PFISR Experiment
Group 3

Hillary Egglestone
Alex Fletcher
Grant Scoular
Bill Archer
Ellen Cousins
Bharat Kunduri

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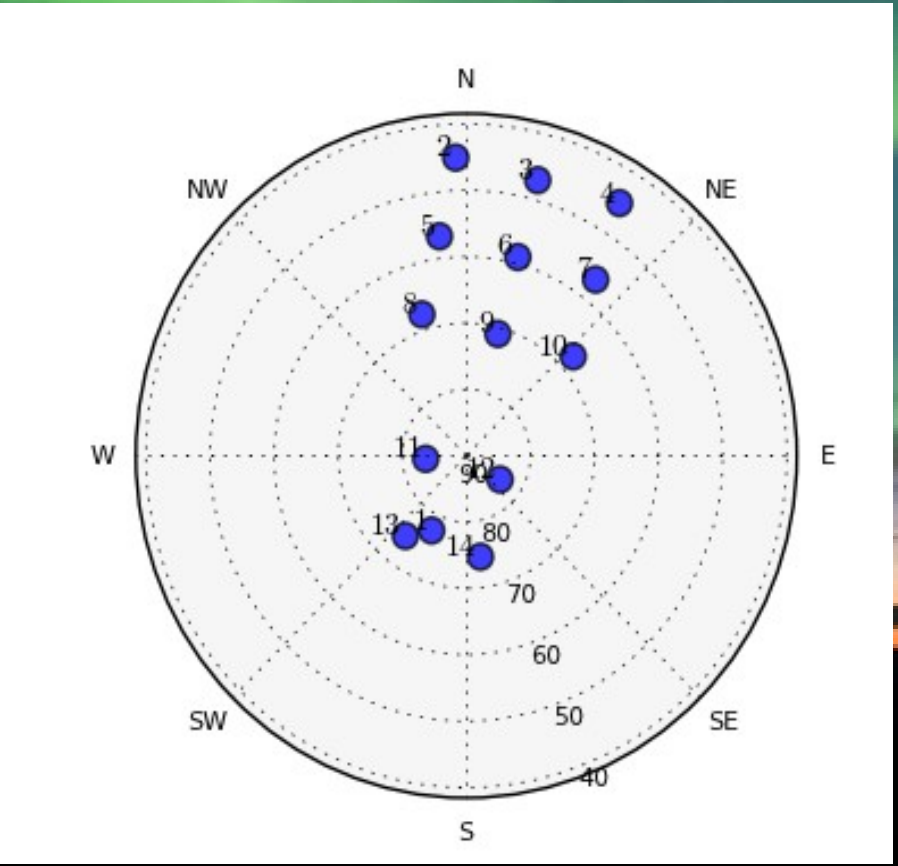
Goals

- Capture convection reversal
- Calculate resolved velocities using different beam combinations
  - Investigate errors
- See what we can see

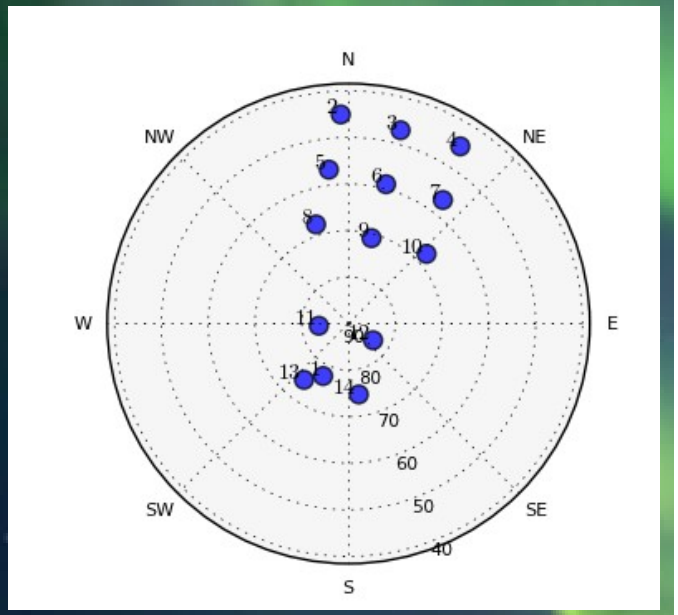
Our Scan

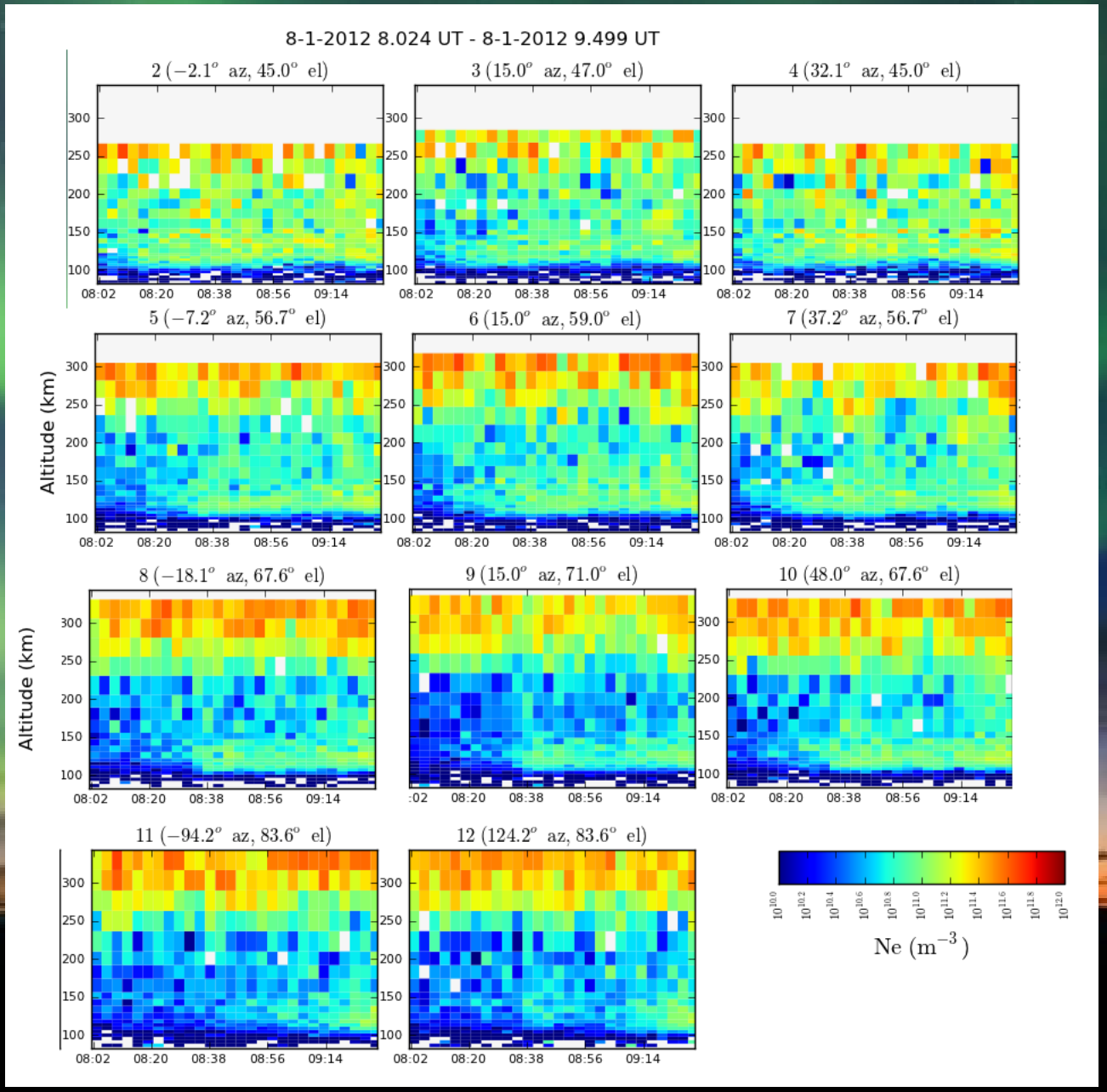
- Northward and Southward line of sight to catch convection reversal
- 9 evenly spaced beams to calculate v_r



