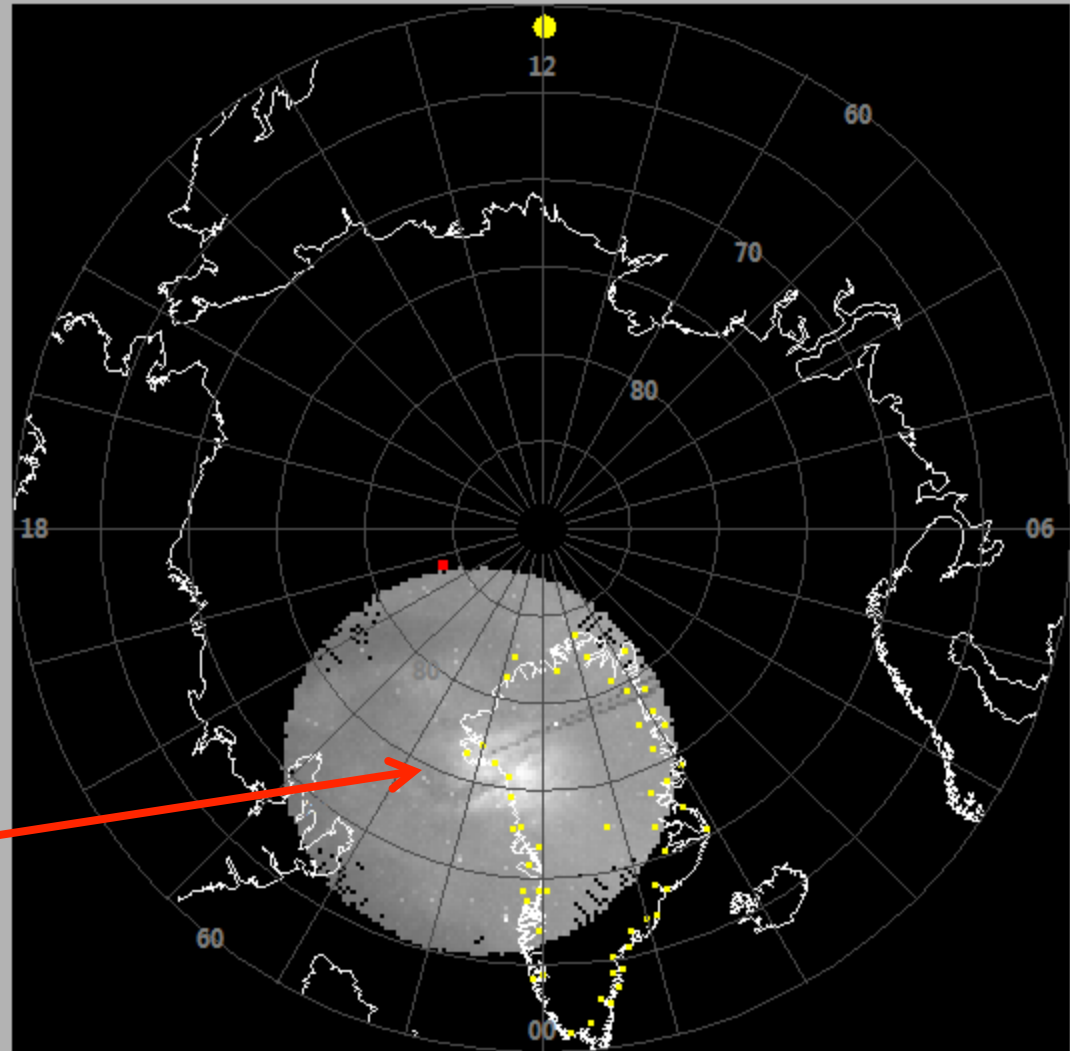


Polar cap  
patches,  
observations  
from Greenland

