

# **Sources of Ionospheric Variation**

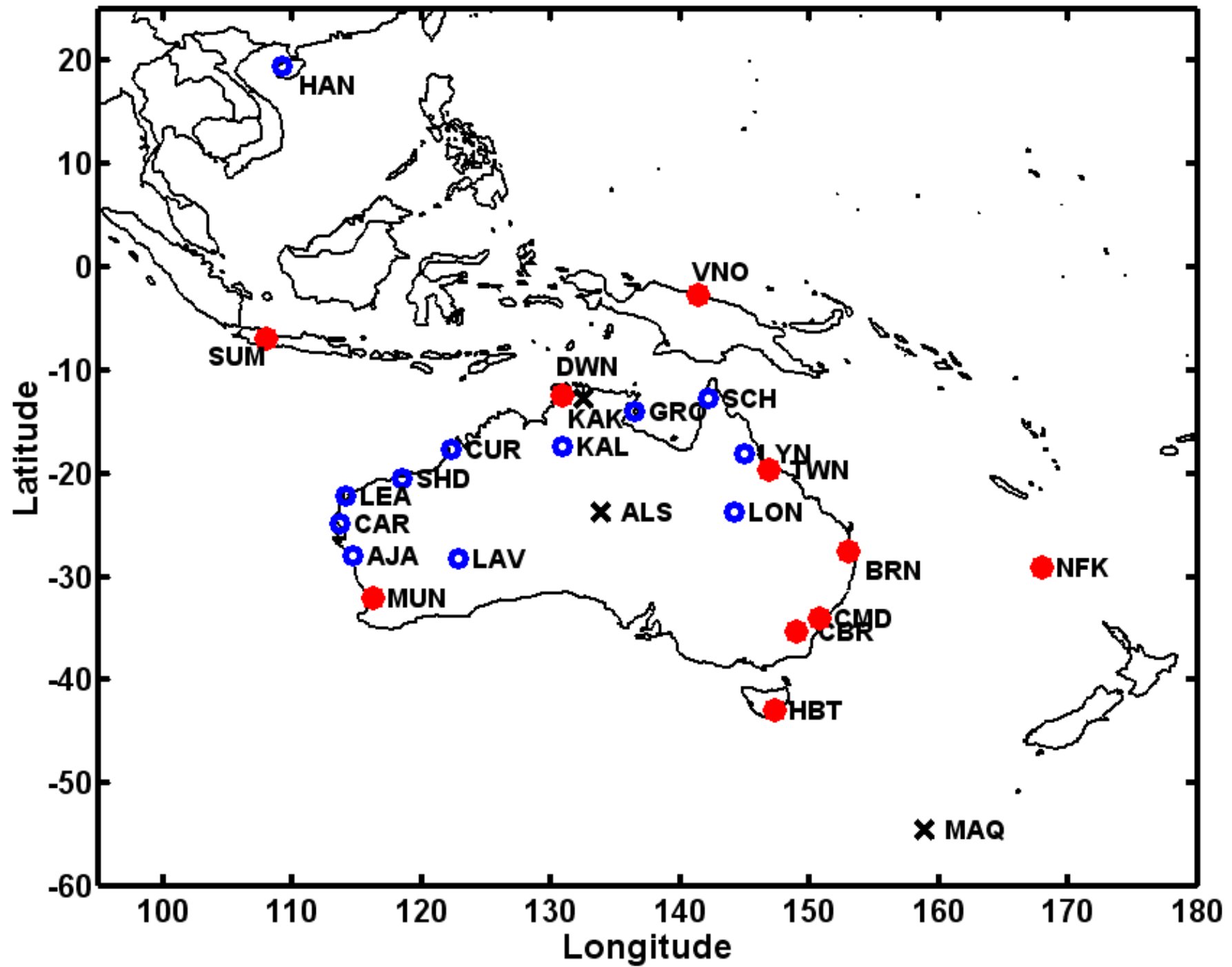
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**Ionospheric Systems Research**

