

POLAR CAP OBSERVATIONS OF THERMOSPHERIC WINDS AND TEMPERATURES AT SONDRE STROMFJORD, GREENLAND

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Conclusions

Temperatures:

Agreement of averaged temperatures with MSIS looked reasonable for several nights, but for many nights there are differences: 1) midnight period of cooling and 2) temperature increases associated with overhead crossings of the auroral belt. The observed rise of the temperature before dawn in conjunction with the high 6300A intensities suggests a connection between the two effects: soft particle precipitation most likely candidate but frictional heating perhaps also a possibility. Comparison with TGCM calculations also needed.

Thermospheric winds:

The technique for formulating neutral wind vectors performs well in most cases. The observed patterns show evidence for abatement in the midnight sector in the meridional wind component at the separatrix between the two cells with a frequency of the order of 20-25%. Also observed in radar observations at Sondre Stromfjord. The observed patterns for magnetically quiet conditions show flow characteristic of the auroral belt, westward in evening followed by the midnight surge. The observed patterns for active conditions show dominance either by the evening cell or the morning cell, but most often the former. We need to correlate our results with IMF measurements.

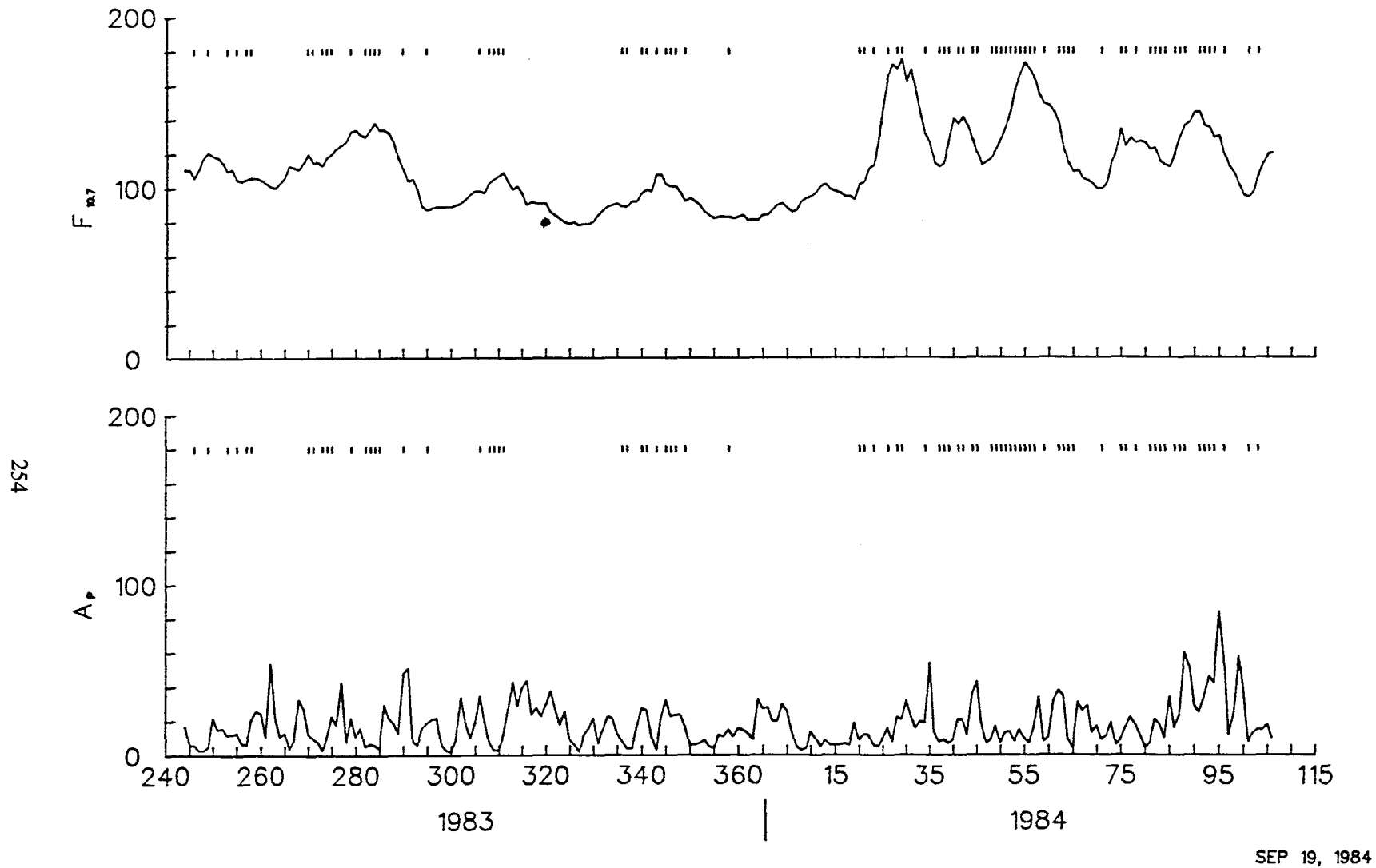
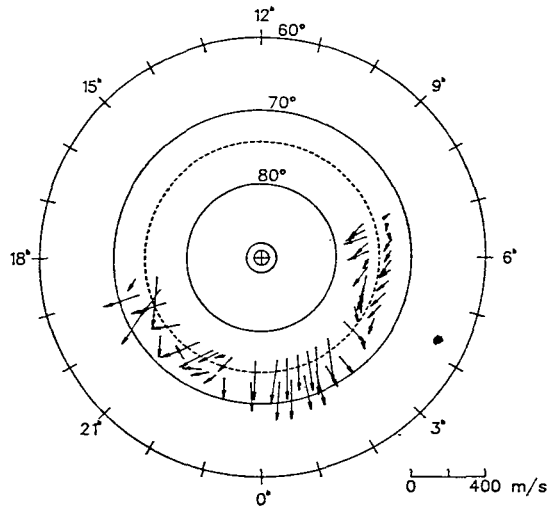
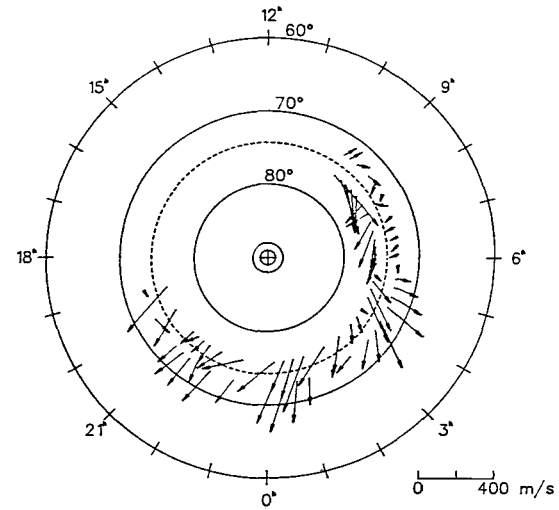


Figure 1. Solar and geomagnetic conditions of the Fabry-Perot observations conducted at Sondre Stromfjord, Greenland, September 1983 to April 1984

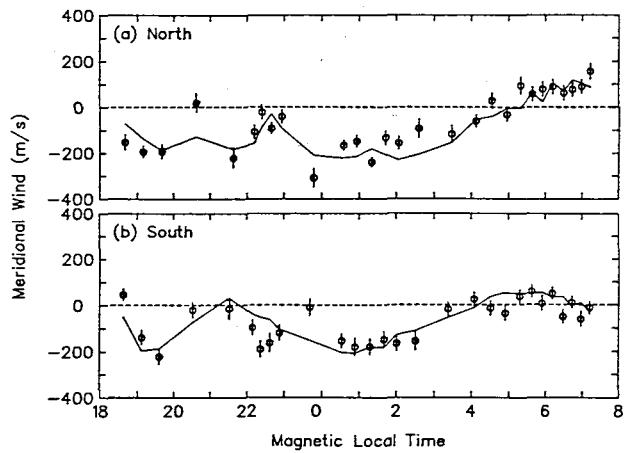
Neutral Wind Vector
 October 21/22, 1983 day 295 (UT)
 Sondre Stromfjord, Greenland



