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HAUS BOU 111730Z

FROM SPACE DISTURBANCE FORECAST CENTER ESSA BOULDER COLO

SDF NUMBER 562B ISSUED 1700Z 11 MARCH 1970

CLASS M FLARES ARE PROBABLE DURING THE NEXT 11 HOURS.

A. HIGHLIGHTS FOR THE PERIOD 04-11 MARCH 1970--

MCMATH REGION 595 - LONGITUDE ABOUT 238 DEGREES AND WHICH IS NOW BEHIND THE LIMB - WAS VERY LIKELY THE SOURCE OF BOTH THE MINOR PCA EVENT AND GREAT MAGNETIC STORM DESCRIBED BELOW. A DEGREE OF UNCERTAINTY EXISTS SINCE THE MAJOR ACTIVITY OBSERVED DURING THIS PERIOD OCCURRED BEYOND THE WEST LIMB. EVENTS TOOK THE FORM OF AN IMPORTANCE 2 BSL NEAR N09 BEGINNING 06/0926 UT AND APPROXIMATELY FIVE HOURS OF IMPORTANCE 1 LOOPS AT N15 FOLLOWED BY AN IMPORTANCE 3, BRIGHT SPRAY AT 08/1838 UT. THE SPRAY REACHED A MAXIMUM HEIGHT OF AT LEAST 0.3 SOLAR RADIUS, BUT WAS NOT ACCOMPANIED BY SIGNIFICANT DECA-METRIC TYPE II EMISSIONS. AT EACH OF THESE TIMES 595'S CENTER OF MASS WAS APPROXIMATELY 99 AND 103 DEGREES WEST OF CM RESPECTIVELY. AS DISCUSSED IN THE PREVIOUS PRELIMINARY REPORT, THIS ACTIVE CENTER EXHIBITED A FAR FROM CLASSICAL GROWTH AND DEVELOPMENT. IN THE 14 DAYS IT FACED EARTH IT APPEARED TO WAX AND WANE IN AREA AND COMPLEXITY SEVERAL TIMES, FINALLY ROTATING FROM VIEW ON 05 MARCH. A MINOR PCA WAS INITIALLY DETECTED AT ABOUT 06/1410 UT AS A VERY GRADUAL PHASE ADVANCE ON TWO ANCHORAGE VLF RECEIVERS, -THE 12.3KHZ ALDRA, NORWAY AND 16.0KHZ GBR /RUGBY, ENGLAND/ PATHS. ABOUT 1.5 HOURS LATER THE 20-70 MEV CHANNEL ON ATS-1 BEGAN TO RESPOND. BEFORE IMPENDING SOLAR ECLIPSE EXPERIMENTS SHUT DOWN THIS GEOSTATIONARY SATELLITE AT 07/0000Z, FLUXES RECORDED WERE STILL ABOUT AN ORDER OF MAGNITUDE BELOW THAT REQUIRED FOR MEASUREABLE RIOMETER ABSORPTION ON THE GROUND. TWENTY-FOUR HOURS LATER THE SENSORS WERE TURNED ON AGAIN, AT WHICH TIME FLUXES WERE OF THE FOLLOWING MAGNITUDES-- 5-20 MEV, ABOUT 2500 PARTICLES/CM2/SEC; 20-70 MEV, ABOUT 20 PARTICLES/CM2/SEC. NOT UNTIL 07/1040Z WAS THE PCA EVENT DETECTABLE ON THE THULE 30 MHZ RIOMETER. A VALUE SHORTLY BEFORE TWILIGHT THE NEXT DAY /0947Z/ INDICATED ATTENUATION OF THE ORDER OF 1.5 DB. THE MAXIMUM ATTENUATION REPORTED BY THULE WAS 3 DB /08/1645Z/, HOWEVER, A LITERAL INTERPRETATION OF THIS ABSORPTION IS CAUTIONED SINCE THE READING MAY BE CONTAMINATED BY THE SEVERE MAGNETIC DISTURBANCE IN PROGRESS AT THE TIME. FOR THE 3-DAY PERIOD NO RIOMETER DATA WERE AVAILABLE FROM THE ALASKAN CHAIN DUE TO /1/ AN REP EVENT BEGINNING 06 MARCH AND /2/ THE GREAT MAGNETIC DISTURBANCE OF THE 7TH AND 8TH. ATS-1 RECORDS INDICATED A MAXIMUM FOR THE PROTON EVENT SOMETIME BEFORE 08/0020Z, BUT EXACTLY HOW MUCH BEFORE IS NOT KNOWN. /SEE NOTE/ COUNTING RATES RETURNED TO VERY NEARLY BACKGROUND LEVELS BY 09/1800Z.