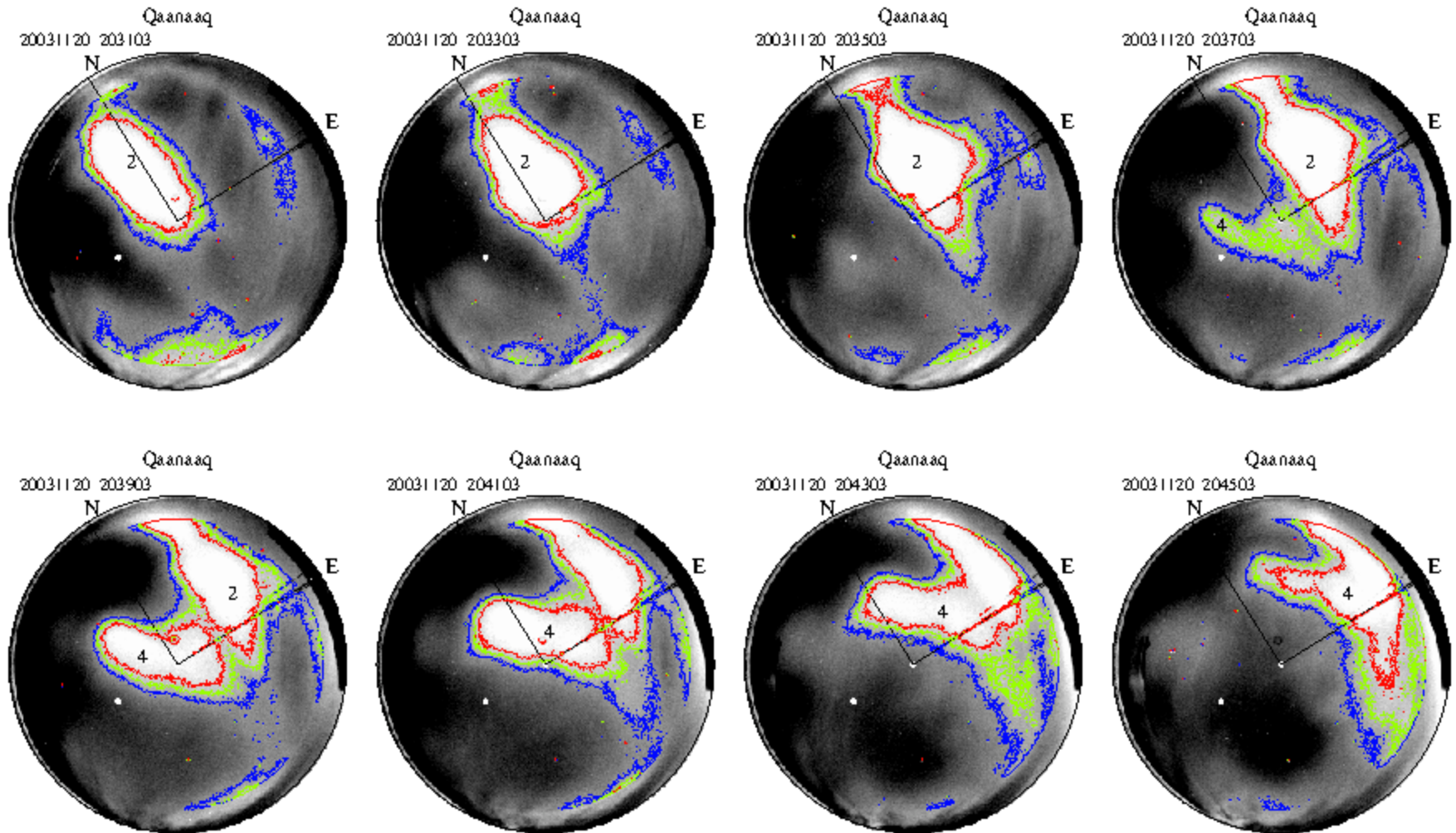
“cigar” shaped  
patches observed  
on December 16,  
2009.