Beam animation

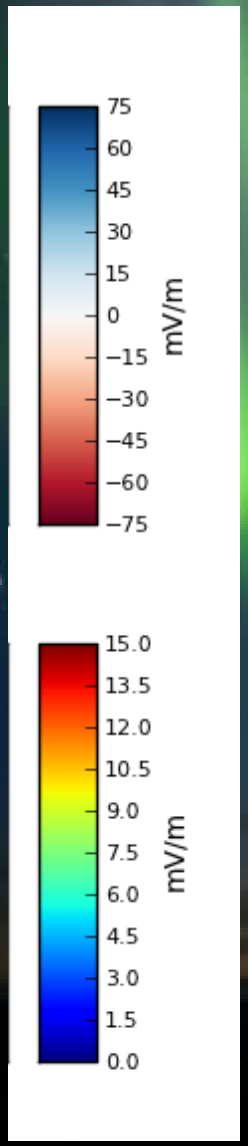
n_e Enhancement in E region

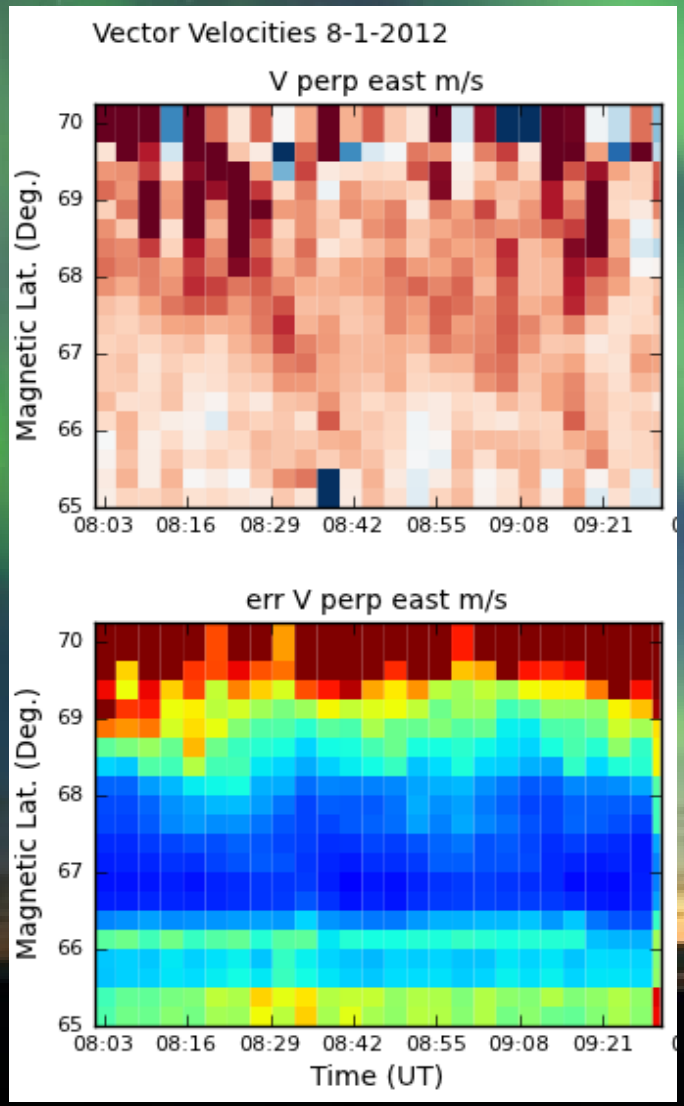


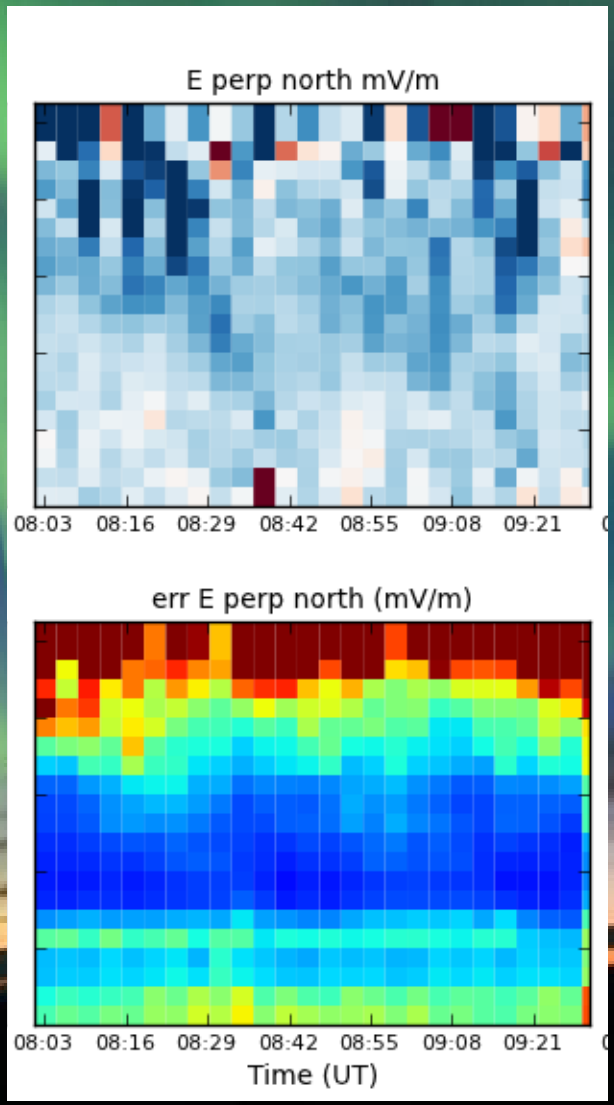