**38 Goodchap St., Noosaville 4566**

**Australia**

**Email: [kenjwlynn@bigpond.com](mailto:kenjwlynn@bigpond.com)**

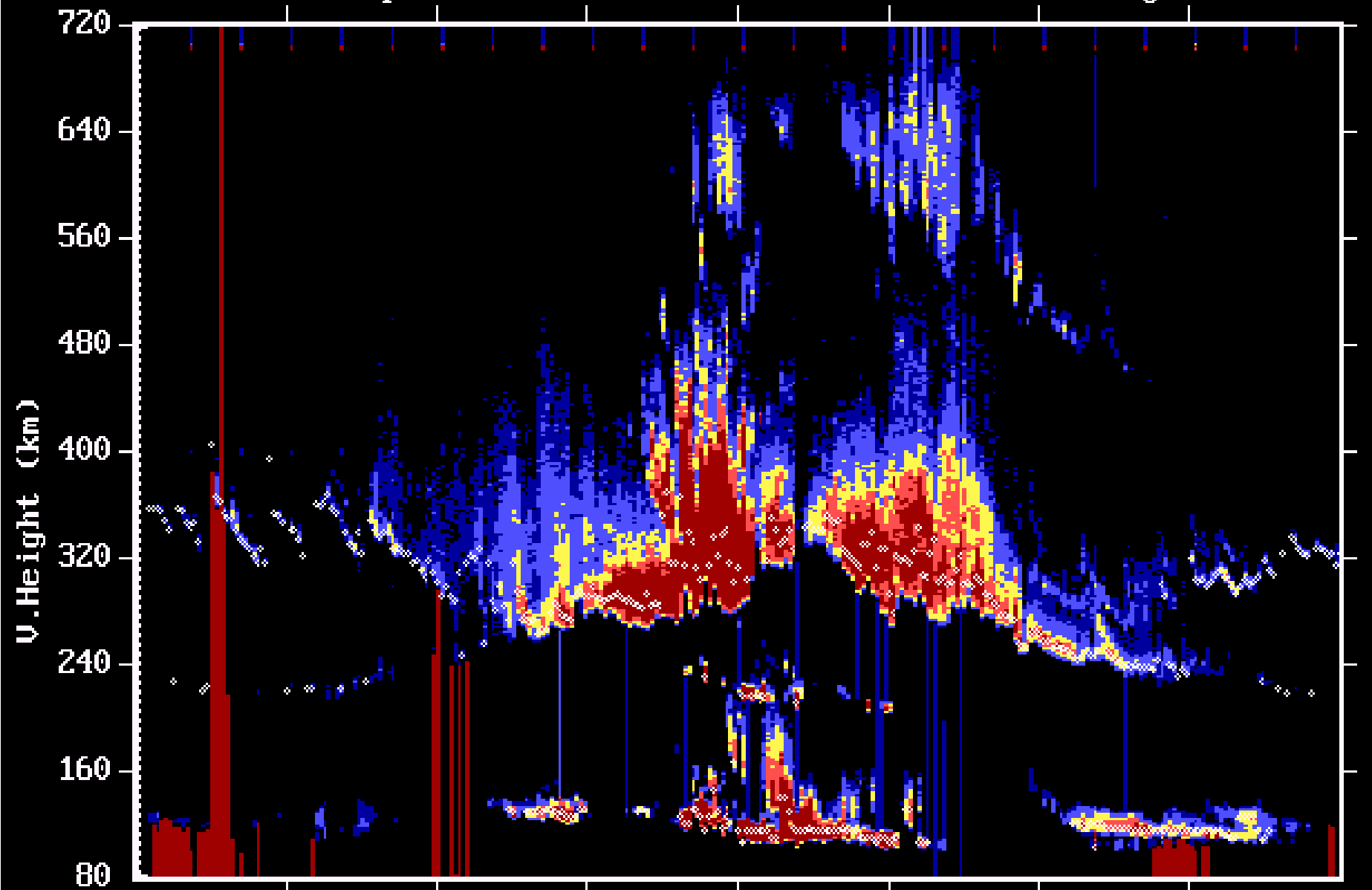


# Macquarie Island Ionosonde TIDs

start file=001114.mqd 14 / 11 / 2000

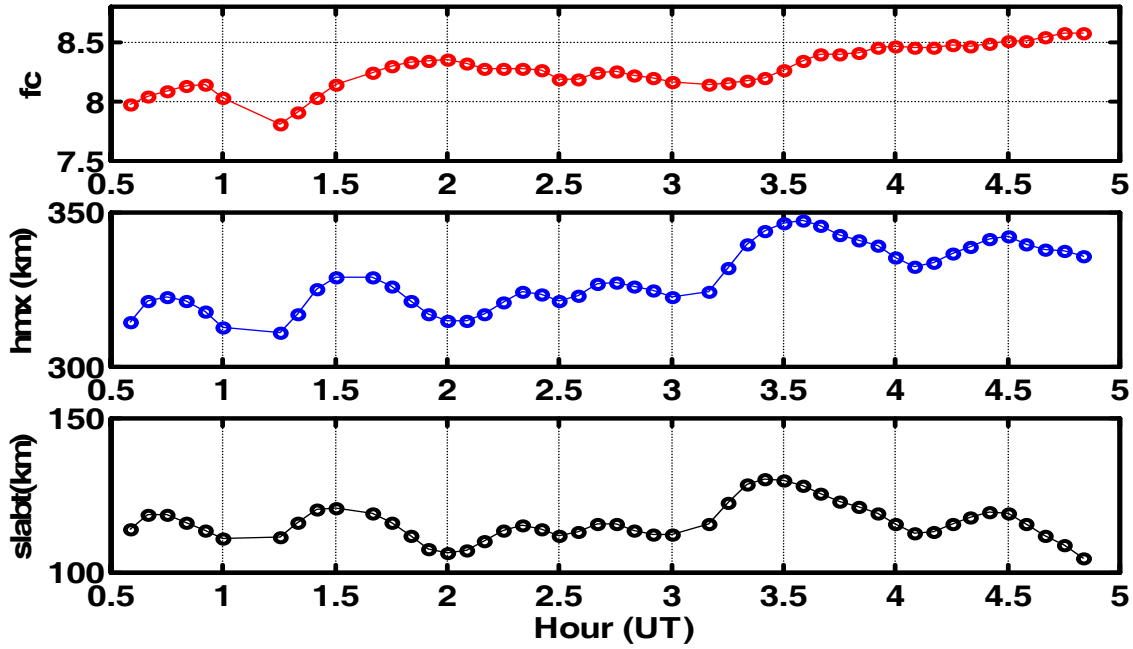
end file=001114.mqd 15 / 11 / 2000

Time= 0 : 0 : 7 ionogms= 288 8

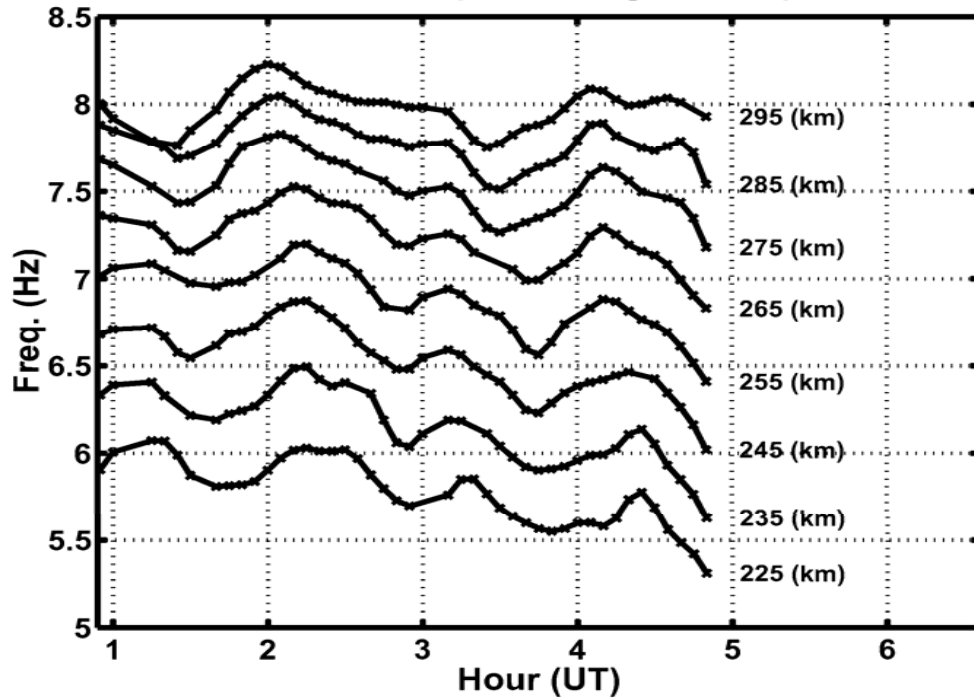


UT	0.0	3.0	6.0	9.0	12.0	15.0	18.0	21.0	24.0
LT	10.6	13.6	16.6	19.6	22.6	1.6	4.6	7.6	10.6

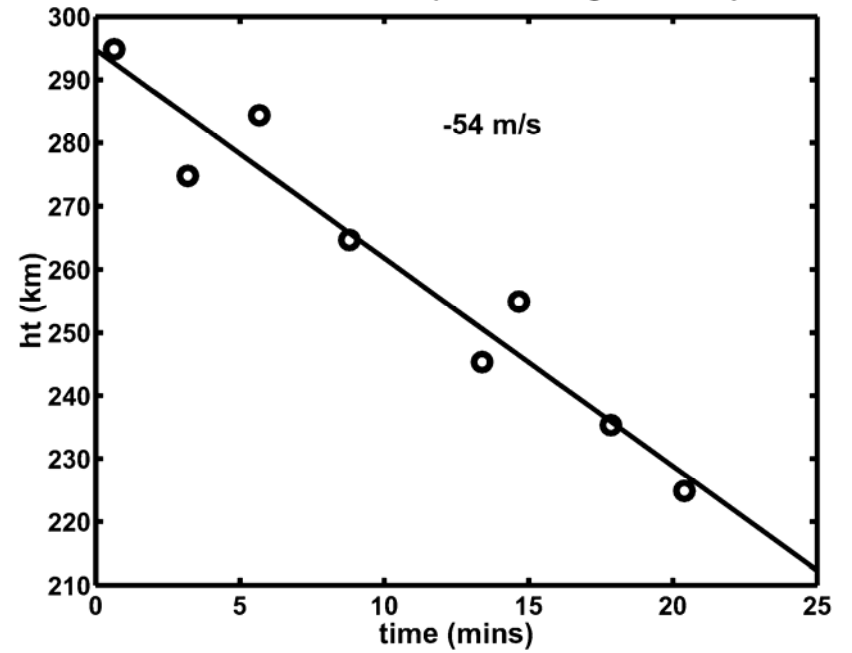
Macquarie Is polplt2.m using mq001114.out



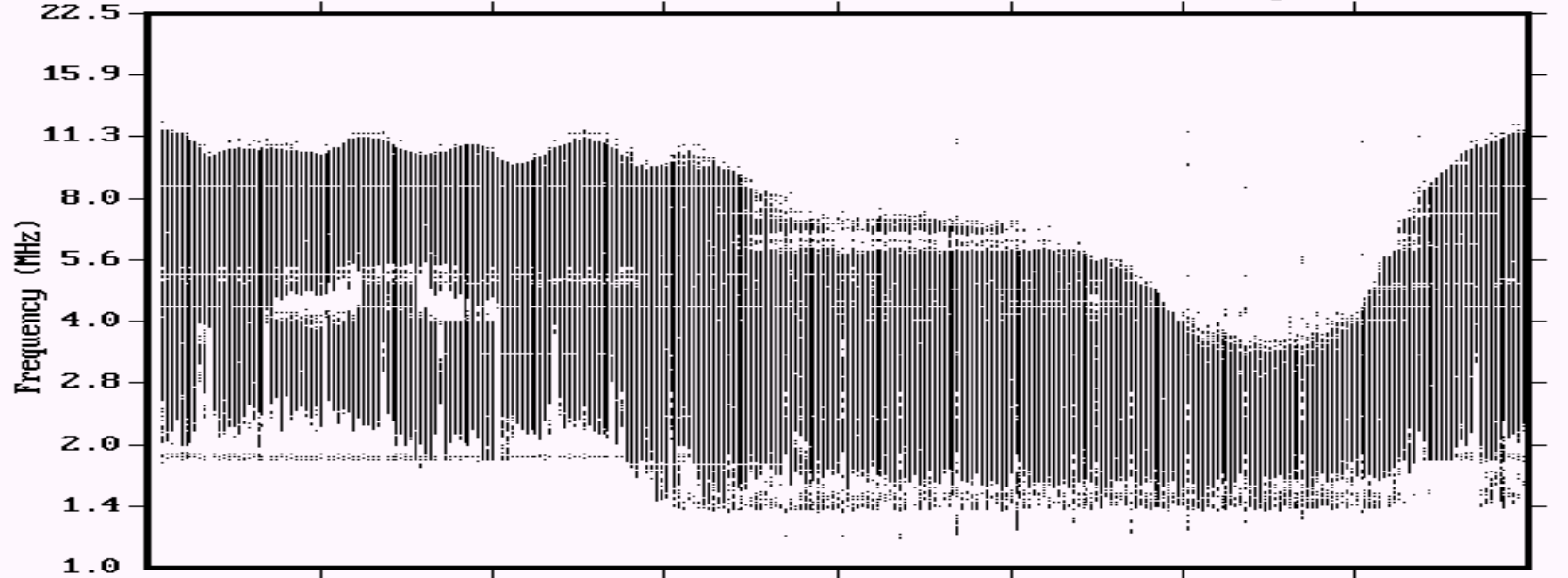
Darwin tinterp4b.m using truionmq.txt



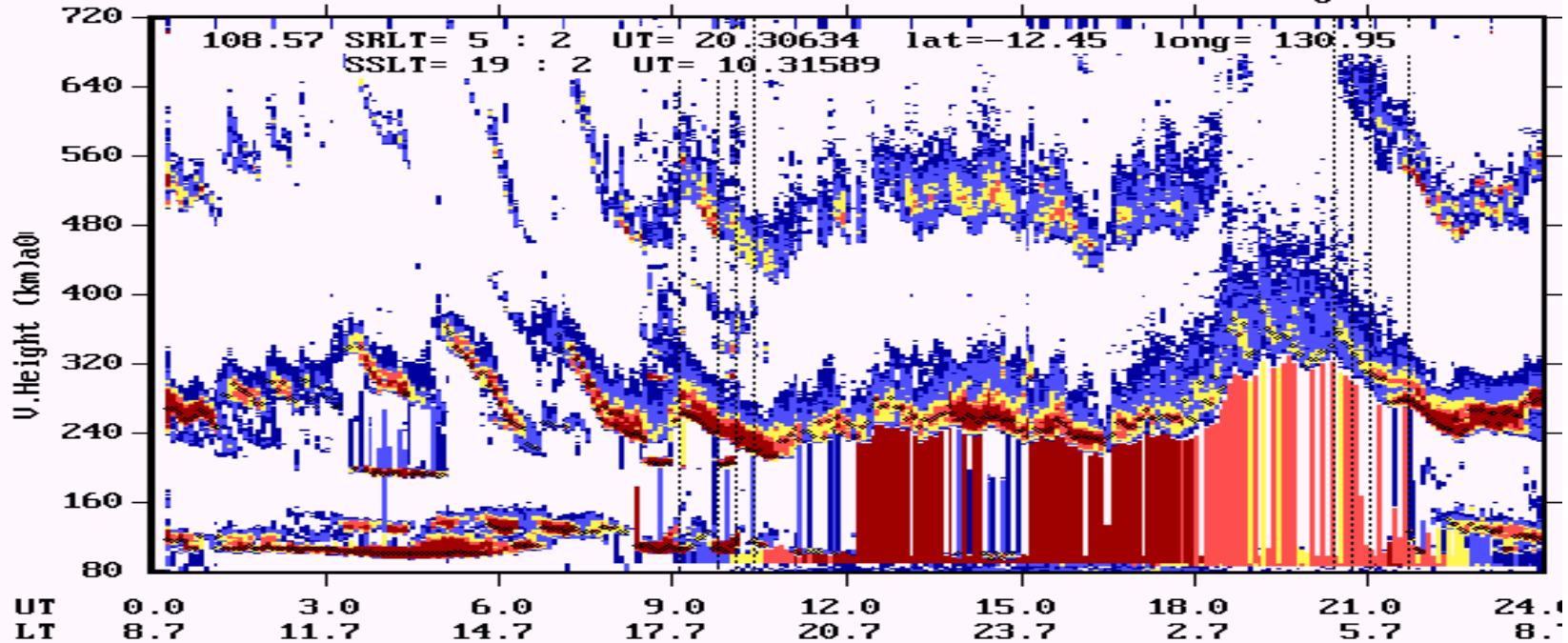
Darwin 16/5/00 tinterp4b.m using truionmq.txt



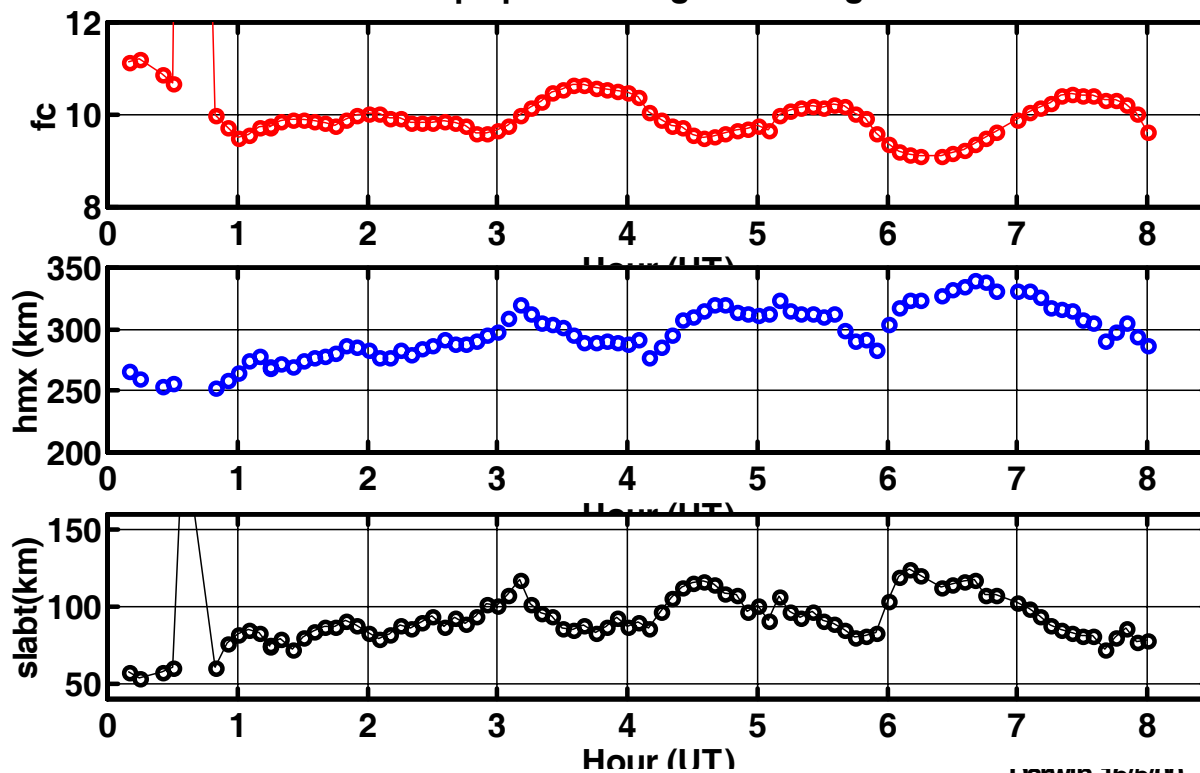
start file=f:\dwn00\000621.dwd 21 / 6 / 2000  
 end file=\000621.dwd 22 / 6 / 2000 Time= 0 : 0 : 6 ionogms= 288 8



