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FROM SPACE ENVIRONMENT SERVICES CENTER, BOULDER, COLORADO
SDR NUMBER 288A

JOINT USAF/NOAA REPORT OF SOLAR AND GEOPHYSICAL ACTIVITY.

ISSUED 1300Z 15 OCTOBER 1981

IA. ANALYSIS OF SOLAR ACTIVE REGIONS AND ACTIVITY FROM

14/1200Z TO 15/1200Z:

SOLAR ACTIVITY HAS BEEN HIGH. THREE MAJOR CENTERS OF ACTIVITY ARE NOW PRESENT, ALL IN THE SUN'S SOUTHERN HEMISPHERE. REGION 3406 (S09E69) HAS ROTATED INTO FULL VIEW WITH A LARGE CLASS - F SPOT GROUP, BRILLIANT FLUCTUATING PLAGE, AND CONTINUES SURGING. IT ANNOUNCED ITS STATUS AS A GREAT ACTIVE CENTER WITH AN X3/SB FLARE AT 14/1710Z WITH 10-CM RADIO BURST OF 7.0 FLUX UNITS AND STRONG SHORTWAVE FADES TO 15 MHZ. REGIONS 3390 (S17W13) AND 3397 (S22W21) HAS MERGED THEIR SPOT GROUPS INTO AN FKC SPOT GROUP OF 2000 MILLIONTHS AREA. THIS IS NOW ONE OF THE LARGEST AND MOST COMPLEX SUNSPOT GROUPS OF SOLAR CYCLE 21. THE MAGNETIC FIELDS STILL PERMIT IDENTIFICATION OF THE TWO ORIGINAL REGIONS AND REVEAL THE CONTINUED PRESENCE OF STRONG DELTA CONFIGURATIONS. EMERGING FLUX, SHEARING PROPER MOTIONS AND ACTIVE FILAMENTS CLEARLY MARK THIS REGION FOR ADDITIONAL CLASS X PROTON FLARES. A QUICK SUCCESION OF THREE CLASS M EVENTS IN RECENT HOURS CONSTITUTES A SINGLE MAJOR EVENT INVOLVING THE ENTIRE COMPOUND REGION: M2/1B AT 0447Z, M3/2B AT 0558Z AND C9.9/SB AT 0642Z. THE FIRST OF THESE THREE PRODUCED A TENFLARE OF 1000 FLUX UNITS, TYPE IV BURST AND A CASTELLI-U RADIO SPECTRUM. MODERATE RADIO ACTIVITY ALSO ACCOMPANIED THE OTHER TWO FLARES. THE THIRD GREAT ACTIVE CENTER IS REGION 3403 (S10E45) WHICH IS ALSO NEARING 2000 MILLIONTHS AREA AS AN FKC SPOT GROUP, ITS LARGE, COMPACT PLAGE IS DISTINCTLY LESS COMPLEX THAN REGION 3390/3397. CLASS M1 EVENTS OCCURRED IN THIS REGION AT 14/1444Z AND 15/0336Z WITH MINOR RADIO BURSTS.

IB. SOLAR ACTIVITY FORECAST:

ANOTHER CLASS X/PROTON FLARE IS EXPECTED FROM REGION 3390/3397, IN THE NEXT 48 HOURS. THE THREE GREAT REGIONS ARE EXPECTED TO PRODUCE FREQUENT CLASS M EVENTS AND OCCASIONAL CLASS X EVENTS, ALL WITH MAJOR SHORTWAVE FADES AND SIGNIFICANT RADIO BURST INTERFERENCE. SOLAR INDICES ARE EXPECTED TO DECLINE FROM THE CURRENT EXTREME VALUES AFTER THE NEXT GREAT CLASS X EVENT.

II. GEOPHYSICAL SUMMARY AND FORECAST:

THE GEOMAGNETIC STORM WHICH COMMENCED SUDDENLY 13/2241Z BECAME A MINOR STORM AFTER 14/0600Z. THE HIGHEST ACTIVITY IN THE PAST 24 HOURS OCCURRED 14/21-24Z AND 15/08-09Z, UNSETLED CONDITIONS HAVE PREVAILED OTHERWISE. CONDITIONS ARE EXPECTED TO DIMINISH TO UNSETLED THROUGH THE NEXT 36 HOURS. ANOTHER MAJOR PROTON FLARE IS EXPECTED TODAY, WITH RESUMPTION OF MINOR OR MAJOR STORM CONDITIONS 24-48 HOURS LATER. THE SATELLITE-LEVEL PROTON EVENT CONTINUES. THE FLUX AT GT 10 MEV DROPPED BELOW 100 PARTICLES (3:/CM²/STER AFTER 110Z. PARTICLE FLUX IS EXPECTED TO REMAIN ABOVE EVENT THRESHOLD (10/SEC) UNTIL 17 OCTOBER.

