Comparison of the convective intensity and environmental properties of the target storms of July 16 and July 28

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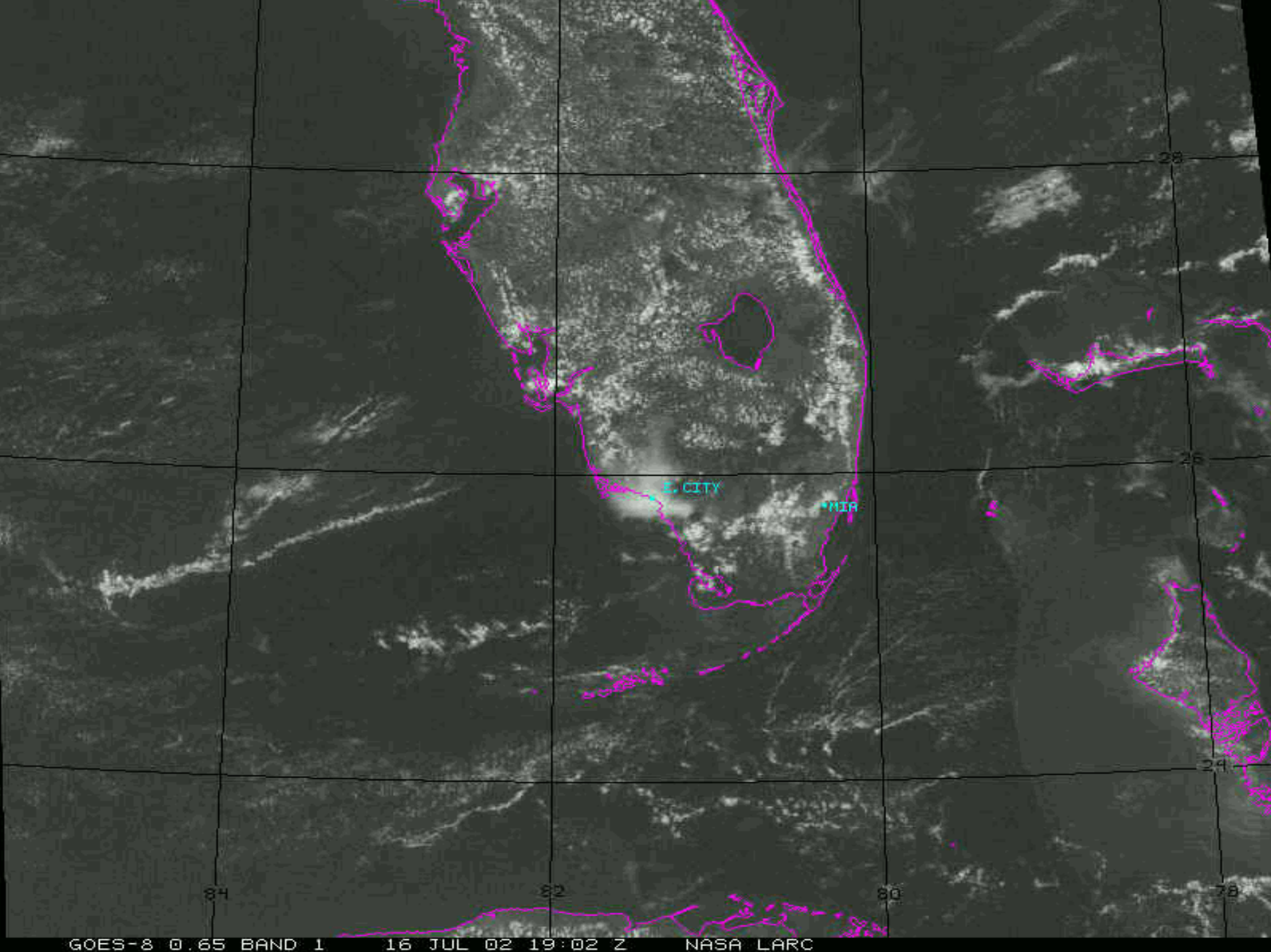
Order of Presentation

- **VIS satellite loops, July 16 and 28**
- **NPOL radar loops, July 16 and 28** (thanks to Paul Kucera for providing data)
- **Time-height radar reflectivity for each storm complex**
- **Time-height radar reflectivity of strongest cell and typical cell**
- **Area covered by echoes > 20 dBZ as f (z,t):**
  - *when and where was most of the anvil produced*?

Order of Presentation

- Time-height distribution of winds for July 2002
- Time-height distribution of theta-e for July 2002
- CAPE variation during July 2002 for all sounding sites
- Quick look at the soundings for July 16 and 28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*MIA
28
26
24
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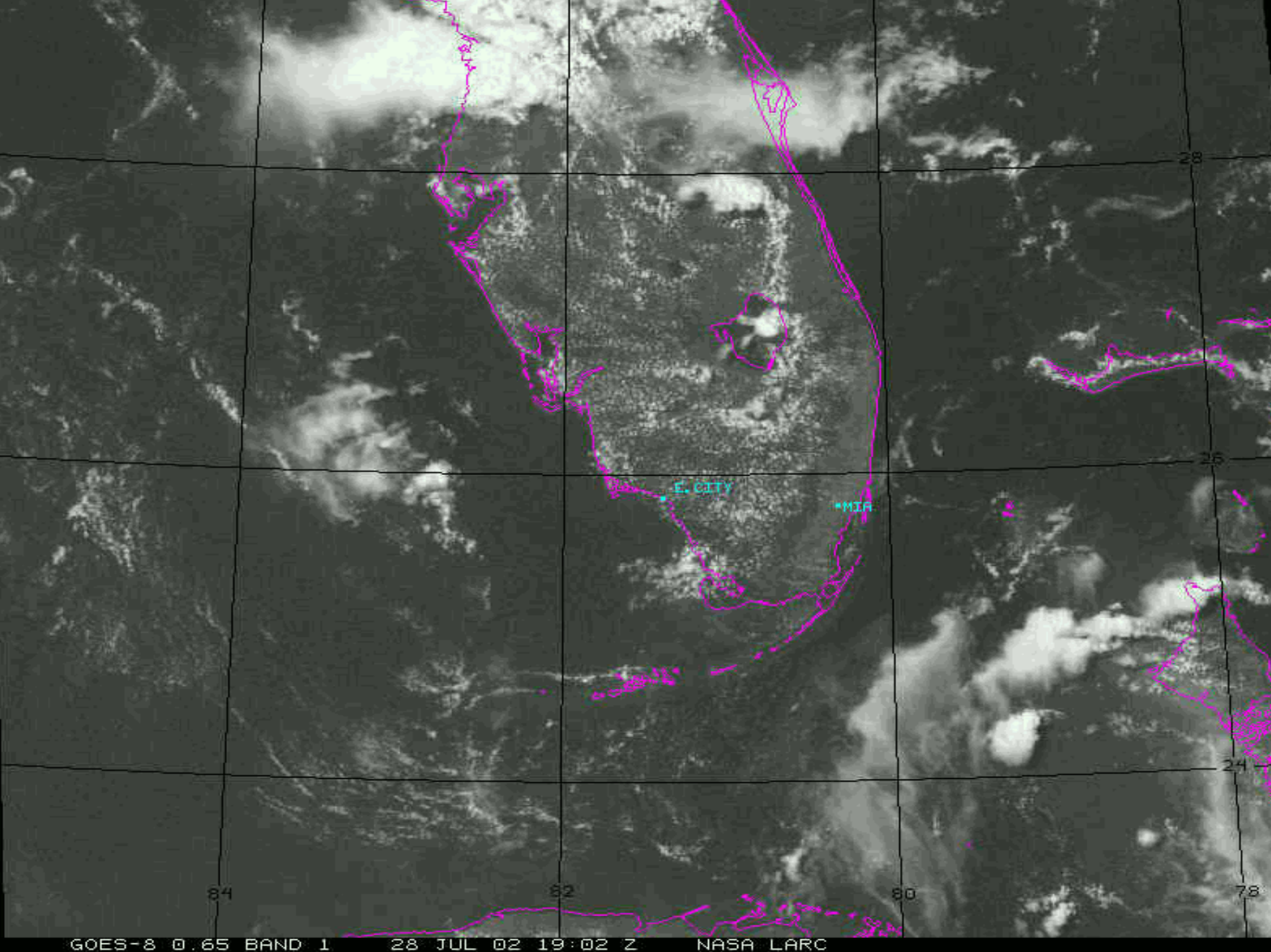
GOES-8 0.65 BAND 1 16 JUL 02 19:02 Z NASA LARC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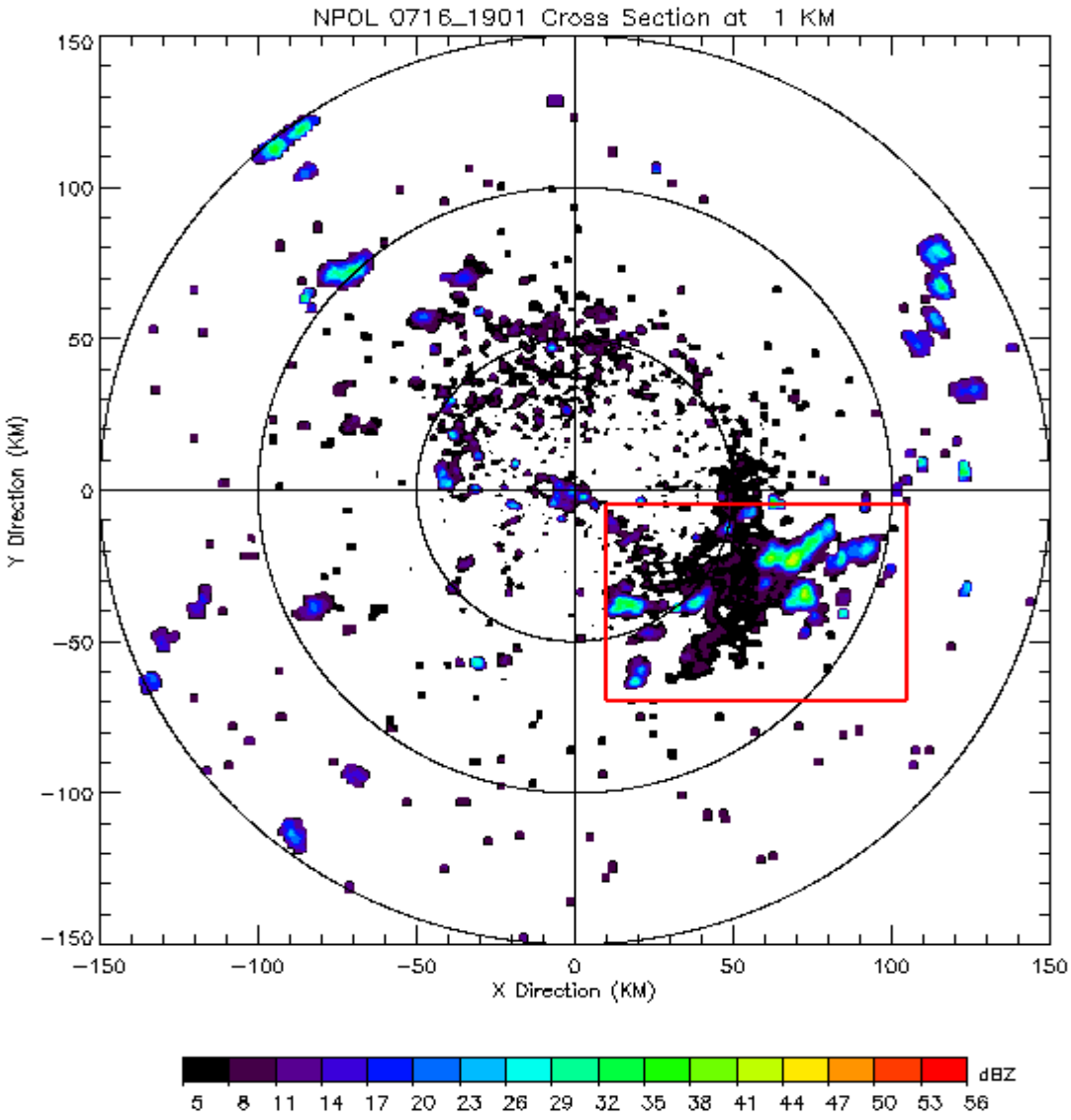
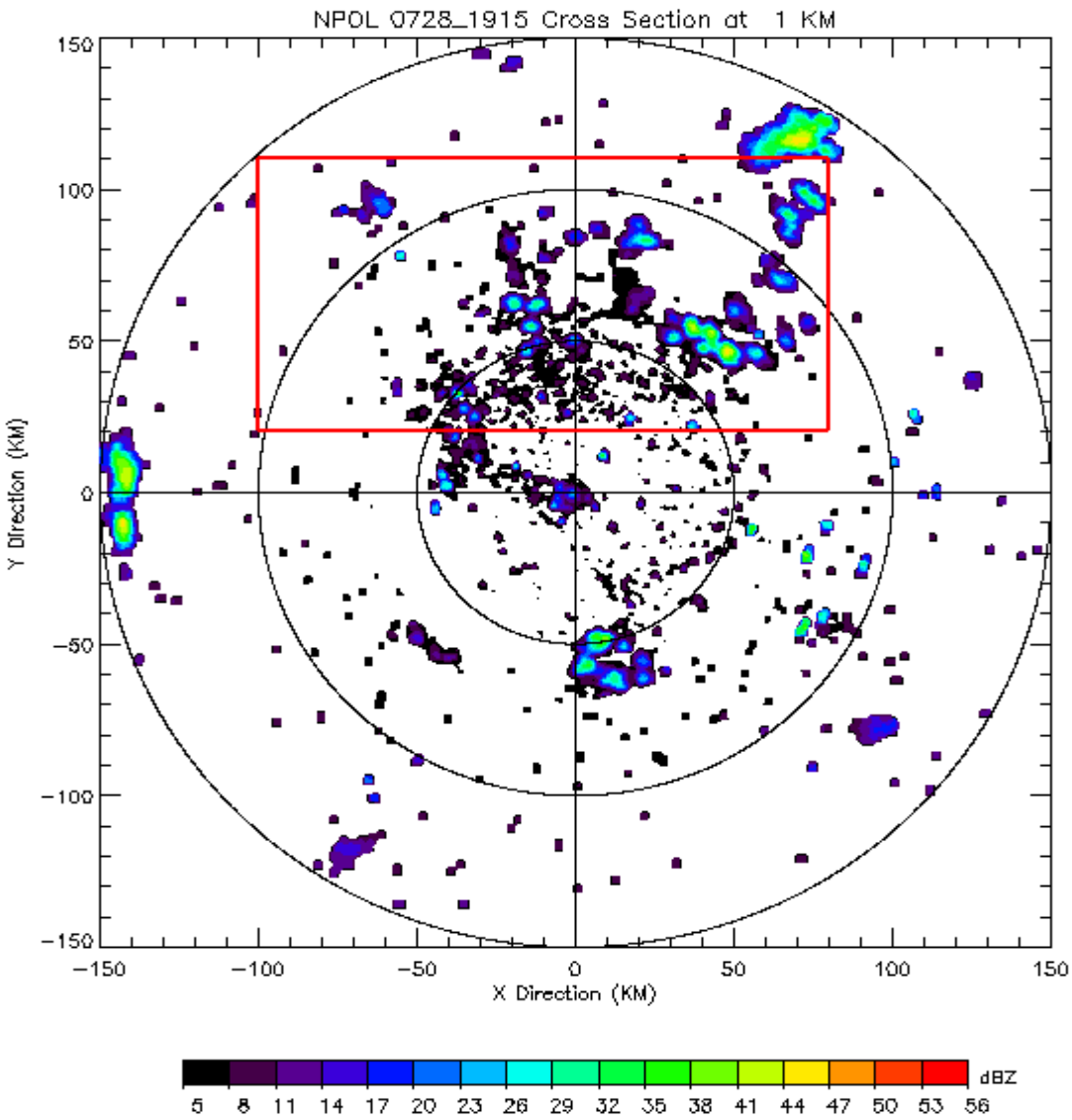


