



July 11, 2007 Flash Flooding in Central Vermont



Jessica A. Neiles

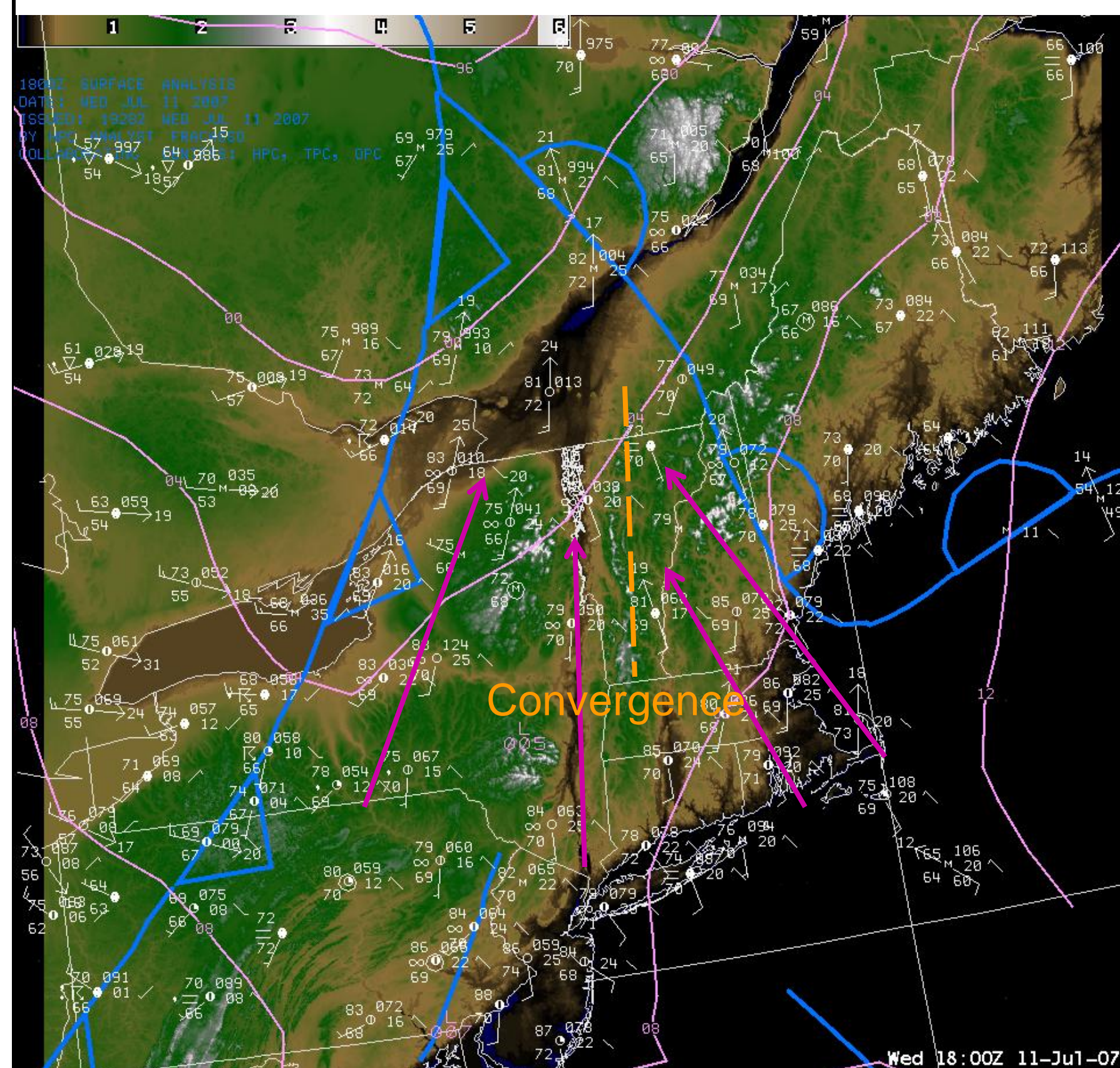
NOAA/National Weather Service - Burlington, VT

INTRODUCTION:

- A slow-moving cold front crossed the region
- Training thunderstorms with torrential rainfall caused flooding, especially across the higher terrain of the Green Mountains.
- Rainfall rates of 3 inches per hour yielded flooding downstream of most persistent training storms.
- Most devastating damage was in downtown Barre where up to 4 feet of standing water affected the downtown area.
- Several homes were a total loss along with numerous roads and a bridge washed away.