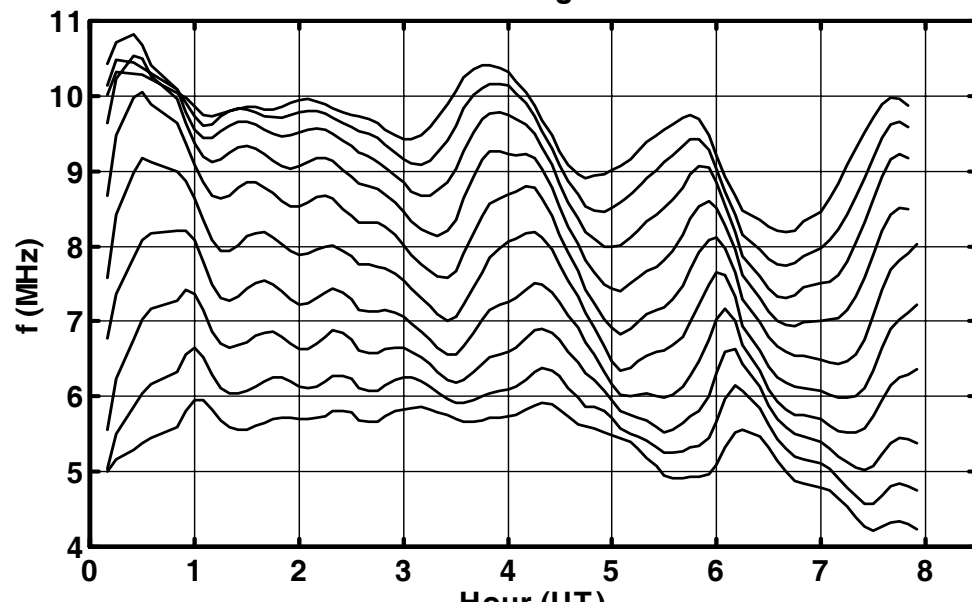
start file=f:\dwn00\000621.dwd 21 / 6 / c=bw rev, new file=enter, x=exit  
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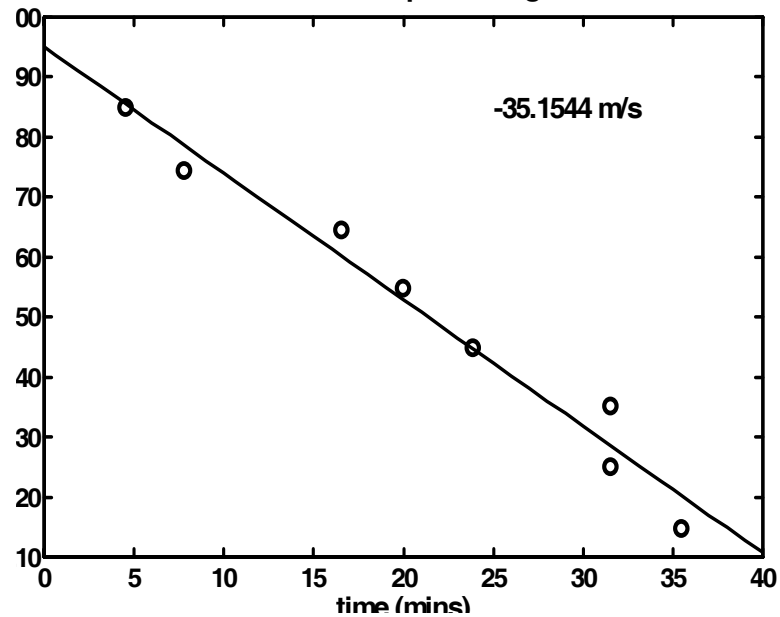
polplt2.m using 970716.dig



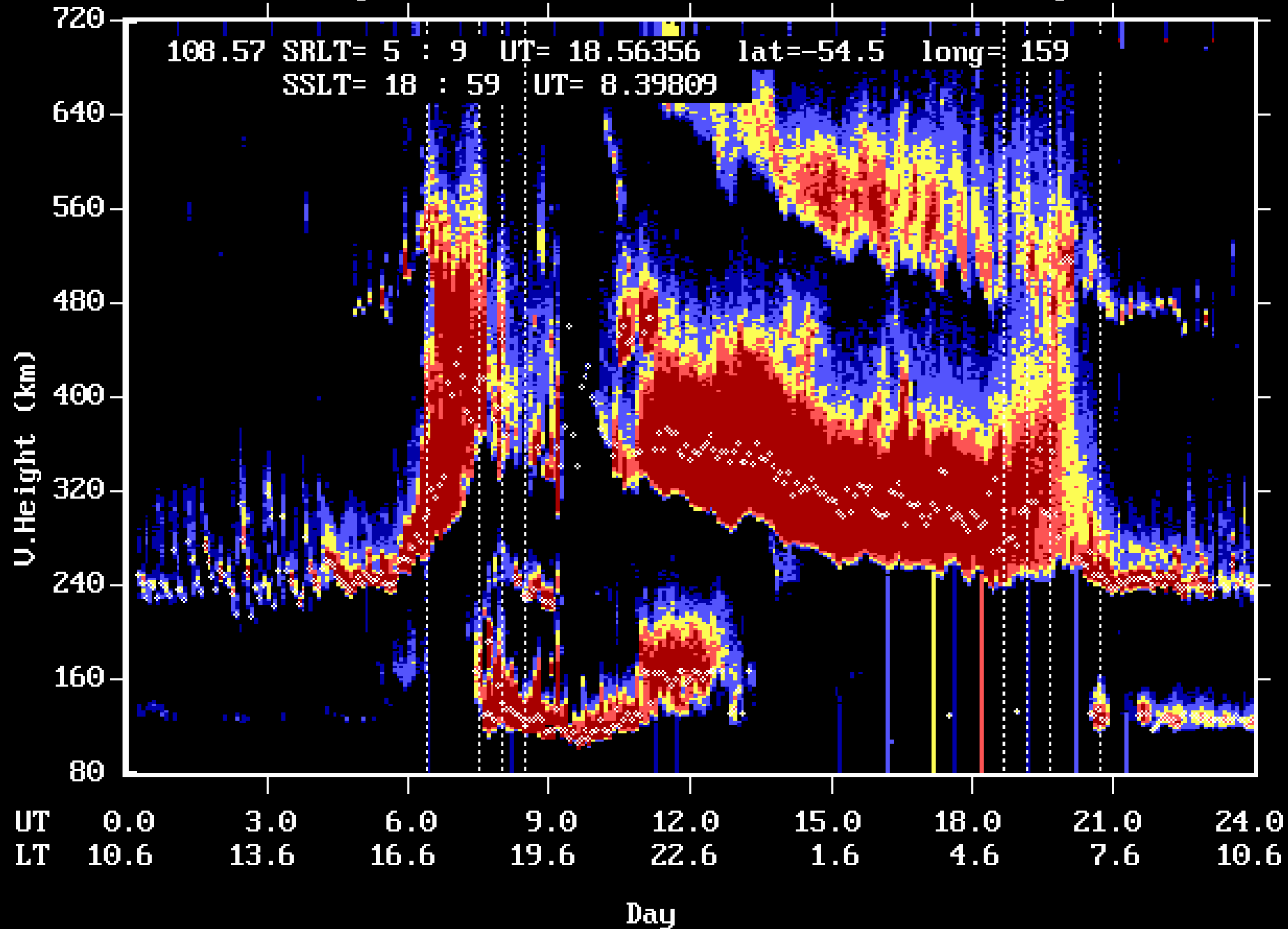
THT621.m using tht621a.txt



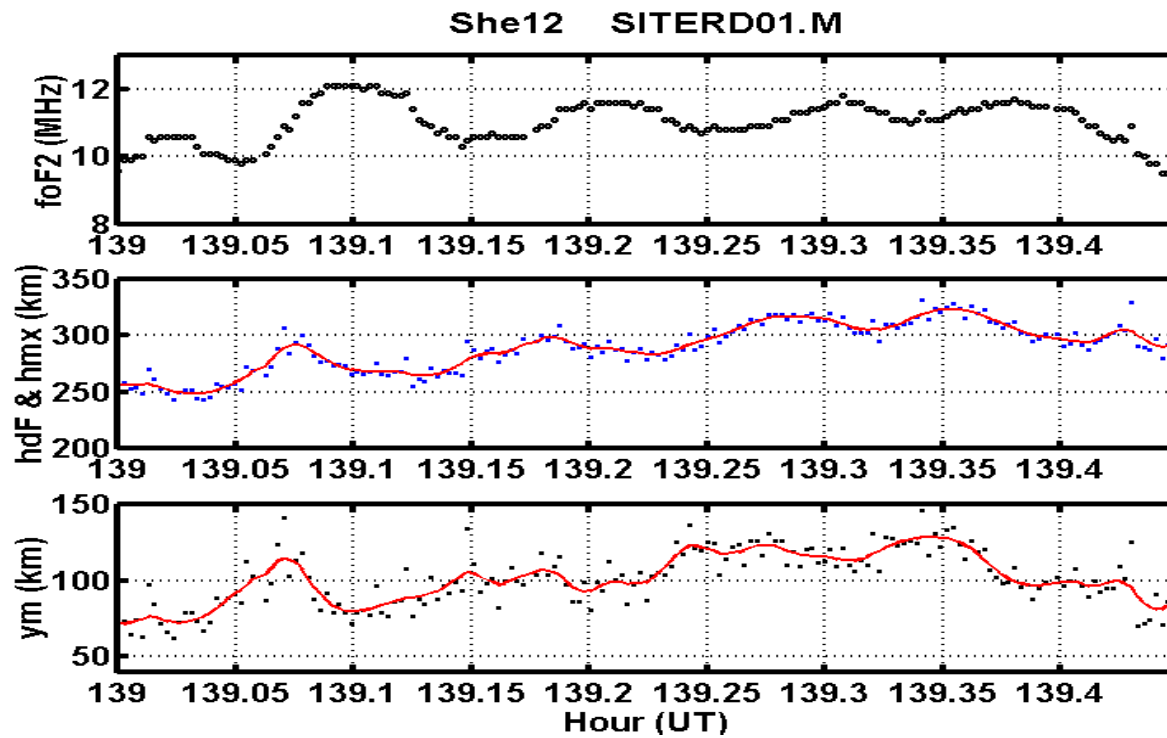
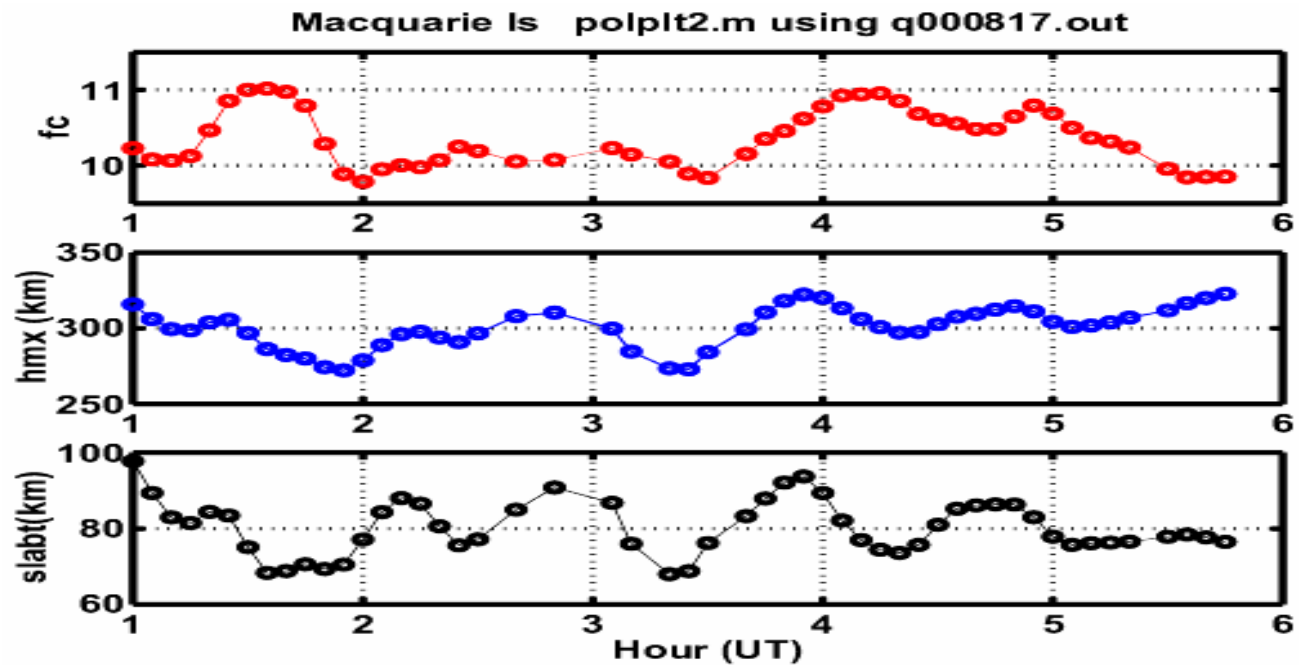
Darwin 16/5/00 interp3.m using tht165.txt