Neutral Wind Vector
 December 5/6, 1983 day 340 (UT)
 Sondre Stromfjord, Greenland



October 21/22, 1983 day 295 (UT)



December 5/6, 1983 day 340 (UT)

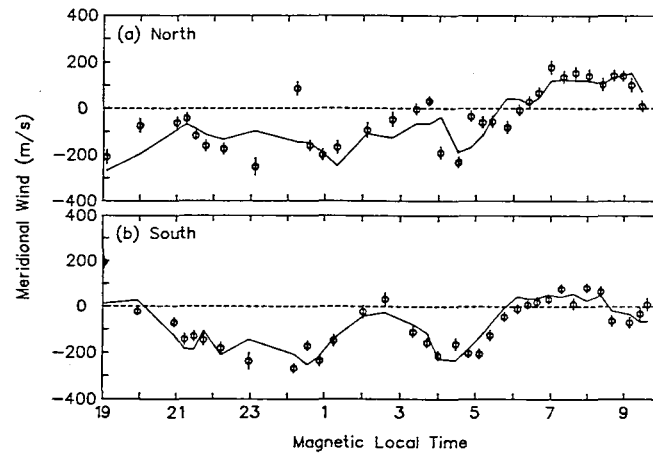
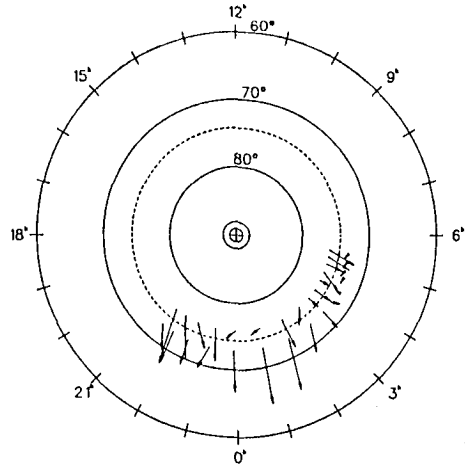


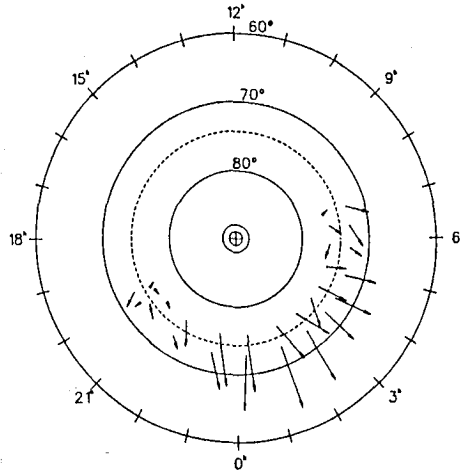
Figure 2

September 14/15, 1983 day 258 (UT)



0 400 m/s

March 4/5, 1984 day 65 (UT)



March 27/28, 1984 day 88 (UT)