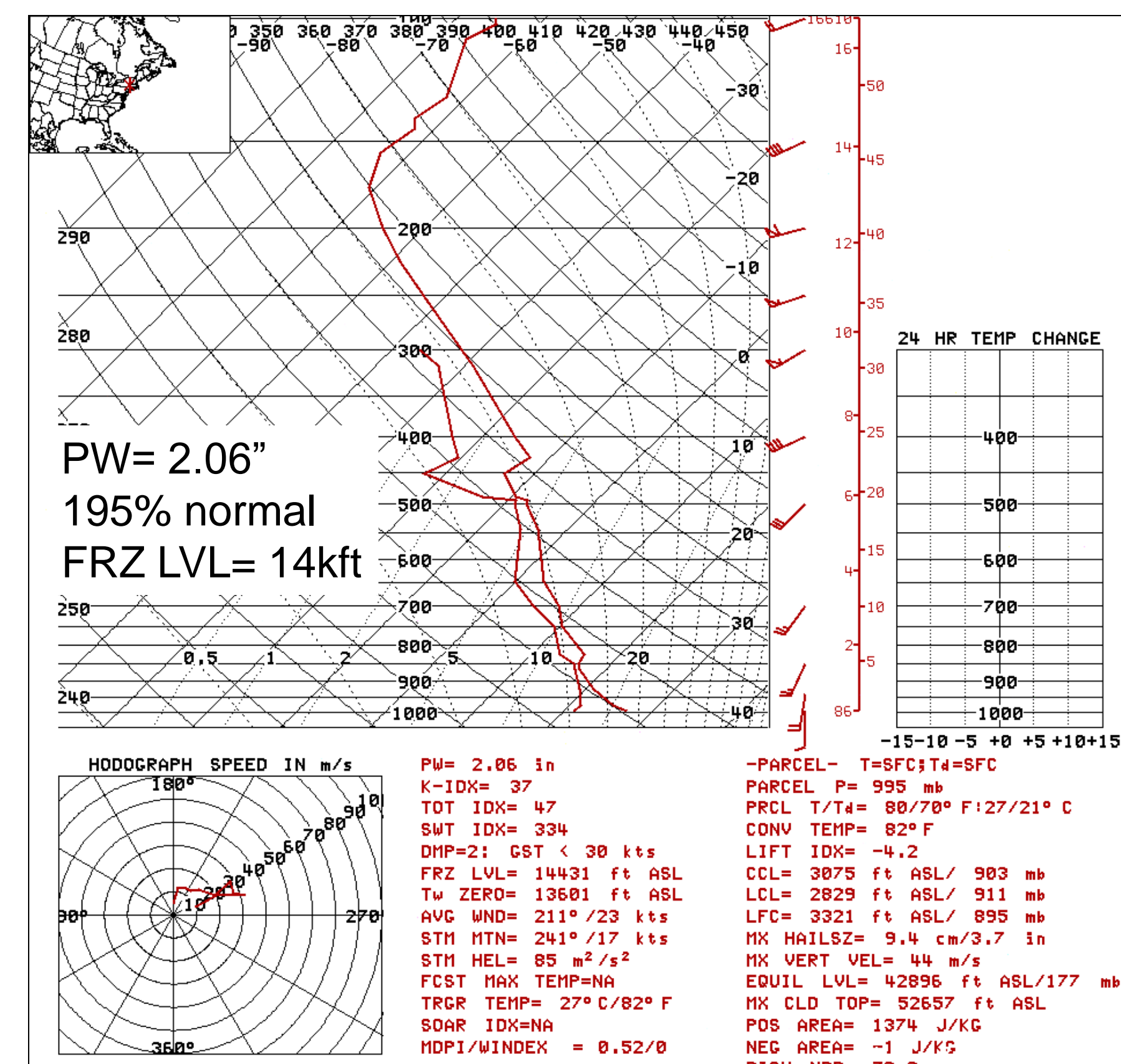
METHODS AND DATA:

SURFACE ANALYSIS:



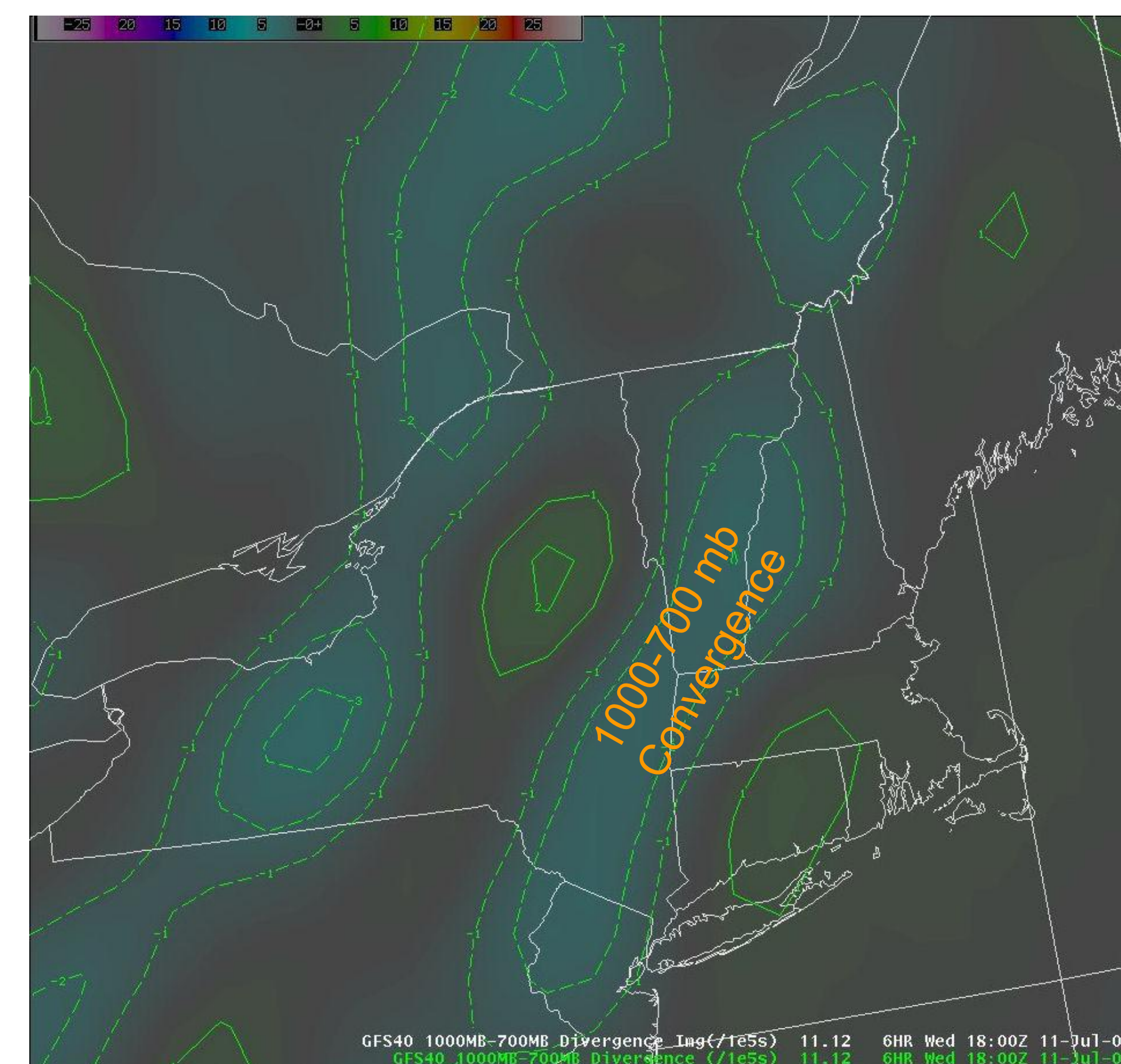
- NY/New England region in warm sector
- Approaching surface cold front.
- Confluent flow present at the surface.
- Very humid with dewpoints in the lower 70's.
- Surface to mid-level airmass convergence along and just east of the Green Mountains.
- South-southeasterly upslope flow off the Atlantic abutted against southwesterly flow ahead of the surface front.
- Orange line indicates axis of convergence.
- Thunderstorms quickly developed during midday within the axis of instability, pooled moisture, and convergence.
- This axis of convergence remained nearly stationary for almost six hours.