NPOL

Radar loop

July 16

19:01Z-22:31Z



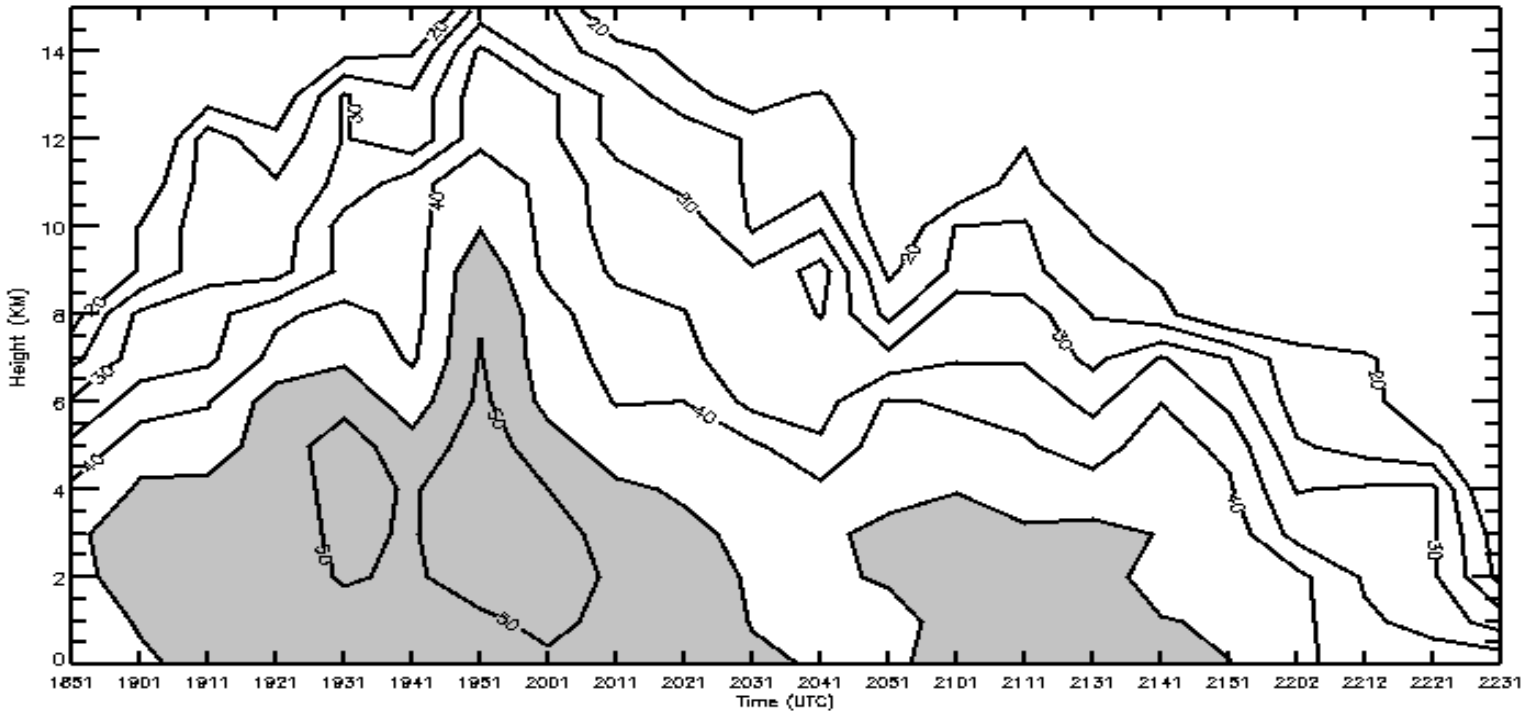
NPOL

Radar loop

July 28

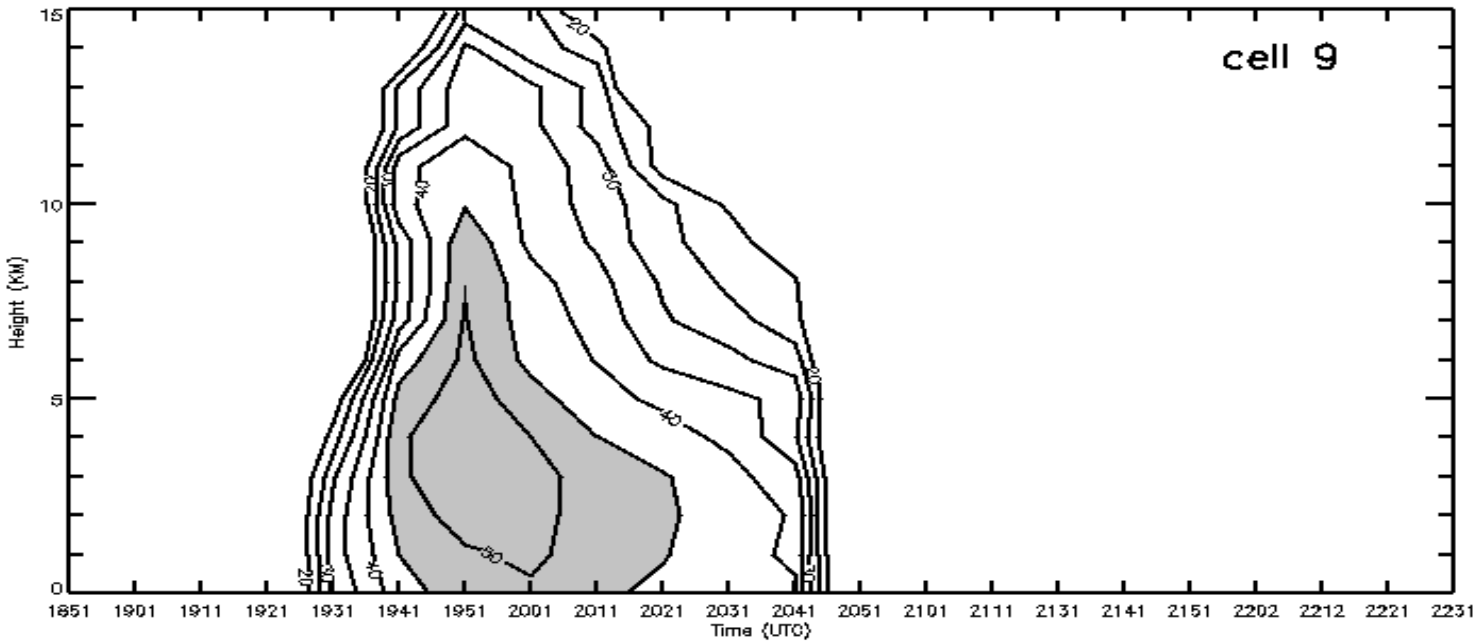
19:15Z-23:32Z

Time-height radar reflectivity July 16



Contours are at 5 dBZ intervals and
shaded area indicates echoes > 45dBZ

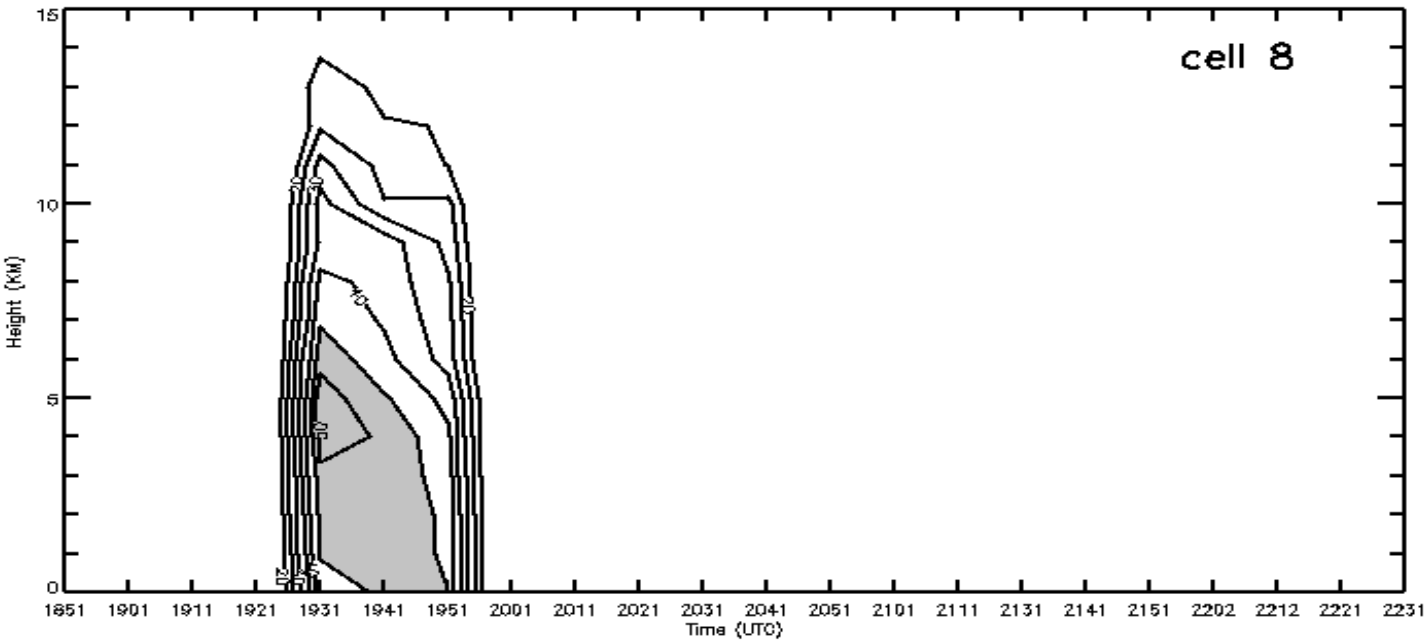
The strongest cell on July 16



Radar life history of cell 9

Contours are at 5 dBZ intervals and
shaded area indicates echoes > 45dBZ

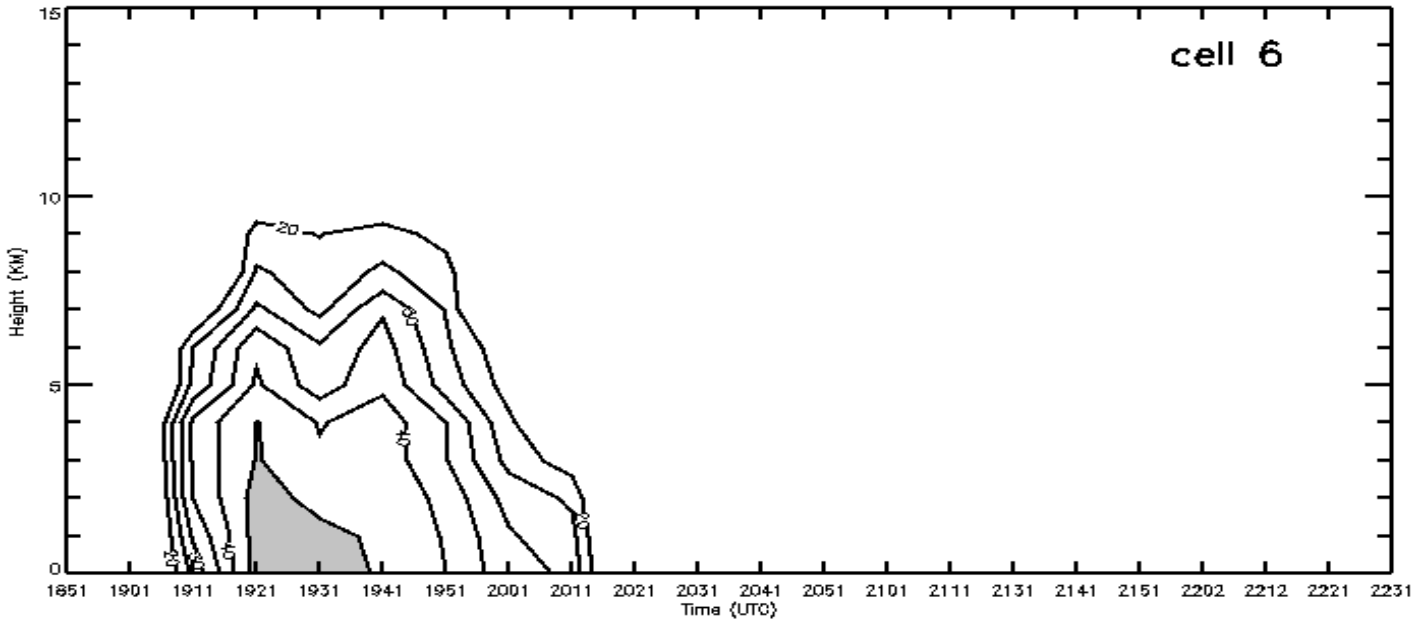
Typical cell on July 16



Radar life history of cell 8

Contours are at 5 dBZ intervals and
shaded area indicates echoes > 45dBZ

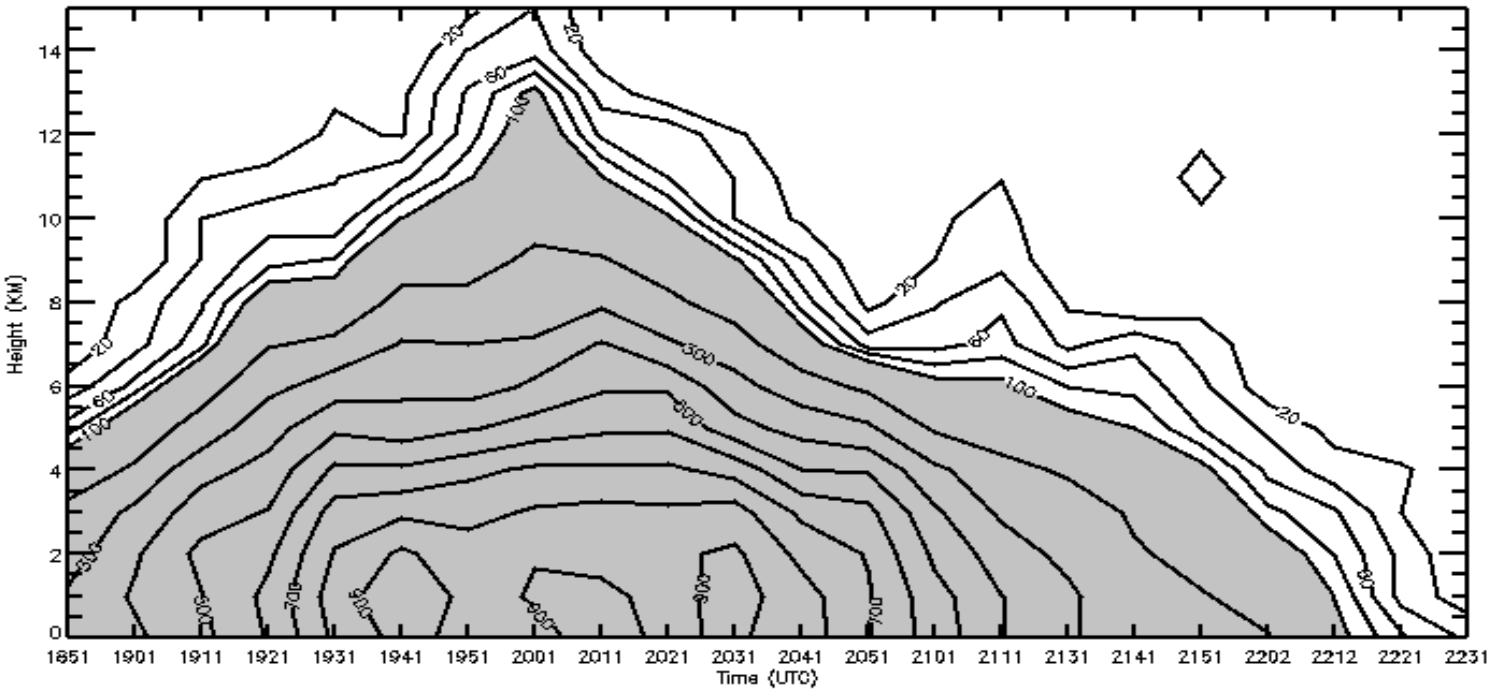
Typical cell on July 16



Radar life history of cell 6

Contours are at 5 dBZ intervals and
shaded area indicates echoes > 45dBZ

Area covered by echoes > 20 dBZ July 16



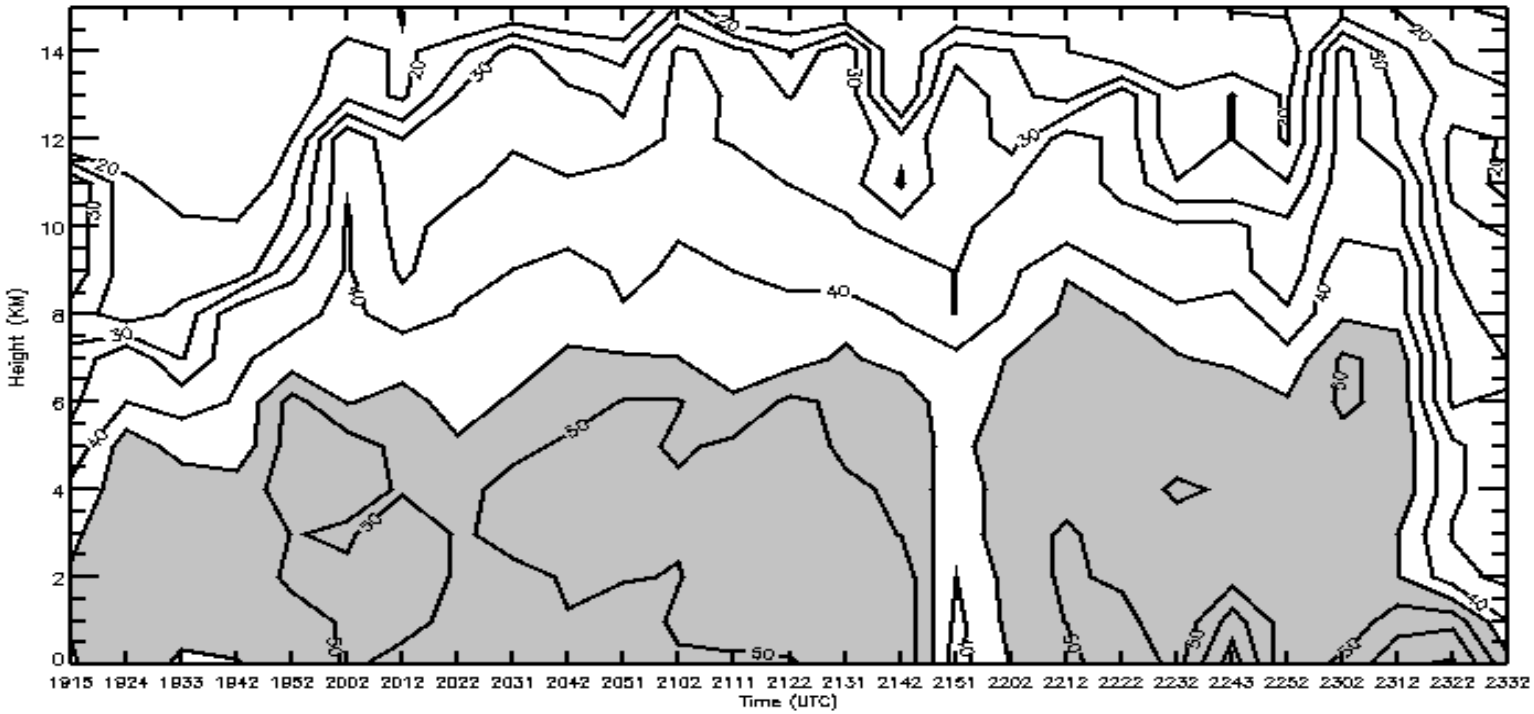
The contour intervals are 20 km^2 and 100 km^2 for less and greater100 km^2
shaded area indicates area > 100 km^2

