of a solar filament in the  
same region  
BLU = H-alpha emission greater in the blue wing than in the red wing

XFL: SXI X-ray flare from GOES Solar X-ray Imager (SXI)  
Maximum area (e.g., 1.6e+03)  
Maximum intensity (e.g., 1.5e+05).

RBR: Fixed-frequency radio burst  
The peak value above pre-burst background of associated radio bursts  
at frequencies 245, 410, 610, 1415, 2695, 4995, 8800 and 15400 MHz:  
1 flux unit = 10<sup>-22</sup> Wm<sup>-2</sup> Hz<sup>-1</sup>

RSP: Sweep-frequency radio burst  
Type and intensity:  
Type II: Slow drift burst  
Type III: Fast drift burst  
Type IV: Broadband smooth continuum burst  
Type V: Brief continuum burst, generally associated with Type III bursts  
Type VI: Series of Type III bursts over a period of 10 minutes or more,  
with no period longer than 30 minutes without activity  
Type VII: Series of Type III and Type V bursts over a period of 10 minutes  
or more, with no period longer than 30 minutes without activity  
Type CTM: Broadband, long-lived, dekametric continuum

Intensity is a relative scale 1=Minor, 2=Significant, 3=Major  
Shock speed in km/s

Reg# - The SWPC-assigned solar region number. The daily SWPC Solar Region  
Summary report contains detailed information about solar regions.  
see <https://www.swpc.noaa.gov/products/solar-region-summary>

For optical events, region numbers are assigned by the observatory.  
Region numbers are assigned to X-ray events by SWPC staff.

For SXI flares, an SWPC algorithm finds the brightest area in the SXI  
image and assigns the region number of the closest active solar region.  
A region number is assigned to off-disk, west limb events if the region  
recently rotated around the limb.