UPPER AIR DATA:



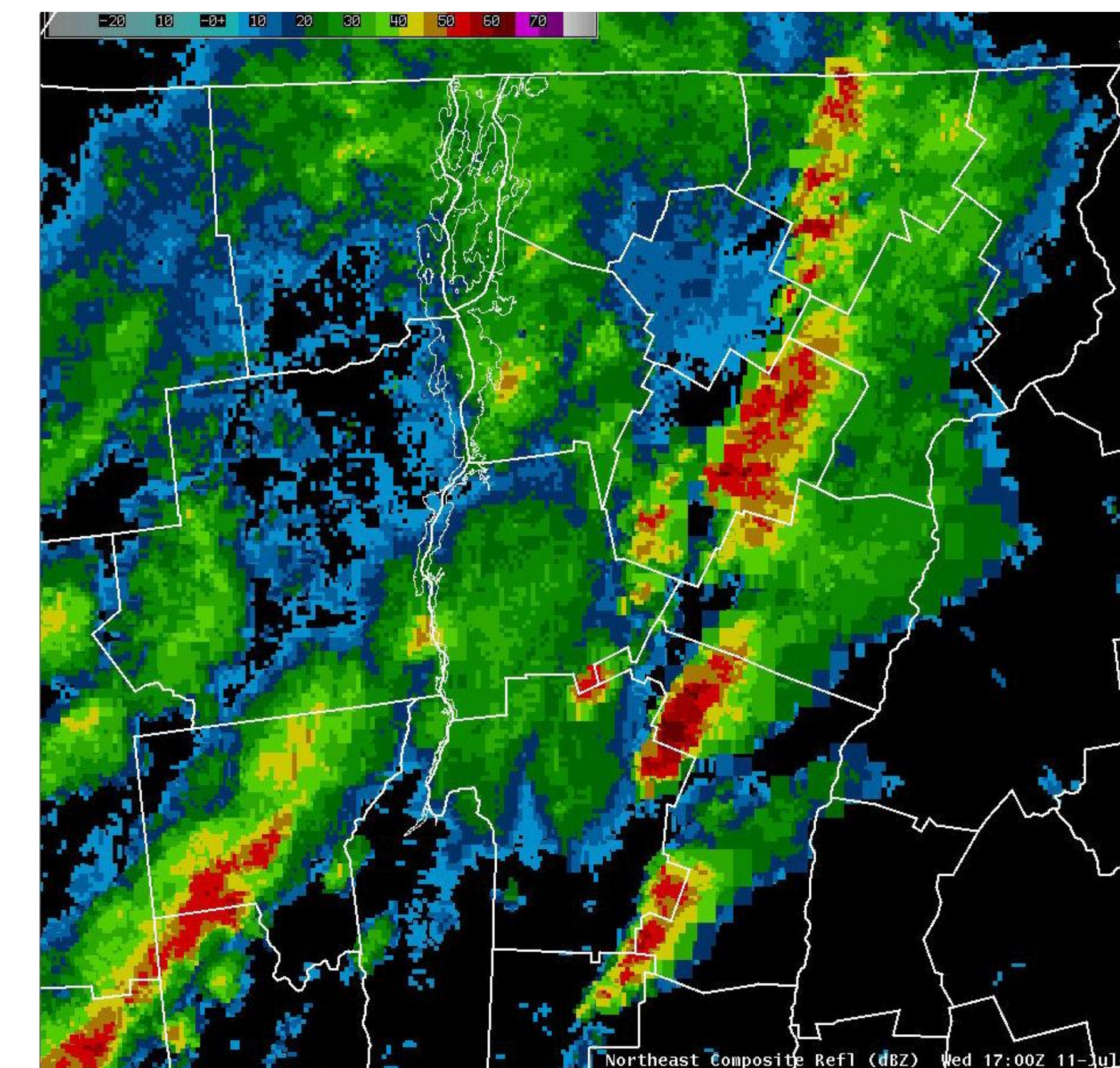
- 18z sounding at Albany, NY (ALY)
- Abnormally high precipitable water and freezing level imply warm air precipitation processes.

