

Geomagnetic Disturbance Report – Reeve Observatory

Event type: Coronal hole high-speed stream (CHHSS)

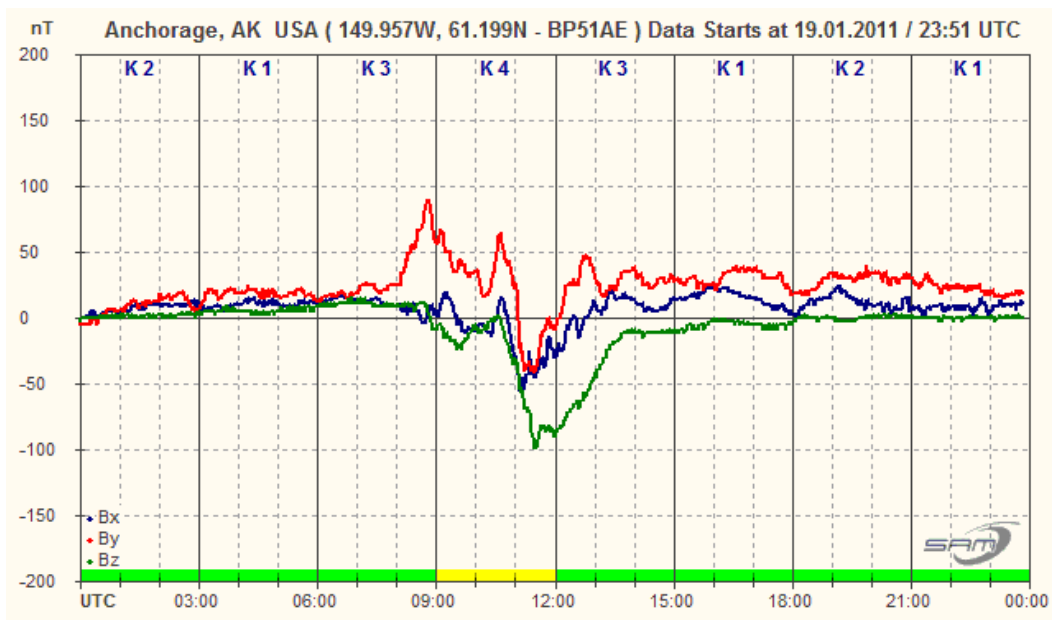
Background: A coronal hole is a large dark region of less dense and colder plasma in the Sun's corona where the solar magnetic field lines are able to stretch far out into the inter-planetary medium. These field lines may connect with Earth's magnetic field, causing a geomagnetic disturbance. During periods of sunspot minimum, the coronal holes usually are found in the Sun's polar regions, but as solar activity increases the coronal holes can be found at all latitudes.

Activity: On 19 January 2011 the Space Weather Prediction Center measured reported the effects of a coronal hole high-speed stream (all dates and times in UTC):

Geophysical Activity Summary 18/2100Z to 19/2100Z:

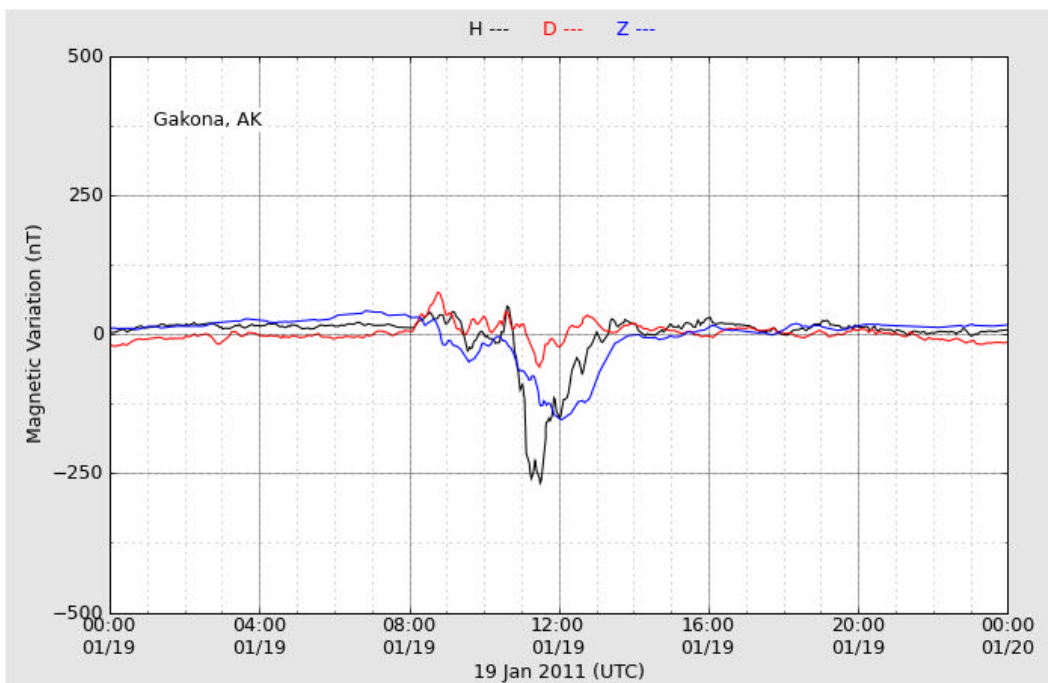
The geomagnetic field was at predominantly quiet to unsettled levels. Isolated active to minor storm levels were observed at high latitudes between 19/0900-1500Z due to a coronal hole high-speed stream.