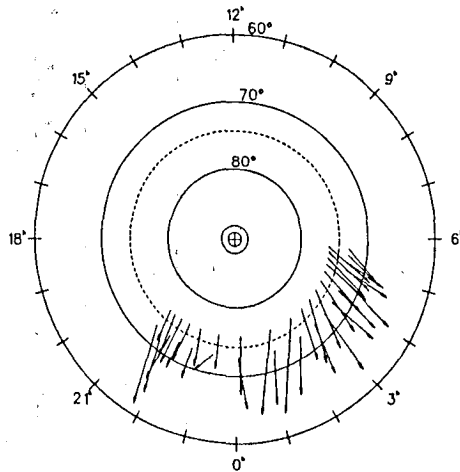


Figure 3

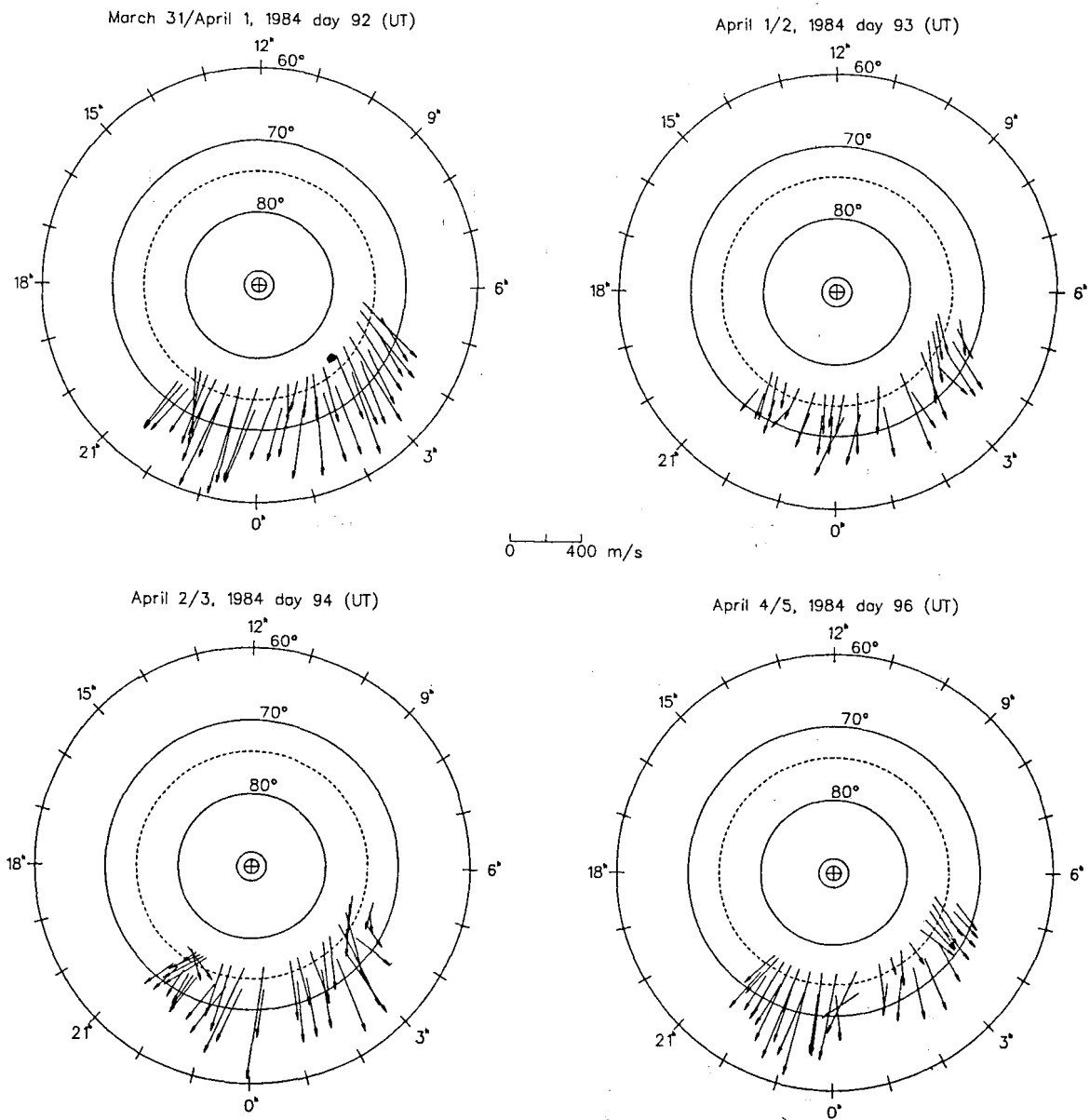
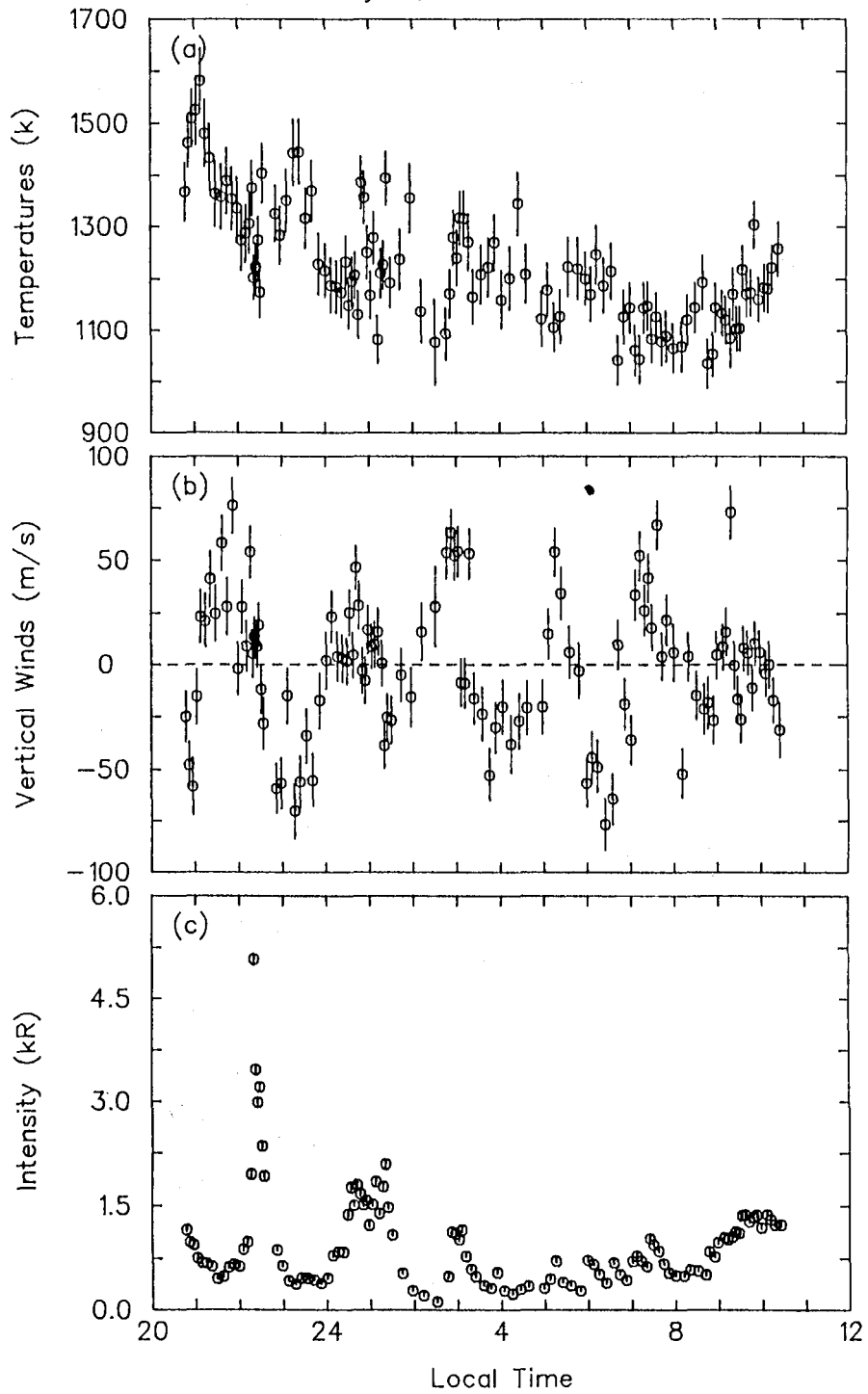


