

END OF REPORT  
 HFUS 1 BOU 121300  
 FROM SPACE ENVIRONMENT SERVICES CENTER, BOULDER, COLORADO  
 SDF NUMBER 315A  
 JOINT USAF/NOAA REPORT OF SOLAR AND GEOPHYSICAL ACTIVITY.  
 ISSUED 1300Z 12 NOV 1931  
 IA. ANALYSIS OF SOLAR ACTIVE REGIONS AND ACTIVITY FROM  
 11/1200Z TO 12/1200Z: SOLAR ACTIVITY HAS BEEN MODERATE.  
 UNASSOCIATED XRAY EVENTS OCCURRED AT 12/0118Z AND 12/0956Z  
 MAXIMA, M2 AND M1 EVENTS RESPECTIVELY. REGION 3451(N13W14)  
 PRODUCED A C9/1B FLARE AT 0343Z MAXIMUM ACCOMPANIED BY RADIO  
 EMISSION AT ALL DISCRETE FREQUENCIES INCLUDING 3400 FLUX UNITS  
 AT 245 MHZ AND 1300 AT 1415 MHZ. THIS REGION IS THE APPARENT  
 PERSISTENT SOURCE OF DISCRETE FREQUENCY EMISSION THROUGHOUT THE  
 EARLY HOURS OF THE DAY. THE M1 EVENT MENTIONED ABOVE ACHIEVED  
 MAXIMUM OVER A PERIOD OF NEARLY ONE AND ONE HALF HOURS, AND  
 XRAY LEVELS HAVE REMAINED NEAR M CLASS SINCE THAT TIME. THE  
 PROBABLE SOURCE OF THIS M CLASS ACTIVITY IS REGION 3432, NOW  
 BEHIND THE WEST LIMB. THE REPORTS CONCERNING REGION 3451  
 INDICATE A VERY DYNAMIC REGION WITH MAGNETIC COMPLEXITY, A  
 DELTA AND STEEP GRADIENTS. REGION 3450(S19W24) HAS ALSO BECOME  
 MORE COMPLEX GAINING A DELTA AND STEEPER GRADIENTS.  
 IB. SOLAR ACTIVITY FORECAST: SOLAR ACTIVITY MAY BE EXPECTED TO  
 INCREASE, POSSIBLY TO HIGH LEVELS DUE TO THE POTENTIAL NOW  
 APPEARING IN REGIONS 3451 AND 3450. BOTH REGIONS ARE FAVORABLY  
 POSITIONED TO DELIVER ENERGETIC PARTICLES IN CASE MAJOR FLARES  
 SHOULD OCCUR.  
 II. GEOPHYSICAL SUMMARY AND FORECAST: THE GEOMAGNETIC FIELD HAS  
 BEEN ACTIVE WITH PERIODS OF MINOR STORM LEVELS SINCE THE STORM  
 SUDDEN COMMENCEMENT AT 11/1238Z. THE LIKELY SOURCE OF THIS  
 ACTIVITY, AN M3/1B FLARE FROM REGION 3450 ACCOMPANIED BY TYPE  
 IV EMISSION OCCURRING 9 NOV. THE MAGNETIC FIELD IS EXPECTED TO  
 REMAIN ACTIVE INTO THE DAY 13 NOV. UNSETTLED TO NEAR ACTIVE  
 CONDITIONS SHOULD FOLLOW FOR THE REMAINDER OF THE FORECAST  
 PERIOD.  
 III. EVENT PROBABILITIES 13 NOV-15 NOV  
 CLASS M 90/90/90  
 CLASS X 30/30/30  
 PROTON 30/30/30  
 PCAF YELLOW  
 IV. OTTAWA 10.7 CM FLUX  
 OBSERVED 11 NOV 221  
 ESTIMATED 12 NOV 220  
 PREDICTED 13 NOV-15 NOV 220/213/215  
 90 DAY MEAN 11 NOV 229  
 V. GEOMAGNETIC A INDICES  
 OBSERVED AFR 10 NOV 015 AP 11 NOV 030  
 ESTIMATED AFR 11 NOV 028 AFR/AP 12 NOV 029/033  
 PREDICTED AFR/AP 13 NOV-15 NOV 014/014-012/014-010/010  
 SOLTERWARN  
 BT