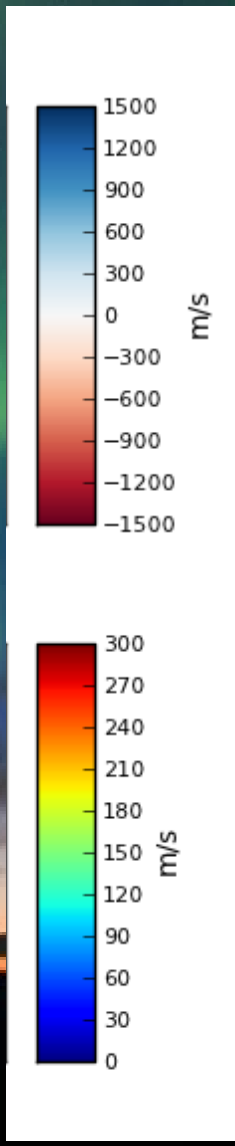
E Region Enhancement

Electric Field and Velocities



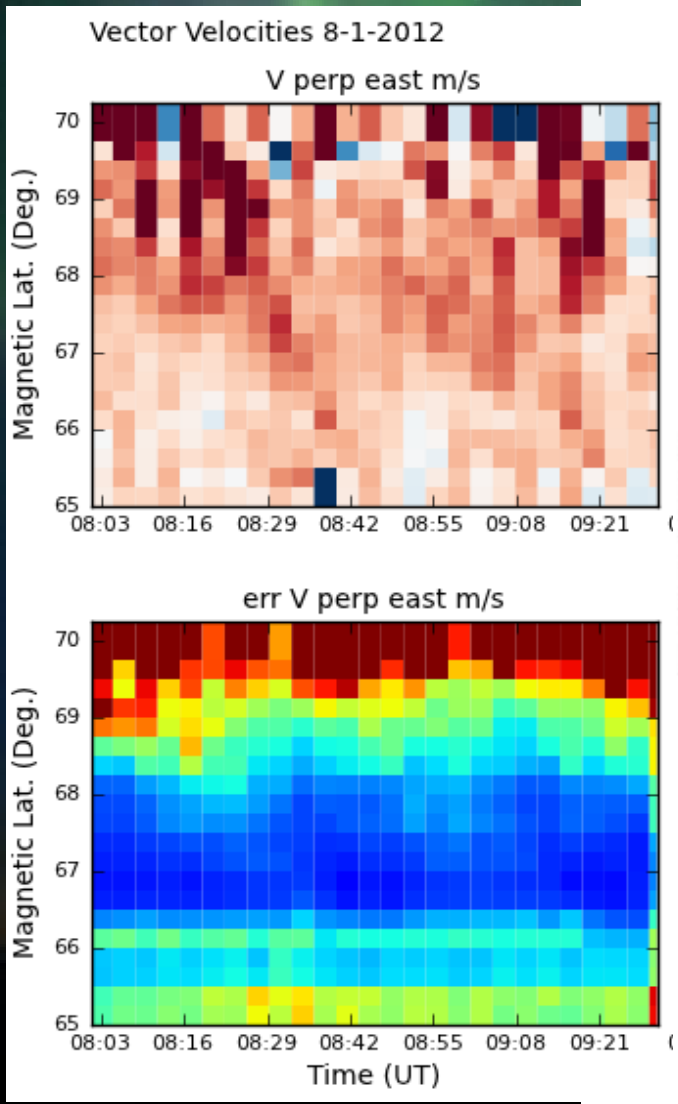


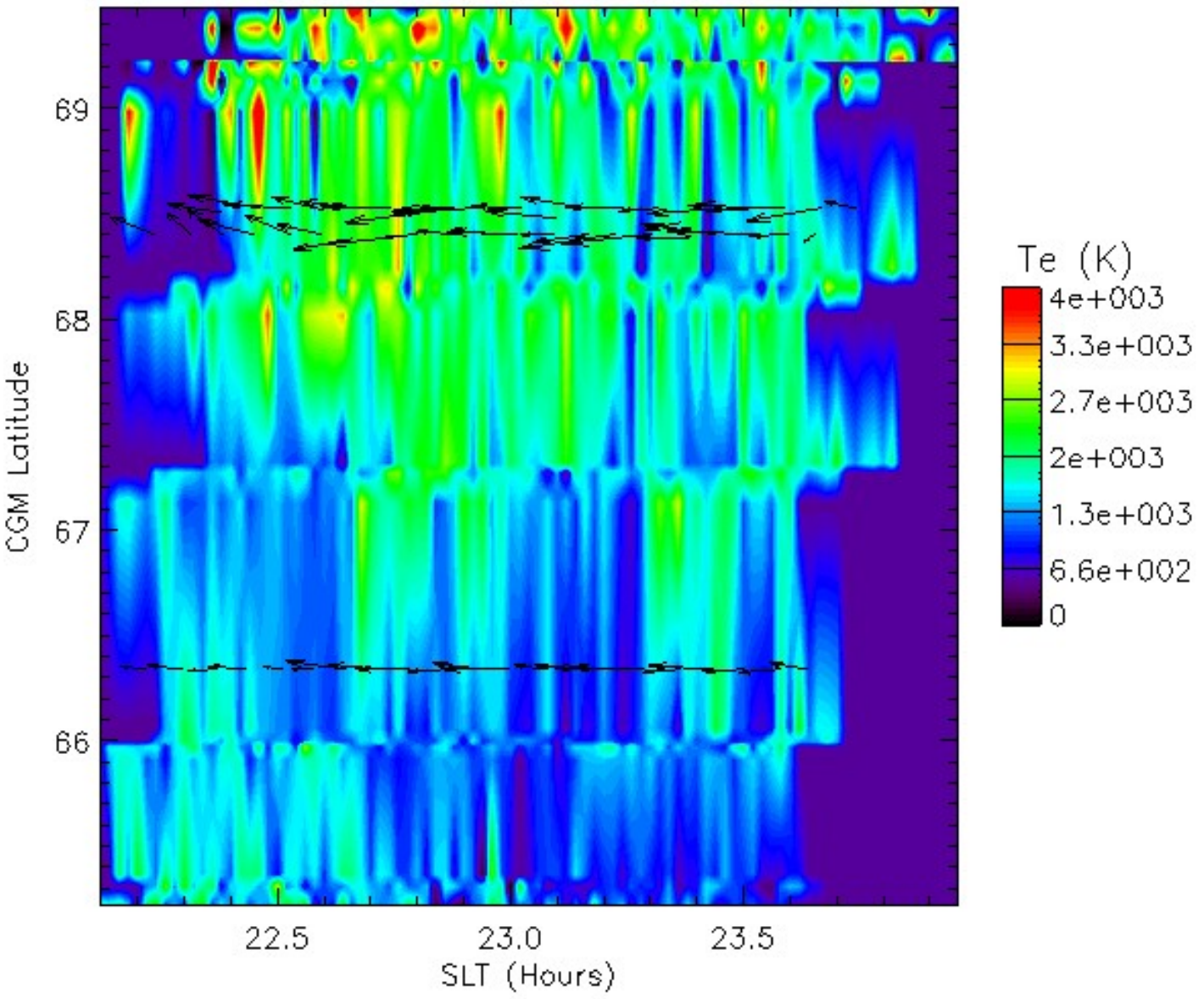




