Hand Analysis Reference Guide

250 and/or 300 mb:

- Wind speeds
  - Start at 100 kt and contour in 25 kt intervals
  - Solid blue lines; shades of blue and purple for shading

- Streamlines
  - Drawn as long arrows following the wind
  - More streamlines where winds are faster and fewer where the wind is slower

- At 250 mb:
  - Height is encoded by dropping the leading 1 and trailing 0
    - A value of 080 is 10,800 m
- At 300 mb:
  - Height is encoded by dropping the last 0
    - A value of 912 is 9,120 m

Hand Analysis Reference Guide

500 mb:

- Heights
  - Height is in decameters (dm) → 540 dm = 5400 m
  - Start at 540 or 570 dm and contour up and down in 6 dm intervals
    - Contour 528, 534, 540, 546, 552, etc.
  - Solid lines in a neutral shade (such as black)

- Wind speeds
  - Start at 50 kt; contour up in 20 kt intervals
  - Shade in wind speeds greater than 70 kt
  - Solid blue lines for contours, shades of blue and purple for shading

- Height rises
  - Start at 3 dm, contour up every 3 dm
  - Dashed yellow or orange
- Height falls
  - Start at -3 dm and contour down every 3 dm
  - Dashed purple or blue

Hand Analysis Reference Guide

700 mb:

- Heights
  - Start at 120 and contour in intervals of 30 m
  - Decoding height on SPC upper-air maps:
    - If the first digit is 0-4: leading 3 was dropped
      - A value of 120 is 3120 m
    - If the first digit is 5-9: leading 2 was dropped
      - A value of 970 is 2970 m
  - Solid lines in a neutral shade (such as black)

- Temperatures
  - Contour at 0°C
  - Contour at 10°C, and every 2°C upward
  - Contour at -10°C and every 2°C downward
  - Dashed lines
  - Purple for 0°C, red for 10°C and up, blue for -10°C and down
  - Shade from -10°C to -14°C to highlight the dendritic growth zone
  - Elevated mixed layer: warm temperatures (>12°C) and large dew point depressions
  - Analyze moist or dry pockets via dew point depression

- 700-500 mb lapse rate
  - Calculate ΔT: difference of the 700 and 500 mb temperatures at an observation site; pencil it in on the 700 mb map
  - Start at 20°C, contour every 2°C upward
  - Solid yellow or orange lines

Hand Analysis Reference Guide

850 mb:

- Heights
  - Start at 500 and contour in intervals of 30 m
  - Decoding height on SPC upper-air maps:
    - Leading 1 is dropped
      - A value of 500 is 1500 m
  - Solid lines in a neutral shade (such as black)

- Temperatures
  - Start at 0°C and contour in intervals of 5°C
  - Dashed lines
  - Purple for 0°C, red > 0°C, and blue < 0°C

- Wind speed
  - Analyze at 35 kt
  - Contour and shade using a color like orange or purple

- Dew point
  - Warm season:
    - Start at 8°C; contour up every 4°C
  - Cool season:
    - Start at 0°C; contour up every 4°C
    - Can also analyze dewpoint depressions < 6°C
  - Transition seasons:
    - Contour at 0°C; start at 8°C and contour up every 4°C
  - Dashed green lines

Hand Analysis Reference Guide

Surface

- Pressure
  - Start at 1000.0 mb; contour every 4 mb
  - Decoding pressure on SPC maps:
    - If the first digit is 0-4: leading 10 was dropped
      - Value of 046 is 1004.6 mb
    - If the first digit is 5-9: leading 9 was dropped
      - Value of 960 is 996.0 mb
  - Solid lines in a neutral shade (such as black)

- Temperatures
  - Every 10°F starting with 0°F
  - Dashed red lines

- Dewpoint
  - Every 10°F starting with 0°F
  - Dashed green lines

- Pressure change/tendency
  - Contour every 1 mb, starting at 0
    - Pressure tendency is in tenths of mb: -11 is -1.1 mb
  - Pressure rises:
    - Solid lines, color such as orange or yellow
  - Pressure falls:
    - Dashed lines, color such as blue or purple

Hand Analysis Reference Guide

Features to Analyze

This is a list of features to look for on any of your analyzed maps, with recommendations for how to draw them.

H High pressure: Blue, block ‘H’

L Low pressure: Red, block ‘L’

Ridge axis: Blue zigzag through the axis of the ridge

Trough axis: Brown dashed line through the axis of the trough

Hand Analysis Reference Guide

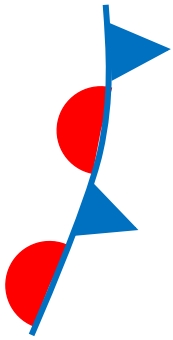
Features to Analyze

This is a list of features to look for on any of your analyzed maps, with recommendations for how to draw them.

Cold front: Blue triangles pointing toward the direction of motion

Dryline: Scallops on the moist side

Warm front: Red half-circles pointing toward the direction of motion



Stationary front: Alternating half circles and triangles, facing opposite directions

Occluded front: Alternating half circles and triangles pointing toward the direction of motion

Outflow boundary: dashed line, sometimes alternating dashed-dot line (black, blue, or brown)

Hand Analysis Reference Guide

Features to Analyze

This is a list of features to look for on any of your analyzed maps, with recommendations for how to draw them.

Decoding a station plot: