The White Light Solar Corona
December 1983–January 1985

R. Fisher
C. Garcia
E. Lundin
P. Seagraves
D. Sime
K. Rock
Preface

The synoptic observing project of the High Altitude Observatory’s Coronal Dynamics Project began on 5 August 1980. The data obtained by the Mark-III K-coronameter located at the Mauna Loa Solar Observatory, Hawaii, are published yearly in volumes of *The White Light Solar Corona: An Atlas of K-coronameter Synoptic Charts* (Table 1). The reader will notice a segment of overlapped data at both the beginning and the end of each volume. This is necessary to provide a complete data set of Carrington rotations covering a specific time period because west limb passage occurs 14 days after east limb passage.

This set of synoptic data should be regarded as a preliminary presentation in which no corrections have been made for the day-to-day variations in sky transmission and scattering of polarized light by the earth’s atmosphere. While there is some inaccuracy incurred in neglecting these effects, it is still possible to use the data set as a characterization of the white light corona. Data from the east and west limbs are presented separately in the synoptic charts, as transient and evolutionary changes in the white light corona can substantially modify the distribution of coronal material over the 14 days between sequential limb transits.

We would like to acknowledge the continuing support of the NCAR Graphics group, who prepared the contour charts.

David Sime

Mauna Loa Solar Observatory

Hilo, Hawaii
# TABLE OF CONTENTS

**PREFACE**

<table>
<thead>
<tr>
<th>I. PROGRAM GOAL</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>II. DESCRIPTION OF DATA PRODUCTS</td>
<td>5</td>
</tr>
<tr>
<td>A. Shaded Synoptic Contour Charts</td>
<td></td>
</tr>
<tr>
<td>B. Polar Charts</td>
<td></td>
</tr>
<tr>
<td>C. Activity Report</td>
<td></td>
</tr>
<tr>
<td>III. ACKNOWLEDGMENTS</td>
<td>8</td>
</tr>
<tr>
<td>IV. REFERENCES</td>
<td>8</td>
</tr>
<tr>
<td>V. DATA PRODUCTS</td>
<td>10</td>
</tr>
<tr>
<td>A. Shaded Synoptic Contour Charts</td>
<td></td>
</tr>
<tr>
<td>B. Shaded Polar Contour Charts</td>
<td></td>
</tr>
<tr>
<td>C. Activity Report</td>
<td></td>
</tr>
</tbody>
</table>
I. PROGRAM GOAL

The synoptic observing program of the Mauna Loa Solar Observatory (MLSO) has as its goal the specification of the long term changes in the structure of the solar corona. The first year's operation of the coronal dynamics (C/D) instrument system yielded a data set that characterizes the coronal rate of change, for certain sized structures, at a time near the maximum of sunspot cycle 21. The second through fourth years of operation continue this effort in the declining phase of the sunspot cycle. In 1983 clear signs of the approaching sunspot minimum are recorded. In 1984, simplification of the low altitude bright features of the corona are observed, tending to show the same sort of structures observed in the previous cycle in 1973-1974.

Although daily images are available from the C/D archive in Boulder, Colorado, the material presented here is in a format providing a convenient access to investigators intending to make correlation studies or an intercomparison of standard synoptic data sets.

K-Coronameter Observations

The device used to collect the data presented in the following pages is the imaging K-coronameter located at the Mauna Loa observing station of the High Altitude Observatory (HAO). The site is at +19° 31' north latitude, 155° 38' west longitude on the island of Hawaii. The system is described in detail by Fisher et al. (1981). The synoptic observing program was begun on day 212 (DOY 212) of 1980. This publication continues work presented in the earlier volumes of this series (see Table 1.)