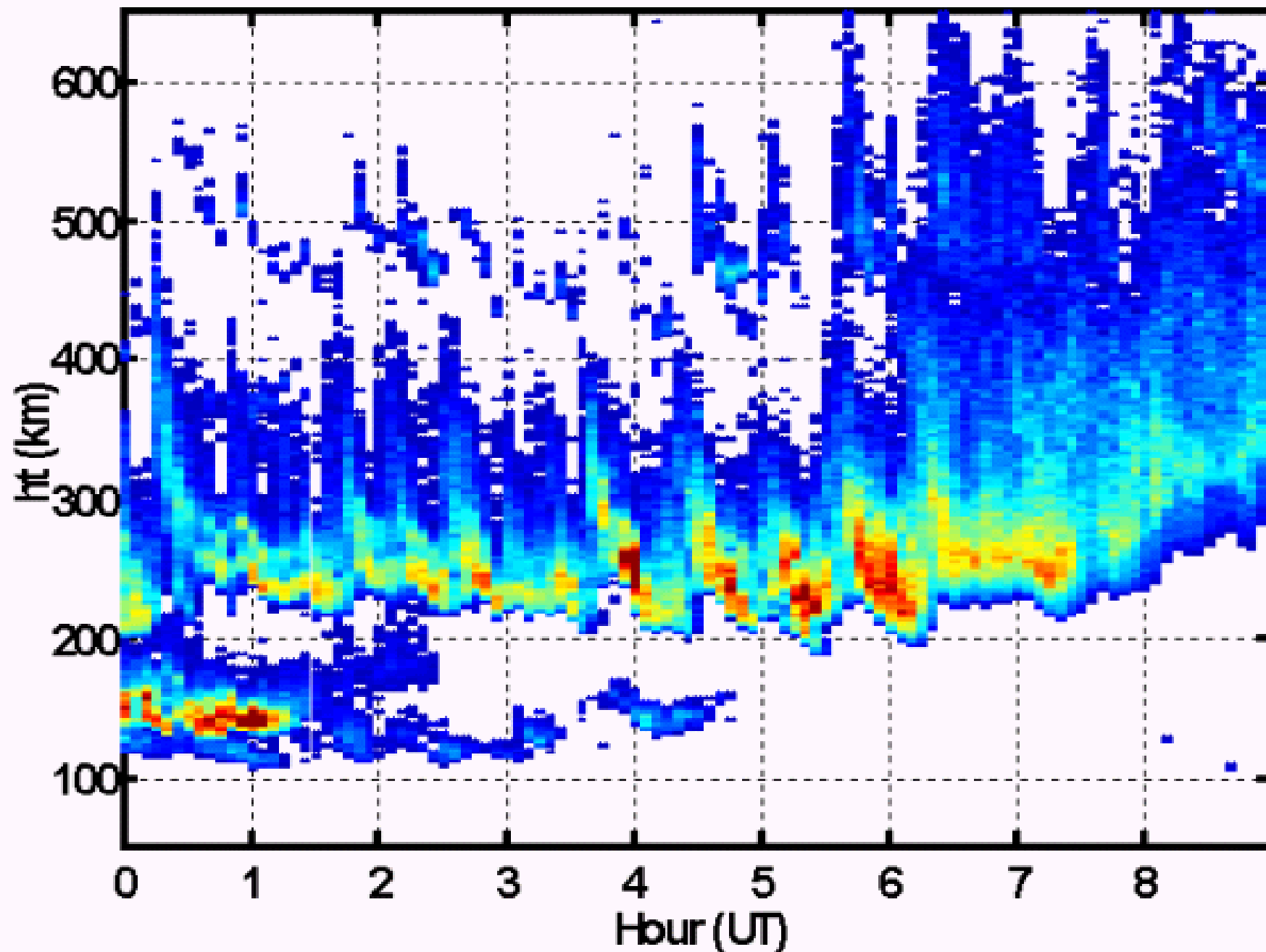
start file=000817.mqd 17 / 8 / 2000 c=bw rev, new file=enter, x=exit  
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# Maquarie MACRD1.M



# VeryLarge Scale Atmospheric Disturbance

Night 23 May 2002 day143

launched from TIGER coverage zone

**JASTP “Large Scale Travelling Atmospheric Disturbances in the Night Ionosphere during the Solar-Terrestrial Event of 23 May 2002” in press.**

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**M.Sjarifudin**

National Institute for Aeronautics and Space (LAPAN), Bandung, Indonesia

**M Terkildsen**

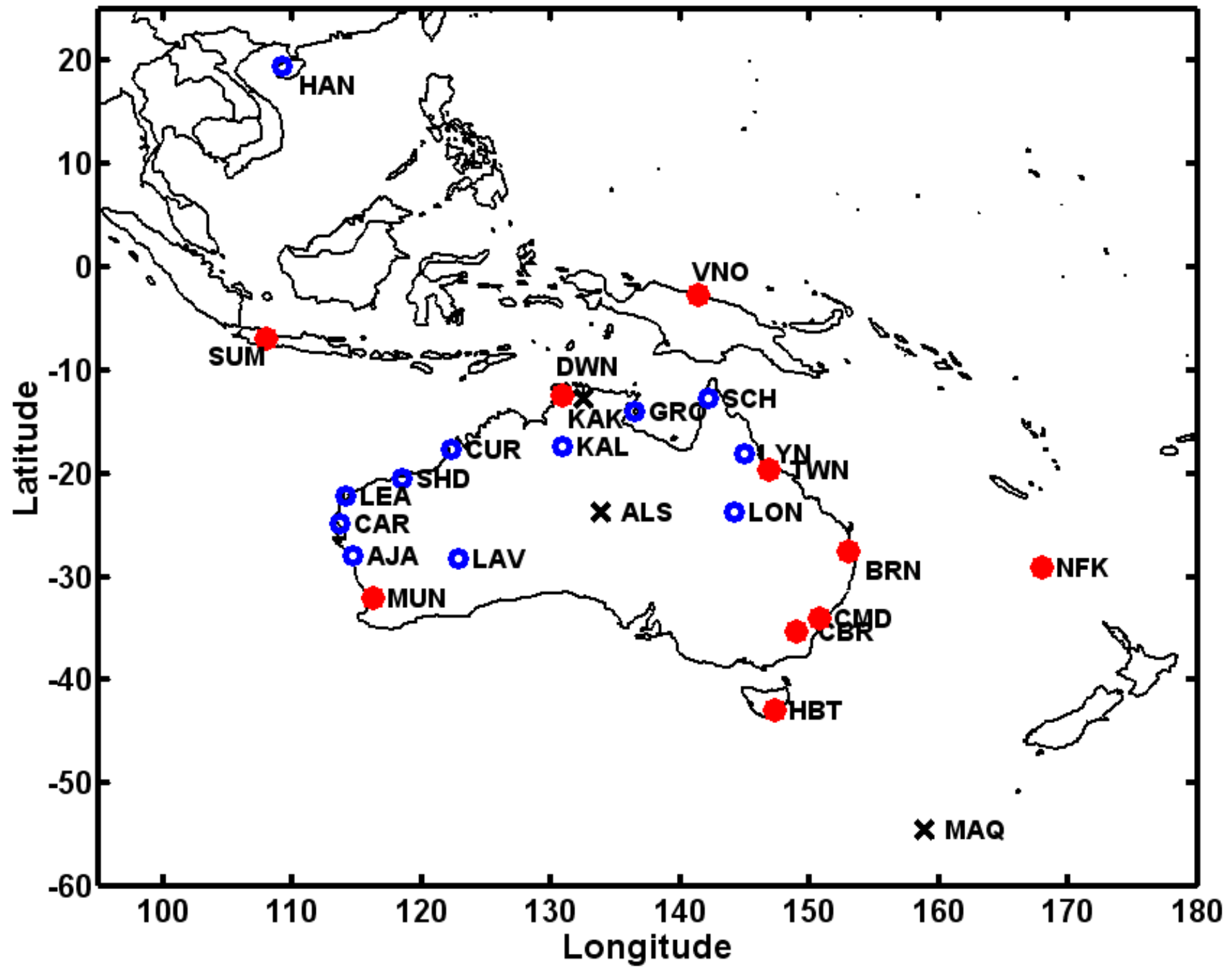
IPS Radio & Space Services, Haymarket, New South Wales