Area covered by echoes > 20 dBZ July 16

Above 12 km

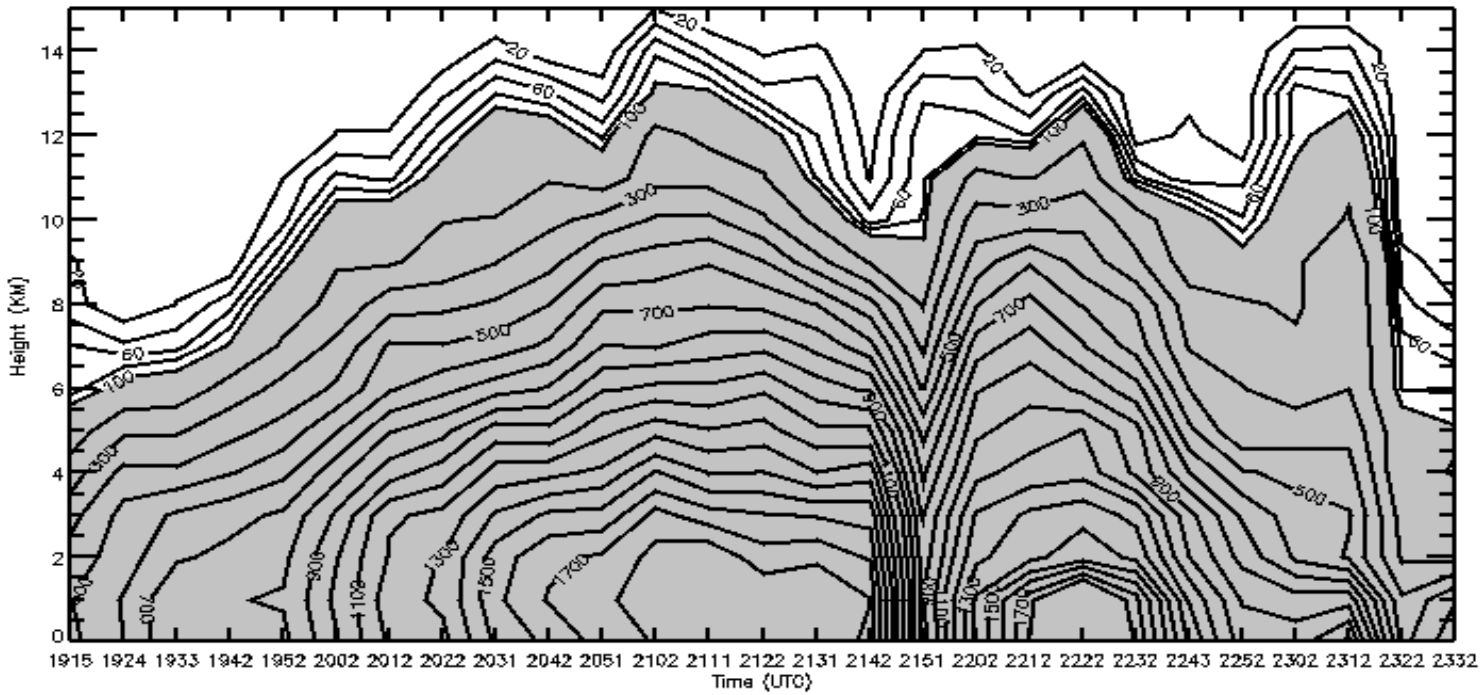
shaded area indicates area > 100 km^2

Time-height radar reflectivity July 28



Contours are at 5 dBZ intervals and
shaded area indicates echoes > 45dBZ

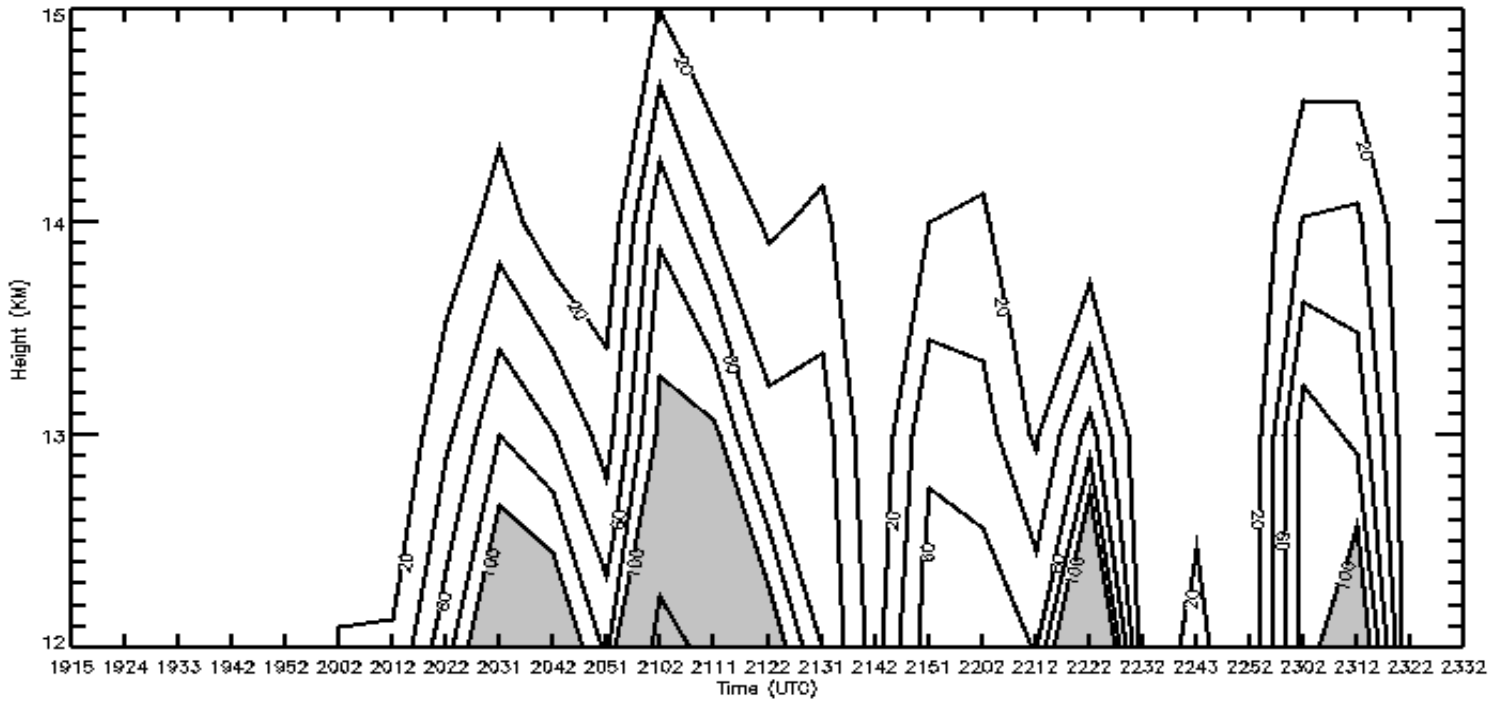
Area covered by echoes > 20 dBZ July 28



The contour intervals are 20 km^2 and 100 km^2 for less and greater100 km^2

shaded area indicates area > 100 km^2

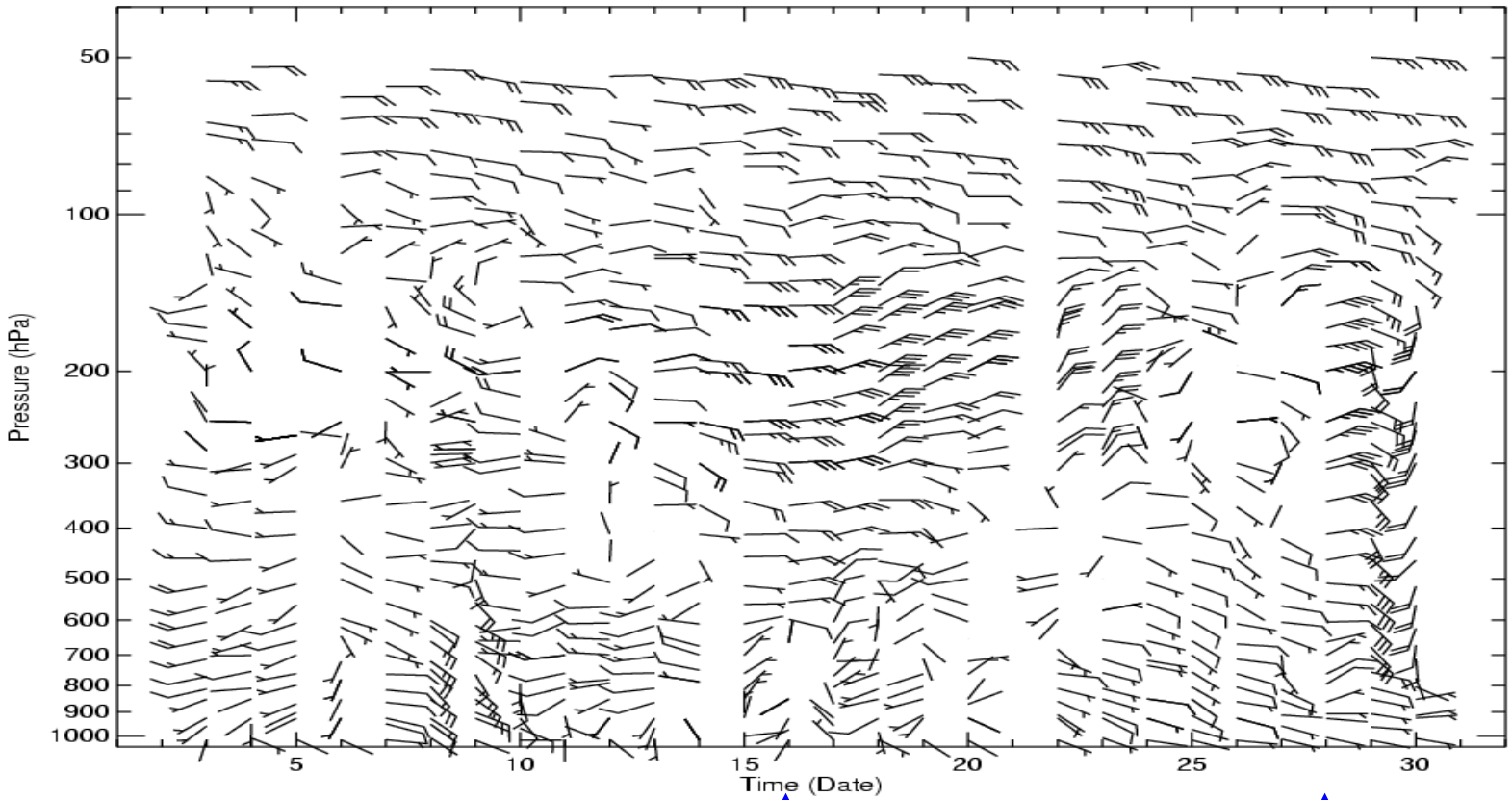
Area covered by echoes > 20 dBZ July 28



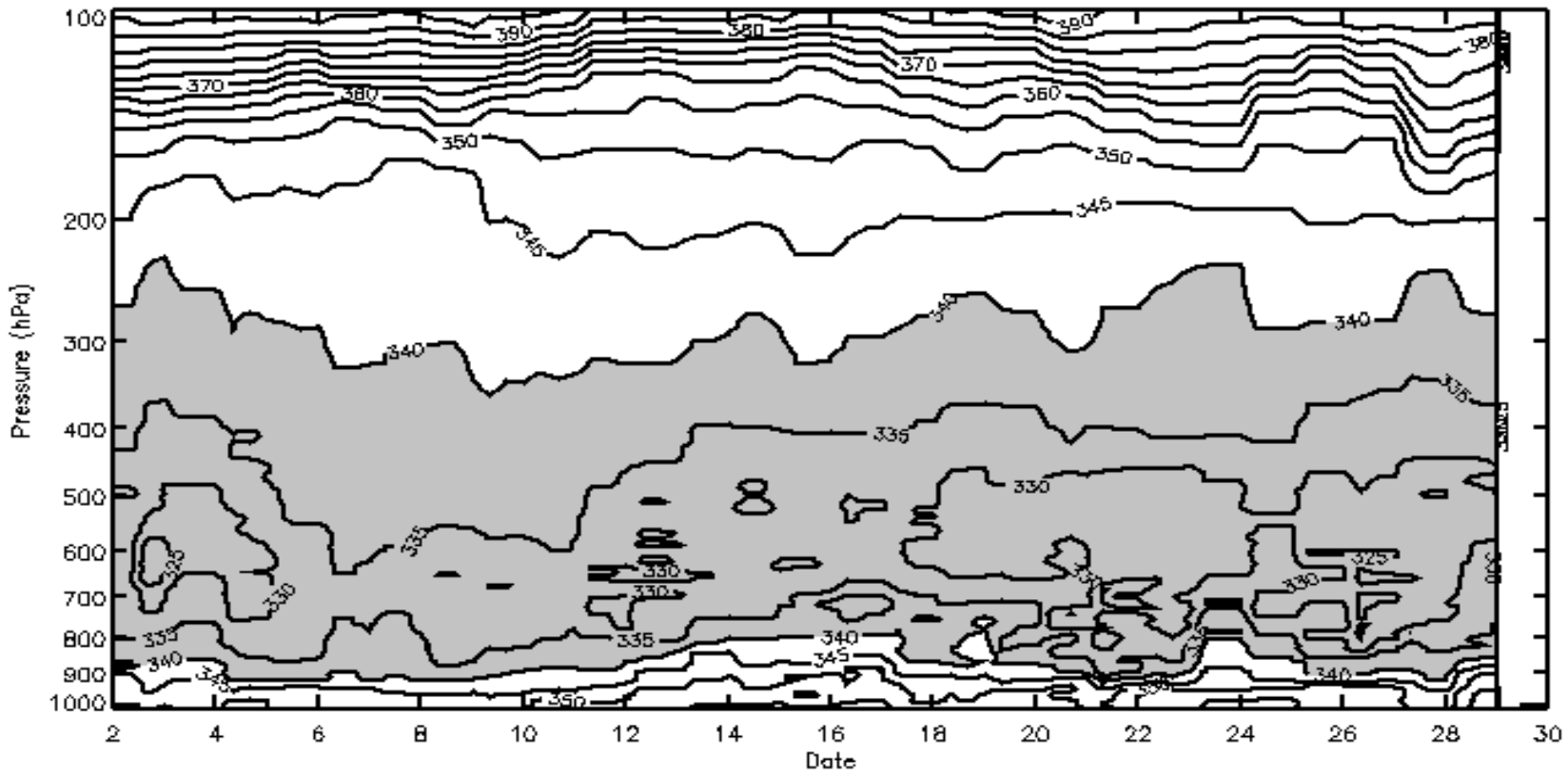
Above 12 km

shaded area indicates area > 100 km^2