A subset of the data, azimuthal polarized brightness (pB) values at three selected heights in the corona, is extracted from each day's operation. This is done during the routine daily calibration procedure. A discussion of the calibration system can be found in volume one of this atlas.
TABLE I

Mark III K-Coronameter Data*

| ATLAS #1 | August 1980 - September 1981 |
| ATLAS #1 | September 1981 - February 1982 |
| ATLAS #3 | December 1981 - January 1983 |
| ATLAS #4 | December 1982 - January 1984 |
| ATLAS #5 | December 1983 - January 1985 |

Calibration data are available in Hilo, Hawaii, so that secular variation in instrument sensitivity, atmospheric scattering in polarized light, and atmospheric transmission may be studied, if necessary. The reader is reminded that a zeroth-order attempt has been made to correct for these effects in the data presented in this atlas. But there are times when errors in the estimate of the true pB signal may be as large as a factor of fifty per cent. These days--days with cirrus clouds or atmospheric emission within the field of view--are rather evident and generally produce a "band," a vertical defect, in the synoptic maps.

The instrument resolution remains unchanged from the description given in 1981. The sample aperture is 3.2 arc seconds wide at the limb of the sun and increases linearly to a width of 22.5 arc seconds at a height of 2.3 $R_{\odot}$. The height of the sample aperture is 10.6 arc second, regardless of height above the limb. This produces an image which is limited to a 20 arc second resolution at a height of 1.5 $R_{\odot}$. The resolution of the synoptic map is somewhat less than this in azimuth because of a process of "deglitching." This numerical procedure is necessary for the routine removal of high spatial frequency noise. The source of this particulate matter (or insects) drifting through the diode field of view during the time of observation. The occurrence of such noise is relatively uncommon during the periods of data sampling in this study, but it does produce high spatial frequency artifacts in the final data which are annoying if not removed. Some

* See references 2-5
azimuthal smoothing has been applied to the data set so that the effective resolution in latitude is \( \pm 1^\circ \). The longitudinal resolution yielded by the K-coronameter technique is quite a different matter. Since this study used one observation per 24-hour period, the sampling theorem dictates that the minimum detectable separation of structures is two days' solar rotation as viewed from the earth, or about 26° of longitude.

MLSO operates seven days per week, weather permitting. A total of 264 days of observations were obtained during the 1984 calendar year. Volcanic activity beginning on 25 March 1984, prevented operations until 30 April 1984. The computer interpolates the available data across a gap caused by cloudy conditions. Gaps are not apparent in the shaded synoptic charts, but are marked with an “X” in the DOY spaces at the bottom of each chart.

Synoptic data are kept on computer disk at the Mauna Loa site. Synoptic contour maps are prepared by the operations crew at the sea-level base in Hilo. The entire observing and data reduction effort is kept intact at the Hawaiian facility. Further requests concerning this material presented here, or questions concerning the method of preparation (or display) may be addressed to either:

D. Sime  
C. Garcia  
High Altitude Observatory  
High Altitude Observatory  
P. O. Box 3000  
P. O Box 425  
Boulder, CO 80307  
Hilo, HI 96721

For those readers requiring the *Atlas* Data in digital format, it is now possible to write *Atlas* data onto 1600 bpi magnetic tape. Data users requesting digital data should supply the Observatory with a blank tape and details of the time of coverage desired. Information concerning the *Atlas* tape format may be obtained from:

P. Seagraves  
High Altitude Observatory  
P. O. Box 425  
Hilo, HI 96721
II. DESCRIPTION OF DATA PRODUCTS

A. Synoptic Contour Charts

The data are plotted in a rectangular format. Two heights, 1.3 and 1.7 $R_\odot$, are used, and the data from the east and west limbs are plotted separately. On days when it is impossible to observe, a notation of “X” is printed in the DOY space. Data for each Carrington rotation period are shown as surface contours with units of pB defined to be $(10^{-8} B_\odot$ percent polarization). The latitude lines of 90° N, 0°, and 90° S are marked on each chart. Solar longitude is not used as the unit of measure along the abscissa; rather the data are plotted as a function of time. The Carrington rotation number is given under the title of the chart; the limb over which the observations were made and the height are given at the left-hand corner. Data from the highest scan, the “outer” scan, are not included in this work, since the average signal-to-noise ratio is, at best, about 1:1.