091216\_032200\_6300\_NAQ

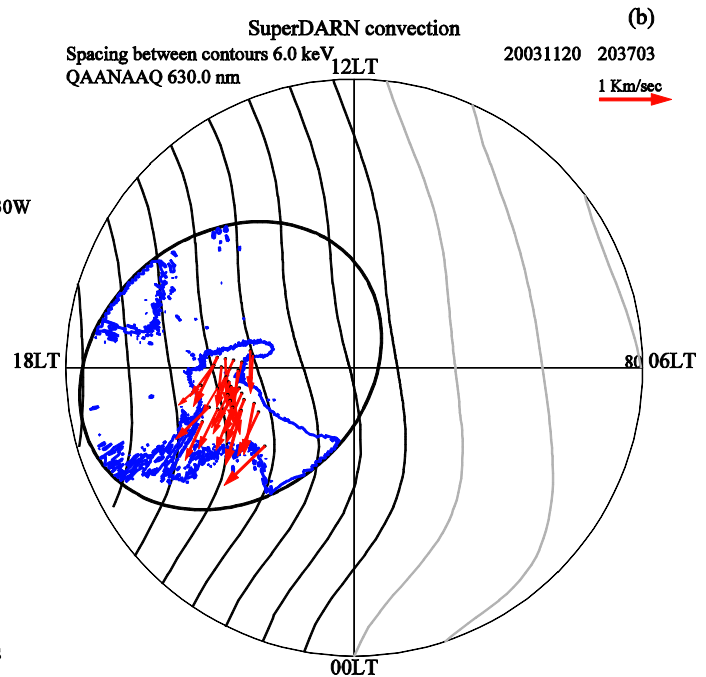
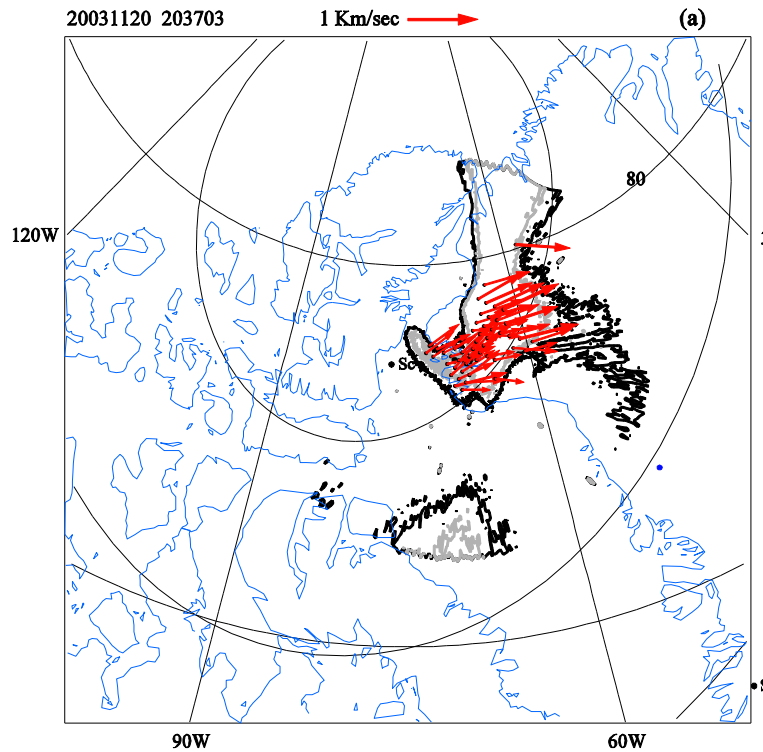
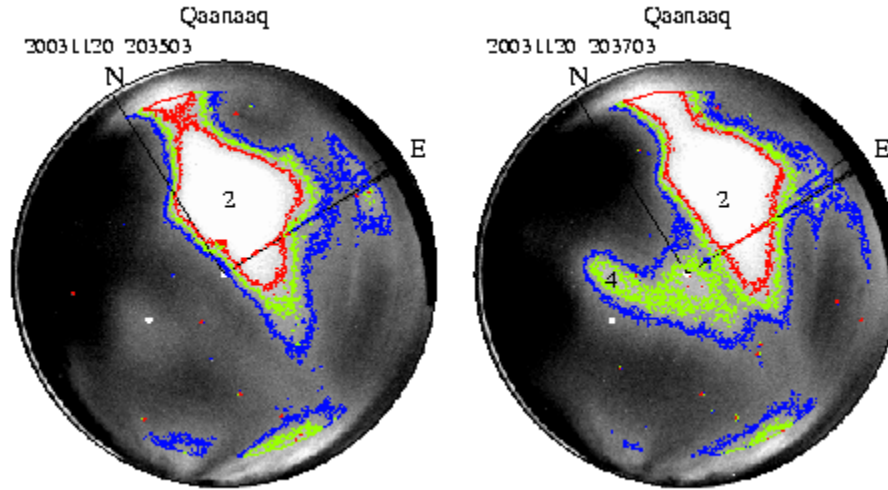