Electron Temperature

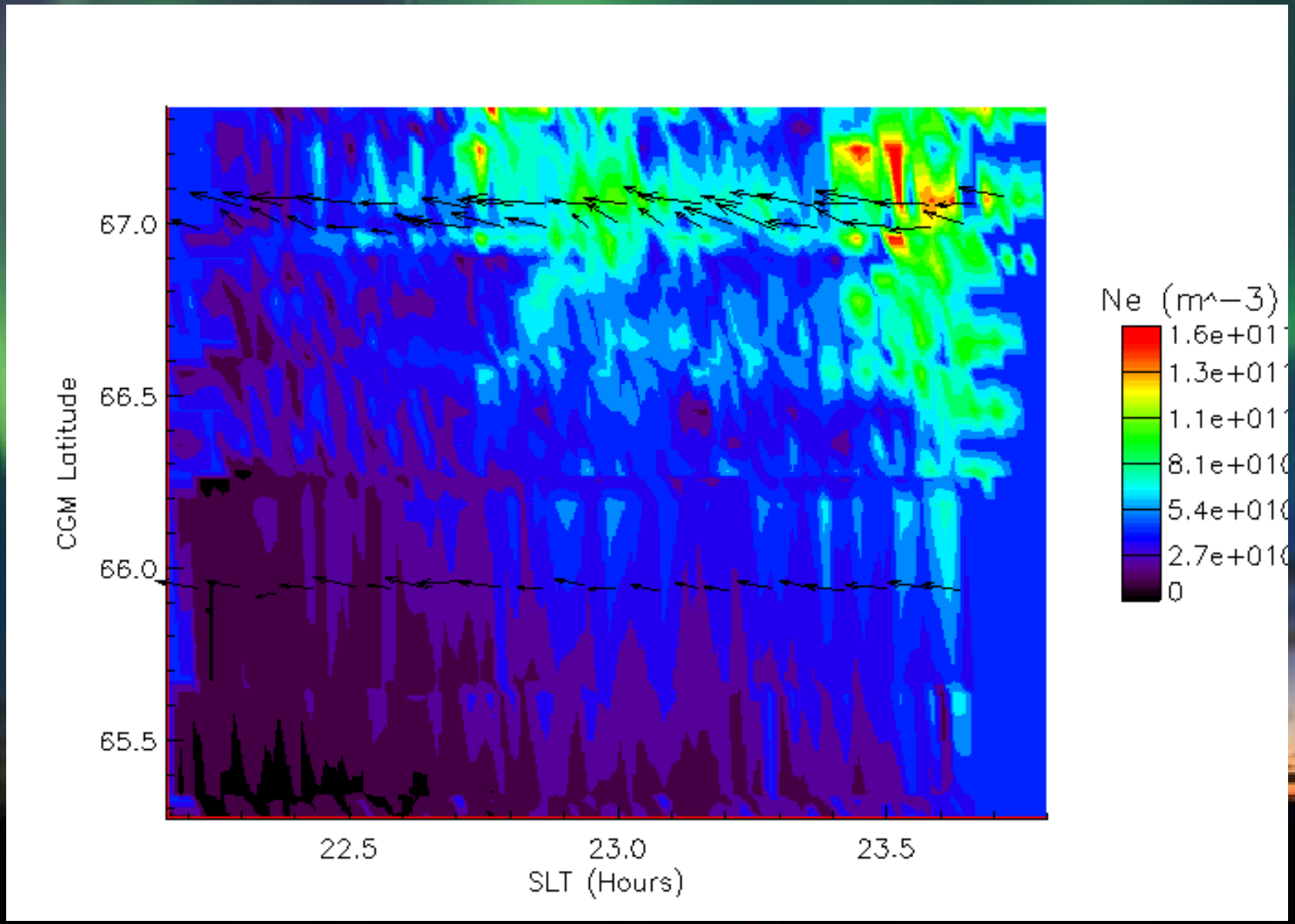
350-400 km



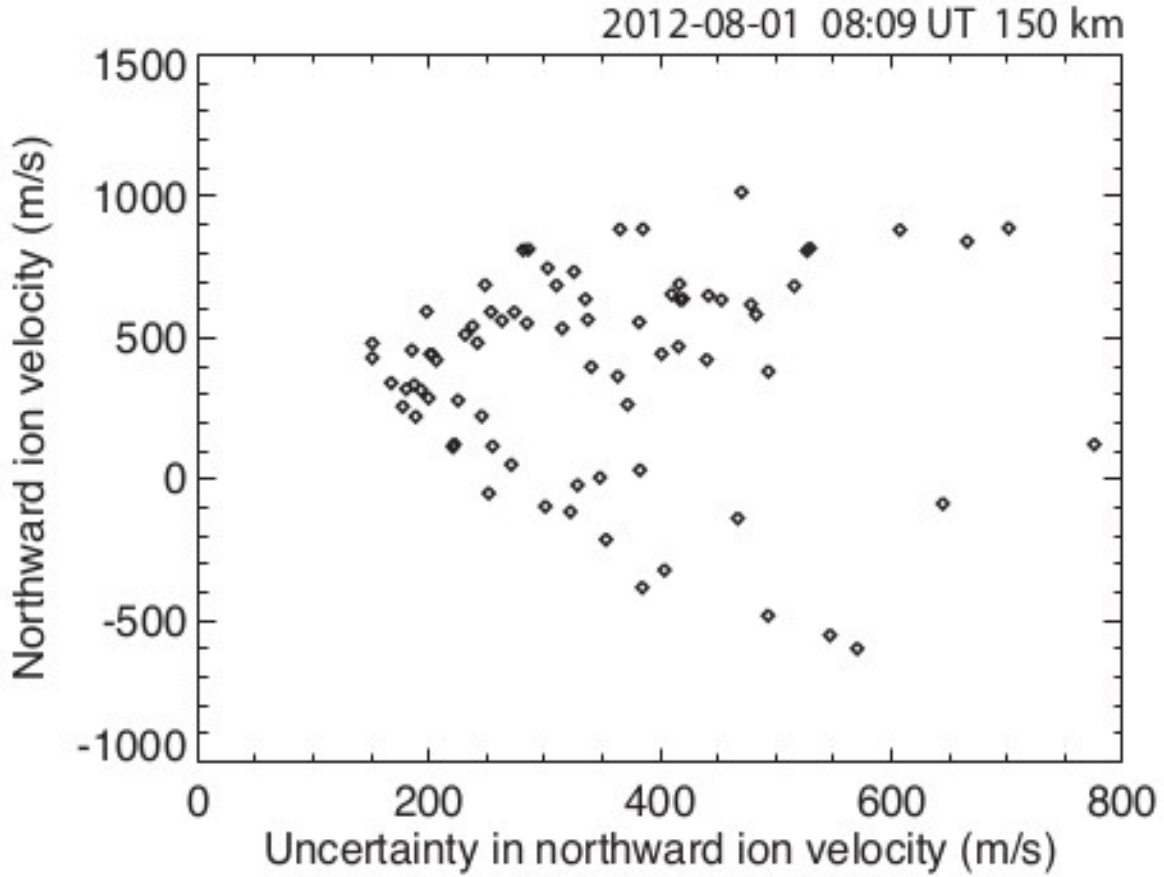


Electron density with latitude

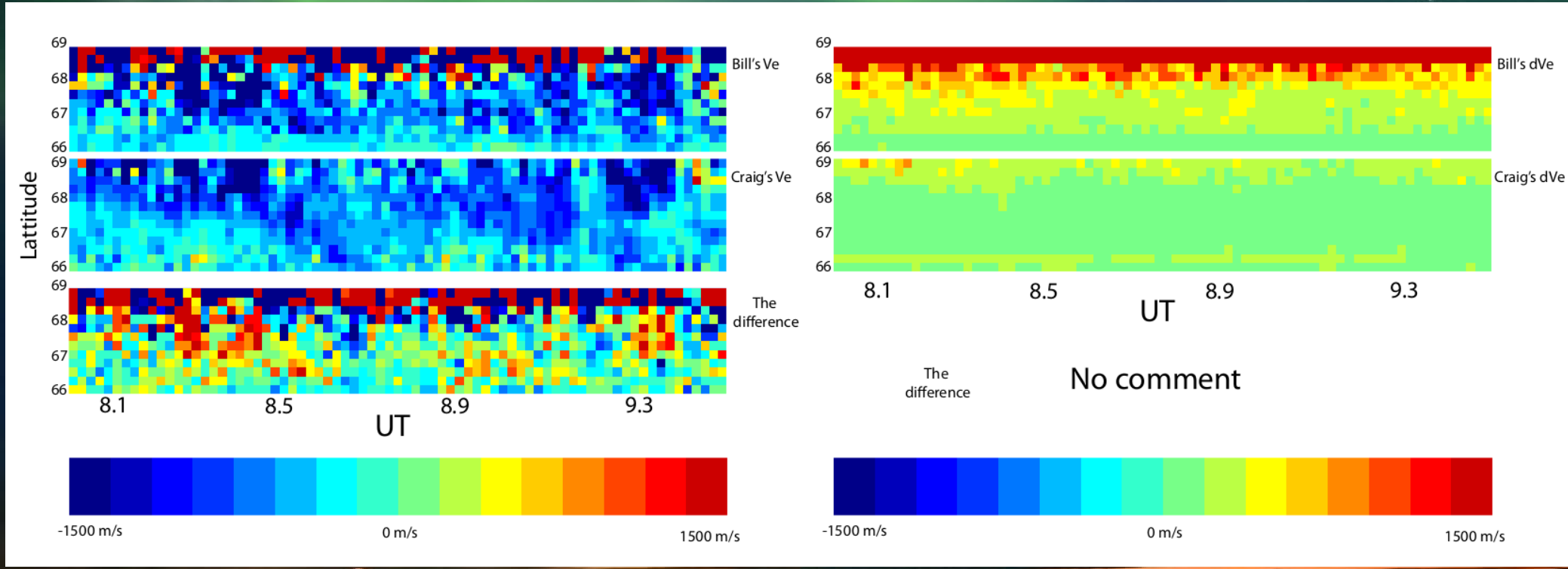