Time-height distribution of Miami 17Z wind

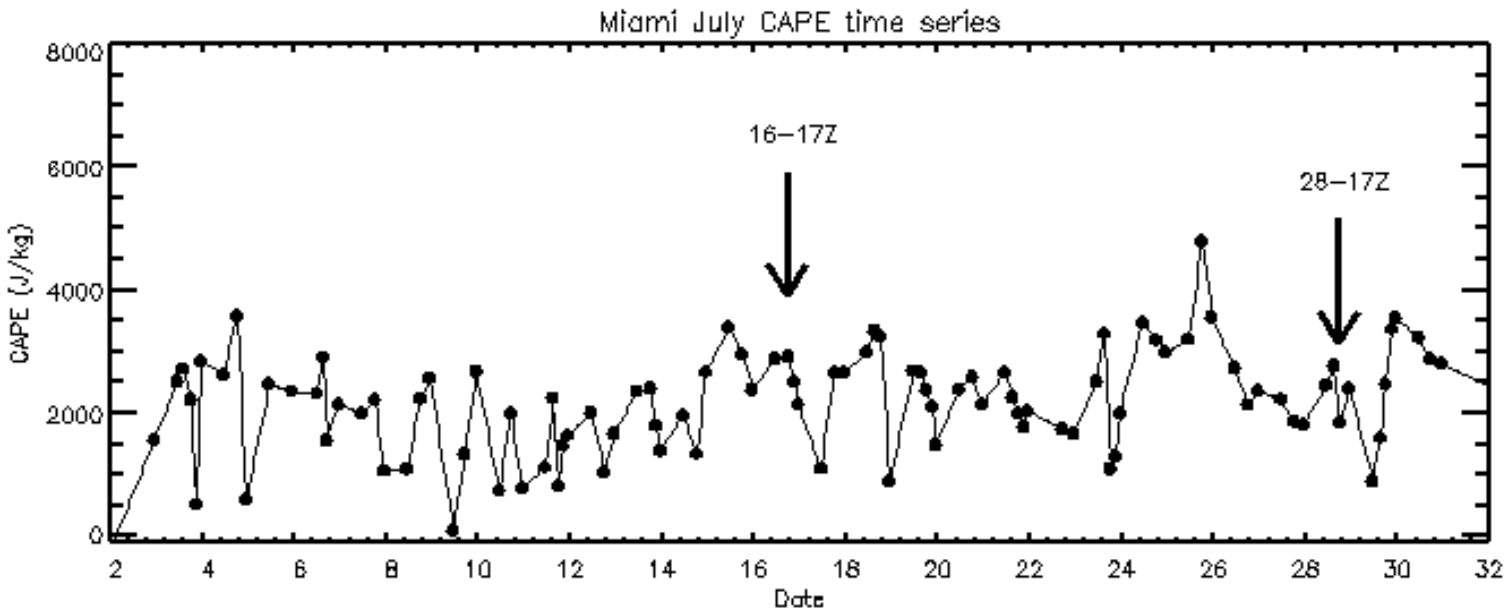


Time-height distribution of Miami θ_e

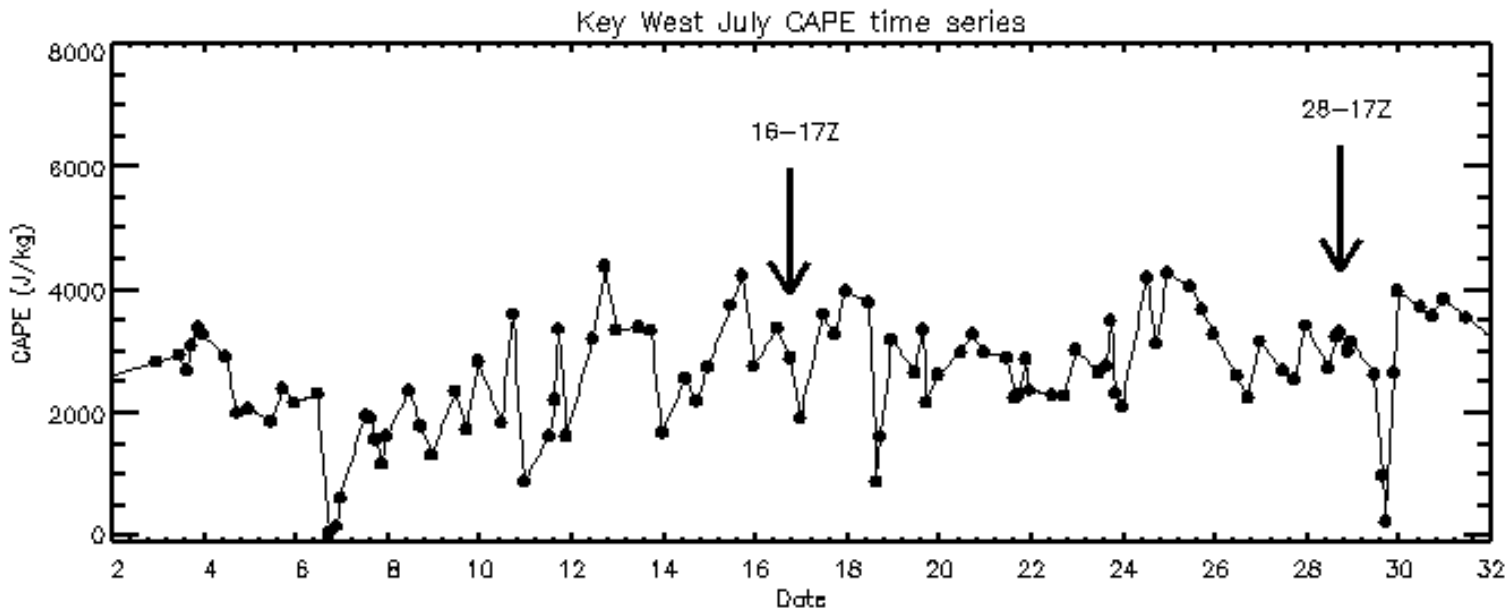


The contour intervals are 5 K, shaded area indicates θ_e < 340 K

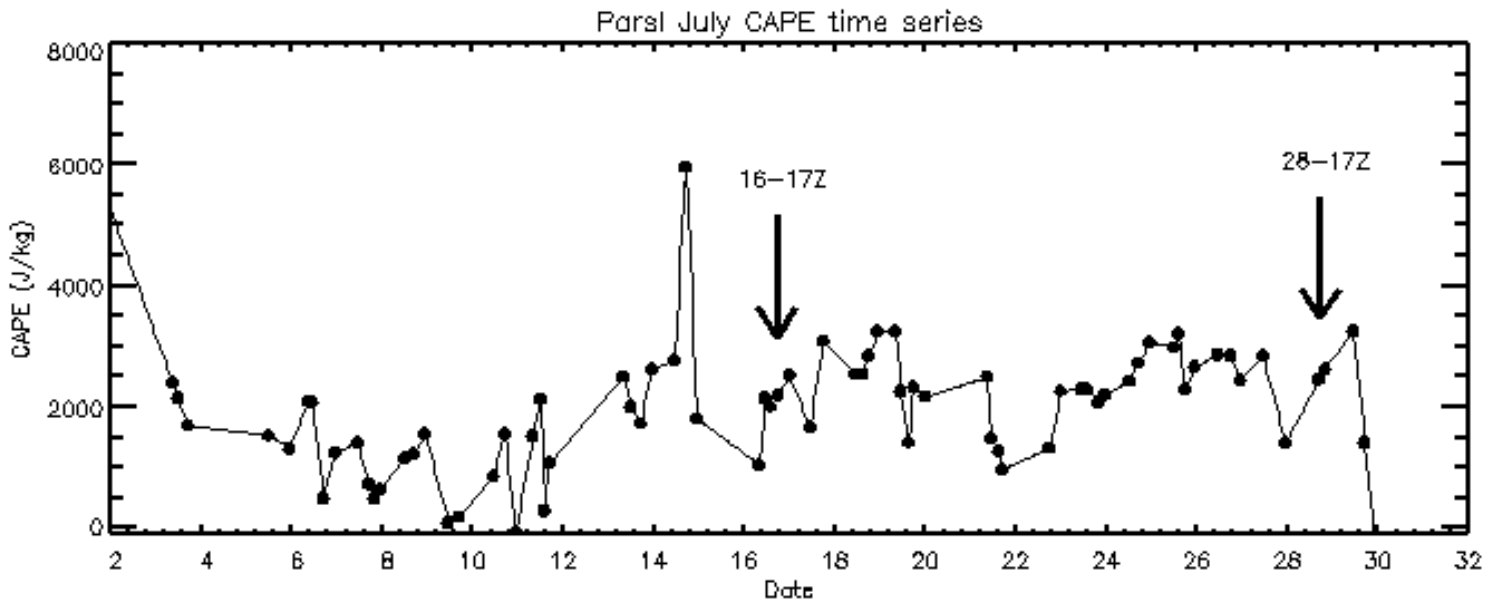
Miami CAPE variation during July 2002



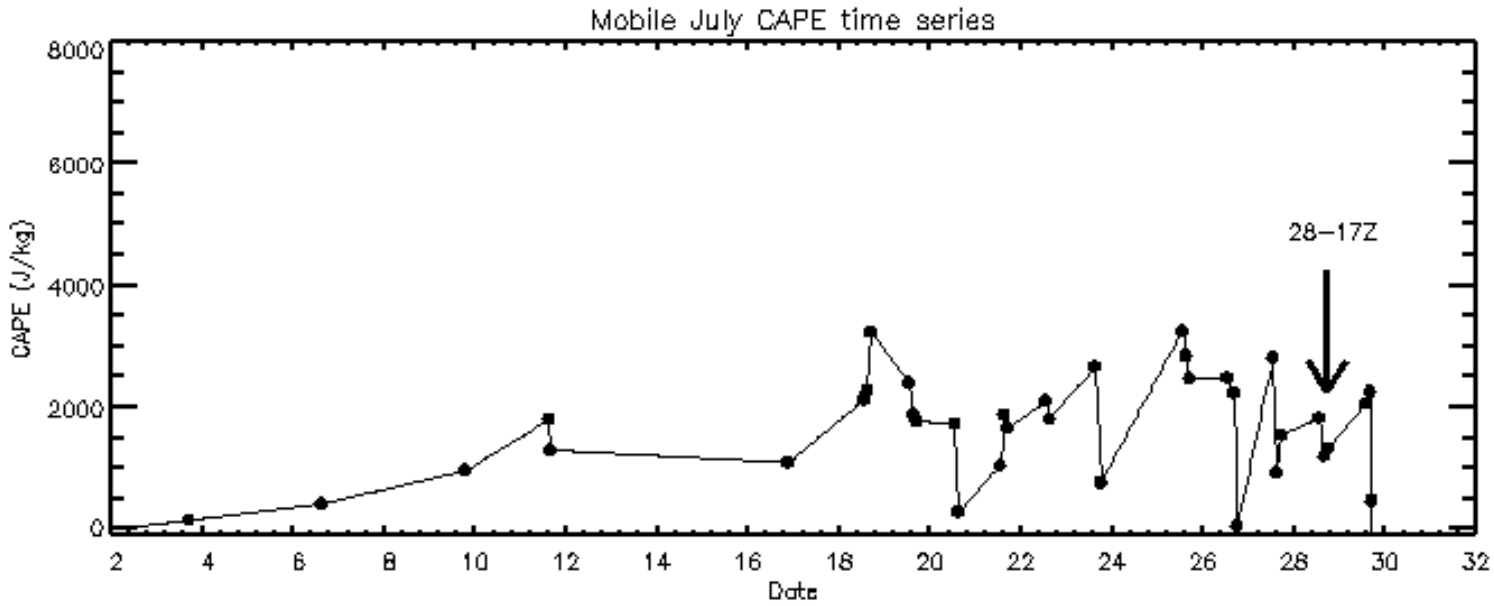
Key West CAPE variation during July 2002

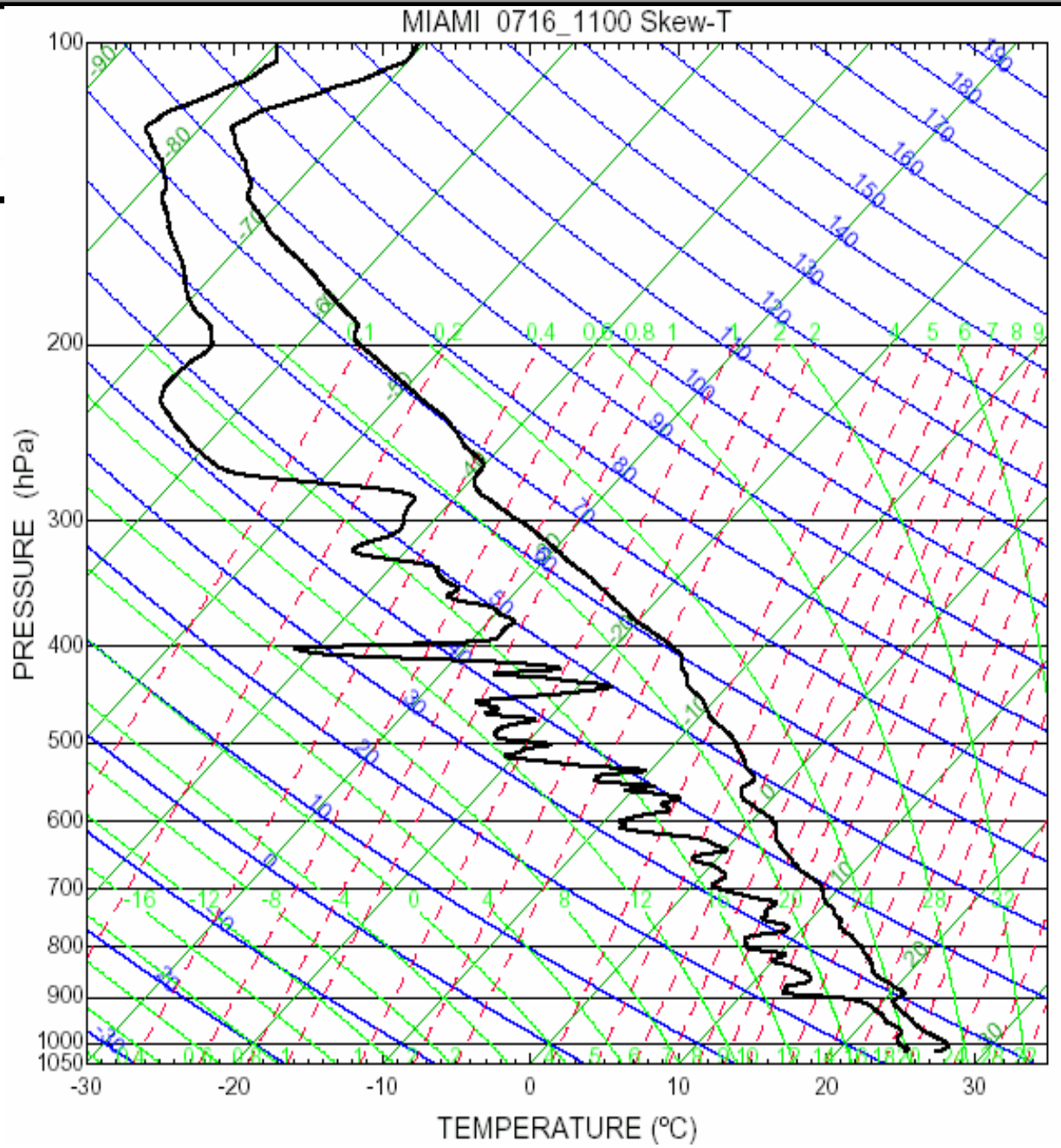


Parsl CAPE variation during July 2002



Mobile CAPE variation during July 2002





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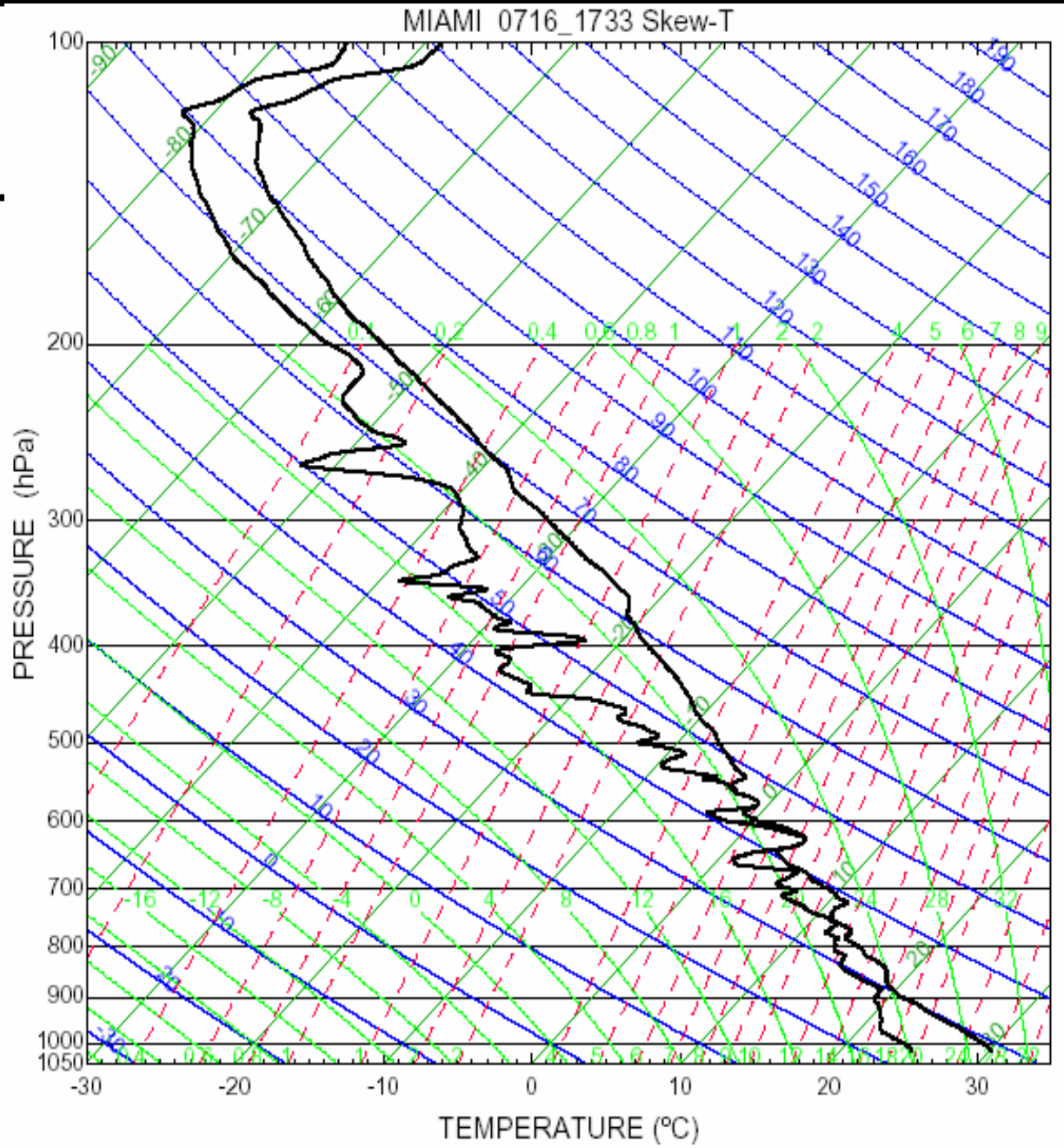