SAM Data: The following SAM_VIEW image is the magnetogram for 19 January 2011. Although the SWPC report indicates the effects of the CHHSS between 0900 and 1500, the magnetogram below indicates activity at the observatory started about 0800 for the Y-component followed one hour later by the X- and Z-components with unsettled conditions extending to about 1400.

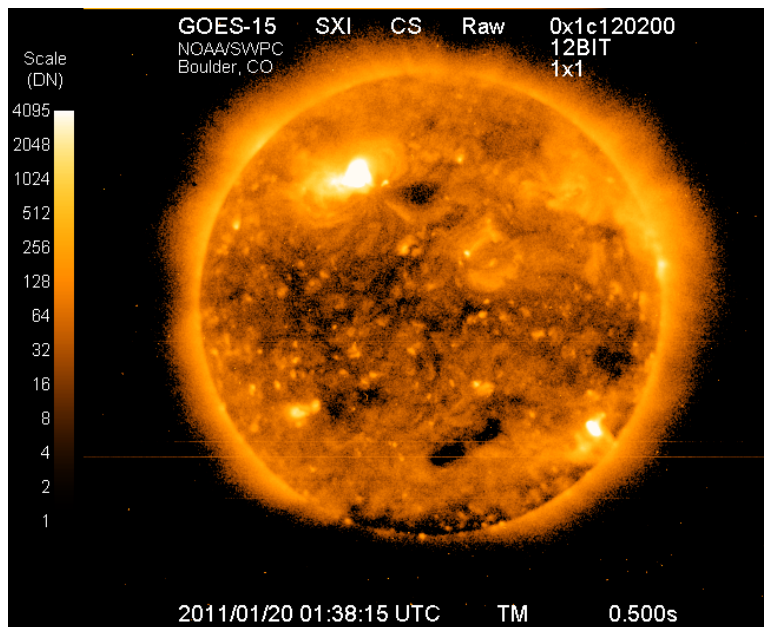


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Alaska Magnetometer Chain (Gakona station, approximately 290 km ENE of observatory):

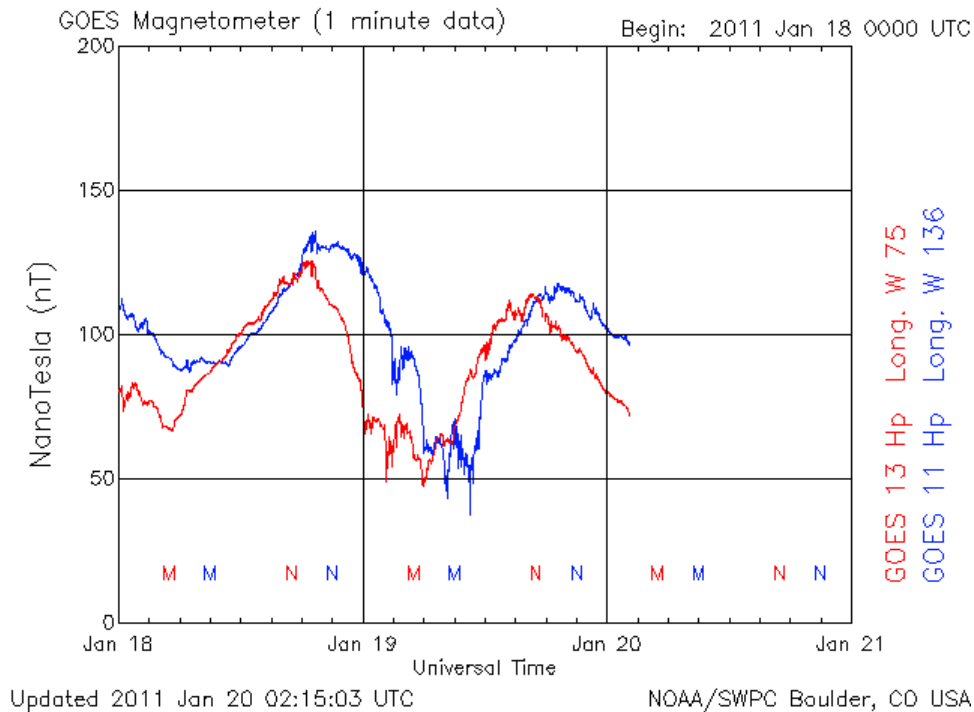


GOES 15 SXI (Solar X-ray Imager):



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



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/>

Geomagnetism Tutorial:

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

Image sources:

GOES: NASA

Alaska Magnetometer Chain: University of Alaska Fairbanks, Geophysical Institute