150-200 km



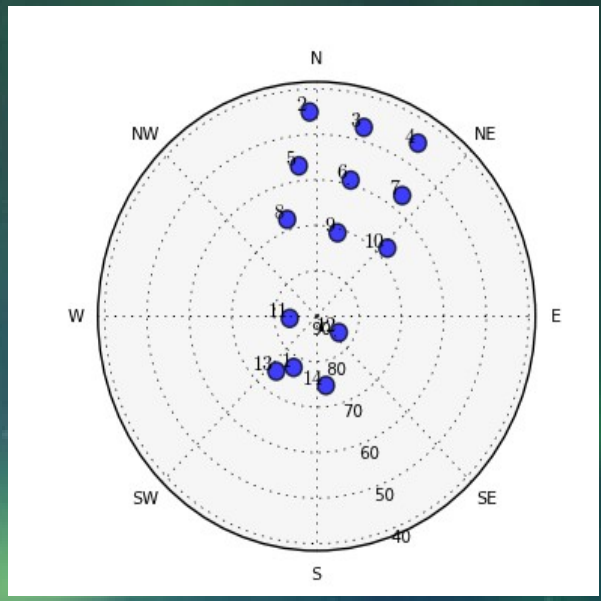
Calculating Resolved Velocities

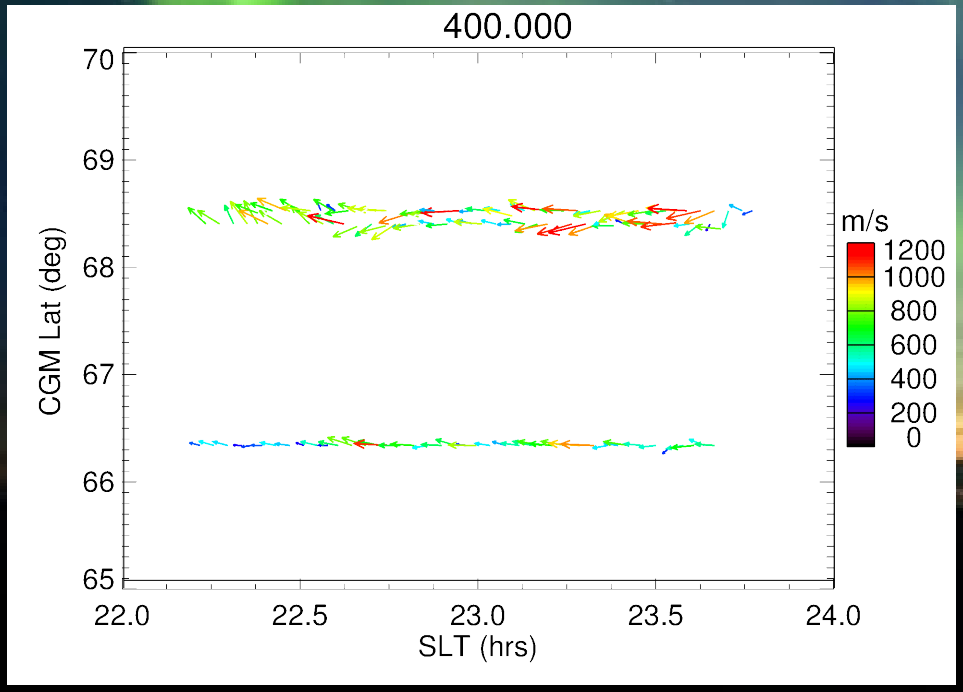


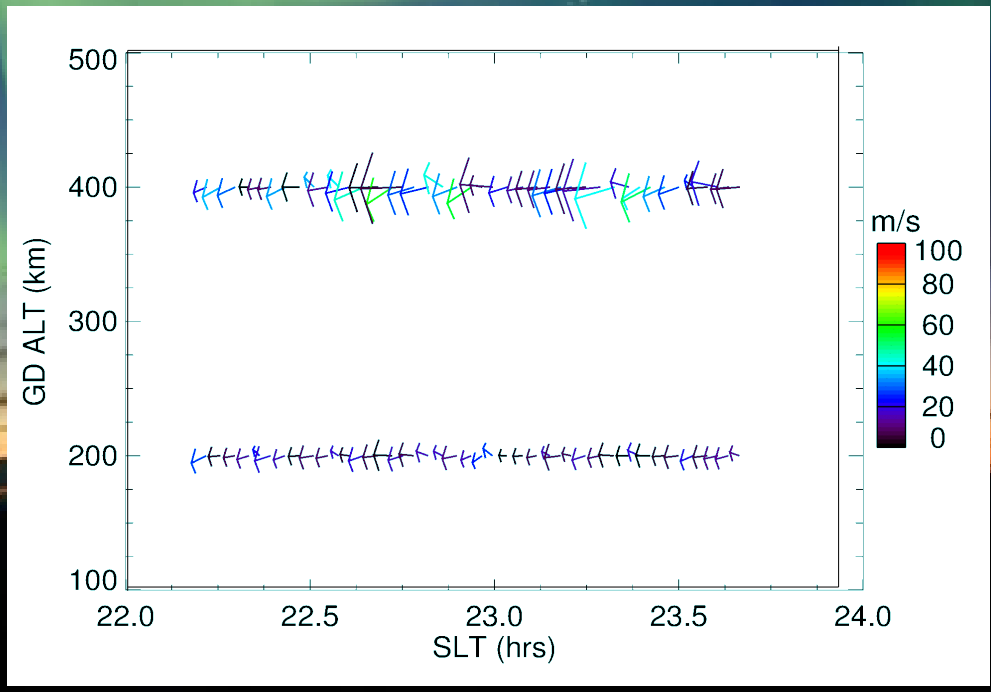
