

Geomagnetic Disturbance Report – Reeve Observatory

Activity: The Space Weather Prediction Center forecast for 16 October 2010 did not expect geomagnetic activity on 17 October:

“IIB. Geophysical Activity Forecast: The geomagnetic field is expected to be at predominately quiet levels for days one and two (17 - 18 October). By day three (19 October), unsettled to active levels, with isolated minor storm periods at high latitudes, are expected. The increase in activity is due to a geoeffective coronal hole high speed stream coupled with possible glancing blow effects from the 14 October CME.”

However, on 17 October geomagnetic storm levels were experienced at Reeve Observatory, apparently due to the effects of a 10 October CME. The SWPC issued the following summary on 17 October:

IIA. Geophysical Activity Summary 16/2100Z to 17/2100Z:

The geomagnetic field ranged from quiet to minor storm levels during the period. Activity was at quiet to unsettled levels until about 17/0700Z when the field became disturbed. Geomagnetic activity increased to active to minor storm levels through 17/0900Z, returning to mostly quiet levels through the remainder of the period. At about 17/0400Z, signatures at the ACE satellite indicated gradual increases in temperature, density and wind velocity. The Bz component of the interplanetary magnetic field (IMF) turned southward, and remained south for about 7 hours, reaching a maximum deflection of -7nT at 17/0737Z. The Bt component of the IMF reached a maximum of 10nT at 17/0520Z. This short-lived disturbance is thought to have been a result of a glancing blow from the slow-moving CME observed on 10 October.

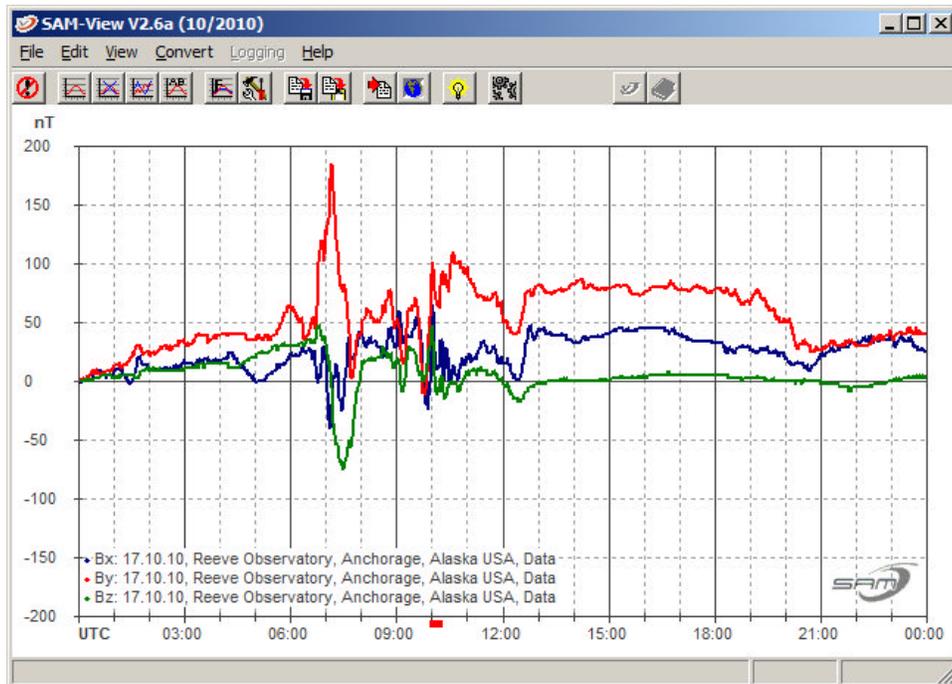
SWPC also issued the following Alerts on 17 October:

“Space Weather Message Code: ALTK04
Serial Number: 1483
Issue Time: 2010 Oct 17 0702 UTC
ALERT: Geomagnetic K-index of 4
Threshold Reached: 2010 Oct 17 0700 UTC
Synoptic Period: 0600-0900 UTC
Station: Boulder
Active Warning: Yes”