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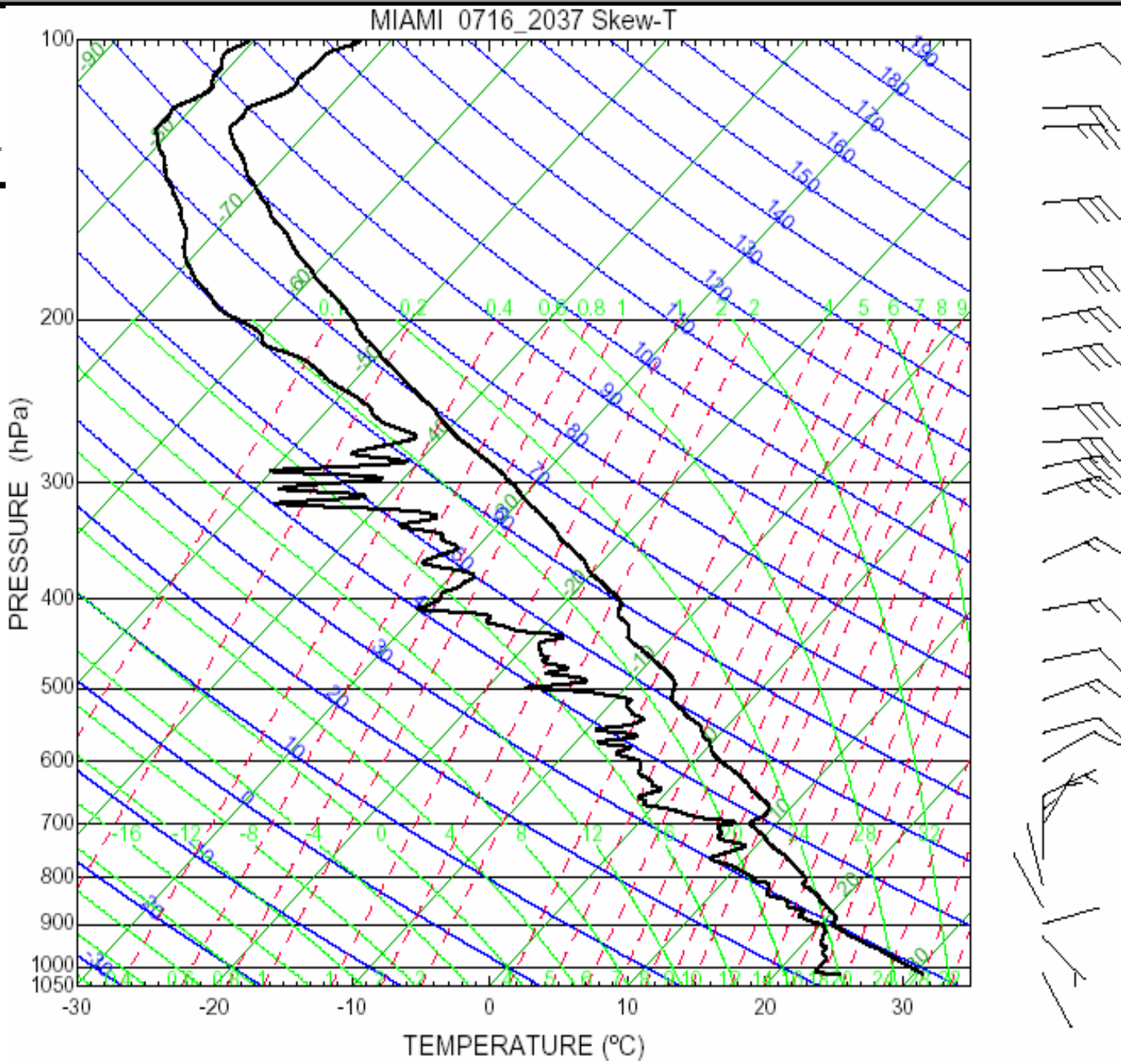
Salt Lake City, Utah



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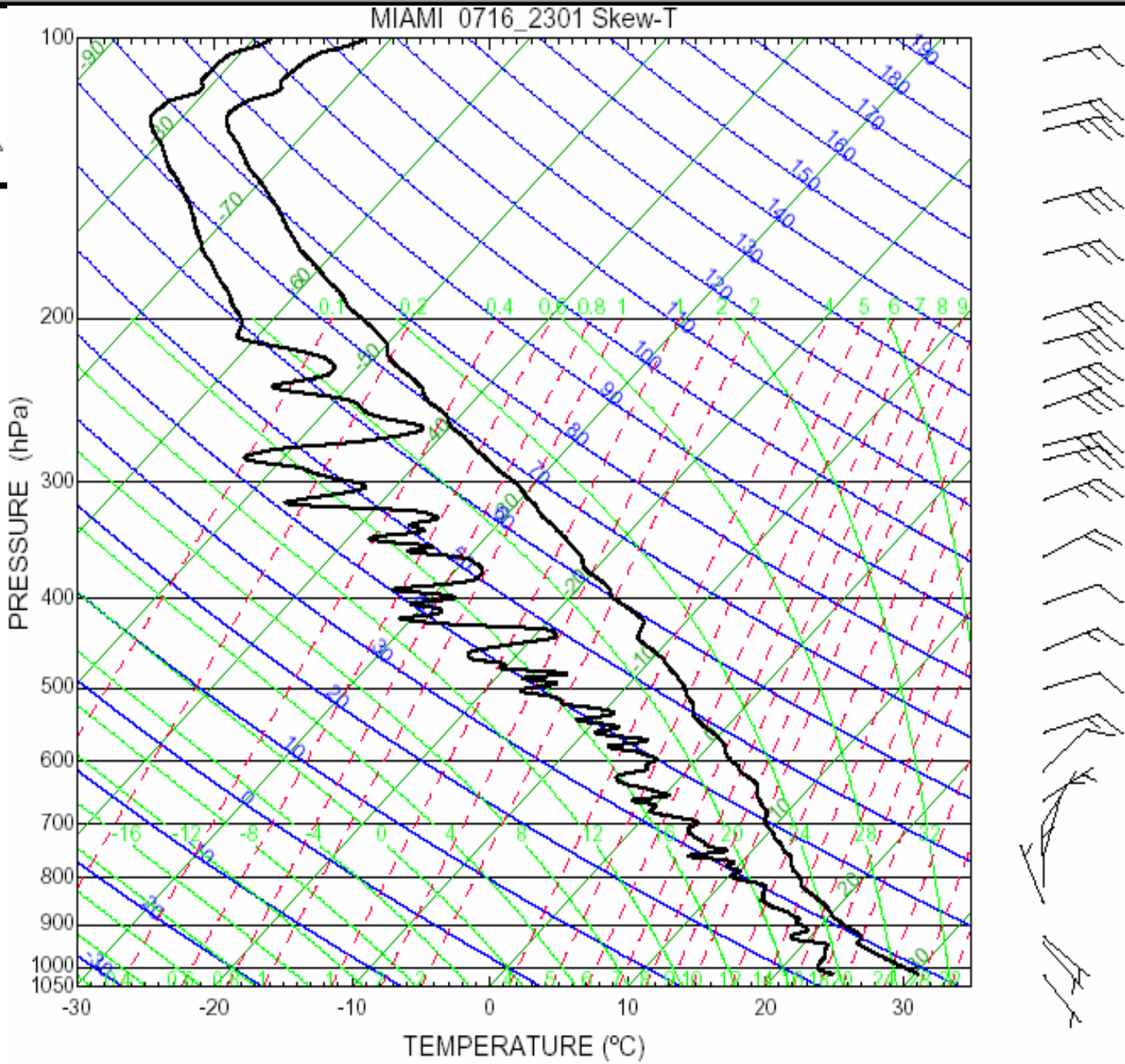

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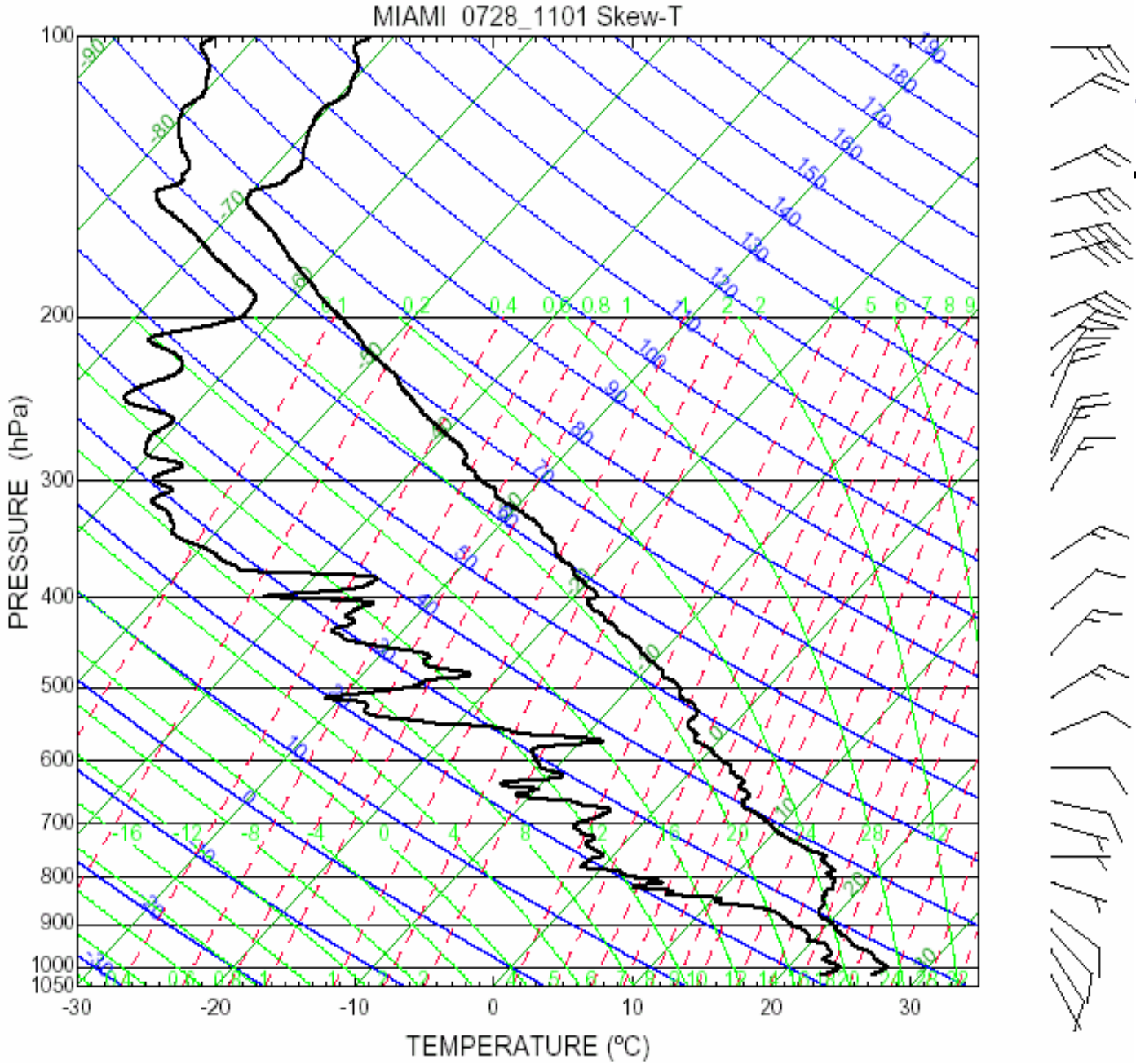

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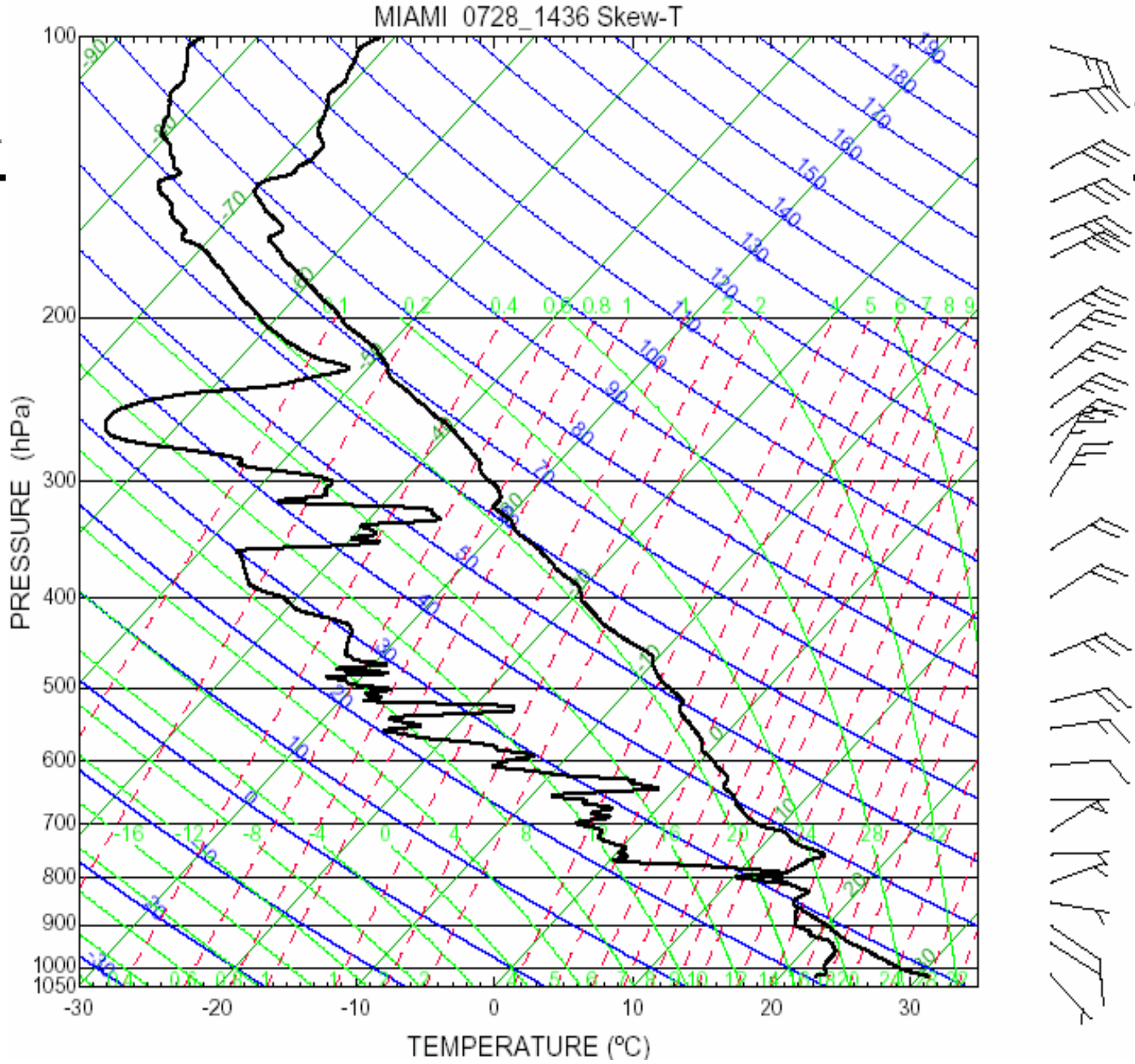