The synoptic contour plots have been converted into a format in which pB resolution is quantified into five levels. This has been done to clarify the morphology of the corona for the identification of white-light structures with other solar features. The levels are specified in Table II.

<table>
<thead>
<tr>
<th>TABLE II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synoptic Chart Level in pBx$10^{-8}$</td>
</tr>
<tr>
<td>Height</td>
</tr>
<tr>
<td>1.3$R_\odot$</td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>White</td>
</tr>
<tr>
<td>Dotted</td>
</tr>
<tr>
<td>Dashed</td>
</tr>
<tr>
<td>Lined</td>
</tr>
</tbody>
</table>

Regions of lower density (black) frequently have negative values for the inferred polarized brightness. This is the result of scattering of photospheric light by the earth’s atmospheric
gases as well as scattering by small particles suspended in the line of sight. There is some variation in the effect from day to day. Ordinarily the effect of scattered light is quite small, less than ±0.3 pB peak to peak; but other variations can be introduced by natural phenomena.

B. Polar Charts

Following new developments with the FORTH code used by the Mauna Loa Solar Observatory, the ordinary coronal synoptic chart, usually depicted with a cylindrical projection, can now be drawn as if viewed from the above the pole of rotation. It provides a different, interesting perspective from which to evaluate the evolution of coronal structures. The initial motivation for the production of these plots was the desire to present data useful in the studies of high latitude coronal streamers and the variation of coronal hole areas.

This Atlas includes the 1984 charts produced from data, taken at both the east and west limbs, at two heights 1.3 \( R_\odot \) and 1.7 \( R_\odot \) in the solar corona. The data are plotted by the POLES routine in the following manner. The north polar region is given on the left-hand portion of the page; the south polar region is shown on the right-hand portion. Each polar plot corresponds to a single Carrington rotation. Longitude is not used as a circumferential variable; this coordinate is replaced by the date of limb observation. Thus, each map is comparable to other data displayed in the usual Carrington format. The equator corresponds to the edge of the circular plot; the solar pole is at the center of each diagram. A "Carrington longitude" is indicated by a set of tic marks separated by ten degrees. The longitude boundary between 0° and 360° is indicated by a bold radius vector extending from the pole to the equator. The dates of observation of the beginning, mid-point, quarter, and three-quarters Carrington rotation are printed around the equatorial circle. Preserving the convention of right-handed rotation, time increases in a clockwise direction on the northern hemisphere plot; time increases in a counter-clockwise sense in the southern hemisphere plot. The diagrams are shown as true polar projections, so that the inferred latitude of any feature is obtained by measuring the normalized radius vector from the pole to some given feature, \( r = d/R \), and setting the latitude \( \theta \) equal to arc \( \cos (r) \), where \( d \) is the linear distance from the center of the plot, and \( R \) is the pole-equator distance.
C. Activity Report

Since 1 February 1980, daily observations of the solar white light corona and the Hα limb have been made from Mauna Loa. Hα information is obtained from a second limb instrument, the Prominence Monitor, which is co-located with the coronameter. Rock et al. (1983) summarizes the activity observed during the four years of observation since 1980.

The Activity Report is compiled from the daily observer’s log, a running narrative written of the day’s operations, and the Prominence Monitor Quality Control Report which is written after the film has been developed and returned to Hilo for inspection. Copies of these logs are stored both in Hilo, Hawaii, and Boulder, Colorado. The digital data from the Mk-III coronameter are stored in Boulder, Colorado, and are designated with the NCAR computing center number V61xxx or V67xxx. Film from the Prominence Monitor is stored in Boulder, Colorado, and each role is uniquely designated with a serial number for film role and year. For example, the fifth roll of film exposed in 1984 is designated MLSO-05-84.