HXUS BOU 121300  
 PREDM 09013 09014 09015  
 PREDX 03013 03014 03015  
 PREDP 03013 03014 03015  
 PCAFT 00213  
 TENCY 22013 21314 21515  
 AFRED 01413 01214 01015  
 AFAPE 01413 01414 01015  
 VKK 44443 33213 33332  
 BT

HFUS 3 BOU 122200  
FROM SPACE ENVIRONMENT SERVICES CENTER, BOULDER, COLORADO  
SDF NUMBER 315B  
JOINT USAF/NOAA REPORT OF SOLAR AND GEOPHYSICAL ACTIVITY.  
ISSUED 2200Z 12 NOV 1981

IA. ANALYSIS OF SOLAR ACTIVE REGIONS AND ACTIVITY FROM  
12/1200Z TO 12/2100Z: SOLAR ACTIVITY REACHED A HIGH LEVEL WITH  
AN IMPULSIVE X1/1B FLARE AT 1606UT FROM REGION 3451(N13W13),  
DURATION 40 MINUTES. IT HAD AN ASSOCIATED MODERATE RADIO BURST  
WITH NO TYPE II OR TYPE IV RADIO EMISSION REPORTED. THIS  
REGION CONTINUES TO INCREASE IN COMPLEXITY. THE SPOT GROUP  
CONTAINS AT LEAST TWO DELTA CONFIGURATIONS AND PROPER MOTION OF  
THE SPOTS IS APPARENT. THIS REGION ALSO PRODUCED THE FOLLOWING  
FLARES; C6/1B AT 1239UT, C4/SN AT 1415UT AND C8/1B AT 1925UT.  
REGION 3456(N17E24) PRODUCED AN M1/1B FLARE AT 1816UT WITH  
ASSOCIATED MODERATE RADIO BURSTS ON ALL FREQUENCIES. IT IS  
GROWING AND THE SPOT GROUP IS MORE COMPLEX THAN EARLIER TODAY.  
REGION 3450 (S19W28) PRODUCED ONLY A SMALL SUBFLARE AT 1625UT.  
SURGE ACTIVITY IS REPORTED AT N05 E LIMB. NEW REGION 3460  
(N13W01) DEVELOPED ON THE DISK SINCE YESTERDAY.

IB. SOLAR ACTIVITY FORECAST: SOLAR ACTIVITY IS EXPECTED TO  
CONTINUE AT A MODERATE TO HIGH LEVEL AS ALL REGIONS CONTINUE TO  
DEVELOP. FURTHER MAJOR FLARES ARE LIKELY FROM REGION 3451 AND  
CLASS M EVENTS ARE POSSIBLE FROM REGION 3450 AND 3456.

II. GEOPHYSICAL SUMMARY AND FORECAST: THE GEOMAGNETIC FIELD HAS  
BEEN ACTIVE THE PAST 9 HOURS. UNSETTLED CONDITIONS ARE  
EXPECTED DURING THE FORECAST PERIOD WITH ACTIVE LEVELS POSSIBLE  
FROM FLARES AND GROWTH IN REGION 3451. A PROTON EVENT IS NOT  
EXPECTED FROM THE X1/1B FLARE BECAUSE OF THE SHORT DURATION AND  
LACK OF SIGNIFICANT RADIO EMISSION.

III. EVENT PROBABILITIES 13 NOV-15 NOV

CLASS M 90/90/90  
CLASS X 30/30/30  
PROTON 30/30/30  
PCAF YELLOW

IV. OTTAWA 10.7 CM FLUX

OBSERVED 12 NOV 228  
PREDICTED 13 NOV-15 NOV 226/224/213  
90 DAY MEAN -12 NOV 230

V. GEOMAGNETIC A INDICES

OBSERVED AFR/AP 11 NOV 030/030  
ESTIMATED AFR/AP 12 NOV 030/040  
PREDICTED AFR/AP 13 NOV-15 NOV 012/014-018/020-018/025  
SOLTERWARN

BT

FXUS BOU 122200  
PREDM 09013 09014 09015  
PREDX 03013 03014 03015  
PREDP 03013 03014 03015  
PCAF 00213  
TENCN 22613 22414 21815  
AFRED 01213 01814 01815  
AFAPF 01413 02014 02515  
BT