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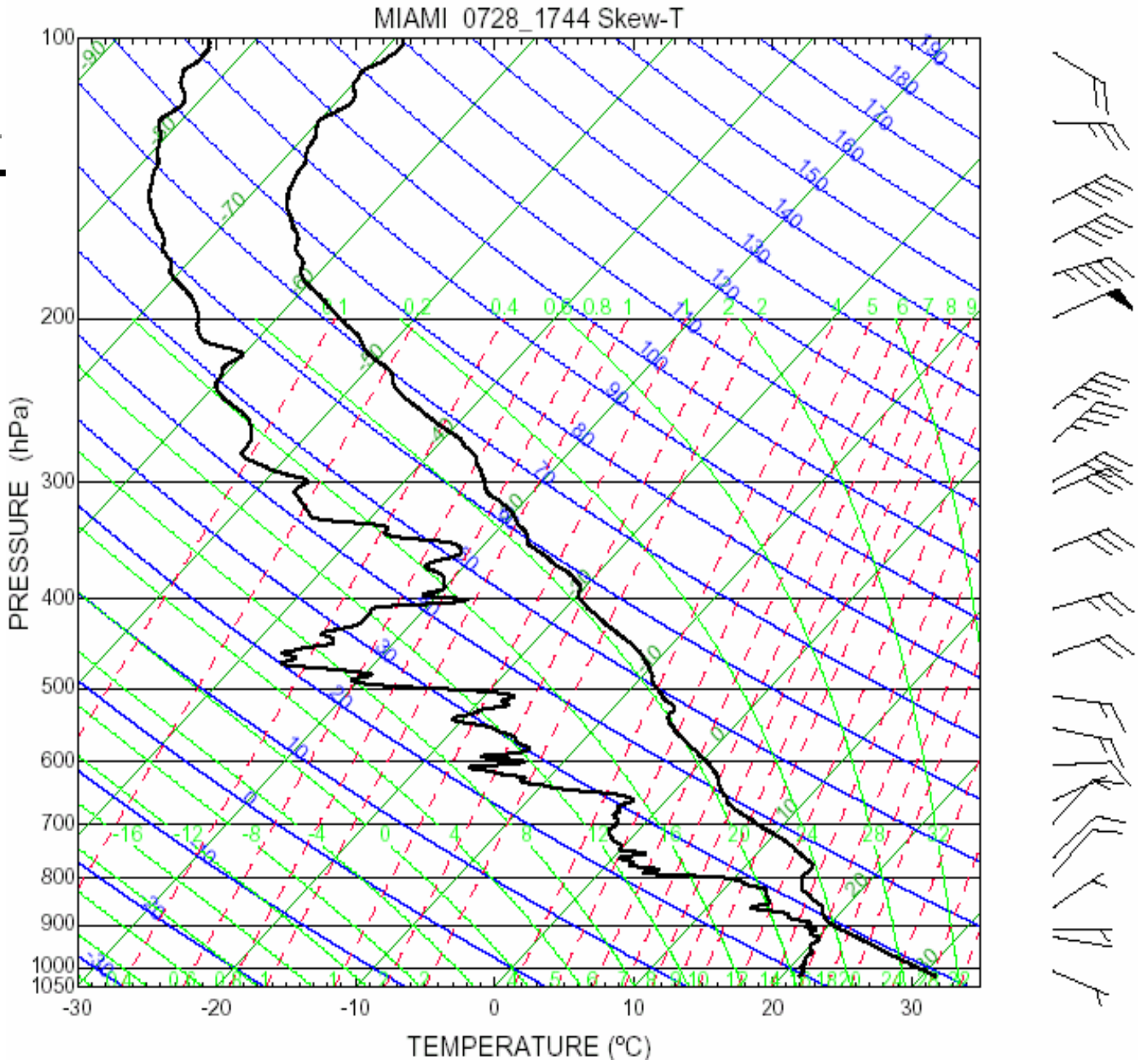
MIAMI 0728_1744 Skew-T
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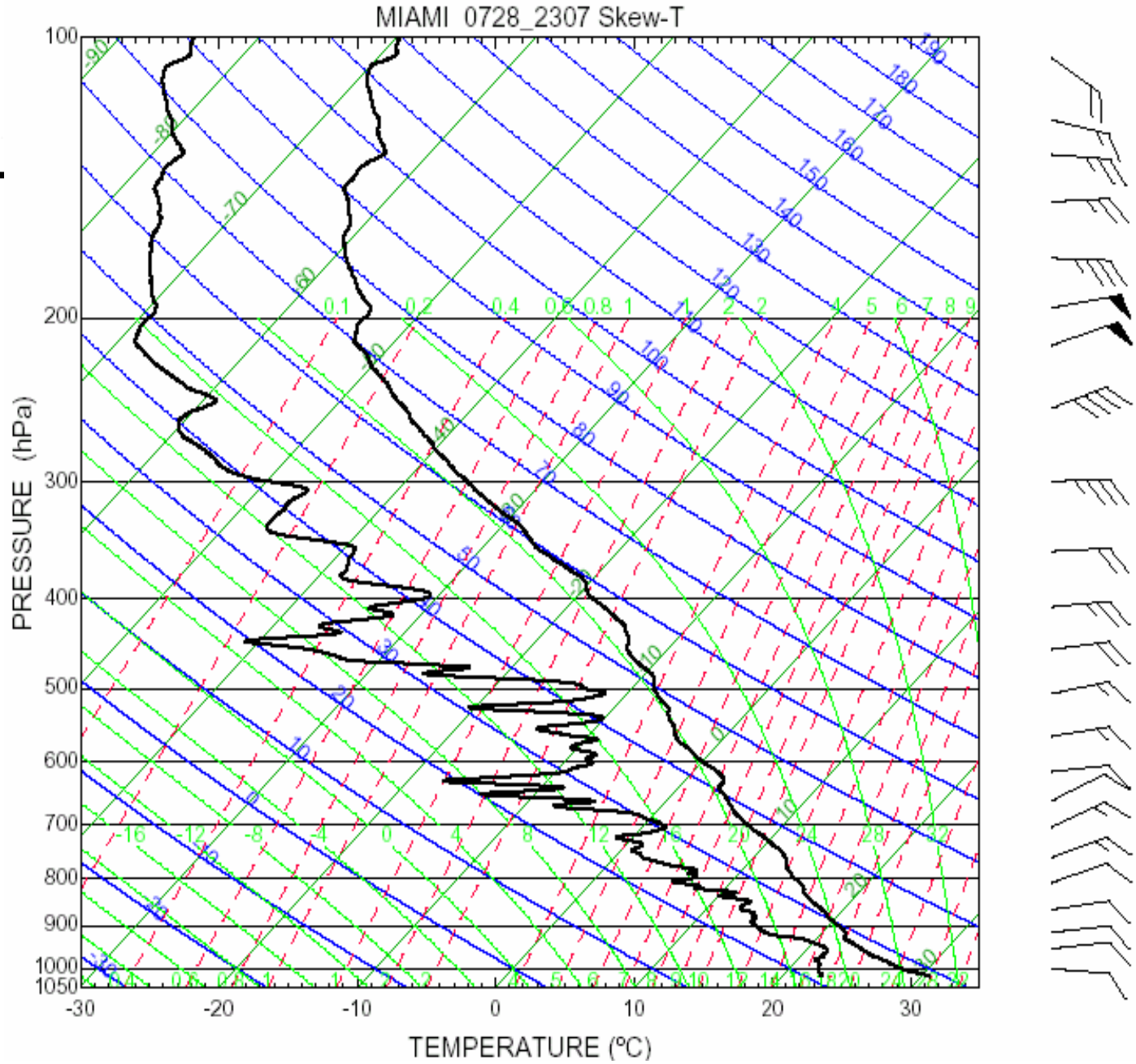

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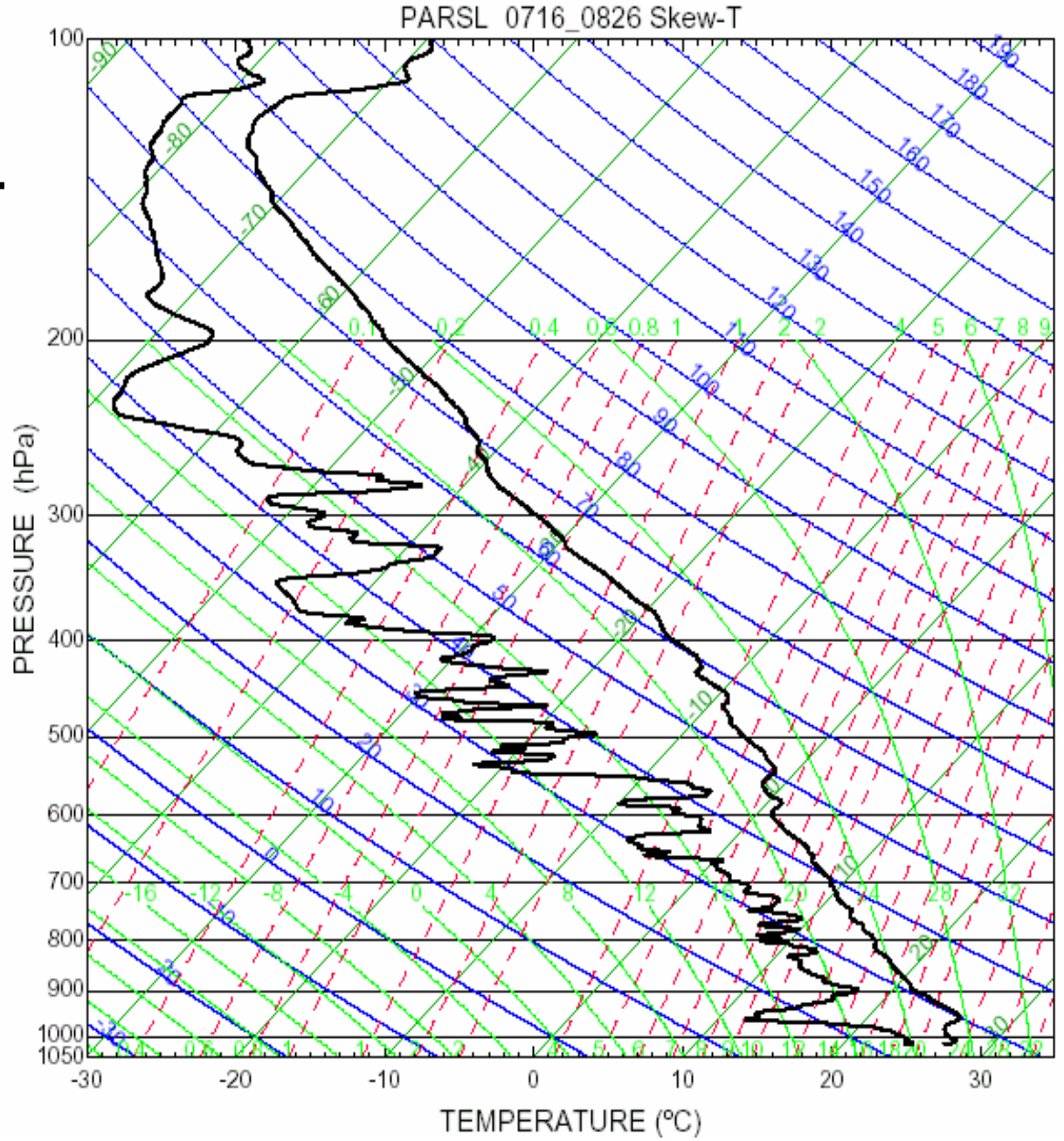

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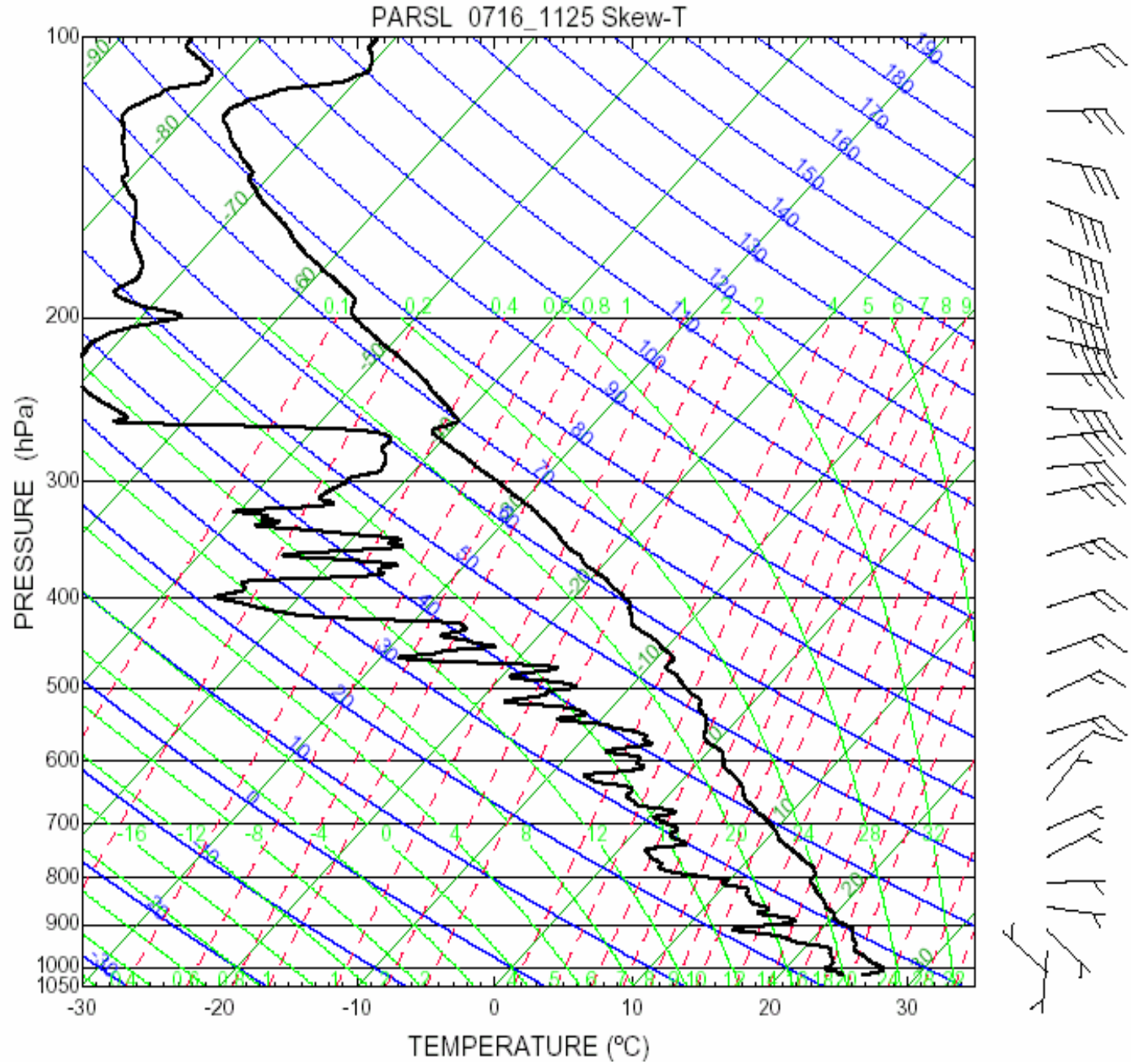

