

HFUS 1 BCU 241400

FROM SPACE ENVIRONMENT SERVICES CENTER, BOULDER, COLORADO  
SDF NUMBER 114A

JOINT USAF/NOAA REPORT OF SOLAR AND GEOPHYSICAL ACTIVITY  
ISSUED 1200UT 24 APRIL 1981

IA. ANALYSIS OF SOLAR ACTIVE REGIONS AND ACTIVITY FROM  
23/1200UT TO 24/1200UT:

SOLAR ACTIVITY WAS HIGH DURING THE PERIOD. REGION 3049 (N14W51) PRODUCED A X1/2B AT 0149UT 24 APRIL. MINOR RADIO BURSTS WERE RECORDED ALONG WITH IMPORTANCE 1 TYPE II/IV SWEEPS. NO SIGNIFICANT SHORT WAVE FADE WAS OBSERVED. REGIONS 3049 AND 3051(N25W47) APPARENTLY PRODUCED A SLOW RISING M3 EVENT. THE OPTICAL FLARE, A 1B, HAD POOR CORRELATION WITH X-RAY MAXIMUM WHICH OCCURRED AT 0933UT WHILE THE OPTICAL MAXIMUM WAS 0852UT. RADIO BURSTS WERE RECORDED THROUGH OUT THE RADIO SPECTRUM. A TENFLARE OF 230 SOLAR FLUX UNITS WAS REPORTED AT 2695MHZ LASTING 34 MINUTES WITH MAXIMUM AT 24/0855UT. REGION 3049 HAS CONTINUED TO EXHIBIT GROWTH AND REMAINS A DKC GROUP WITH A DELTA. MARKED SPOT ROTATION IN REGION 3049 HAS ALSO BEEN REPORTED. REGION 3067 (S03E67) PRODUCED A SURGE OUT TO .18 RADII. REGION IS NOW A D TYPE GROUP.

IB. SOLAR ACTIVITY FORECAST:

SOLAR ACTIVITY IS EXPECTED TO BE MODERATE TO HIGH, WITH THE DYNAMIC CHANGES IN REGION 3049, AND POSSIBLE INTERACTION WITH REGION 3051, LARGE ENERGETIC FLARES ARE EXPECTED. REGION 3067 IS GROWING AND MAY BE A FACTOR IN FLARE PRODUCTION IN THE NEXT 24 HOURS.

II. GEOPHYSICAL SUMMARY AND FORECAST:

THE GEOMAGNETIC FIELD HAS BEEN ACTIVE DURING THE PERIOD. THE GEOMAGNETIC FIELD IS EXPECTED TO BE ACTIVE UNTIL 27 APRIL WHEN MINOR STORM CONDITIONS ARE EXPECTED AS THE EFFECTS OF THE X-CLASS EVENT ARE OBSERVED ON THE GEOMAGNETIC FIELD.

III. EVENT PROBABILITIES: 25-27 APRIL

CLASS M 90/90/90

CLASS X 20/20/10

PROTON 20/20/10

PCAF YELLOW

IV. OTTAWA 10.7 CM

OBSERVED 23 APR 203

ESTIMATED 24 APR 211

PREDICTED 25-27 APR 215/210/190

90 DAY MEAN 23 APR 212

V. GEOMAGNETIC A INDICES

OBSERVED AFR 22 APR 28 AP 23 APR 33

ESTIMATED AFR 23 APR 23 AFR/AP 24 APR 14/23

PREDICTED AFR/AP 25-27 APR 15/15 15/20 40/40

SOLTERWARN

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HFUS 3 BOU 242200  
FROM SPACE ENVIRONMENT SERVICES CENTER, BOULDER, COLORADO  
SDF NUMBER 114B  
JOINT USAF/NOAA REPORT OF SOLAR AND GEOPHYSICAL ACTIVITY.  
ISSUED 2000UT 24 APRIL 1981

IA. ANALYSIS OF SOLAR ACTIVE REGIONS AND ACTIVITY FROM  
24/1200UT TO 24/2200UT:

SOLAR ACTIVITY WAS HIGH DURING THE PERIOD. REGION 3049 (N14W57) PRODUCED AN X5/2B FLARE BEGINNING AT 1343 UT AND REACHING MAXIMUM AT 1400UT. THE FLARE HAD PARALLEL RIBBONS IN H-ALPHA AND WAS SEEN IN WHITE LIGHT TELESCOPES. IT WAS ACCOMPANIED BY FAIRLY STRONG DISCRETE FREQUENCY RADIO BURSTS AT CENTIMETRIC WAVELENGTHS (A CASTELLI U-BURST WAS OBSERVED) AND TYPE II AND TYPE IV RADIO SWEEP FREQUENCY EVENTS WERE OBSERVED TO ACCOMPANY THE OPTICAL FLARE. THE FLARE LASTED NEARLY TWO HOURS AND AFTER MAXIMUM THE FLARE SPREAD MORE THAN 10 DEGREES NORTHEAST INTO NEARBY REGION 3051 (N24W52) SIMULTANEOUSLY COVERING UMBRAE IN TWO REGIONS AT ONCE. FOLLOWING THE EVENT FILAMENTS APPEARED TO BECOME ACTIVATED ALL THE WAY ACROSS THE DISK. AN ENORMOUS MUSH-ROOM-SHAPED PROMINENCE FORMED TO ABOUT 0.1R AT NE05 TO NE20 AFTER THE FLARE AND WAS SEEN TO BE LIFTING OFF ABOUT 2045 UT. A PECULIAR FLARE (APPARENTLY A HYDER FLARE) (A 1B OPTICALLY WITH PRACTICALLY NO X-RAY RESPONSE) WAS OBSERVED WITH MAXIMUM AT 1644UT IN SPOTLESS REGION 3061 (S43E16). THIS FLARE MAY HAVE BEEN CAUSED BY THE EARLIER MAJOR FLARE IN REGION 3049. THE MAJOR FLARE IN REGION 3049 PRODUCED PROTONS WHICH EXCEEDED EVENT THRESHOLDS AT SATELLITE LEVELS.

IB. SOLAR ACTIVITY FORECAST:

SOLAR ACTIVITY IS EXPECTED TO BE MODERATE TO HIGH. WITH CONTINUED DYNAMIC CHANGES IN REGION 3049 AND OBSERVED INTERACTION WITH REGION 3051 (N24W52) FURTHER LARGE ENERGETIC FLARES ARE POSSIBLE. REGION 3067 (N01E62) IS GROWING AND MAY BE A FACTOR IN FLARE PRODUCTION IN THE NEXT 24 HOURS.

II. GEOPHYSICAL SUMMARY AND FORECAST:

PROTON COUNTS EXCEEDED EVENT THRESHOLDS OF 10 PARTICLES/SEC (AT GREATER THAN 10 MEV) WITHIN LESS THAN AN HOUR (1455UT) AFTER THE X5 FLARE MAXIMUM. AN APPARENT MAXIMUM WAS REACHED AT APPROXIMATELY 1725UT WITH 160 PARTICLES/SEC. THE THULE GREENLAND 30 MHZ RIOMETER EXCEEDED DAYTIME PCA THRESHOLDS OF 2.0 DB. AT 1745UT. AT 2045UT ABSORPTION WAS RUNNING 2.7DB AT THULE. THE GEOMAGNETIC FIELD HAS BEEN AT ACTIVE LEVELS SINCE 1200UT. THE FIELD IS EXPECTED TO CONTINUE AT ACTIVE LEVELS (3-HOURLY K-VALUES OF 3 AND 4) UNTIL MIDDAY ON 26 APRIL WHEN THE EFFECTS OF TODAY'S MAJOR FLARE HIT. A MAJOR GEOMAGNETIC STORM IS INDICATED LATE ON 26 APRIL AND THROUGH THE DAY ON THE 27TH.

III. EVENT PROBABILITIES: 25-27 APRIL 1981

CLASS M 90/90/90

CLASS X 30/20/10

PROTON 30/20/10

CAF IN PROGRESS

IV. OTTAWA 10.7 FLUX

OBSERVED 24 APRIL 222

PREDICTED 25-27 APRIL 215/210/190

90 DAY MEAN 24 APRIL 212

V. GEOMAGNETIC A INDICES

OBSERVED AFR/AP 23 APRIL 26/33

ESTIMATED AFR/AP 24 APRIL 20/25

PREDICTED AFR/AP 25-27 APRIL 20/25 35/40 65/75

SOLTERWARN

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