**J.Shi**

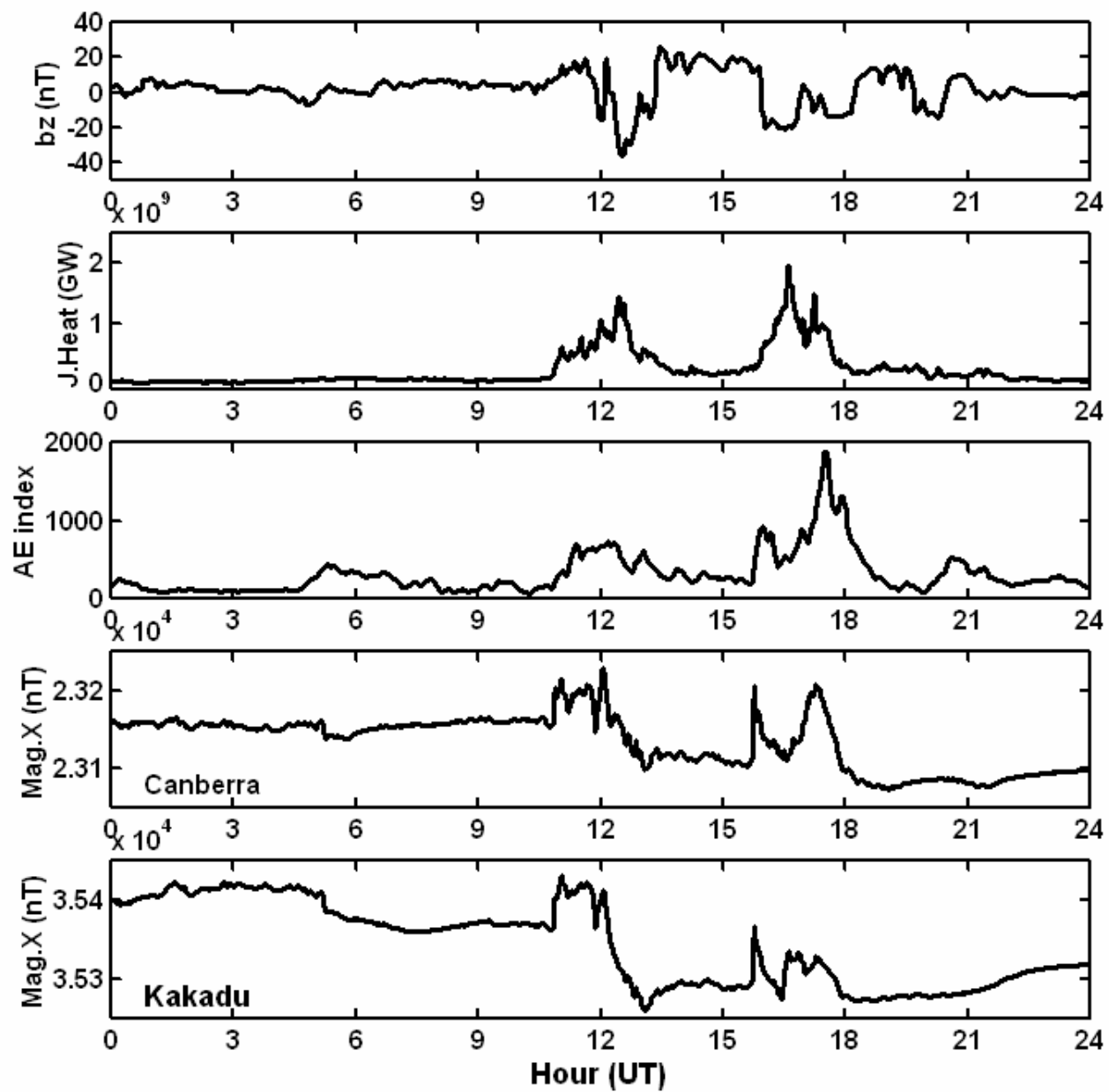
Center for Space Science and Applied Research, Chinese Academy of Sciences.Beijing

**T. J. Harris**

Defence Science and Technology Organisation, Edinburgh, South Australia



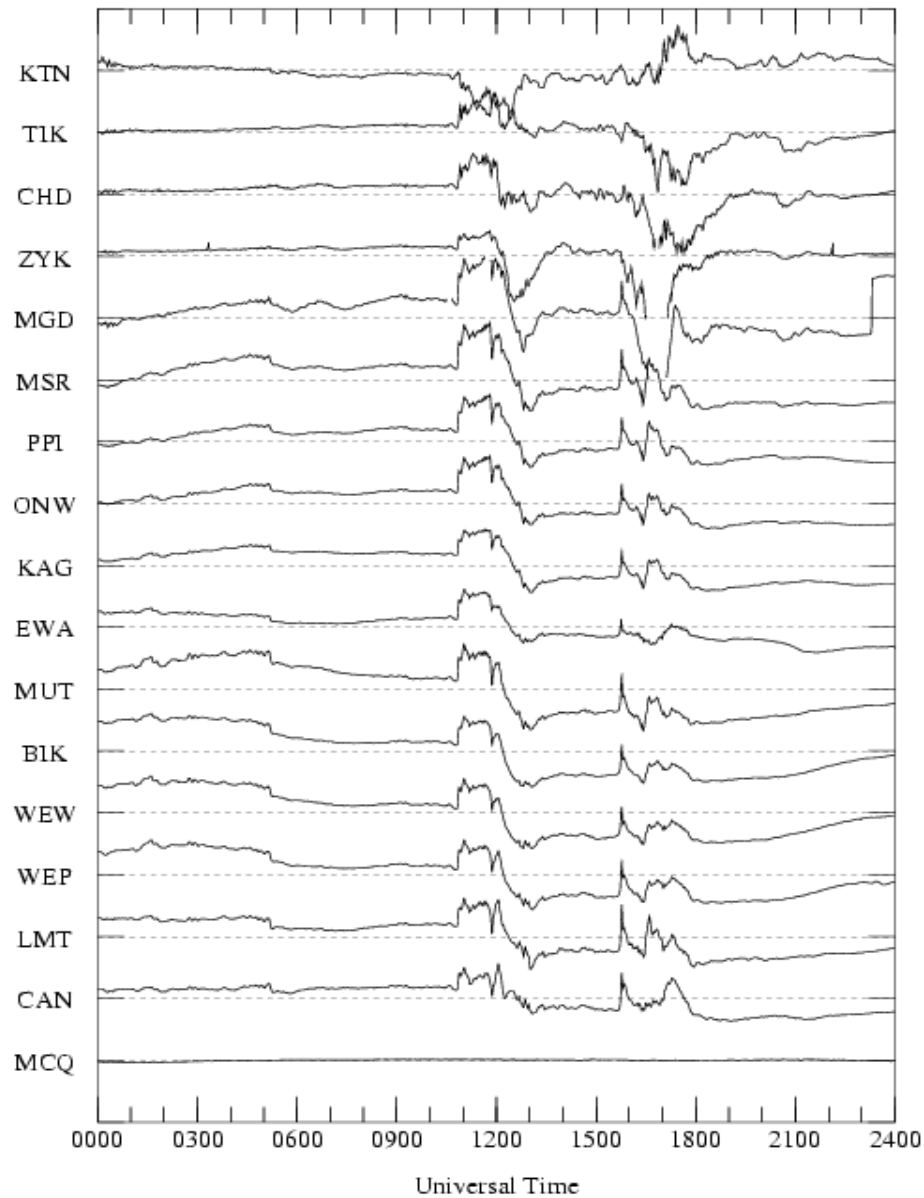
23 May 2002 day143 LTID? event



### 210 MM Magnetic Field Data, 1-min Averages

May 23 2002 Day 143

H Comp. 700nT/div(KTN,TIK,CHD,KOT,ZYK,MCQ) 150nT/div(Other)

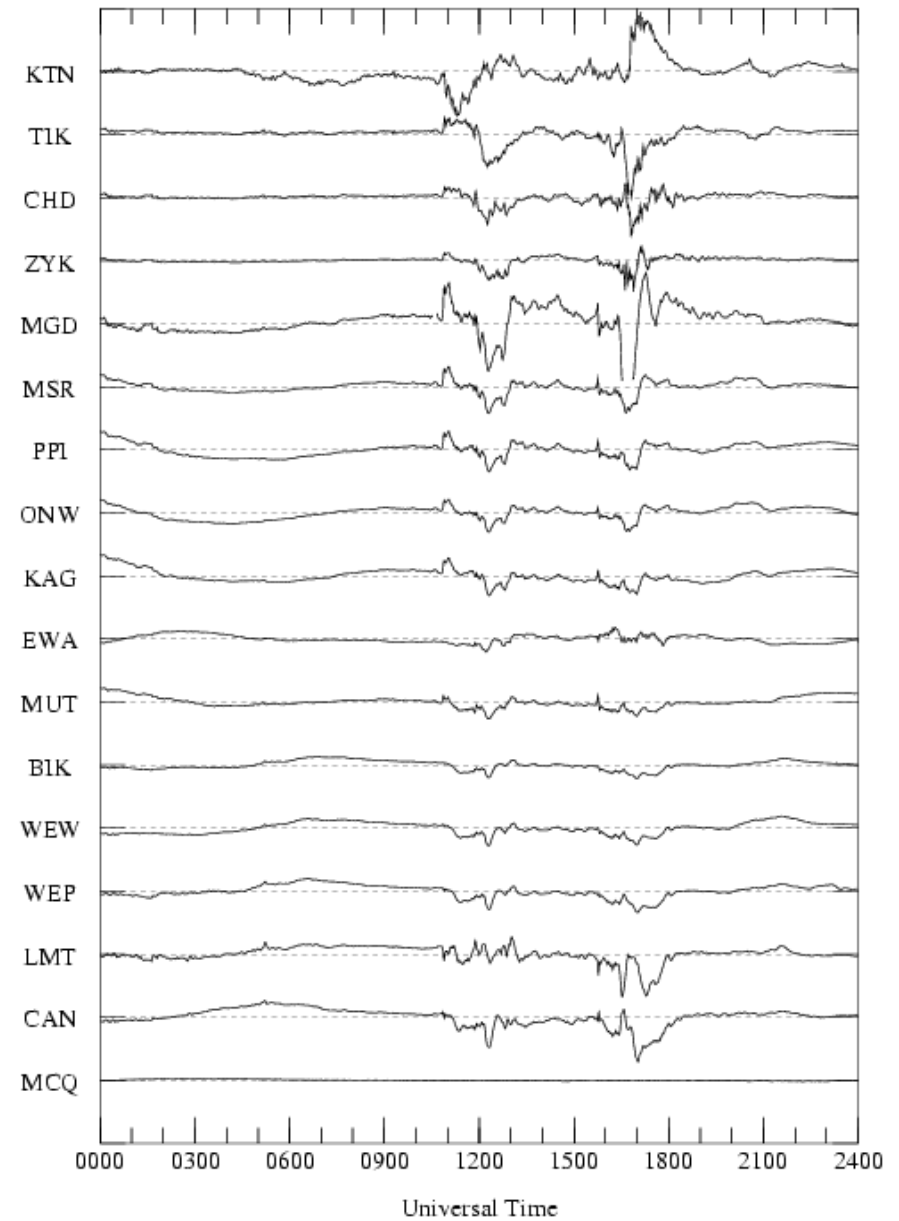


l0plot Thu Oct 9 14:31:09 2003

### 210 MM Magnetic Field Data, 1-min Averages

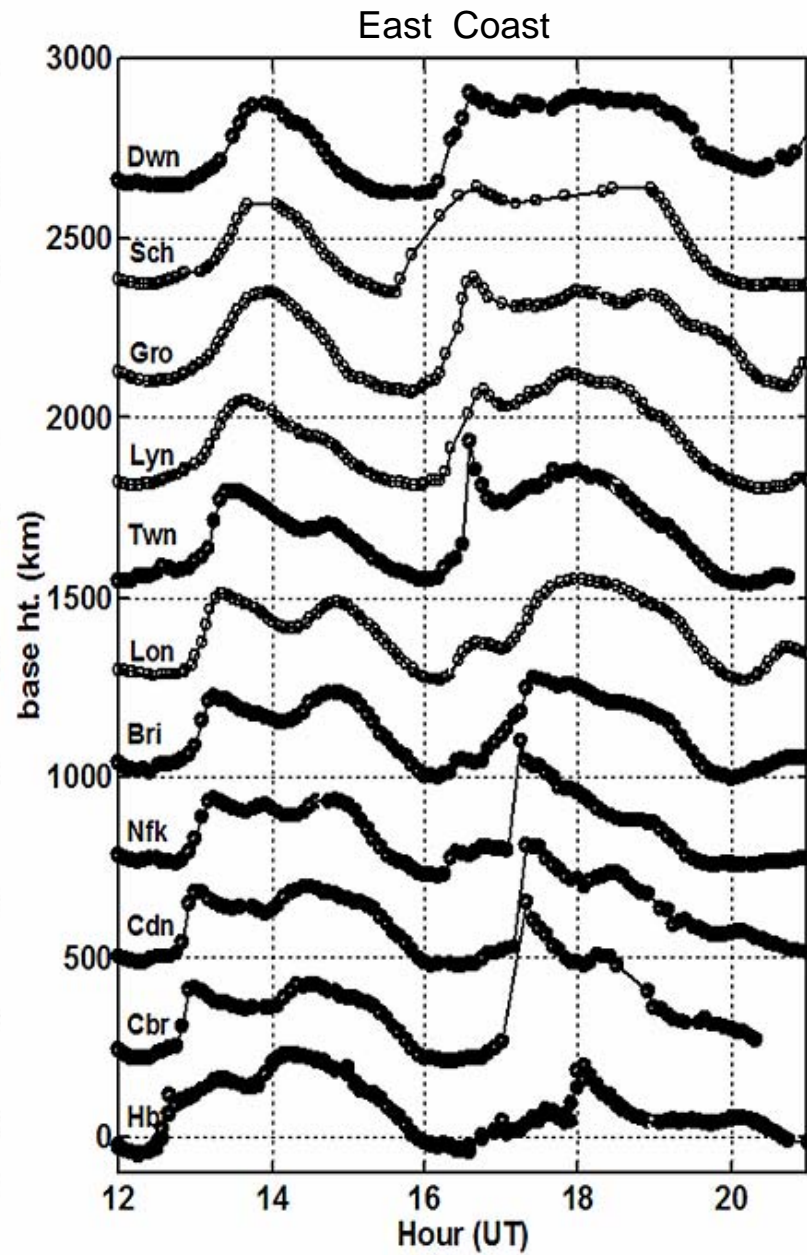
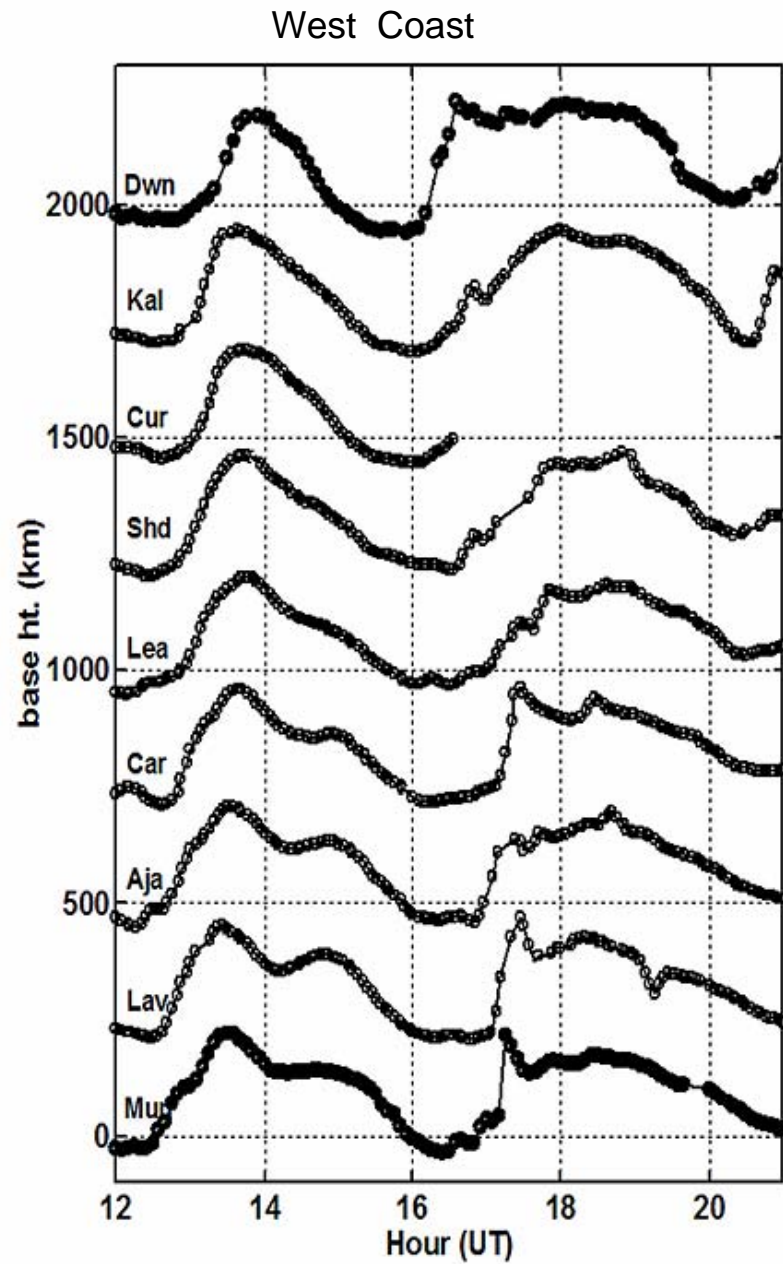
May 23 2002 Day 143

D Comp. 700nT/div(KTN,TIK,CHD,KOT,ZYK,MCQ) 150nT/div(Other)