The list of specific events, as detected from the source outlined above occurring in 1984, is entered in the table below. Date and day of year (DOY) are given in the first two columns. The third column contains a short characterization of the kind of activity detected, from either Hα observations from the Prominence Monitor or white light coronal changes detected with the Mk-III system. The three letter designation EPL, eruptive prominence loop, has been used in the report to characterize Hα mass ejected above the limb. Times for specific events are given in universal time (UT) and should be considered as accurate to ±5 seconds. Event location is given in terms of position angle (PA) and radius vector (RV). Position angles are estimated to an accuracy of ±6°, the radius vector estimates are given with an error band of ±0.1 \( R_\odot \). The last two columns refer to the Prominence Monitor film roll numbers and the Mk-III magnetic tape numbers on which the event was recorded.

Observational selection plays a role in the kinds of events recorded in this list. The reader is cautioned so that inaccurate event rates are not estimated by using this table as if it listed all activity detected from the data during this period of time. Rather, this list contains only the
information concerning the kinds of activity detected by the observing crew and recorded in one of the logs mentioned above. Obviously this is a subset of all solar activity occurring during this period.

III. ACKNOWLEDGEMENTS

The authors acknowledge the assistance of L. Hori and C. Baker in the preparation of this manuscript. The shaded synoptic charts were prepared by the NCAR Graphics group; assistance in the preparation of this Technical Note was given by C. Rasmussen of the NCAR Publications Department.

IV. REFERENCES


HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1743 HEIGHT 1.7R₀

EAST LIMB
NORTH
WEST LIMB
SOUTH

DOY
+90
0
-90

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1744 HEIGHT 1.3 R⊙

EAST LIMB

WEST LIMB

NORTH

SOUTH

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1744 HEIGHT 1.7\(R_\odot\)

EAST LIMB

WEST LIMB

NORTH

SOUTH

PB 2 1 0 -I

\(X = \text{NO DATA}\)
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1745 HEIGHT 1.3R_{\odot}

EAST LIMB NORTH

WEST LIMB NORTH

SOUTH

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1746 HEIGHT 1.3R_0

EAST LIMB
NORTH

WEST LIMB
NORTH

SOUTH

PB 2 1 0 -1

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA

MK III K-CORONAMETER

ROTATION 1746 HEIGHT 1.7 R₂

EAST LIMB

WEST LIMB

NORTH

SOUTH

PB 2 1 0 -1

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1747   HEIGHT 1.7 R⊙

EAST LIMB

WEST LIMB

SOUTH

NORTH

X = NO DATA

LEGEND:

1

2

3

4

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1748  HEIGHT 1.3 \(R_0\)

EAST LIMB
+90
0
-90

WEST LIMB
+90
0
-90

NORTH

SOUTH

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1748  HEIGHT 1.7R̄_☉
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1750  HEIGHT 1.7 R⊙

EAST LIMB

SOUTH

WEST LIMB

NORTH

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1751  HEIGHT 1.3R⊙

EAST LIMB
NORTH

WEST LIMB
NORTH

SOUTH

DOY 1232 1230 1228 1226 1224 1222 1220 1218 1214 1212 1210

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1753 HEIGHT 1.3 R_o

EAST LIMB
+90°
0°
-90°
NORTH

WEST LIMB
+90°
0°
-90°
NORTH

SOUTH

PB 2 1 0 -1

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1753 HEIGHT 1.7R₀

EAST LIMB
NORTH
+90
0
-90

SOUTH

WEST LIMB
NORTH
+90
0
-90

SOUTH

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1755  HEIGHT 1.3R☉
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1755 HEIGHT 1.7 R<sub>o</sub>

WEST LIMB

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1756  HEIGHT 1.7 R_⊙

EAST LIMB
+90

NORTH

-90

SOUTH

WEST LIMB
+90

NORTH

-90

SOUTH

X = NO DATA
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1757  HEIGHT 1.7 R°
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1743  HEIGHT 1.3 Rø

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1743  HEIGHT 1.7 R_☉

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1744  HEIGHT 1.3 \( R_\odot \)

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1744 HEIGHT 1.7 R_

EAST LIMB

WEST LIMB

NORTH SOUTH
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1745  HEIGHT 1.3 R_