Comparison to “Official” Velocities



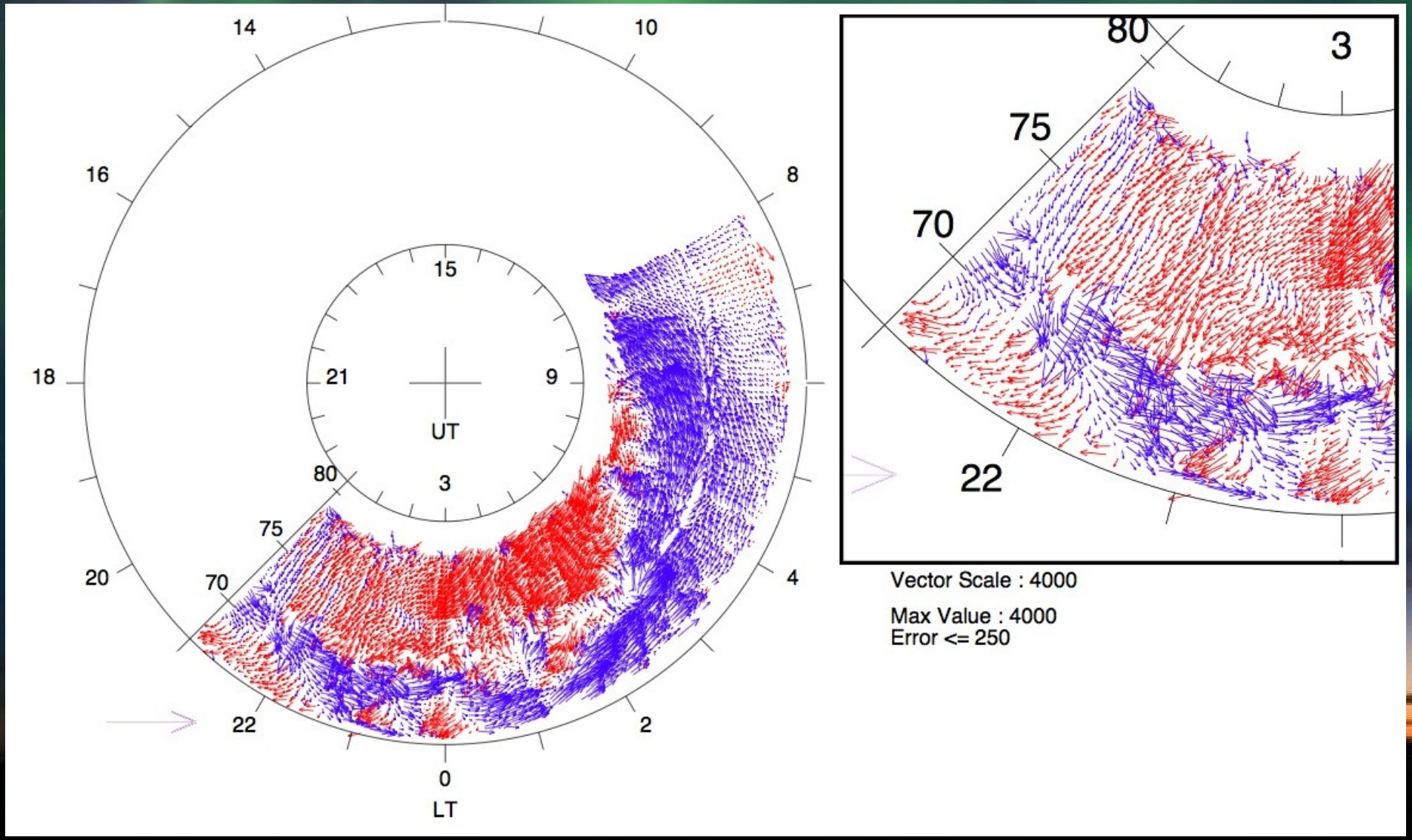
- Calculation of resolved velocities
  - Singular value decomposition of LOS measurements
  - Error weighted