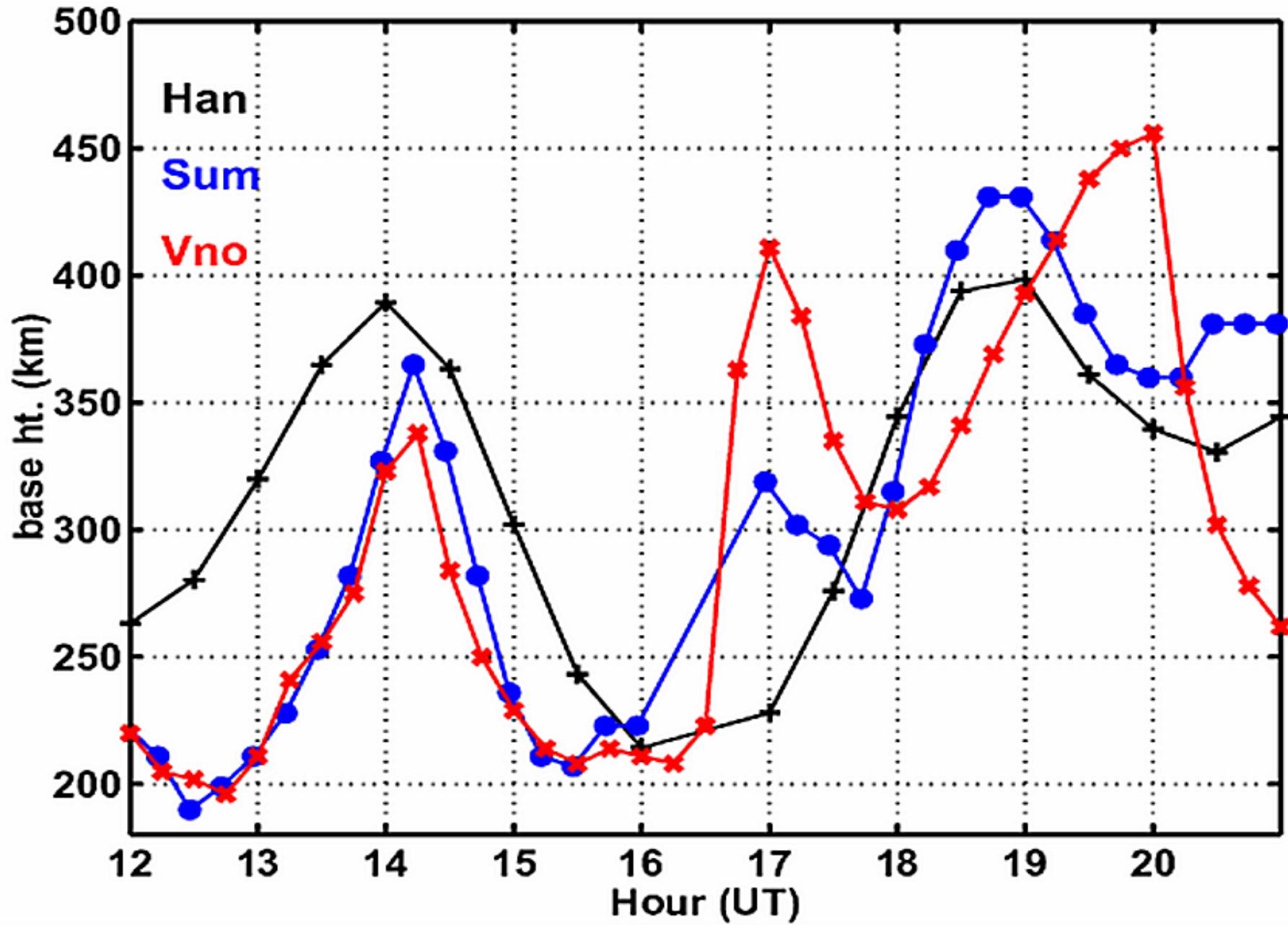


lplot Thu Oct 9 14:31:10 2003

23 May 2002 day143 LTID event?

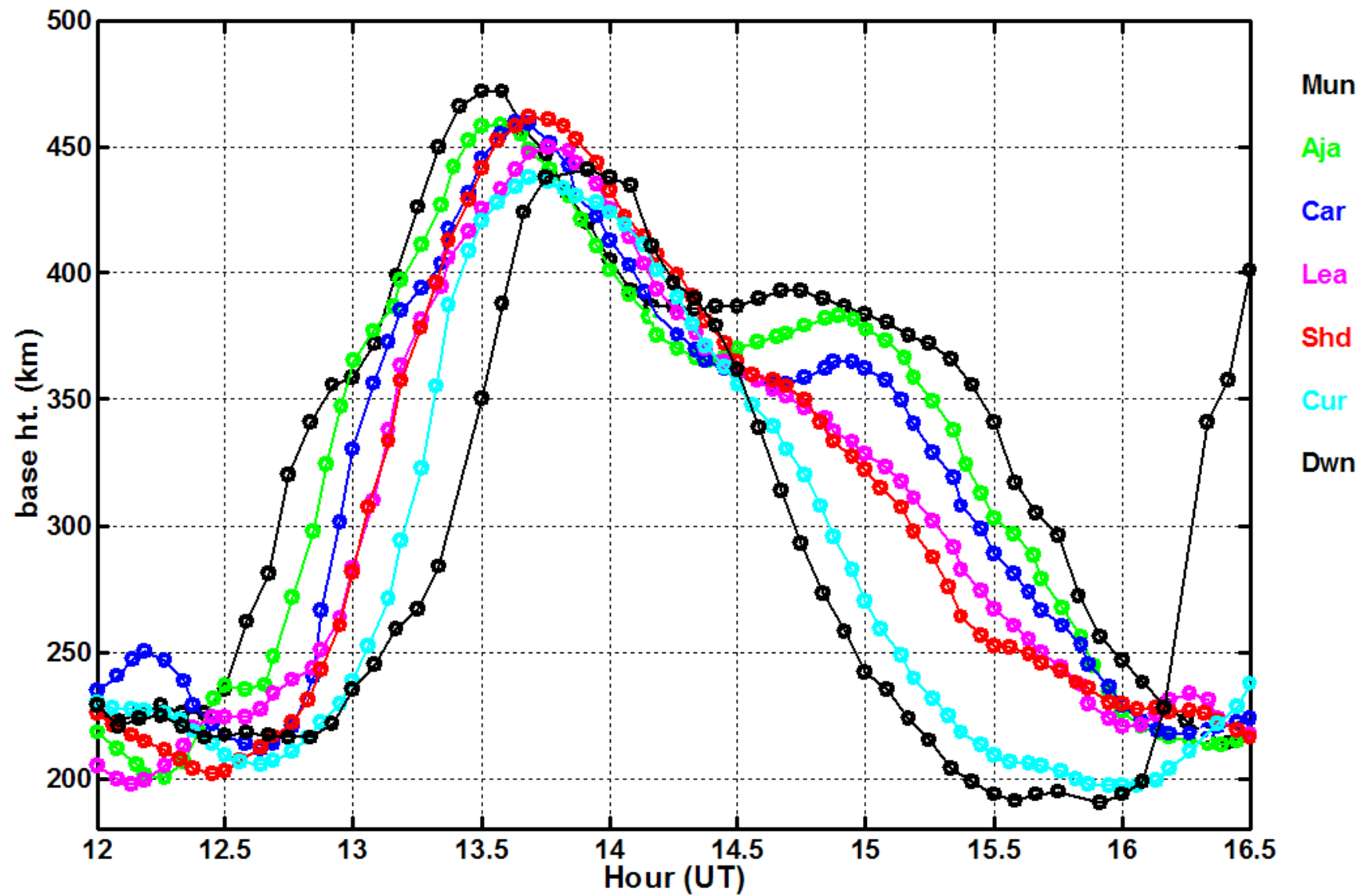


23 May 2002 day143 LTID event?

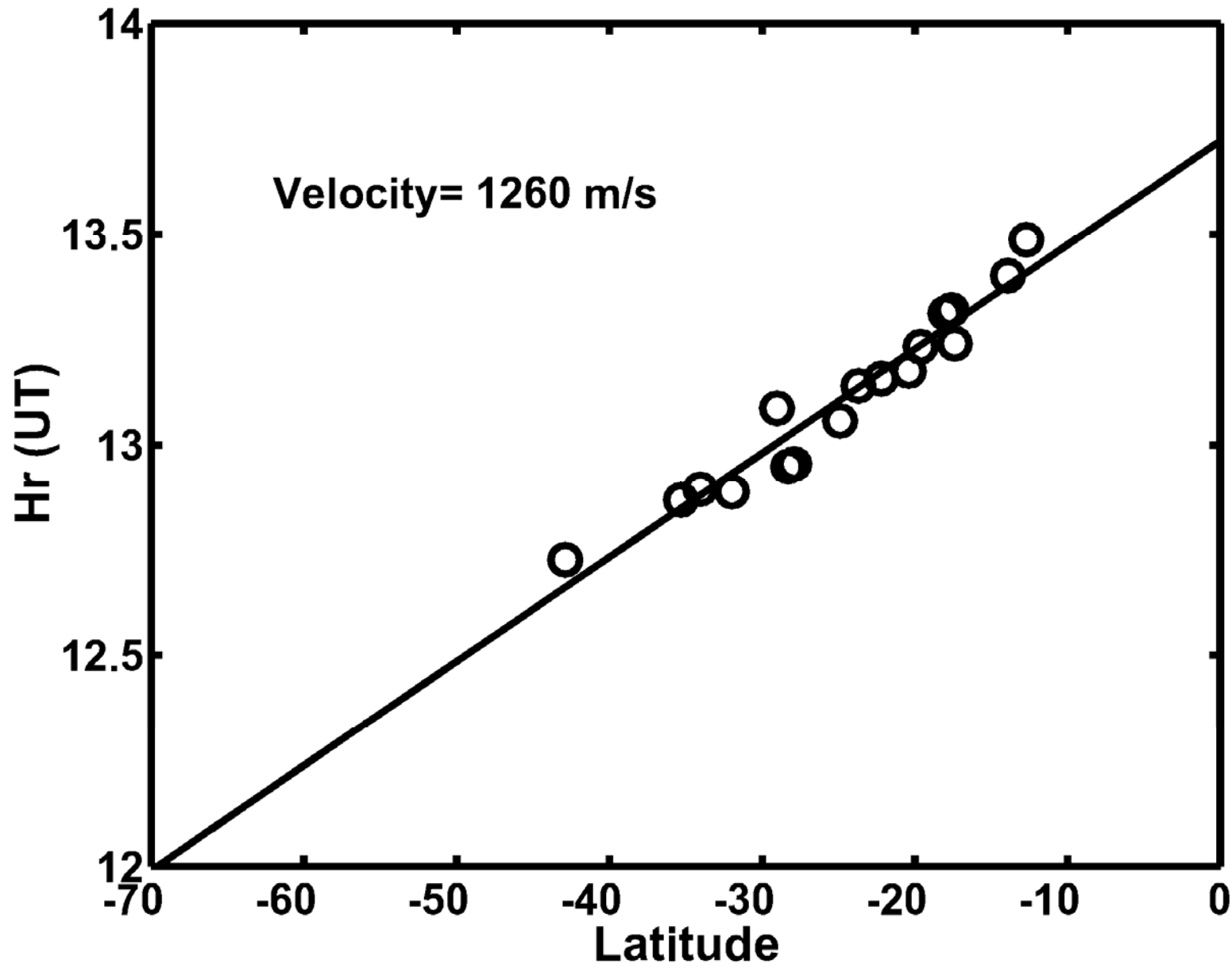


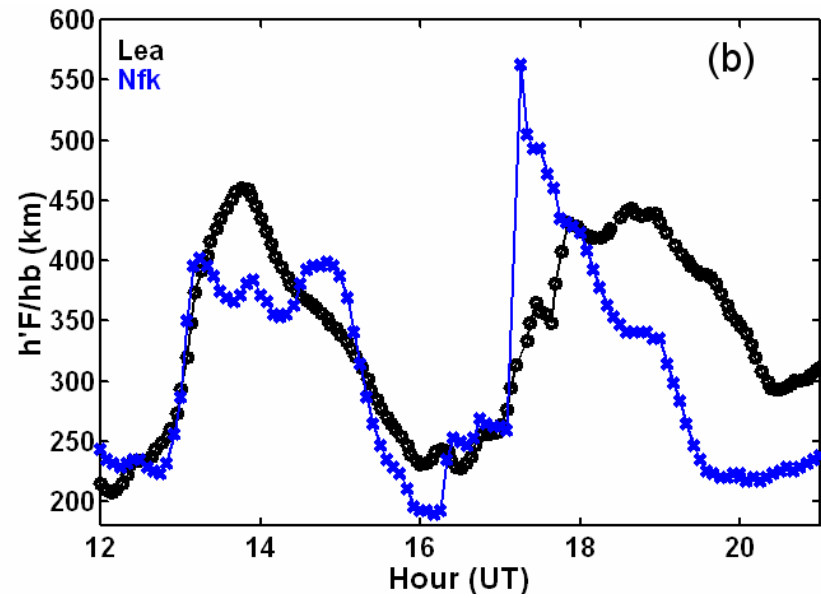
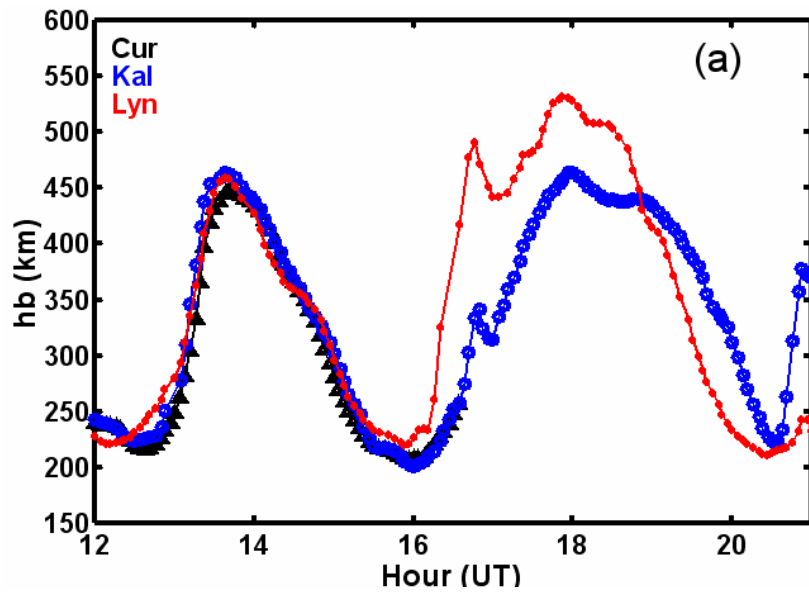