THE GEOMAGNETIC FIELD BECAME DISTURBED AT 05/0805Z WHEN A SMALL SC WAS REPORTED BY THE FREDERICKSBURG AND BOULDER OBSERVATORIES. PROBABLY THE CM PASSAGE OF MCMATH REGION 607 INITIATED THESE MINOR FLUCTUATIONS WHICH CONTINUED THROUGHOUT THE FOLLOWING DAY. VISUAL ARUORA WAS REPORTED 10 DEGREES ABOVE THE HORIZON AT WINNEPEG AT 06/0300Z. BY 07 MARCH THE DISTURBANCE HAD REACHED MINOR STORM PROPORTIONS WITH AN A-FREDERICKSBURG OF 32. VISUAL SIGHTINGS OF THE AURORA BEGINNING ABOUT 1800Z WERE DESCRIBED AS BRILLIANT DISPLAYS BY SSA SITE PERSONNEL IN ALASKA. THE GREAT EVENT BEGAN 08/1420Z. ITS SC CORRESPONDED TO A 43-HOUR DELAY FROM THE MAJOR WEST LIMB ACTIVITY WITNESSED 06 MARCH. IN AGREEMENT WITH STATISTICAL STUDIES OF MAJOR OR GREAT STORMS, THE INITIAL OR POSITIVE PHASE WAS SHORT LIVED; THE HORIZONTAL COMPONENT REACHED ITS MINIMUM VALUE APPROXIMATELY 2 HOURS 14 MINUTES INTO STORM TIME; AND THE HORIZONTAL TRACE'S OVERALL CHARACTER, EVEN AT A RELATIVELY LOW MAGNETIC LATITUDE STATION SUCH AS BOULDER, WAS ONE OF LARGE AND RAPID VARIATIONS. HF RADIO COMMUNICATIONS WERE SEVERLY DISRUPTED WHILE VHF AND UHF OPERATORS /30-3000 MHZ/ REPORTED MID-LATITUDE DAYTIME RADIO AURORAE FROM ABOUT 08/1900 TO 2000Z. ALTHOUGH NO SPECTACULAR AURORAL DISPLAYS WERE VISIBLE DURING THE EVENING HOURS, EXTREMELY BRIGHT LOW LATITUDE RED ARC AURORAE /SAR/ WERE OBSERVED AND RECORDED AT RATTLESNAKE OBSERVATORY, RICHLAND, WASHINGTON. THE FREDERICKSBURG A-INDEX WAS 166 FOR 08 MARCH AND WOULD HAVE BEEN HIGHER HAD THE STORM'S ONSET MORE NEARLY COINCIDED WITH 0000Z.

DURING THIS GEOPHYSICALLY SIGNIFICANT WEEK, NO X EVENTS WERE OBSERVED ON THE DISK. MOREOVER, THE M FLARES RECORDED ORIGINATED FROM WITHIN FOUR DIFFERENT REGIONS, ONE OF THEM BEING 595. THE LARGEST SPOT GROUP, D-TYPE/450, NOW VISIBLE IS MCMATH REGION 618 /L ABOUT 083/ - ONE WHICH ROTATED INTO VIEW IN THE SE 04 MARCH. THE REGION IS MAGNETICET Y XBETA-GAMMA WHILE IN WHITE LIGHT THE GROUP CONSISTS PRIMARILY OF AN INTRICATELY FORMED LEADER. NO M ACTIVITY HAS BEEN REPORTED FROM IT FOR THE PAST TWO DAYS. NOTE--THERE EXISTS EVIDENCE ON THE LOW ENERGY SOLAR COSMIC RAY CHANNELS OF PIONEER 6 AND 8 THAT ENHANCED PARTICLE COUNTING RATES WERE BEING RECORDED 2 TO 8 HOURS PRIOR TO THE 08/0020Z QUOTED ABOVE, THE TIMES AT WHICH ATS-1 DATA RETURNED. FROM THE KNOWN POSITIONS OF THESE SPACECRAFTS AND THE ASSUMPTION THAT REGION 595 WAS THE SOURCE WE CAN TENTATIVELY CONCLUDE THAT A SECTOR OF THE INTERPLANETARY MEDIUM MORE THAN 180 DEGREES IN EXTENT WAS AFFECTED!

B. FORECAST FOR THE PERIOD 12-18 MARCH 1970--

CLASS M ACTIVITY WILL BE DECREASING TO A LOW LEVEL THROUGHOUT THE PERIOD.

28-DAY FORECAST FOR THE PERIOD 12 MARCH-09 APRIL 1970--

SOLAR ACTIVITY IS EXPECTED TO REMAIN LOW WITH ONLY A SLIGHT ENHANCEMENT IN ACTIVITY STARTING 19 MARCH AS MCMATH REGION 595 ROTATES OVER THE EAST LIMB.

C. FLARE AND PROTON EVENT PROBABILITIES FOR THE NEXT THREE 24 HOUR PERIODS BEGINNING 11/1700Z ENDING 14/1700Z.

CLASS M OR GREATER 50/40/40

CLASS X 10/05/05

PROTON EVENTS 02/02/02

D. OTTAWA 10.7CM FLUX AT 1400Z WAS 158. PREDICTED 152/146/144.

E. MAGNETIC A-FREDERICKSBURG FOR 10 MAR WAS 04. FOR 11 MAR ABOUT 02. PREDICTED AP FOR 12-14 MAR 06/06/08.

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FROM SPACE DISTURBANCE FORECAST CENTER ESSA BOULDER COLO  
SDF NUMBER 562A ISSUED 0400Z 11 MAR 1970  
INFREQUENT M FLARE ACTIVITY IS EXPECTED DURING THE NEXT  
13 HOURS.

A. LOCALLY VISUAL OBSERVATIONS WERE ELIMINATED DUE TO A  
SNOW STORM. REPORTS INDICATE, HOWEVER, THAT ONLY SCATTERED  
SUBFLARES CONSTITUTE CURRENT ACTIVITY. THE MAJORITY OF  
THESE NONENERGETIC EVENTS ARE OCCURRING WITHIN THE TWO SPOT  
GROUPS CENTERED NEAR S13W27 AND S13W03. THE GEOMAGNETIC FIELD  
IS QUIET AND SATELLITE PROTON DETECTORS ARE AT BACKGROUND  
LEVEL.

B. SAME AS PREVIOUS MESSAGE.

C. FLARE AND PROTON EVENT PROBABILITIES FOR THE NEXT THREE 24  
HOUR PERIODS BEGINNING 11 MAR/0400Z ENDING 14 MAR/0400Z.

CLASS M OR GREATER 60/60/50

CLASS X 10/10/05

PROTON EVENTS 02/02/02

D. OTTAWA 10.7CM FLUXES FOR 10/1700 AND 2000Z WERE 160 AND 162  
RESPECTIVELY.

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