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1745 HEIGHT 1.7 R⊙

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1746   HEIGHT 1.3 R⊙

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1746  HEIGHT 1.7 R⊙

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1747 HEIGHT 1.3 Rₖ

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER

ROTATION 1747    HEIGHT 1.7 R_

EAST LIMB

WEST LIMB

PE
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1748  HEIGHT 1.3 R_e

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1749  HEIGHT 1.3 Rₖ

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER

ROTATION 1749  HEIGHT 1.7 R☉

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1750  HEIGHT 1.3 R_
EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER

ROTATION 1750 HEIGHT 1.7 R☉

EAST LIMB

WEST LIMB

PE

-1 0 1 2
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1751 HEIGHT 1.3 \( R_\odot \)

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER

ROTATION 1751  HEIGHT 1.7 R☉

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1752   HEIGHT 1.3 Rør

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1752      HEIGHT 1.7 R☉
EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER

ROTATION 1753      HEIGHT 1.3 R\(_e\)

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1753    HEIGHT 1.7 R_
EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1754 HEIGHT 1.3 R_

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1754     HEIGHT 1.7 R☉

EAST LIMB

WEST LIMB

Fi
-1 0 1 2
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1755  HEIGHT 1.3 R_

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1755  HEIGHT 1.7 R_

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1756       HEIGHT 1.3 R_{\odot}

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER

ROTATION 1756       HEIGHT 1.7 R⊙

EAST LIMB

WEST LIMB

LEGEND
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1757    HEIGHT 1.3 R_e