23 May 2002 day143 LTID event?

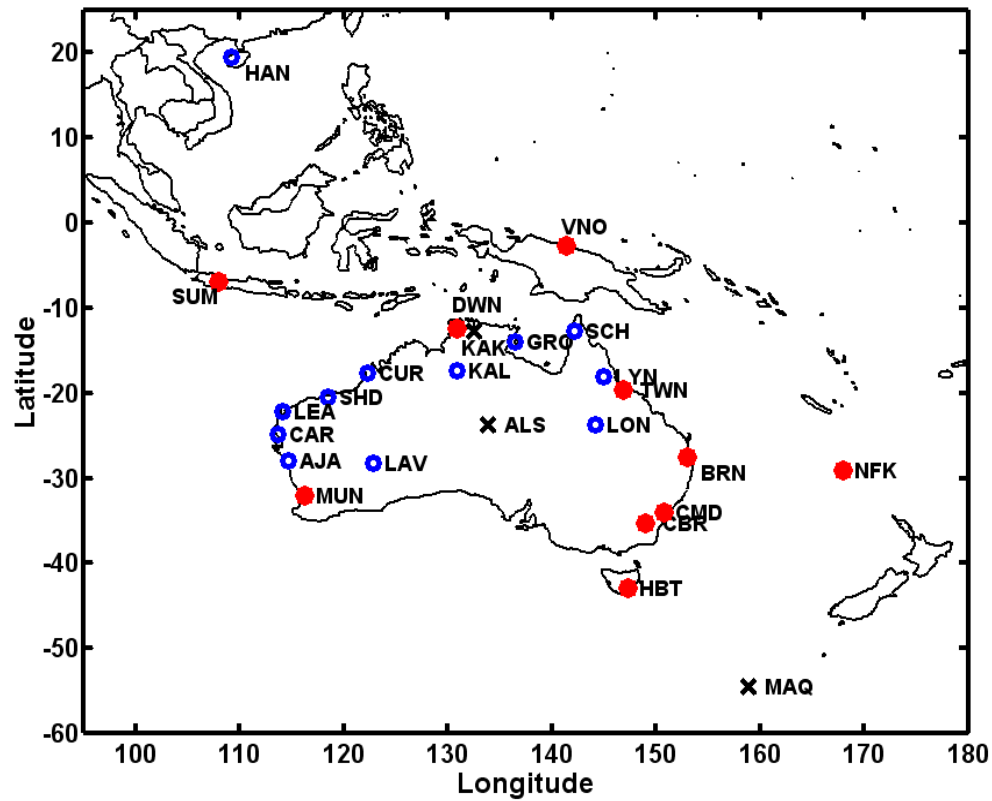


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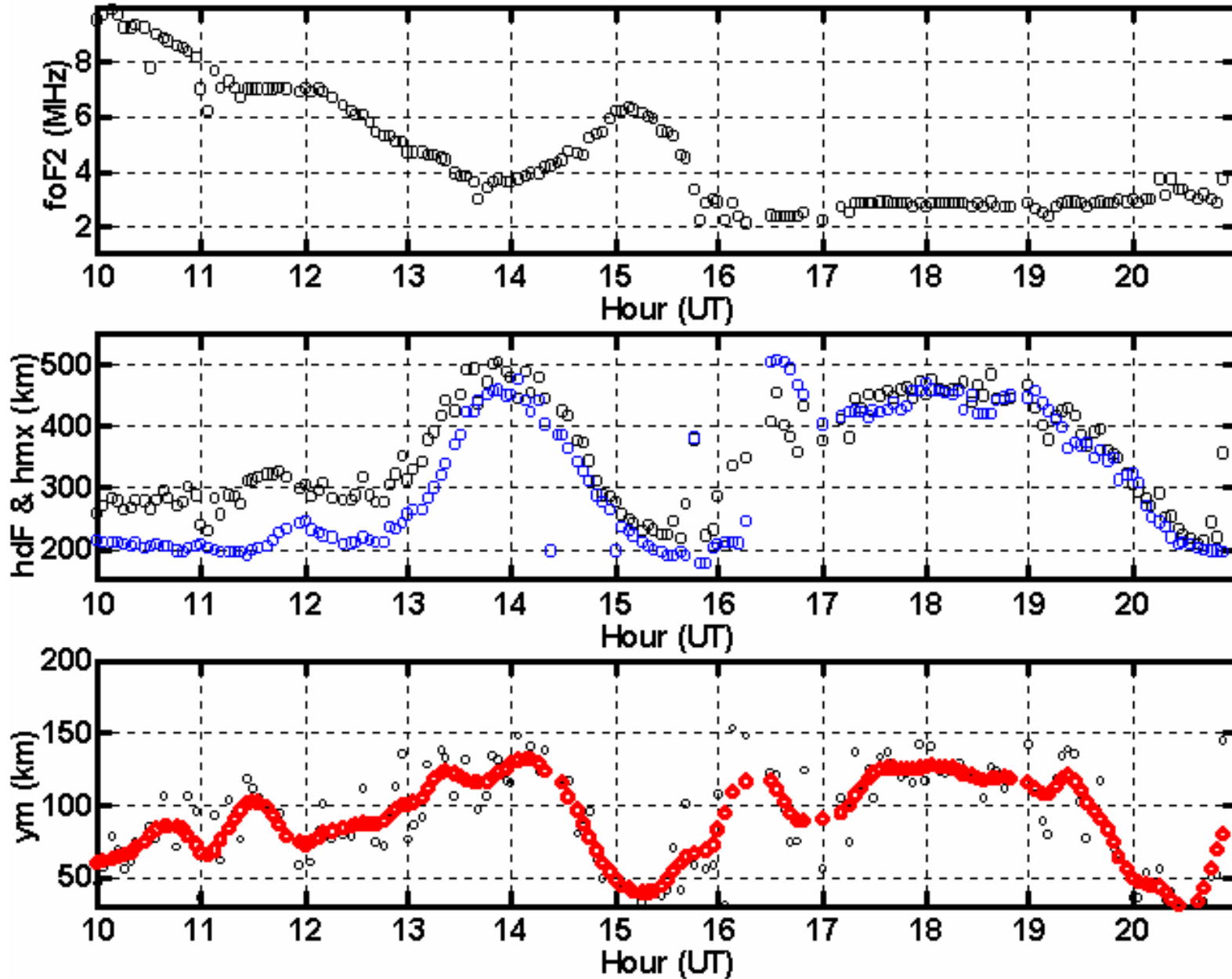


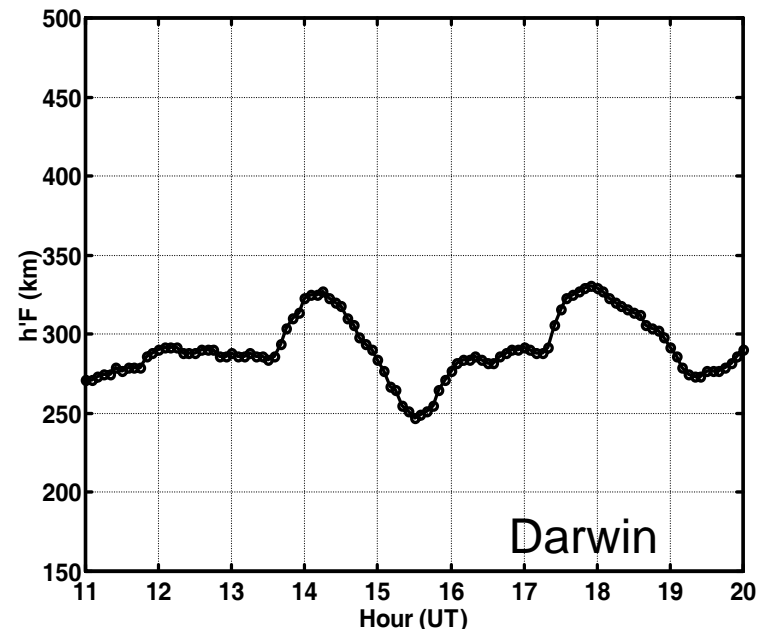
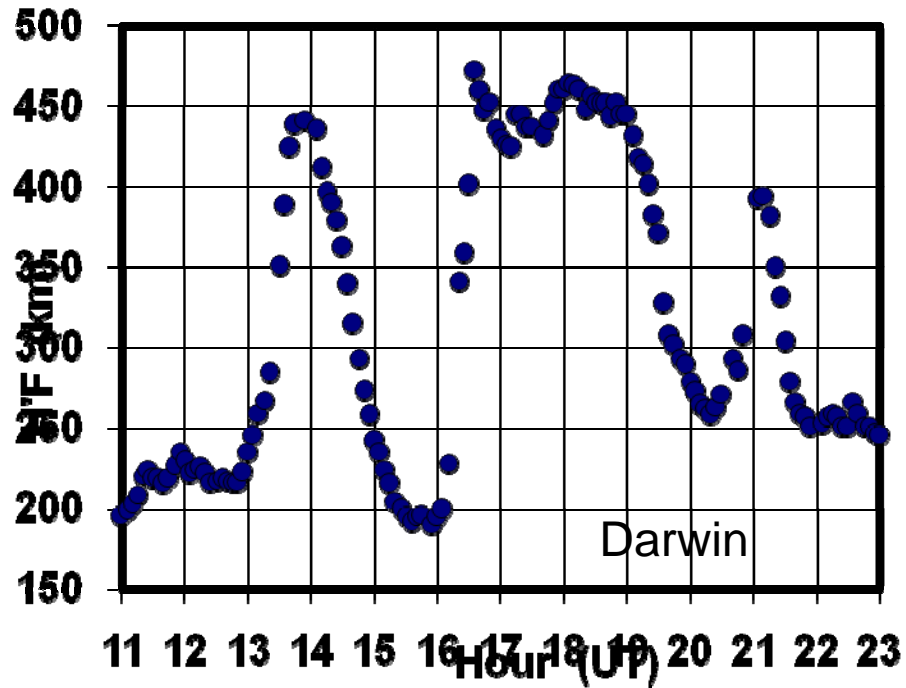
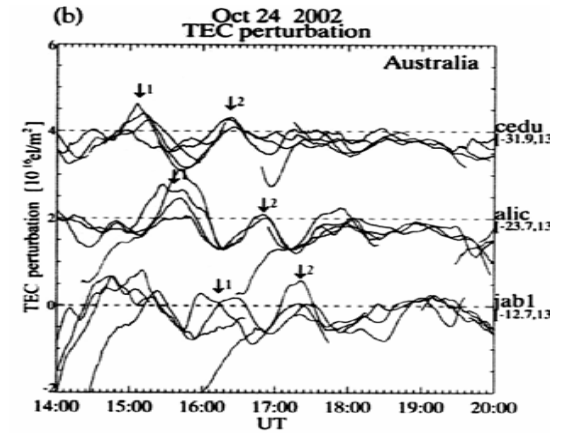
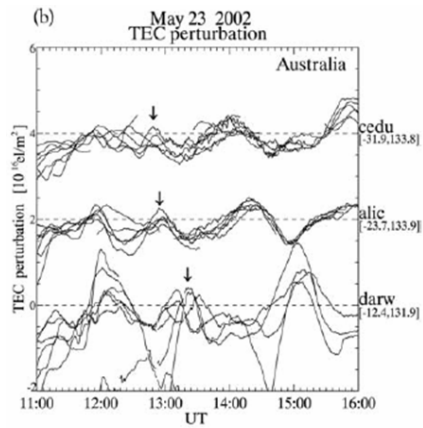


23 May 2002  
LTID event?



Darwin 23 May 2002 day143 LTID event?





Simulation Study of a Positive Ionospheric Storm Phase Observed at Millstone Hill

Authors: [M. Swisdak](#), [J. D. Huba](#), [G. Joyce](#), [Chao-Song Huang](#)

Comments: Submitted for publication in GRL

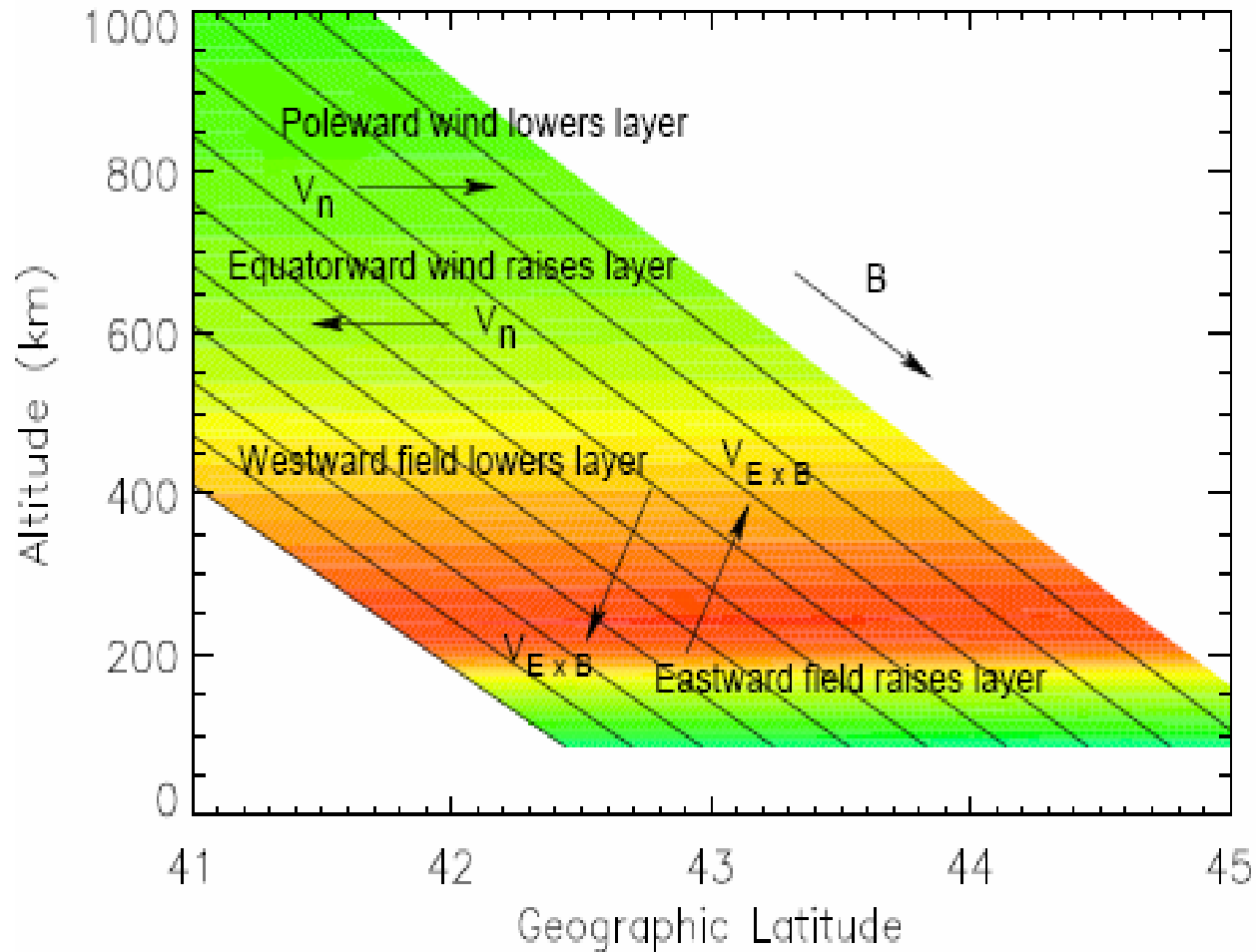


Figure 1. Schematic of the effects of neutral winds and electric fields on the midlatitude ionosphere. The colors merely suggest the variation of the density with altitude and do not represent the simulations.

## Conclusions

### Gravity Waves

1. TIDs with 45-80 minute periods common wave train day form high to low latitudes
2. TIDs with 45-80 minute periods have foF2 and hmx variations out of phase
3. TIDs with 45-80 minute periods have hmx and sub-peak parabolic thickness varying in phase.

### Auroral sourced Very Large Scale TIDS

1. Have same relationships between foF2, hmx and sub-peak parabolic thickness as for gravity wave TIDs. A generic relation.
2. At maximum, lifted the whole night ionosphere from the source to low-latitudes