Geo Lat - Solar Local Time

# Imager observations during the Magnetic storm of Nov 20, 2003



# 2-D cross correlation of consecutive images



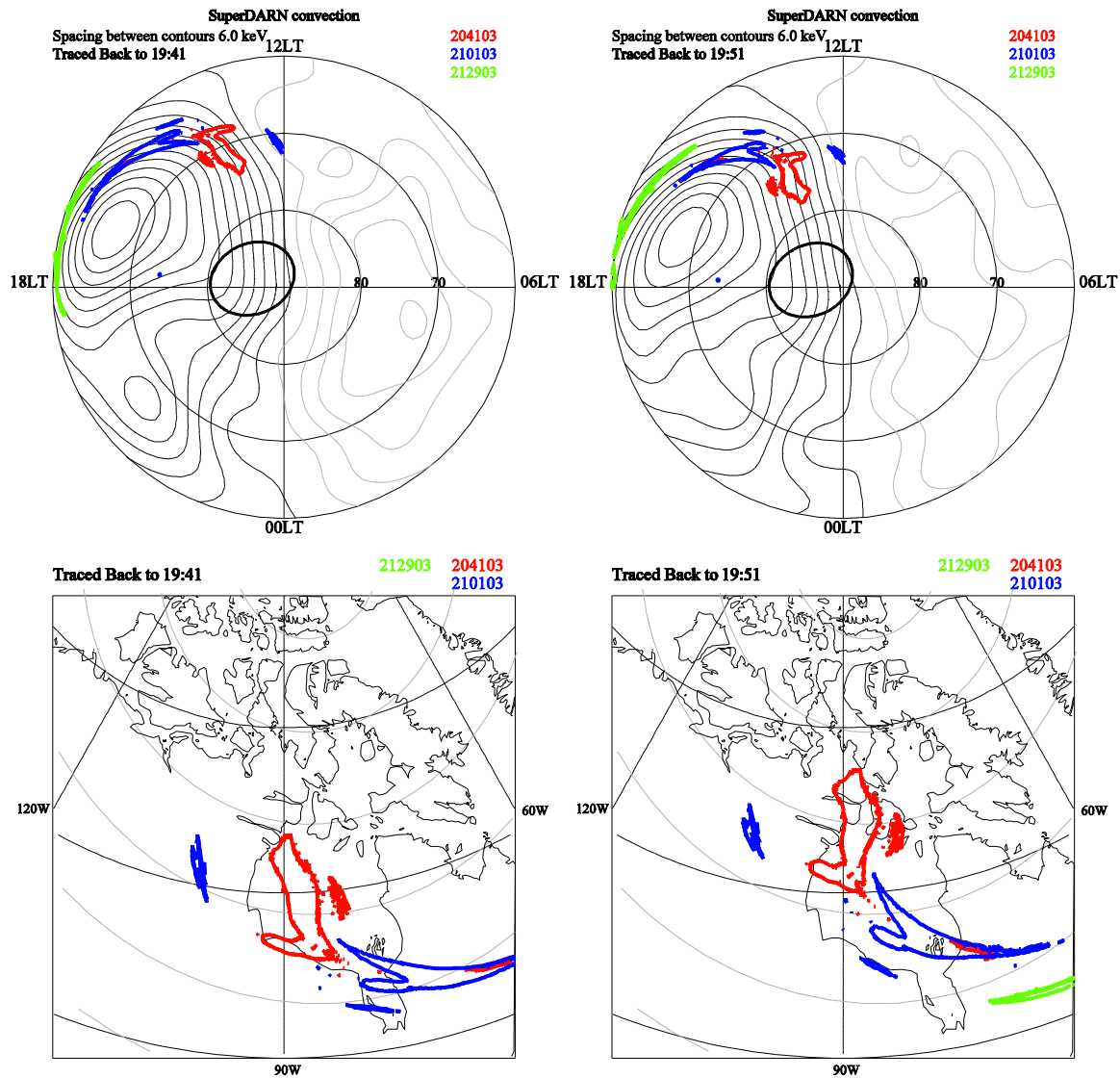
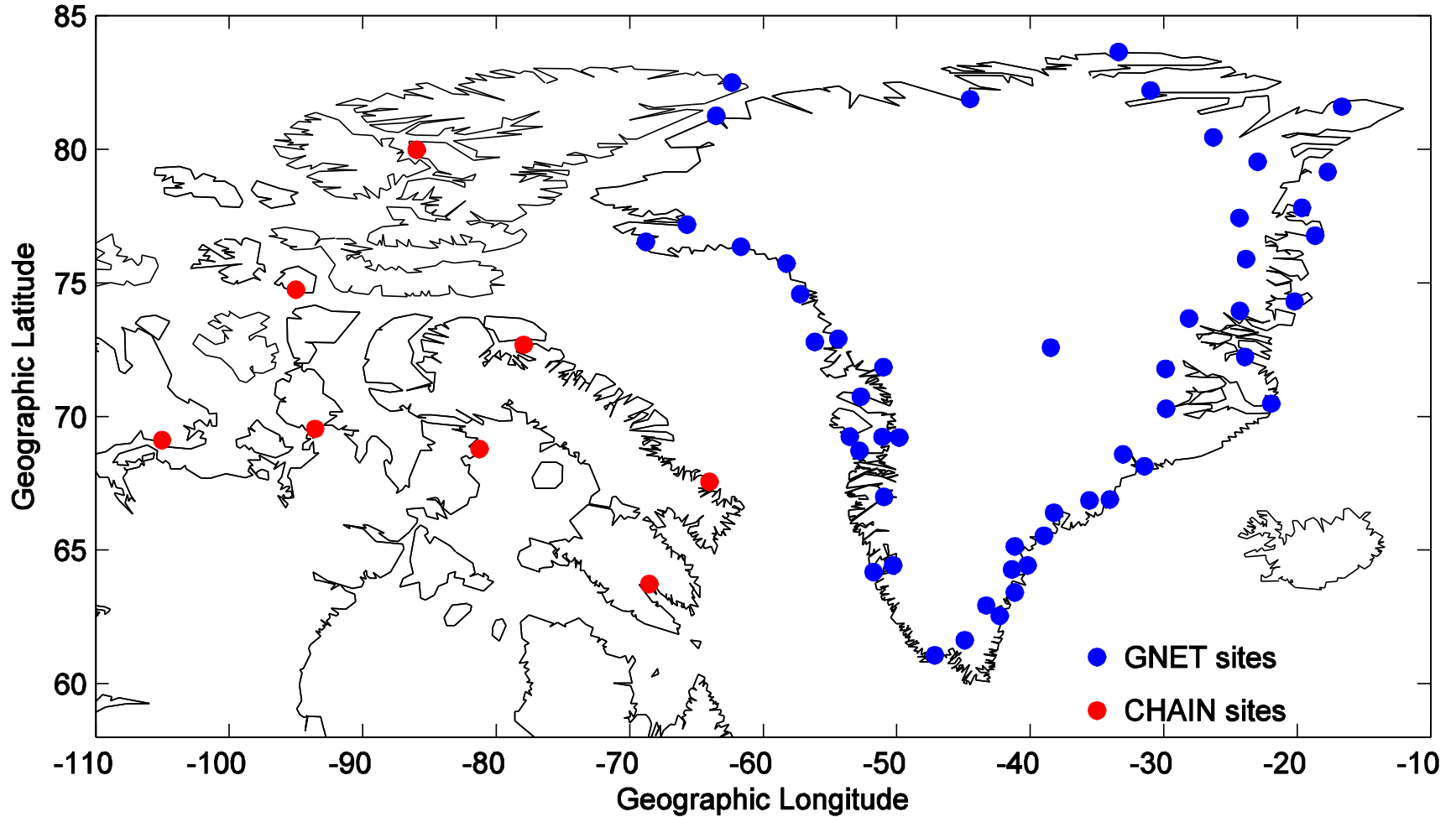