EAST LIMB

WEST LIMB
HIGH ALTITUDE OBSERVATORY MAUNA LOA
MK III K-CORONAMETER
ROTATION 1757  HEIGHT 1.7 R₆

EAST LIMB

WEST LIMB

FE

-1  0  1  2
<table>
<thead>
<tr>
<th>DATE</th>
<th>DOY</th>
<th>ACTIVITY</th>
<th>TIME</th>
<th>PA</th>
<th>RV</th>
<th>MLSO FILM #</th>
<th>MAG TAPE #</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/28/84</td>
<td>28</td>
<td>Surge, Corona Enhancement</td>
<td>1800-1950</td>
<td>250-275</td>
<td>1.3</td>
<td>2-84</td>
<td>V67377</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1800-1830</td>
<td>285</td>
<td></td>
<td></td>
<td>V67378</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V67379</td>
</tr>
<tr>
<td>02/03/84</td>
<td>34</td>
<td>Limbflare</td>
<td>1935</td>
<td>280-285</td>
<td>1.1</td>
<td>3-84</td>
<td>V67380</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Region Changed from Bright to Dim about Every Thirty-minutes</td>
<td></td>
<td>280-285</td>
<td></td>
<td></td>
<td>V67381</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Material seen ejected, but QC may see more. Coronal Enhancement only.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03/02/84</td>
<td>62</td>
<td>Very Active Region</td>
<td></td>
<td>272-305</td>
<td>1.2</td>
<td>5-84</td>
<td>V67386</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possible EPL</td>
<td>1750</td>
<td>305</td>
<td></td>
<td></td>
<td>V67385</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Small EPL</td>
<td>2106</td>
<td>272</td>
<td></td>
<td></td>
<td>V67385</td>
</tr>
<tr>
<td>03/03/84</td>
<td>63</td>
<td>Large Slow EPL</td>
<td>1800-2000</td>
<td>90-120</td>
<td>1.5</td>
<td>5-84</td>
<td>V67385</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Transient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V67385</td>
</tr>
<tr>
<td>03/05/84</td>
<td>65</td>
<td>Limbflare and Small EPL</td>
<td>1855-1910</td>
<td>105</td>
<td>1.2</td>
<td>5-84</td>
<td>V67385</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Coronal Transient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V67385</td>
</tr>
<tr>
<td>03/14/84</td>
<td>74</td>
<td>Limbflare</td>
<td>1945-2030</td>
<td>70-80</td>
<td>1.2</td>
<td>6-84</td>
<td>V67387</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flare Associated Transient</td>
<td>1915-2030</td>
<td>60-140</td>
<td>1.2</td>
<td>V67388</td>
<td>V67389</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Transient Preceded Limb Activity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V67390</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post Flare Loops Persist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03/19/84</td>
<td>79</td>
<td>EPL</td>
<td>1913-90</td>
<td>40</td>
<td>6-84</td>
<td>V67391</td>
<td>V67392</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1925</td>
<td>1.25</td>
<td></td>
<td></td>
<td>V67392</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1935-1945</td>
<td>1.4-1.5</td>
<td></td>
<td></td>
<td>V67393</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V67394</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPL</td>
<td>1940</td>
<td>20-60</td>
<td>1.2</td>
<td>V67395</td>
<td>V67395</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2030</td>
<td>1.3</td>
<td></td>
<td></td>
<td>V67395</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2100</td>
<td>1.4</td>
<td></td>
<td></td>
<td>V67395</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transient</td>
<td></td>
<td>100-120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATE</td>
<td>DOY</td>
<td>ACTIVITY</td>
<td>TIME</td>
<td>PA</td>
<td>RV</td>
<td>MLSO</td>
<td>MAG TAPE #</td>
</tr>
<tr>
<td>------------</td>
<td>-----</td>
<td>-------------------------</td>
<td>-------</td>
<td>------</td>
<td>-----</td>
<td>------</td>
<td>------------</td>
</tr>
<tr>
<td>06/30/84</td>
<td>182</td>
<td>Active Prominence</td>
<td></td>
<td></td>
<td></td>
<td>58-80</td>
<td>10-84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Became an EPL</td>
<td>2000-2245</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grew</td>
<td>2020</td>
<td></td>
<td>1.25</td>
<td></td>
<td>V67405</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grew</td>
<td>2035</td>
<td></td>
<td>1.3</td>
<td></td>
<td>V67406</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grew</td>
<td>2055</td>
<td></td>
<td>1.4</td>
<td></td>
<td>V67407</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grew</td>
<td>2120</td>
<td></td>
<td>1.5</td>
<td></td>
<td>V67408</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grew</td>
<td>2130</td>
<td></td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grew</td>
<td>2210</td>
<td></td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prominence Material became Diffuse and Complex as EVENT Progresses</td>
<td>2020</td>
<td>129</td>
<td>1.15</td>
<td>13-84</td>
<td>V67412</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coronal Transient seen first as Depletion Followed by Enhancement</td>
<td>70-90</td>
<td></td>
<td></td>
<td>10-84</td>
<td></td>
</tr>
<tr>
<td>08/09/84</td>
<td>222</td>
<td>Active Region</td>
<td>-1900</td>
<td>109-120</td>
<td>1.2</td>
<td>13-84</td>
<td>V67412</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remnants of what appeared to be an EPL before Observations started</td>
<td>130</td>
<td>38, 274</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Material above Region to 1.2 RV gone by 1900 UT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08/13/84</td>
<td>226</td>
<td>Active Prominence grew steadily during morning</td>
<td>2020</td>
<td>129</td>
<td>1.15</td>
<td>13-84</td>
<td>V67412</td>
</tr>
<tr>
<td>10/03/84</td>
<td>227</td>
<td>EPL (clouded out at 1924)</td>
<td>1903-1924</td>
<td>120-128</td>
<td>1.25</td>
<td>16-84</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Coronal Data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### MAUNA LOA SOLAR OBSERVATORY - ACTIVITY REPORT

**DATE** | **DOY** | **ACTIVITY** | **TIME** | **PA** | **RV** | **MLSFO FILM #** | **MAG TAPE #**
---|---|---|---|---|---|---|---
12/07/84 | 342 | Fast Transient
- Start | 1824 | 90 | 19-84 | V67425
- Max Depletion | 1833 | | V67426
- Restructured (Enhancement) | 1836 | 120 | |
12/12/84 | 347 | Small EPL
Coronal Activity not seen in Real Time, Saved Tape | 1815-1830 (approx.) | 143 | 1.1 | 19-84 | V67427