Figure 4

Fabry-Perot observations
Day 37, 1983 (UT)
Sondre Stromfjord, Greenland



MAY 3, 1984

Figure 5

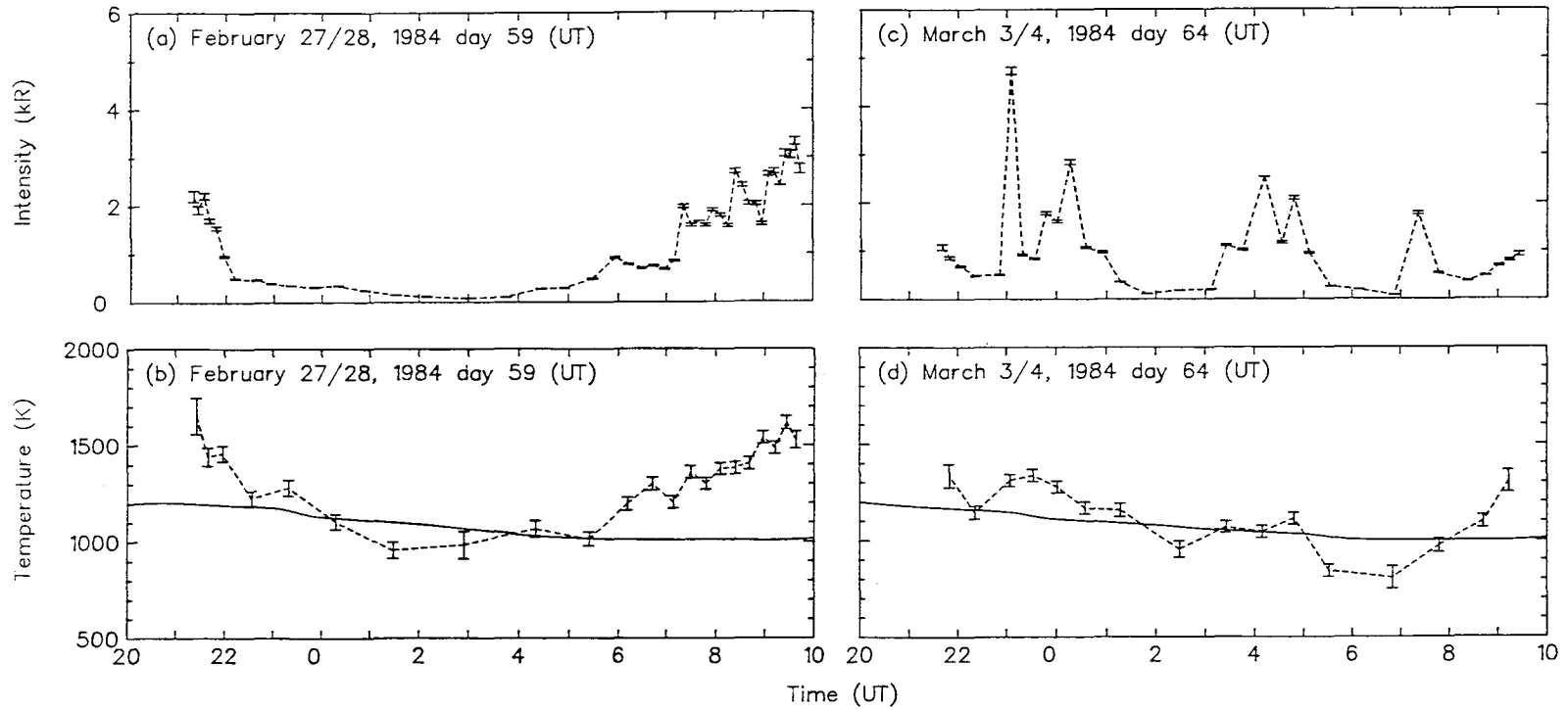
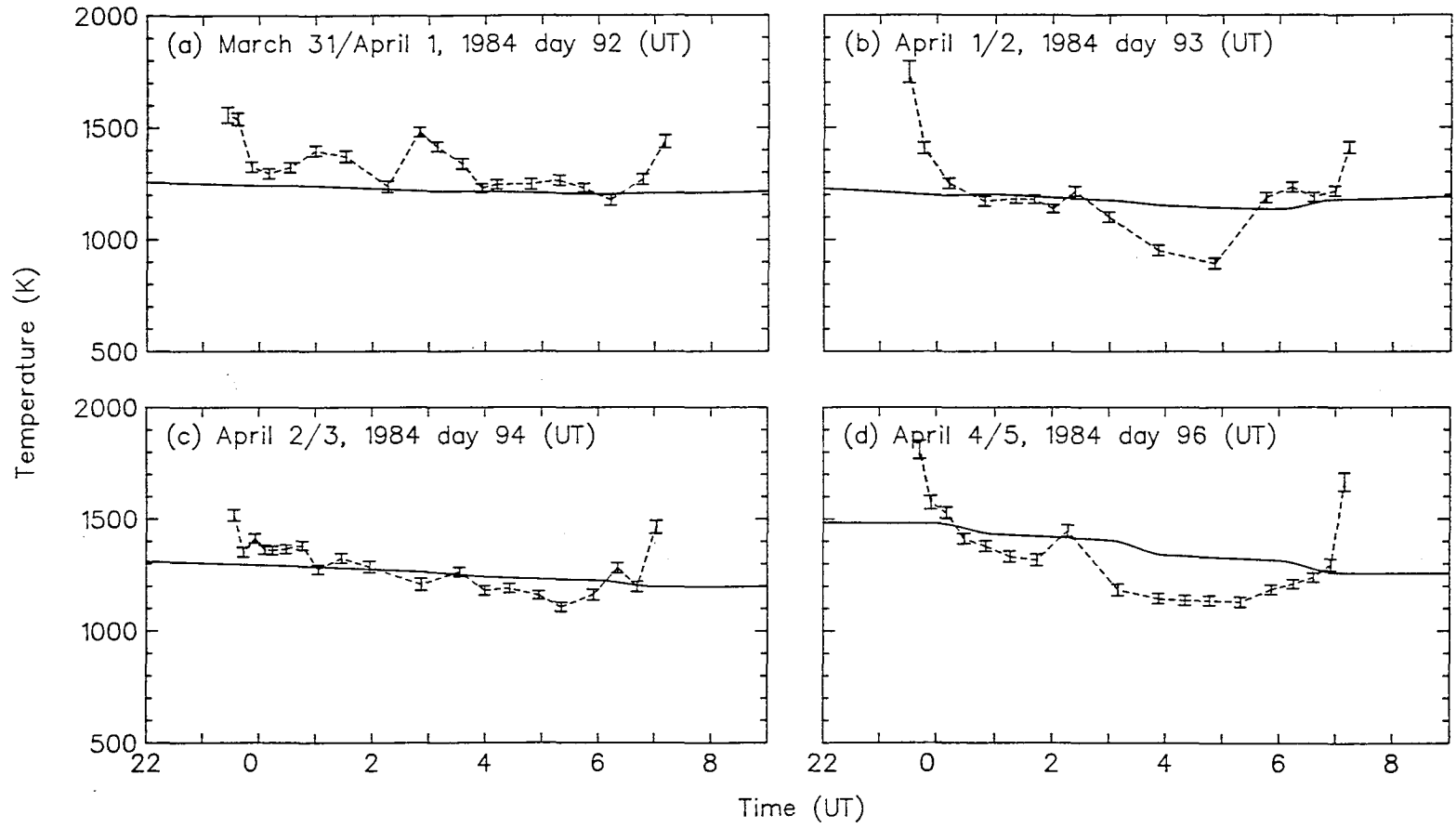