III. EVENT PROBABILITIES: 16-18 OCTOBER

CLASS M: 90/90/90

CLASS X: 50/40/40

PROTON: 50/40/40

PCAF: IN PROGRESS

IV. OTTAWA 10.7 FLUX

OBSERVED 14 OCTOBER 277

ESTIMATED 15 OCTOBER 300

PREDICTED 16-18 OCTOBER 305/300/280

90 DAY MEAN 14 OCTOBER 219

V. GEOMAGNETIC A INDICES

OBSERVED AFR 13 OCTOBER 13 AP 14 OCTOBER 42

ESTIMATED AFR 14 OCTOBER 32 AFR/AP 15 OCTOBER 25/25

PREDICTED AFR/AP 16-18 OCTOBER 15/25 30/25 30/25

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HFUS 3 BOU 152200

FROM SPACE ENVIRONMENT SERVICES CENTER BOULDER COLORADO

SDE NUMBER 289P

JOINT USAF/NCAA REPORT OF SOLAR AND GEOPHYSICAL ACTIVITY

ISSUED 1200Z 15 OCTOBER 1981

I. ANALYSIS OF SOLAR ACTIVE REGIONS AND ACTIVITY FROM 15/1200Z TO 15/2100Z: SOLAR ACTIVITY HAS BEEN LOW DURING THIS PERIOD. ONLY C-CLASS ACTIVITY HAS BEEN RECORDED. THE LARGEST EVENT WAS A C7/SR FROM REGION 3403 (S11E40) AT 1206Z. A C5/1B EVENT WAS REPORTED FROM REGION 3390 (S18W19) AT 2021Z, A FLARE OF 691 FLUX UNITS WAS RECORDED WITH THIS EVENT. REGION 3397 (S24W27) PRODUCED A C7/1B AT 2043Z. NEW REGION TODAY, 3409 (N14W15) A SIMPLE C-TYPE GROUP.

II. SOLAR ACTIVITY FORECAST: SOLAR ACTIVITY IS EXPECTED TO BE MODERATE TO HIGH. REGIONS 3390/97 IS CAPABLE OF A PROTON FLARE DURING THE NEXT 36 HOURS. REGIONS 3403 AND 3406 (S10E64) ARE ALSO CAPABLE OF X-CLASS EVENTS.

III. GEOPHYSICAL SUMMARY AND FORECAST: THE GEOMAGNETIC FIELD HAS BEEN AT ACTIVE LEVELS THIS PERIOD. THE FIELD IS EXPECTED TO BE ACTIVE WITH SHORT PERIODS AT MINOR STORM LEVELS. IF AN X-CLASS EVENT OCCURS THEN A MAJOR GEOMAGNETIC STORM IS TO BE EXPECTED 24 TO 36 HOURS LATER. THE SATELLITE LEVEL PROTON CONTINUES IN PROGRESS. IF NO MAJOR EVENTS OCCUR THEN THE PROTON EVENT IS EXPECTED TO DECLINE BELOW EVENT LEVELS BY 17 OCTOBER. THE POLAR CAP ABSORPTION EVENT ENDED 15/1500Z.

IV. EVENT PROBABILITIES 16 OCTOBER - 18 OCTOBER

CLASS M 90/90/90

CLASS X 50/40/40

PROTON 50/40/40

PCAF YELLOW

V. OTTAWA 10.7 CM FLUX

OBSERVED 15 OCTOBER 289

PREDICTED 16-18 OCTOBER 292/296/296

90-DAY MEAN 15 OCTOBER 220

VI. GEOMAGNETIC INDICES

OBSERVED AFR/AP 14 OCTOBER 39/42

ESTIMATED AFR/AP 15 OCTOBER 25/25

PREDICTED AFR/AP 16-18 OCTOBER 15/15 - 30/25 - 30/25

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