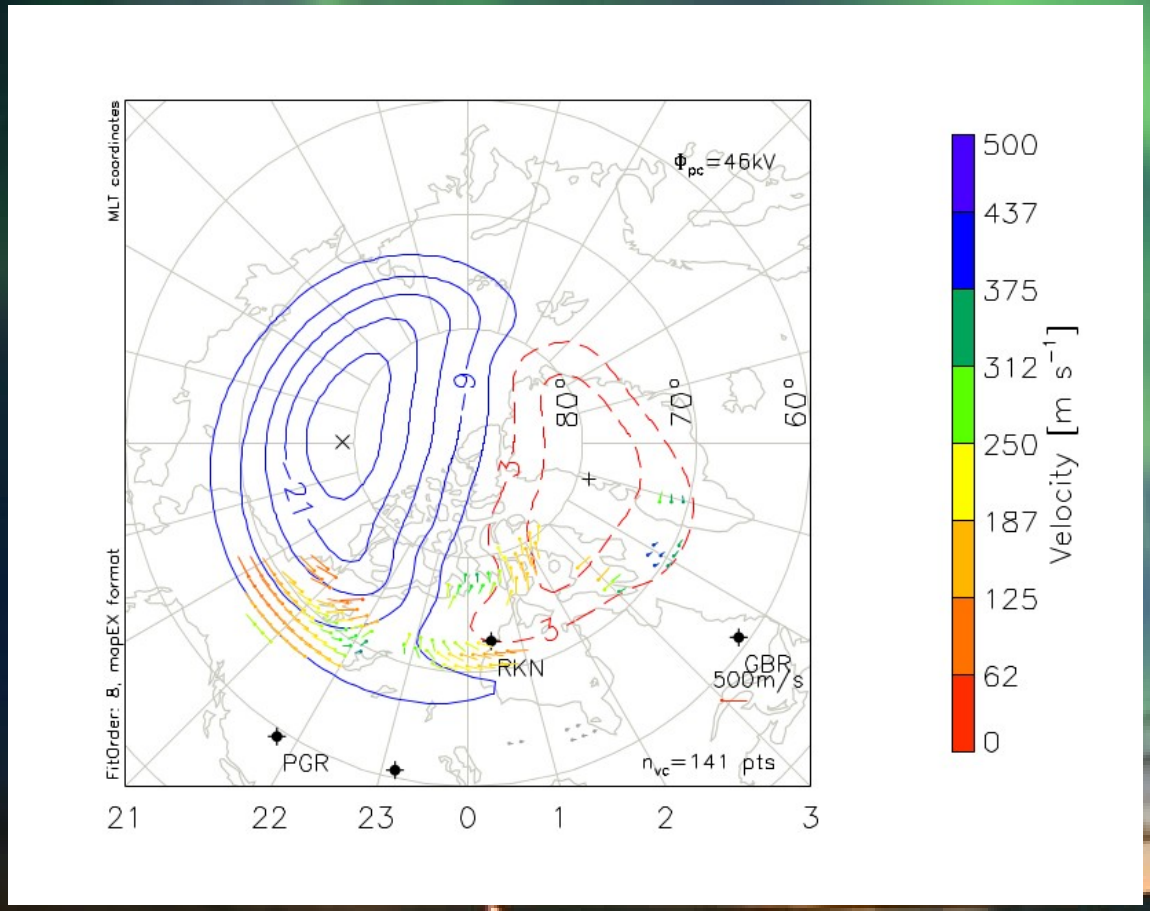


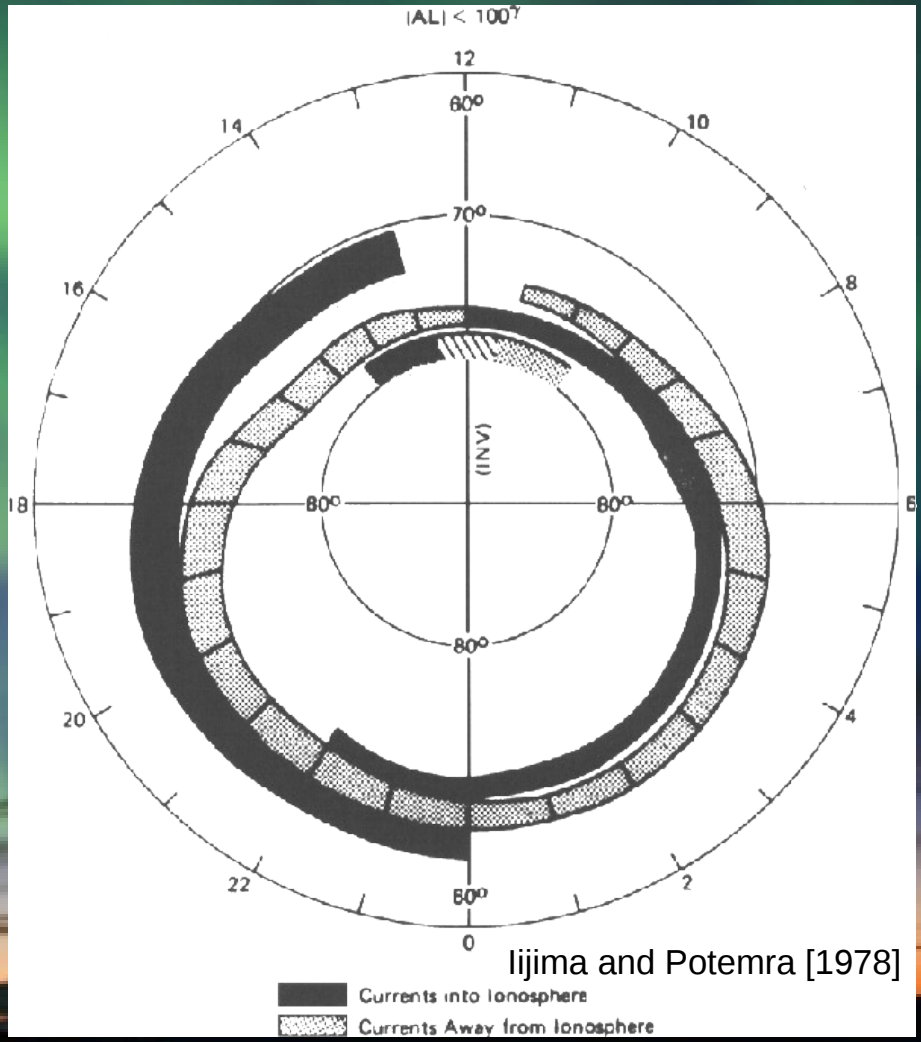


Sondrestrom observations of Harang discontinuity



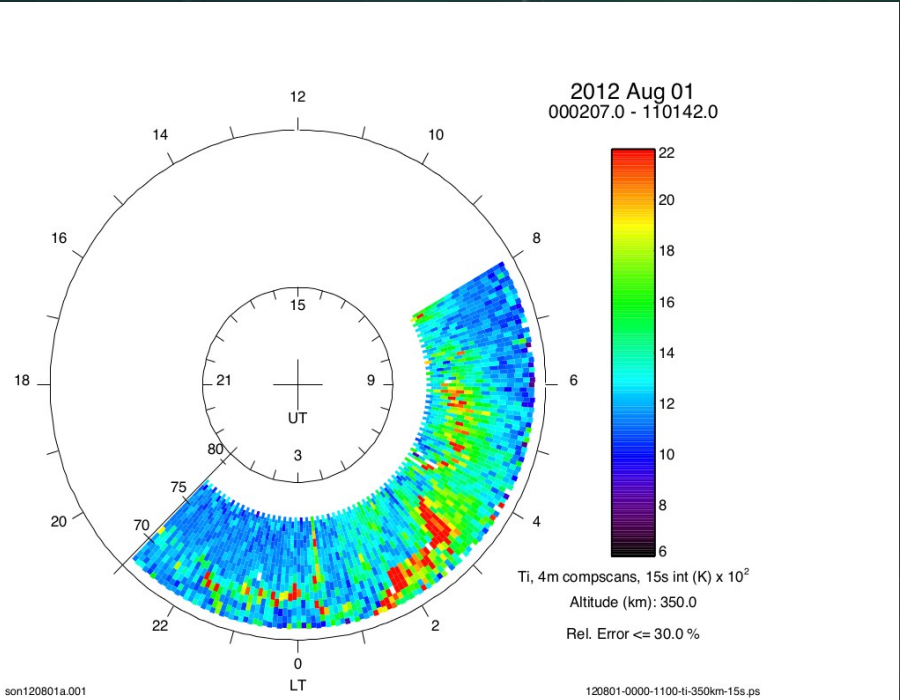
Convection pattern and Field aligned currents

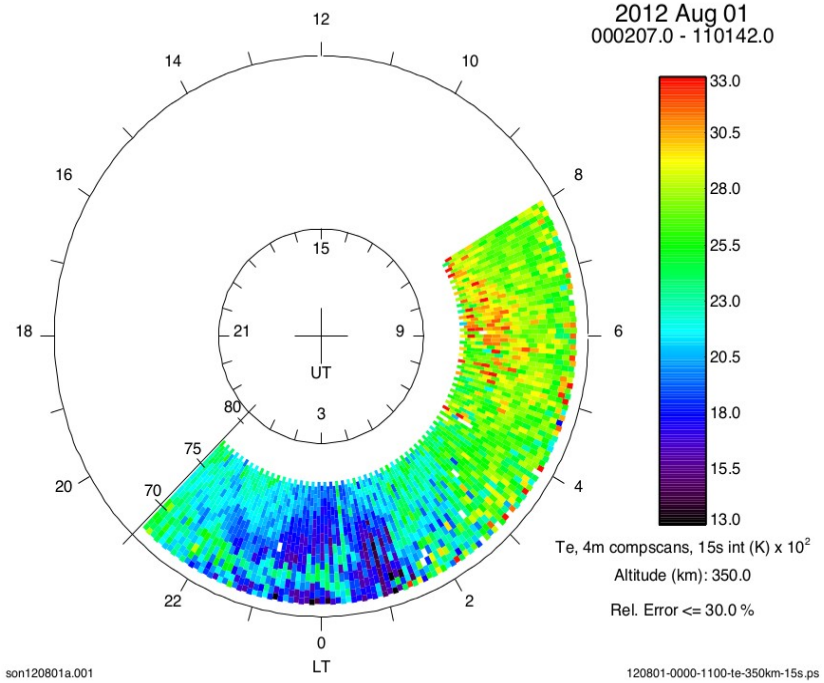


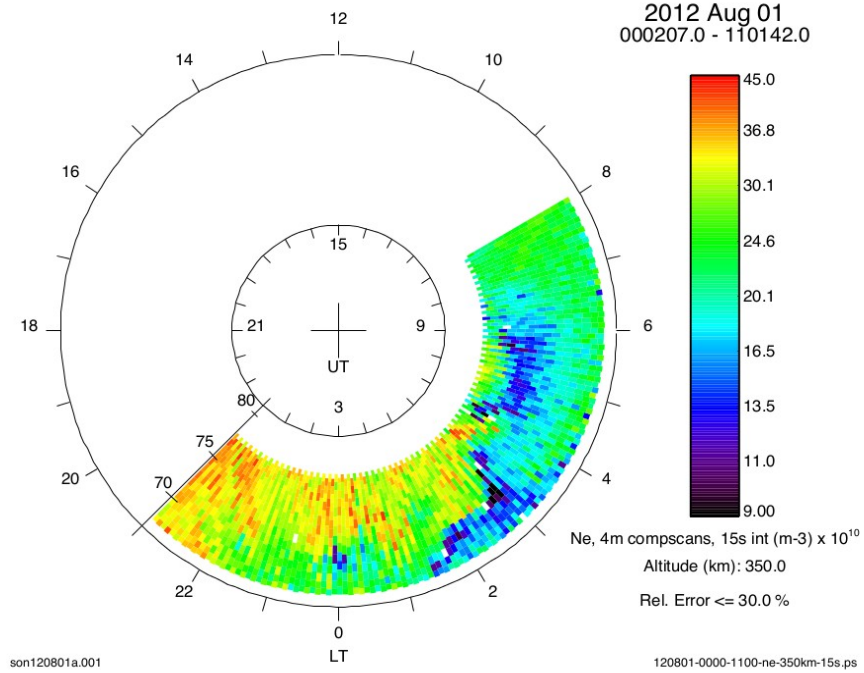


Iijima and Potemra [1978]

Plasma Parameters During Harang Discontinuity







Conclusions

- E region enhancement caused by precipitation
- Harang discontinuity was observed in Sondrestrom data
- Calculated velocities not as good as Craig's

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Thank You

- Thanks SuperDARN, PFISR