MODEL DATA:



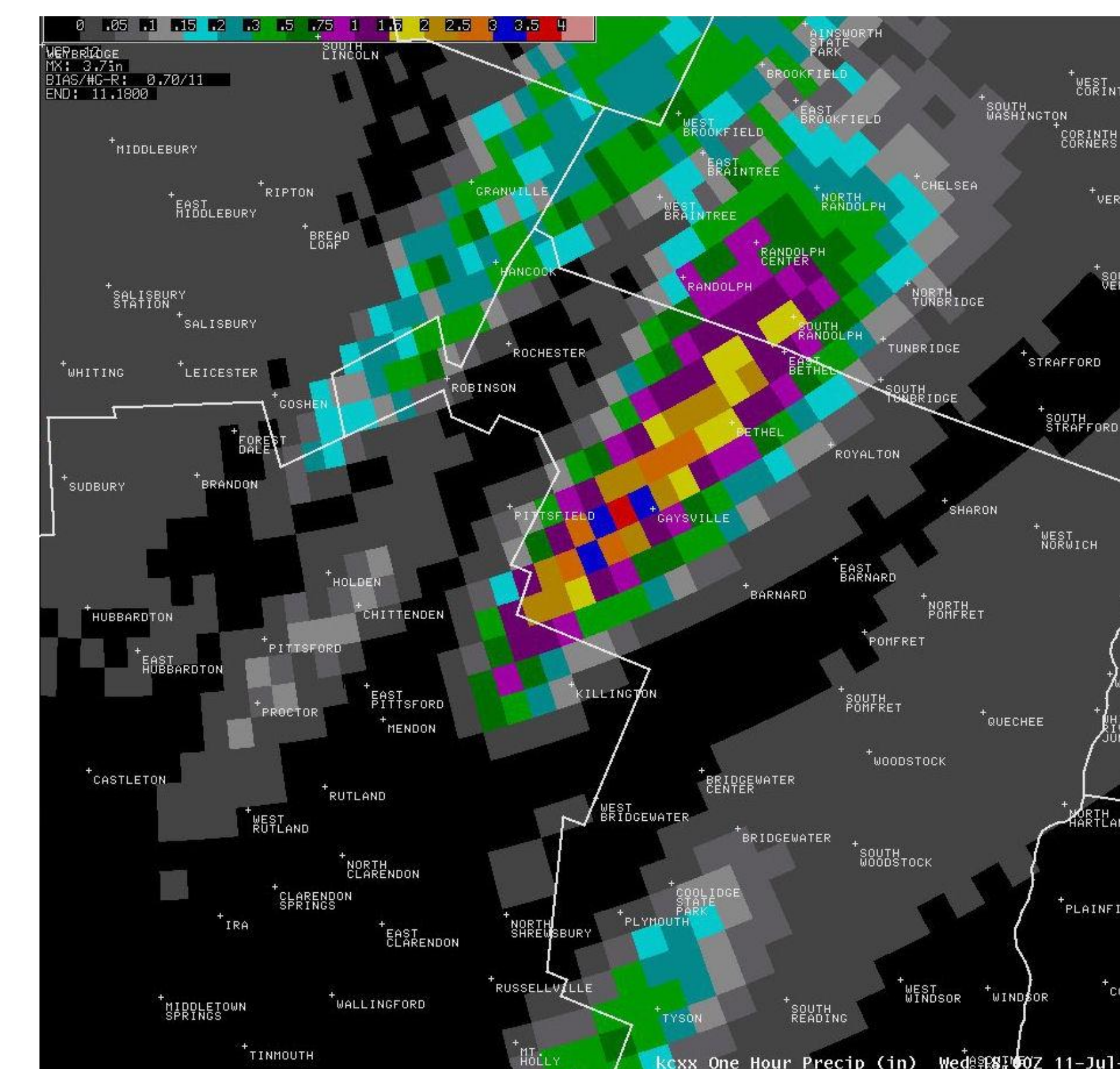
- 12z GFS indicated 1000-700 mb convergence at 18z.
- Convergence was coincident with lift and thunderstorms rapidly developed.
- GFS indicated a faster moving cold front with one line of strong storms with frontal passage.

COMPOSITE REFLECTIVITY:



- Flash Flood Watch was issued around 1pm LST.
- Storm motion was around 15 mph towards the north-northeast, causing training of thunderstorms along the eastern slopes of the Green Mountains.