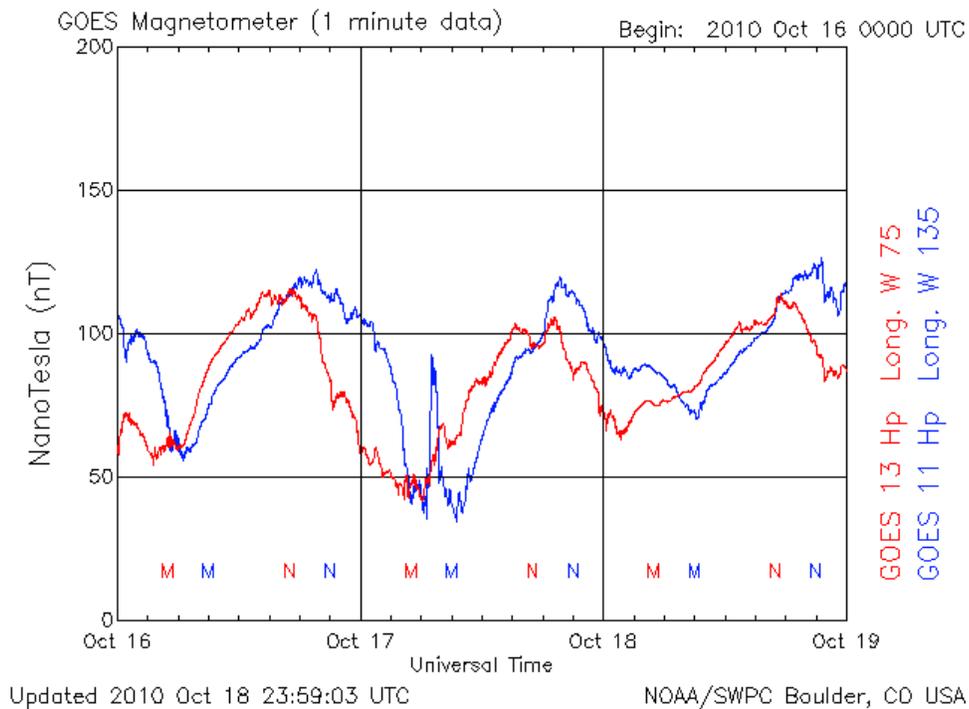
“Space Weather Message Code: ALTK05
Serial Number: 648
Issue Time: 2010 Oct 17 0745 UTC
ALERT: Geomagnetic K-index of 5
Threshold Reached: 2010 Oct 17 0744 UTC
Synoptic Period: 0600-0900 UTC
Station: Boulder
Active Warning: Yes
NOAA Scale: G1 – Minor”

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SAM-III Data: The magnetogram below shows 17 October at Reeve Observatory

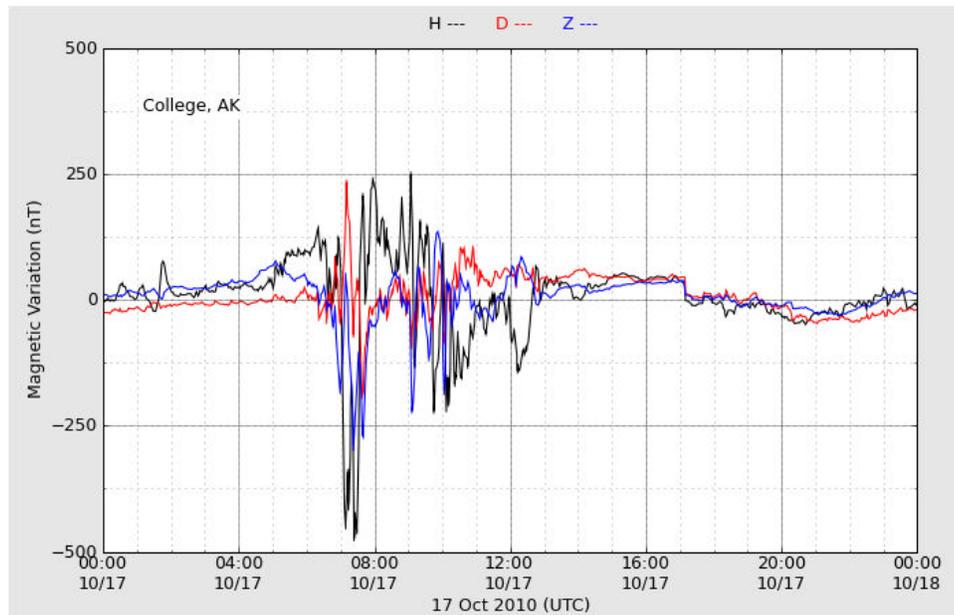


GOES data (GOES 11 is most relevant to Reeve Observatory):



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Alaska Magnetometer Chain (Note: College is nearest available station):



Equipment:

Simple Aurora Monitor (SAM-III) located at geomagnetic coordinates: 61.63 °N : 262.89 °E

Equipment description: www.reeve.com/SAMDescription.htm

Resources:

Reeve Observatory SAM-III real-time data: www.reeve.com/SAM/SAM_simple.html

Alaska Magnetometer Chain – 137.229.36.30/cgi-bin/magnetometer/magchain.cgi

Geostationary Operational Environmental Satellites – www.swpc.noaa.gov/rt_plots/mag_3d.html

Space Weather Prediction Center – www.swpc.noaa.gov/

SOHO – http://sohodata.nascom.nasa.gov/cgi-bin/data_query

SDO – <http://sdo.gsfc.nasa.gov/>

Tutorial:

www.reeve.com/Documents/SAM/GeomagnetismTutorial.pdf