Case Study 1

due: Tuesday Feb, 25, 2003

- Information on data available is on the class web site.
- Guidelines:
  - 3 to 4 pages of text
  - All case studies are to be written in third person
  - The case studies should consist of an:
    1. Introduction
    2. Synoptic Overview
    3. Mesoscale Analysis
    4. Conclusion
  - Figures should only be used as needed. A case study is NOT a show and tell of pictures. If you include a figure you must reference the figure in your text, and reference a particular feature on that figure.
  - The bare minimum required for figures is as follows:
    - two cross sections
      - hand drawn
      - one cross section parallel to the lake effect band
      - one cross section perpendicular to the band
      - include both theta and theta-e on these cross sections
      - cross section should at a minimum go up to 500mb
      - shade in areas of saturation
      - lake location should be identified on the cross section
    - 850 mb analysis
      - hand drawn
      - consistent with your cross section
    - Surface analysis
      - hand drawn
      - must be consistent with cross sections
      - should include temperature, streamlines, fronts, pressure
    - radar or satellite image
    - snowfall total analysis
    - cloud top temperature analysis across the lake, in degrees C
  - All figures should have a caption with them. These figures should be theme orientated.
Questions to consider when writing your case study:

- **Synoptic Scale**
  - What synoptic scale features allowed the lake effect to be maintained for several days?
  - What were the inversion heights like over the region?
  - Was there any synoptic scale forcing for ascent?

- **Mesoscale**
  - How well do the radar derived storm total precipitation amounts coincide with the observed snowfall totals? If there are differences, why?
  - Was there evidence of a land breeze, if so what role did the land breeze play?
  - What caused the spatial variation in snowfall amounts?
  - What role, if any, did topography play in this event?
  - What were the cloud top temperatures like? What was the depth of the cloud? How far do you think a parcel had to travel across the lake before reaching a point of efficient snow production?