Figure 9. Trajectory analysis of the patches observed at Qaanaq on November 20, 2003 at 2041 (red), 2101 (blue), and 2129 UT (green). The images were traced backward in time to 1941 and 1951 UT. The top panels show the patches in a CG system; the lower panels show the same information in geographic coordinates. See text for further interpretation of the composite images.

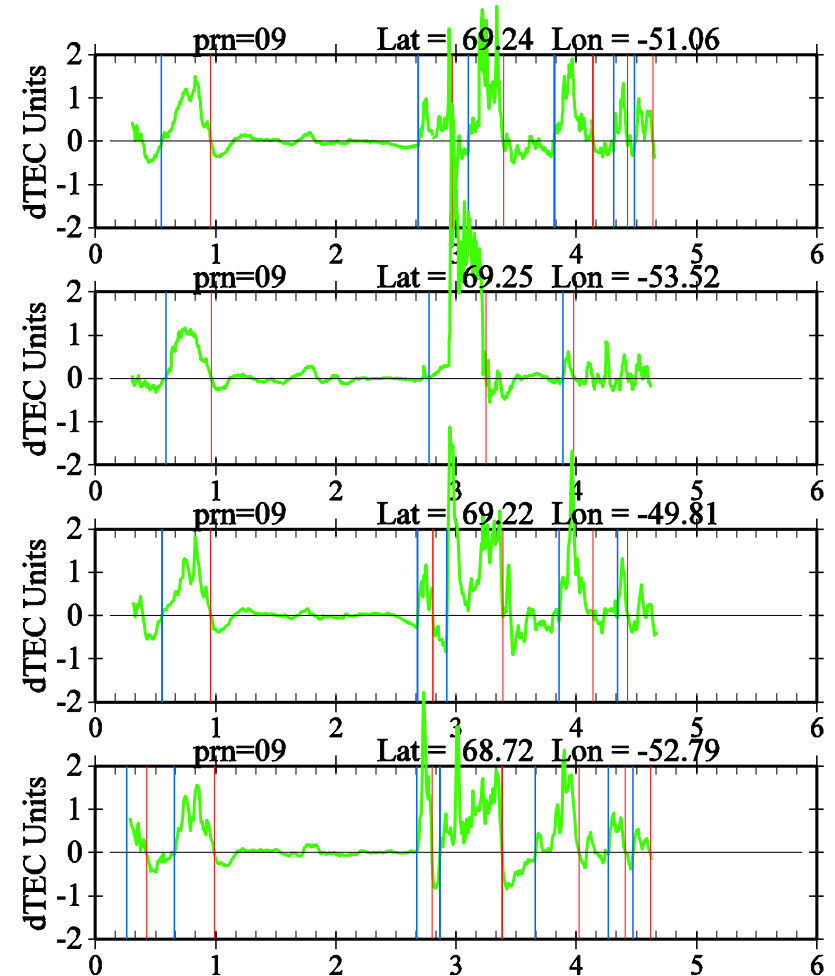
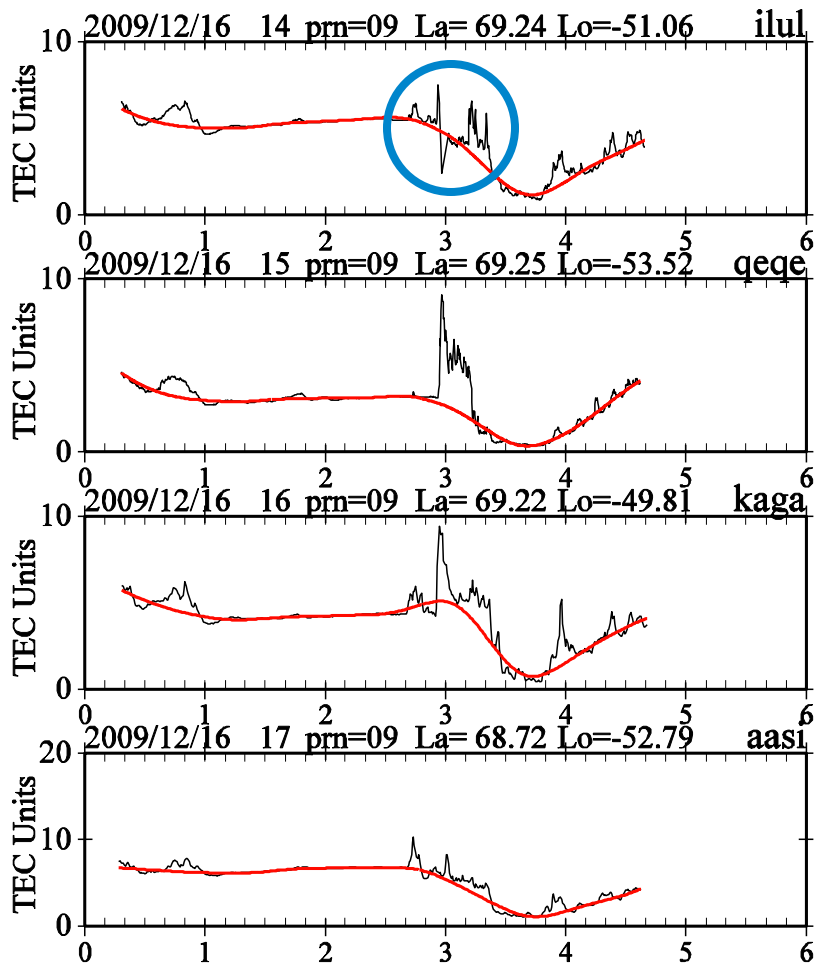
# GPS stations in Greenland And East Canada