ONE HOUR PRECIPITATION ESTIMATES:



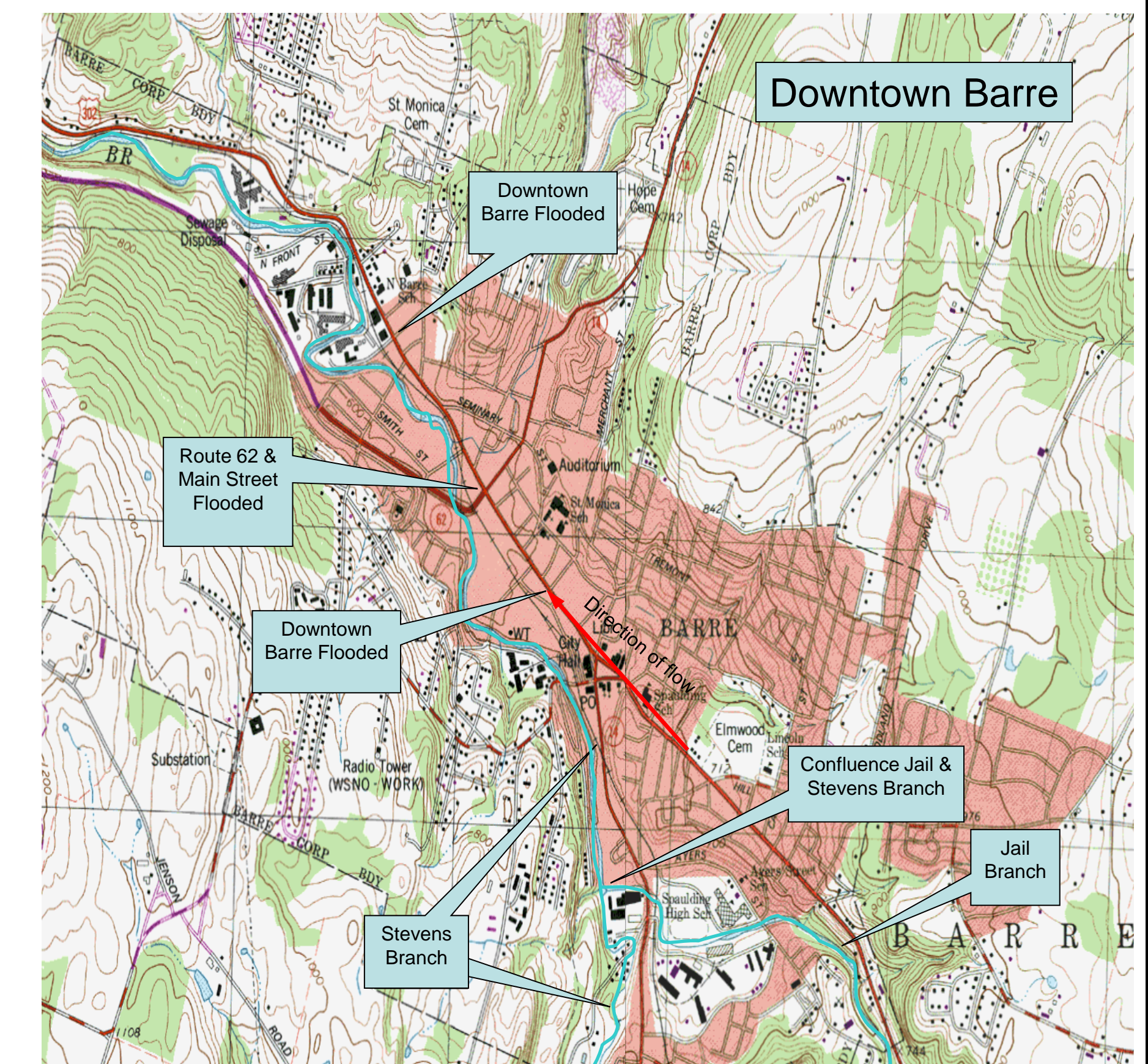
- One hour precipitation estimations from KCXX radar near Burlington, VT from 17-18z.
- Rainfall amounts in excess of three inches had occurred near Gaysville, VT.
- Randolph, VT reported almost five inches of rain.

DAMAGE:



- One of the hardest hit areas in East Barre

AREA AFFECTED:



- A local state of emergency was declared in Barre, VT following this event.

CONCLUSIONS:

- Favorable synoptic pattern with low to mid level convergence and moist upslope flow provided lift.
- Training thunderstorms over higher terrain caused devastating flooding downstream.
- FEMA declared the hardest hit areas eligible for federal disaster assistance.
- \$1.5 million damage was reported in Barre alone.