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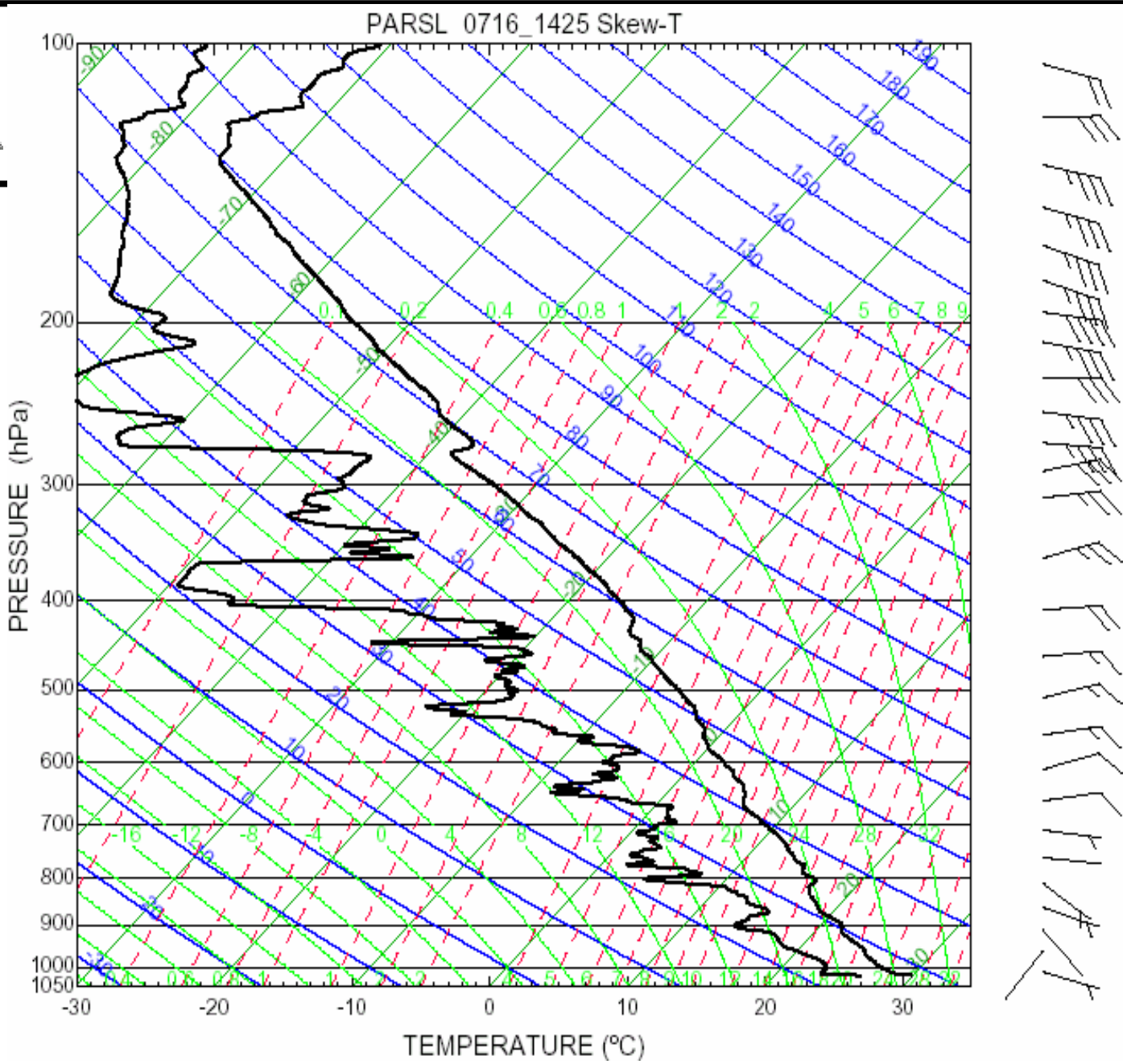

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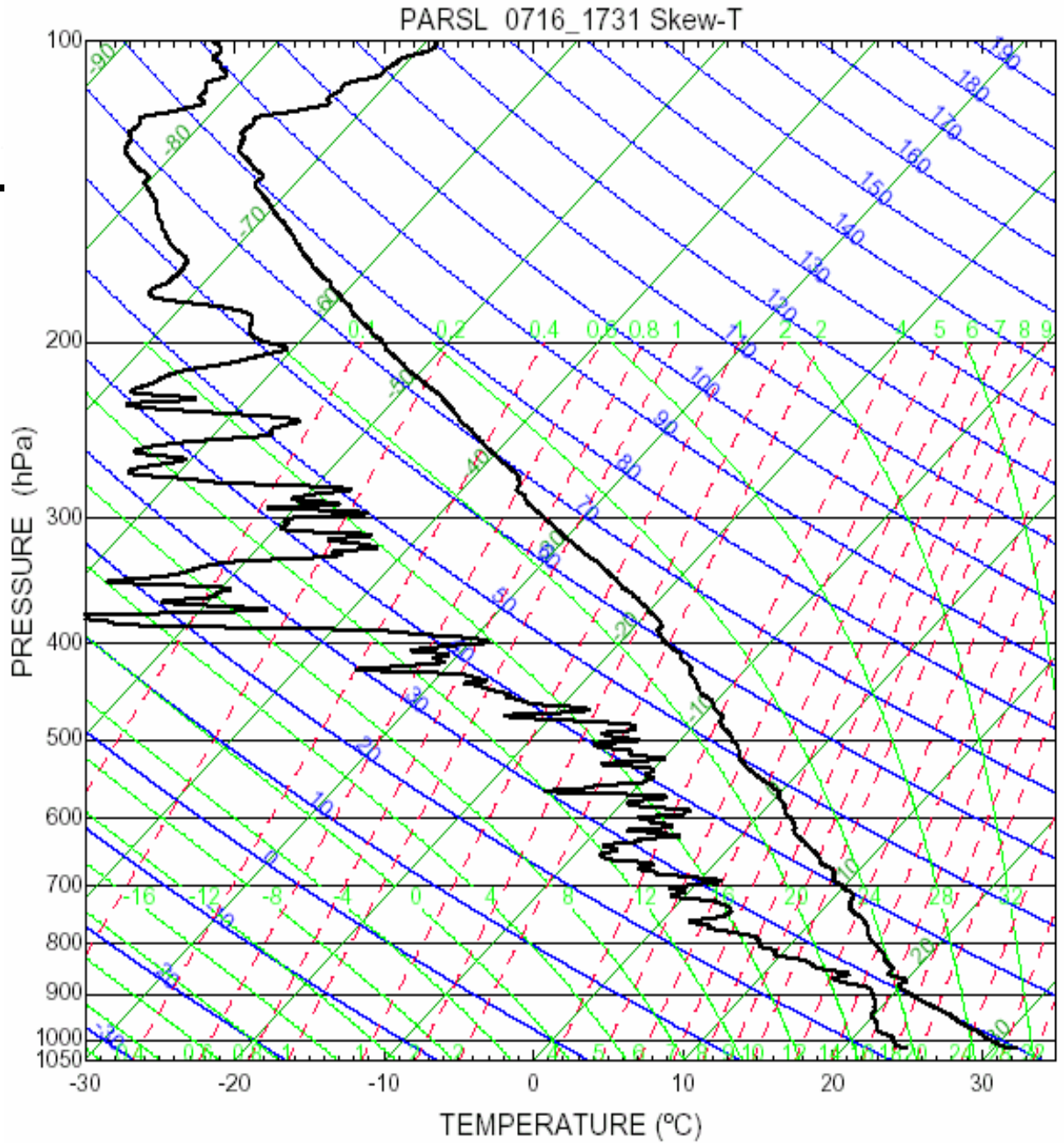

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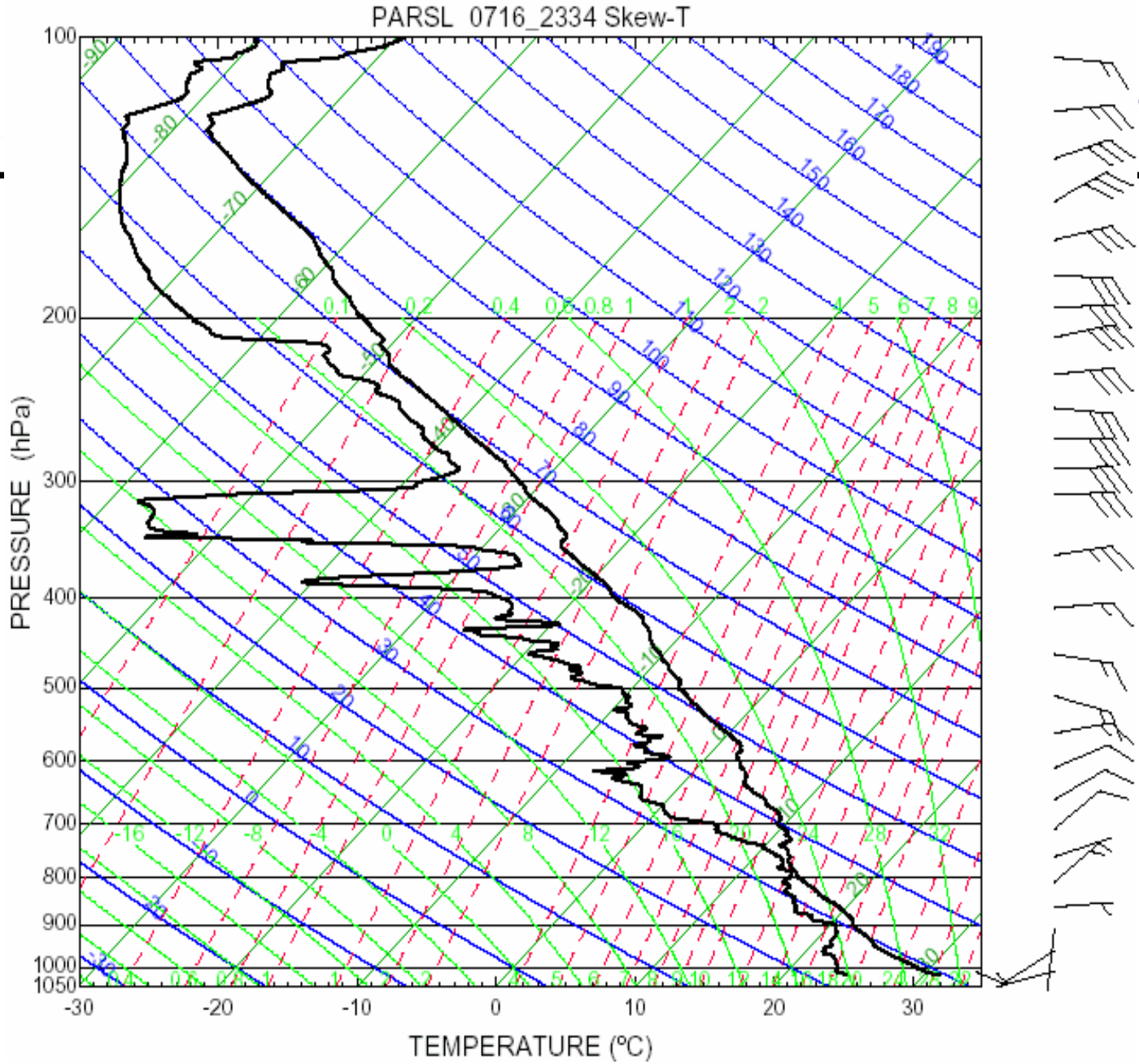

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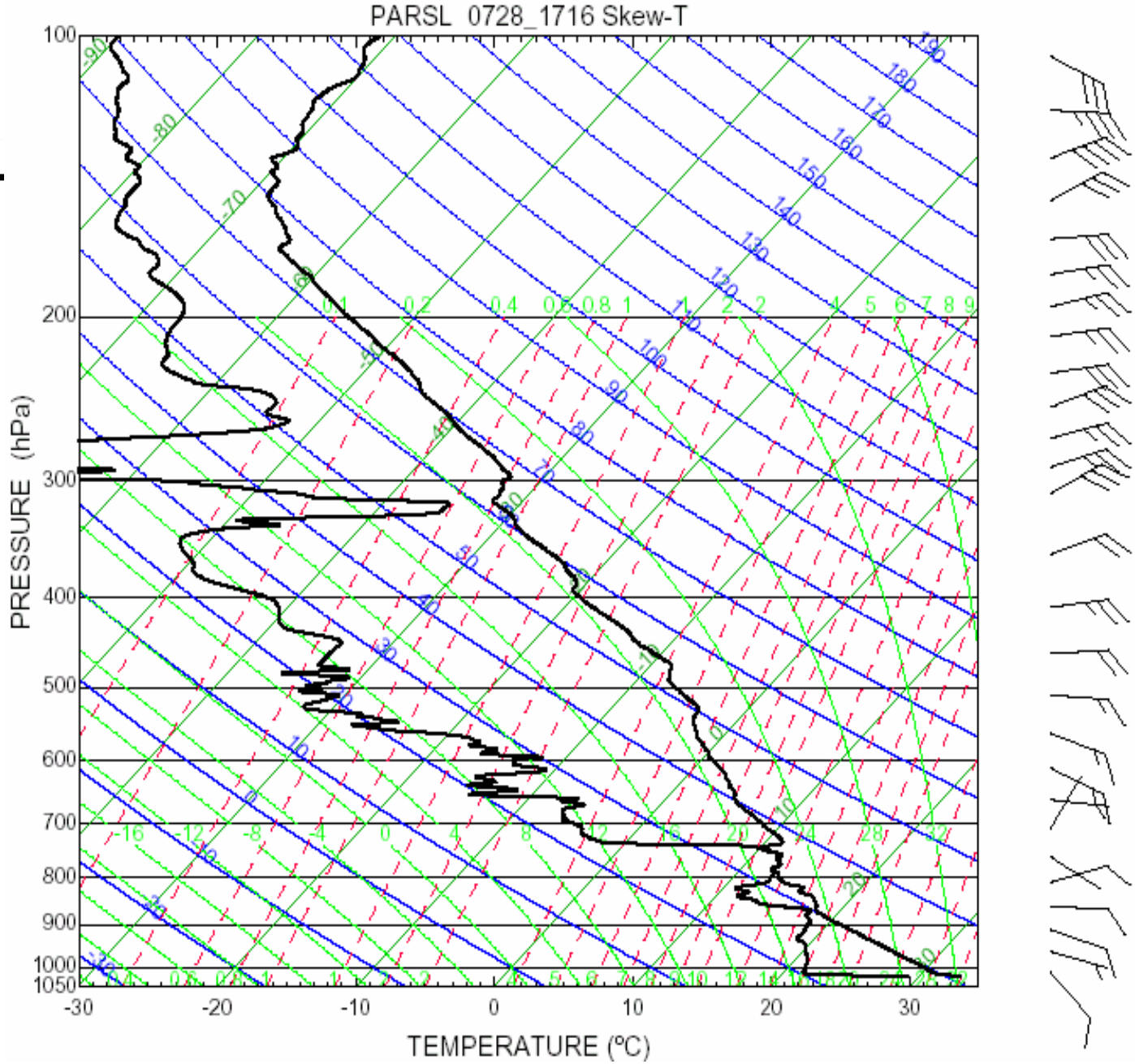

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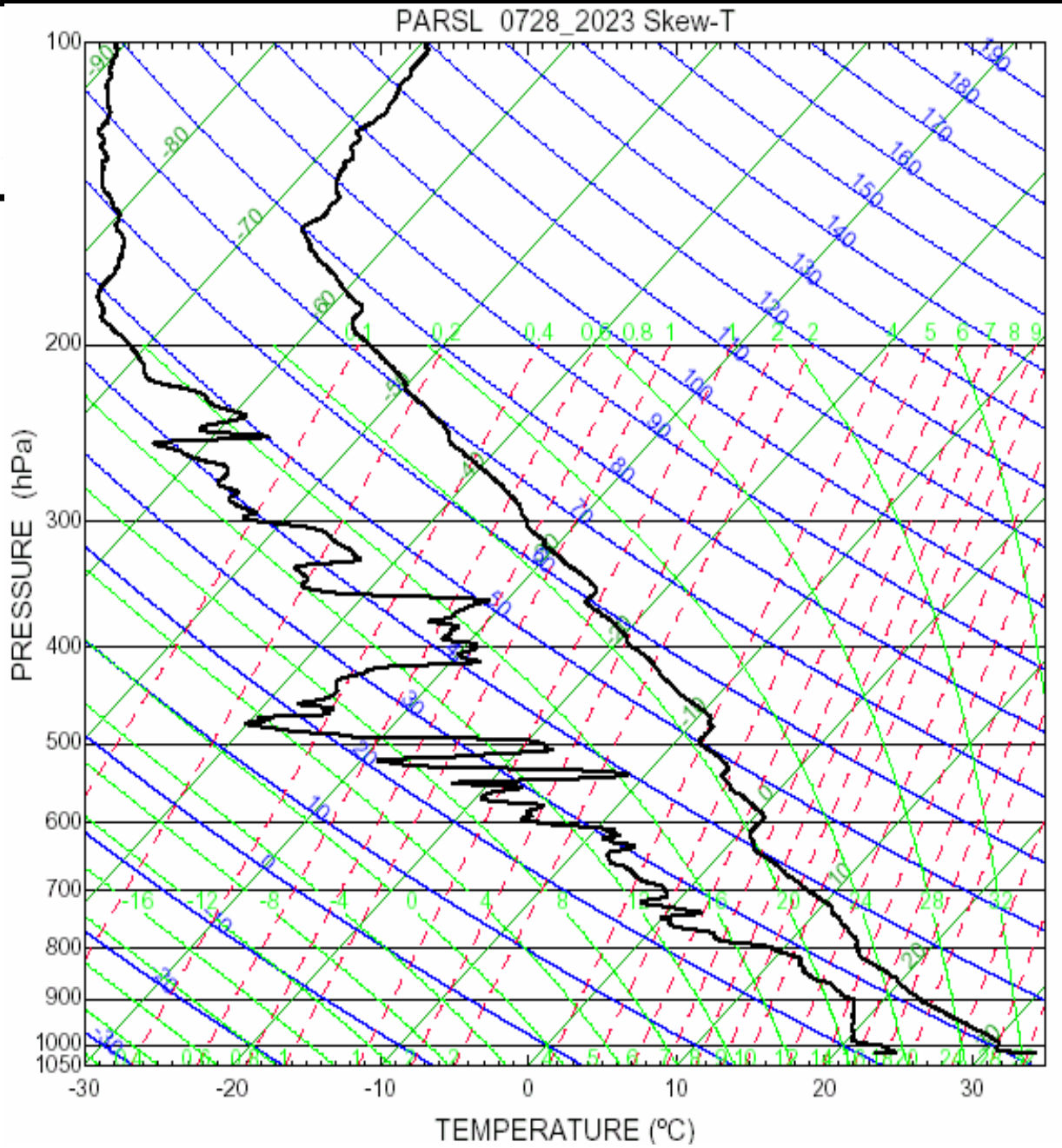