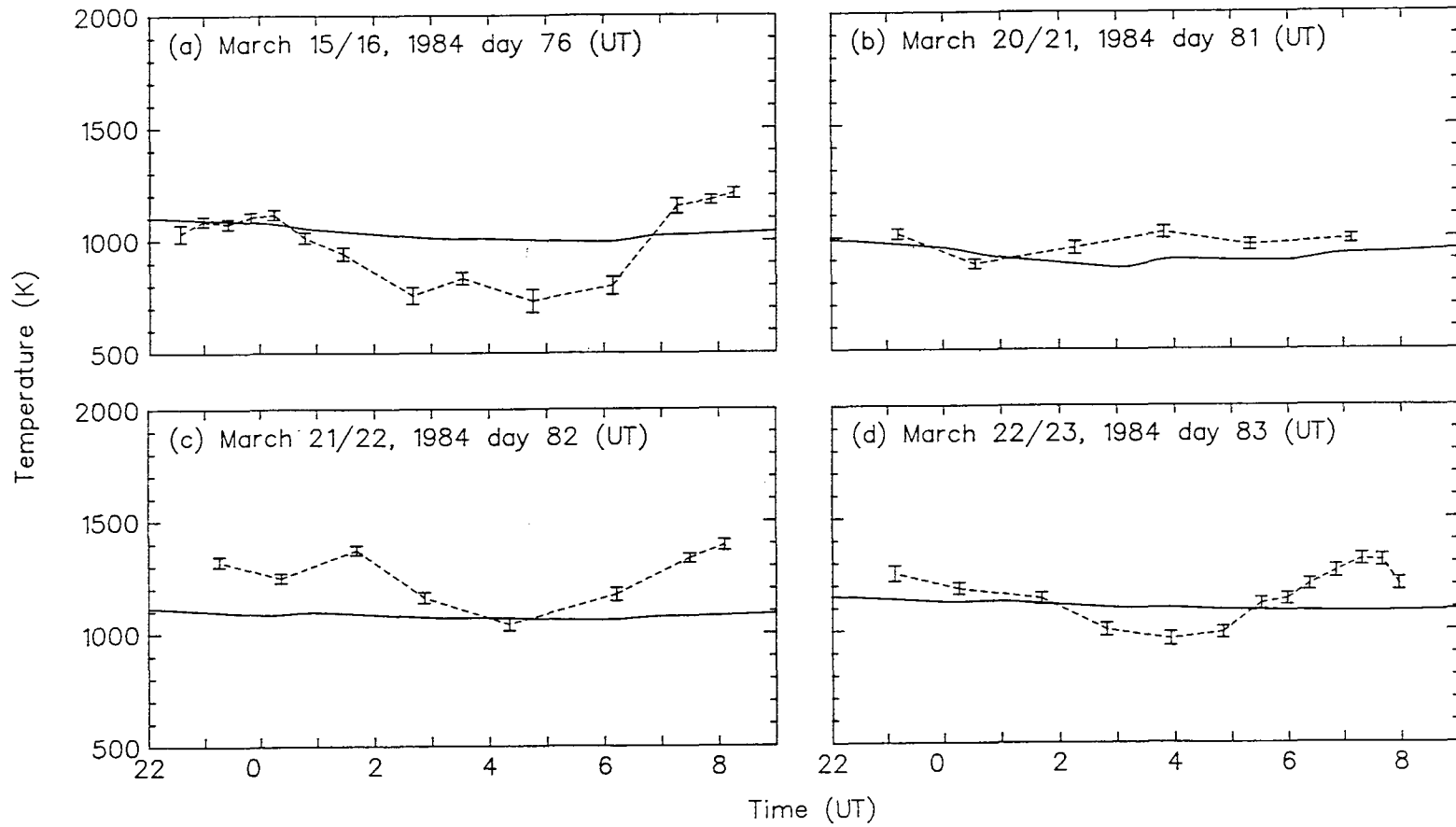


Figure 6



SEP 27, 1984

Figure 7



SEP 27, 1984

Figure 8