GPS Sites



**Black trace is the measured TEC, red line displays the fit to TEC to calculate patch TEC.**

**Green curve dTEC, blue line start of TEC enhancements, red line indicates the end of enhancement**

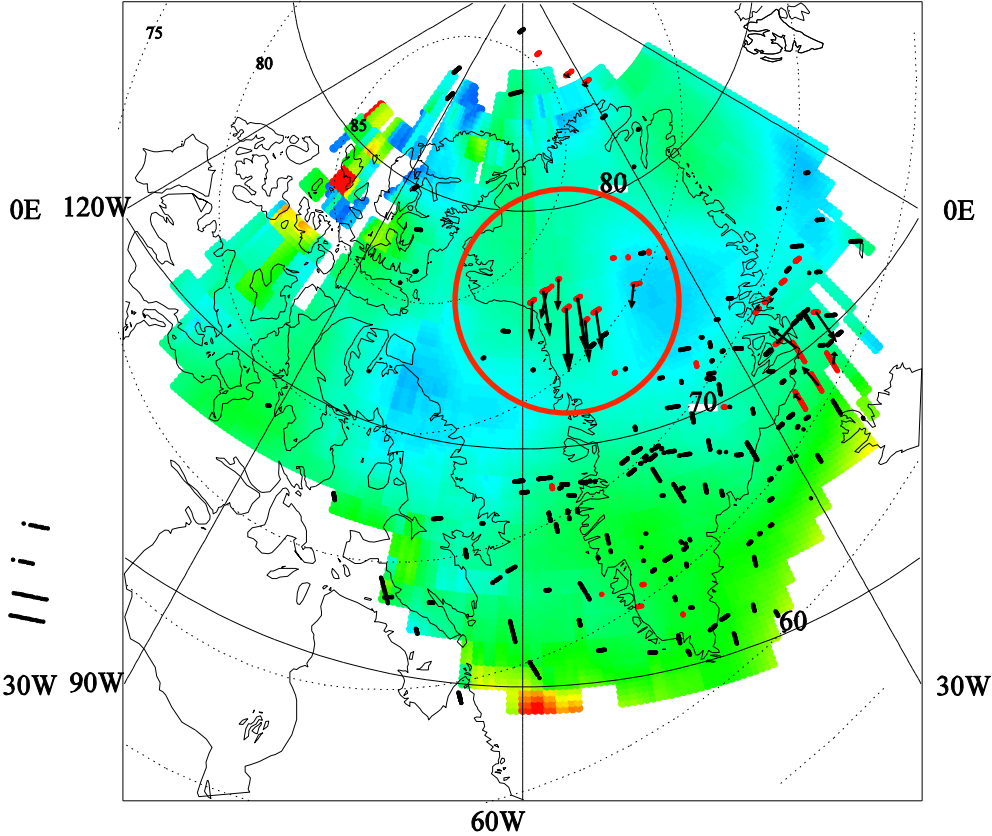
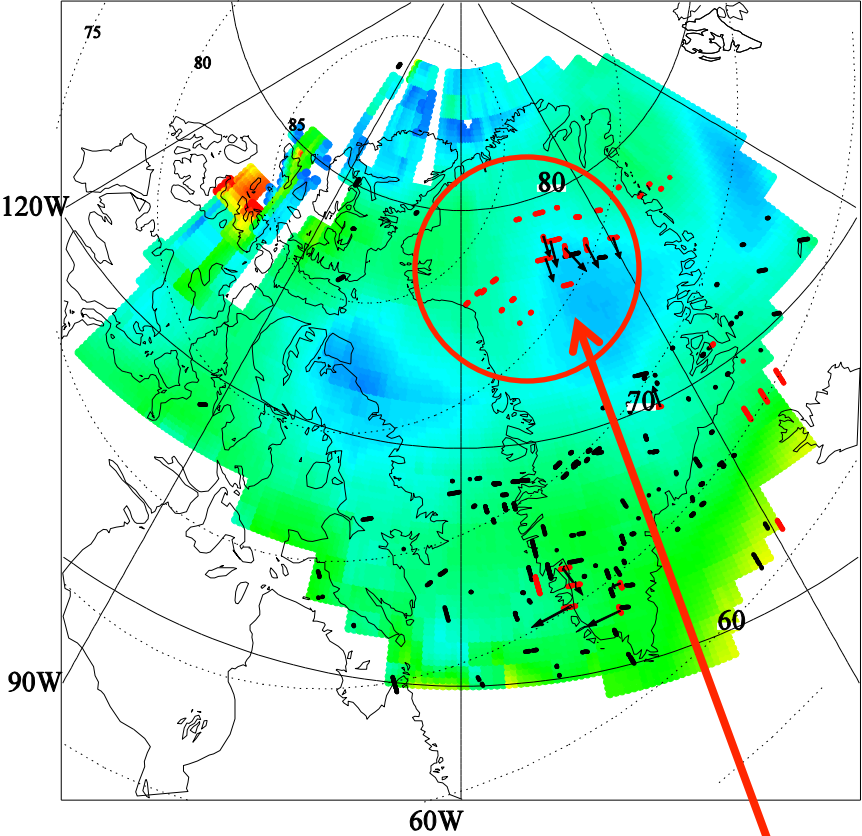


# TEC enhancements observed on December 16, 2009



2009/12/16 02:50:00 - 03:00:00 Universal Time 1 km/sec →

2009/12/16 03:00:00 - 03:10:00 Universal Time 1 km/sec →



**Polar cap patches**

# Summary

We, at BC have developed software to process and trace back in time polar cap patches observed by the all-sky imagers placed at the center of the polar cap (e.g. Qaanaaq). The patches are traced back to the time they cross the line between closed and open field lines.

TEC values from 55 GPS receivers in the polar cap are used to identify polar cap patches and calculate their velocity and direction of motion.





# Solar Wind parameters during the Super Storm of November 2003

20–21 November 2003