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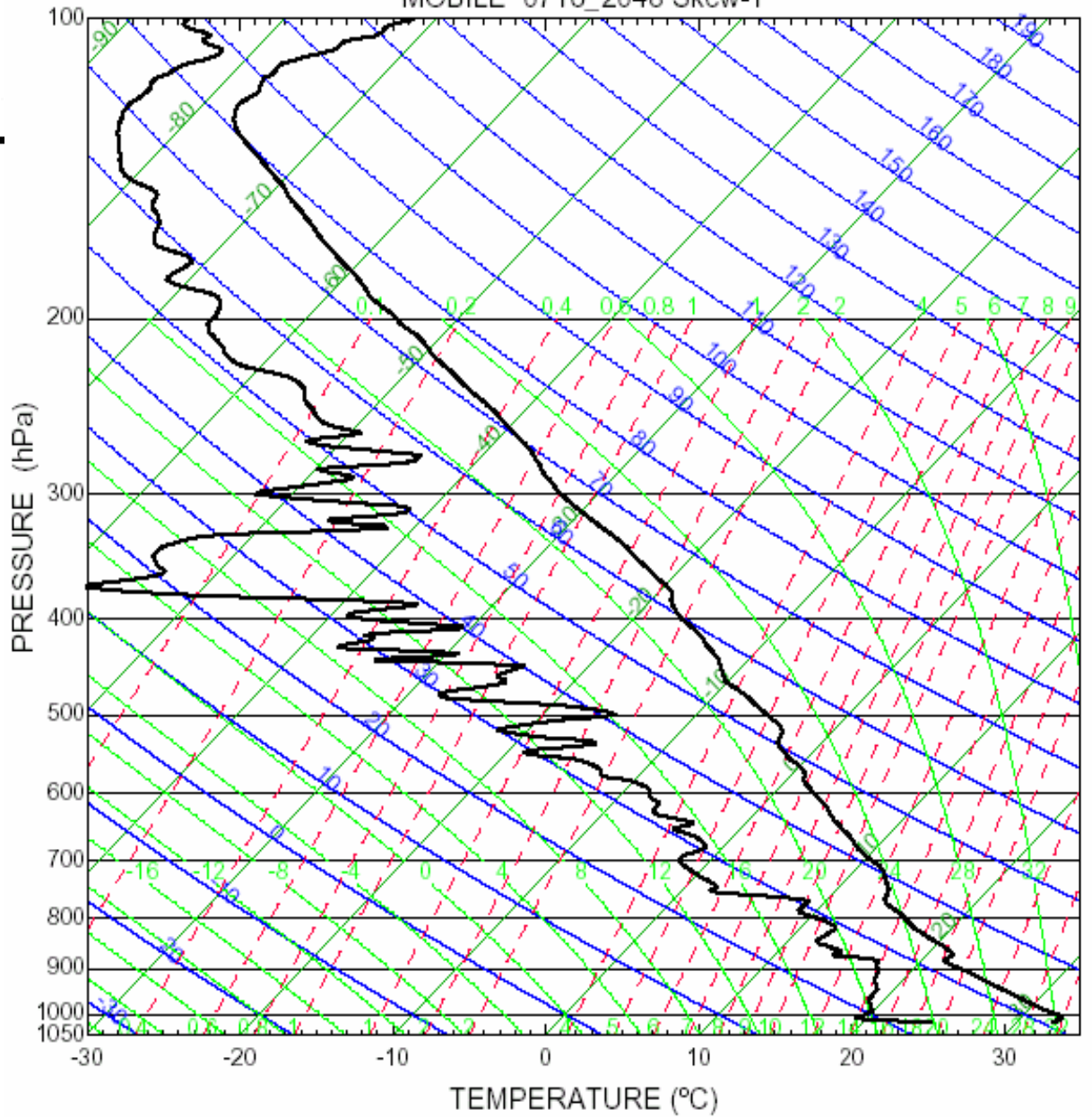

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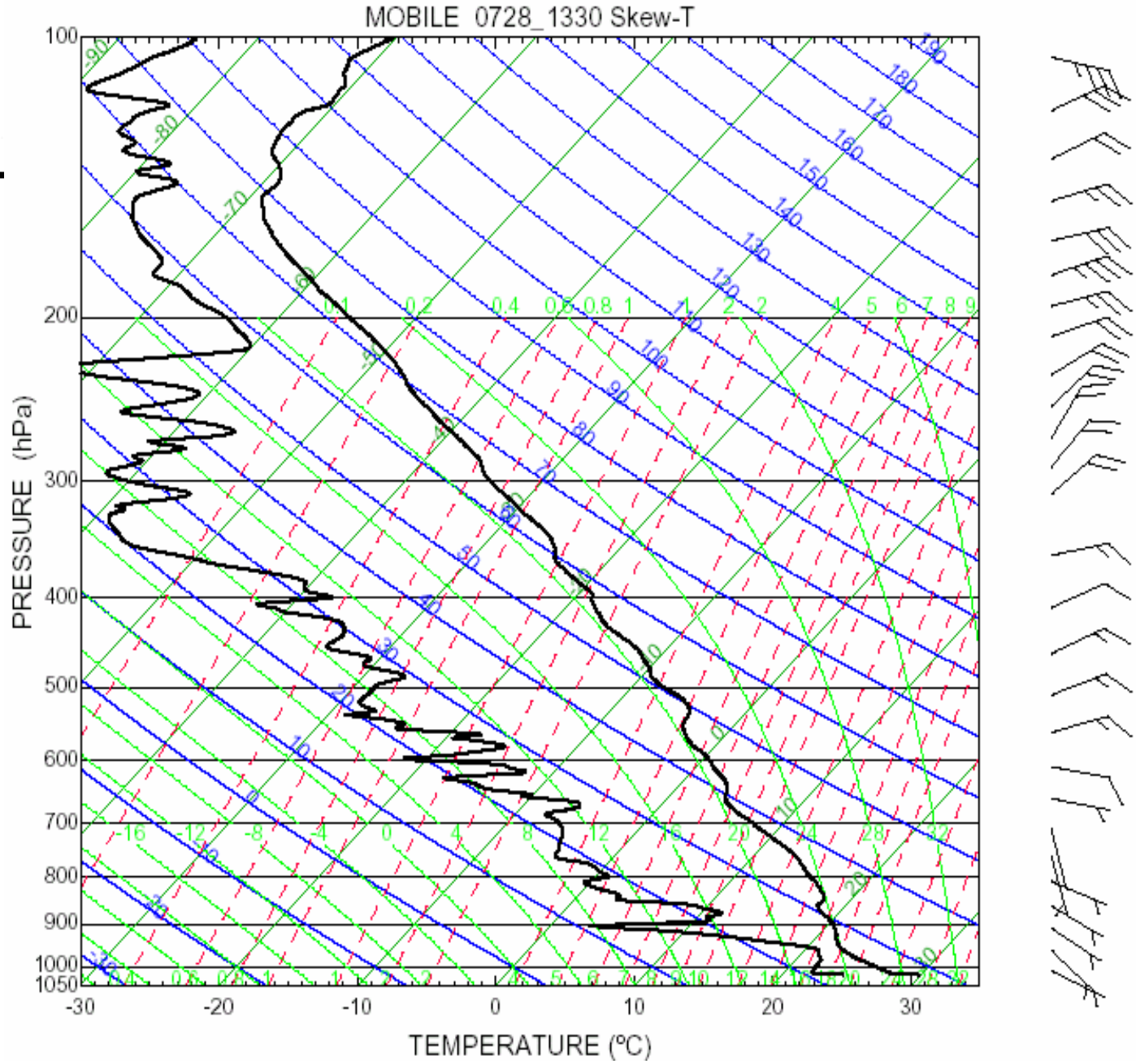

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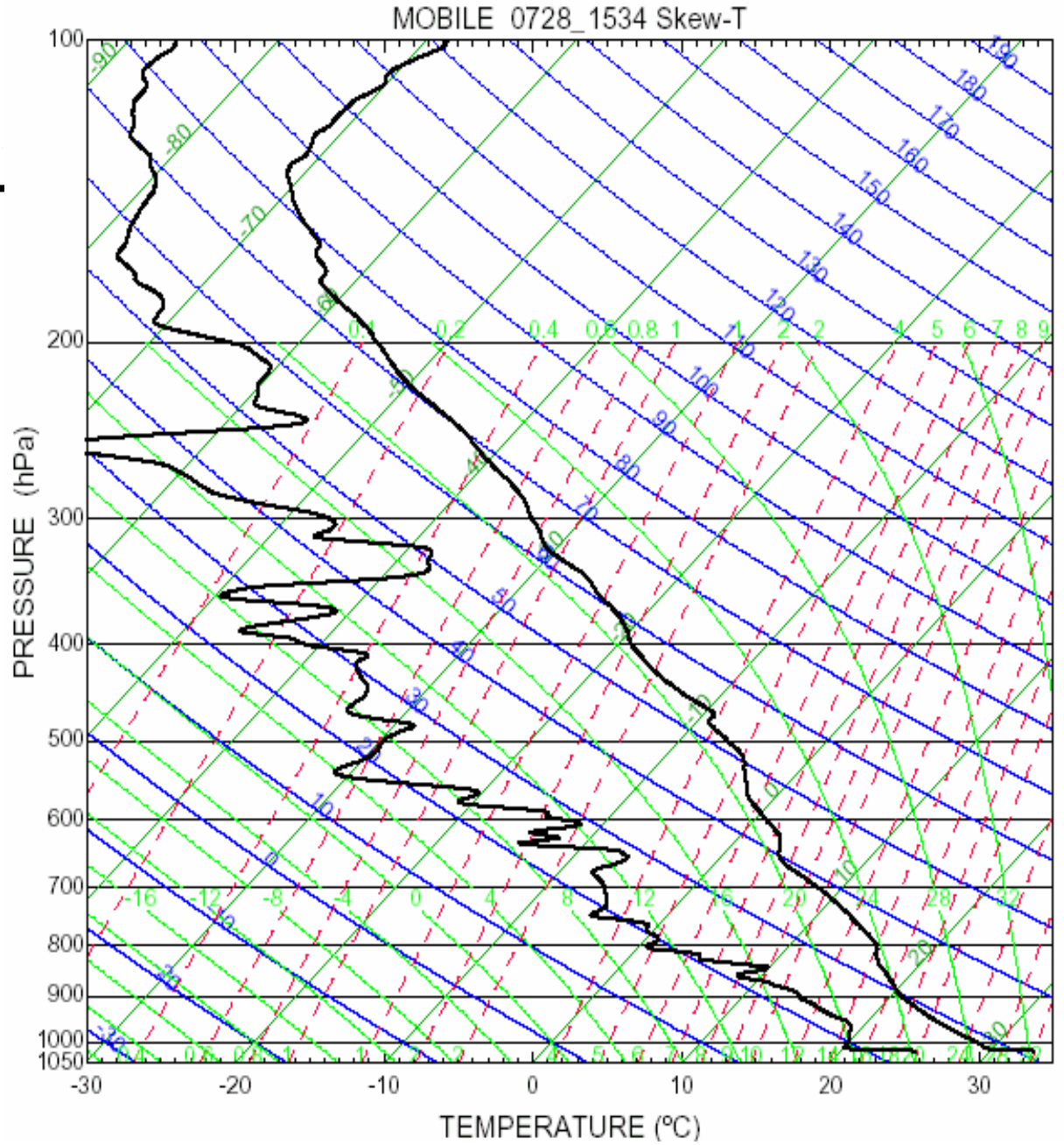

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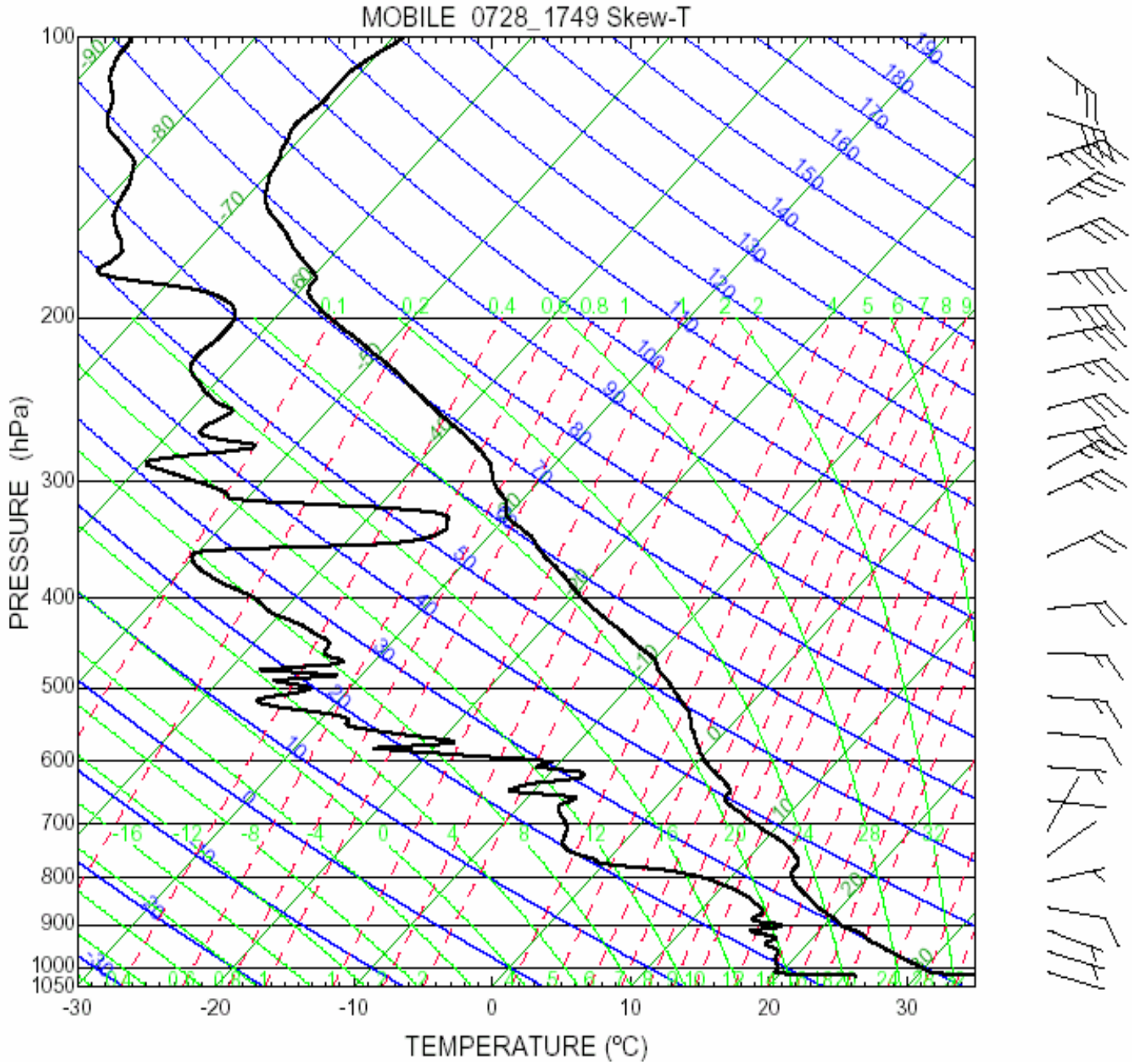

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Summary: Very Preliminary

- Both missions targeted cumulonimbus groups with ~10-20 cells
- July 16 system was smaller; one strong cell may have created most of the anvil mass
- July 28 system had several strong cells contributing to the anvil mass over a period of several hours; none lasted a very long time but there were more of them
- NPOL reflectivities are reduced ~10 dBZ during heavy rain
- Soundings are promising, more QC needed, some of the Mobile soundings may be dry-biased at low levels
- Aircraft and sounding data should be integrated for best model initialization

Next Steps

- Extensive collaboration required to integrate database!
- Should combine data from NPOL, ELDORA, EDOP to estimate mass flux in strongest cells as f(z, t)
- Should intercompare radar data from different sources; important when we compare with in situ ice particle measurements from B57F and Citation
- Should begin collaboration with modelers to assure best possible agreement on environmental conditions
- We plan to expand analysis of target storms on other dates, and compare measures of convective intensity with long term data from surface radars and TRMM