Rules of Isoplething

1. Never violate a valid data point. Only in extreme and defendable circumstances should data be omitted. Analyze for all given data.
2. Interpolate as much as possible. Allow for extreme packing of isolines if that is defendable.
3. Smooth isolines and, whenever possible, keep spacing consistent.
4. Do not analyze for what does not exist. Do not assume data.
5. There should be no features smaller than the distance between data points.
6. Isolines cannot intersect nor can they suddenly stop. Just as data is continuous, so are isolines. The exception to this is naturally at the end of a page.
7. Label all closed isolines with appropriate markings (i.e. "H" or "L") in bold and large letters. Label the maximum and minimum values with a small underline.
8. Label the ends of the lines neatly and consistently. Make sure that any abbreviations are understandable. Title the map and include time.
9. Analyze in even multiples of the interval of analysis. If the contour interval is 60 m, then the line should be divisible by 60*.
10. Remember that each line must represent all areas with the specified value. On one side of the line, values will be lower than the value on the line, and on the other side, values will be higher.
11. Use a good pencil and initially sketch lines lightly. If needed, make them smooth by darkening the lines after you know where they should be placed.
12. Have a good eraser handy.
13. Start with a line that gives you a good understanding of what is happening. This may be in the middle or near the extremes. Use this line as a guide to draw the rest of the isolines.
14. When the lines become tricky to draw, consider all the alternatives. There may be a better way to draw the analysis.
15. Remember that the data is only a reflection of the actual atmosphere!

* Good starting points: 250 mb – 032 (10320 m) or 062 (10620 m); 500 mb – 540 (5400 m) or 570 (5700 m); 700 mb – 000 (3000 m); 850 – 150 (1500 m)

Severe Weather Lab Procedures

Time	Map	Instructions
45-60 mins	Hourly surface analysis	Isotherms every 5° in red lines. Isodrosotherms every 5° in dashed green. Isobars every 4mb in solid black. Locate fronts and other significant surface features.
15 mins	250 mb	Isoheights every 60 meters in solid black. Isotachs in 20 knot increments starting after 30kts (50 or 70 where appropriate.) Shade in areas greater than 50 (or 70) kts.
15 mins	500 mb	Isoheights every 60 meters in solid black. Isotherms every 4°C in red. 12-hours height changes in dashed blue lines in 30-meter intervals.
15 mins	700 mb	Isoheights every 30 meters in solid black. Isotherms every 2°C in red. Mark in significant dry air intrusions.
15 mins	850 mb	Isoheights every 30 meters in solid black. Isotherms every 2°C in red. Isodrosotherms every 5°C in green. Identify important boundaries.
10 mins	925	Isodrosotherms every 5°C. Plot out 700-500mb delta-T's on each station.
10 mins	Other	Check radar and satellite information and other objectively analyzed maps.
10 mins	Composite	Complete a composite map.
30 mins	Other	Look at morning upper-air soundings in detail. Adjust surface parameters accordingly. Look at radar and satellite images.
20 mins	Severe Weather Outlook	A la SPC, outline a risk of severe and general thunderstorms. Write a brief group discussion. Then pick a county for your severe weather pick. You must have 3 outlooks completed.
30 mins	Forecast maps	You may check the validity of forecasts. Be aware of where certain parameters are different than the analysis.

Create a Composite Map

Level	Instructions
250 mb	Mark any significant jets in purple. Include areas of strong divergence.
500 mb	Mark any significant jets in blue. Include closed lows in open red letters and label 500 mb with an "H5".
700 mb	Mark any significant jets in brown. Include closed lows in open red letters and label 700mb with an "H7". Draw the 6°, 8°, 10°, 12° and 14° isotherms in brown and hatch regions greater than 12°.
850 mb	Mark any significant jets in red. Include closed lows in open red letters and label 850mb with an "H8". Contour the 0° isotherm in dashed blue. Draw in the 10°, 15°, 20° isodrosotherms in dashed green. Identify the thermal axis in red filled circles.
925 mb	Mark in significant moisture axis in green dots. Use 850 mb in the higher terrain.
700-500 mb	Draw in black dashed line, the 16°, 20° and 24° isotherms of the 700-500mb lapse rates.
Surface	Label in closed letters the surface highs and lows. Include max and min values. Draw in easily identifiable fronts and other surface features. Contour the 50° 60° and 70° isodrosotherms and use as a basis to draw in the low-level moisture axis in dark green filled circles.
First guess	In orange, outline an area that might be favorable for severe weather.

Nowcasting

Nowcasting includes monitoring severe weather warnings and reports, monitoring current information such as satellite and radar and doing surface analyses. Nowcasting must take place during and immediately prior to a severe weather event.