

The Harmless Supercell of July 12, 2001

Matt Fugazzi

During the evening of July 12, 2001 scattered thunderstorms formed over the Owyhees and moved out over the Treasure Valley. One of these cells displayed clear supercell characteristics as it tracked between Boise and Mountain Home. While no radar images or other hard data was saved, while tracking this cell on radar I kept a detailed log of the features on paper. The synoptic situation is reconstructed from my forecast shift record the day before.

While the storm did not run over any spotters, it was observed by a number spotters in the Mountain Home area from a distance of 8 to 12 miles. Other than a rain shaft and a rain free wall cloud (apparently non-rotating), no spotters reported anything alarming, and no strong winds were reported radiating out from this storm, even from the spotters who were probably run over by the radar identifiable Rear Flank Downdraft. This storm may have produced severe weather, but nobody was in the path to witness it until it crossed I-84.

The storm crossed I-84 only a few miles from the Boise Stage Stop. Nothing remarkable occurred at the Stage Stop and there were no reports of problems as the storm crossed I-84. The cell fell apart soon after this. In the interest of science here is a summary of my radar observations which may help with warning decisions in the future.

Storm environment...

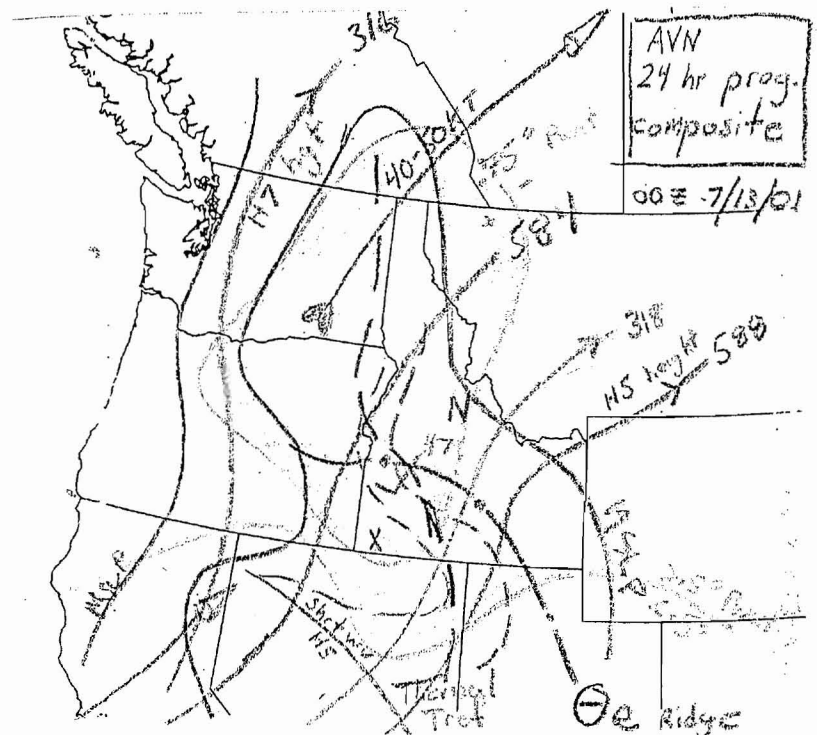
AM Convective Checklist BOI modified sounding...

CAPE = 1350 J/Kg

0- 6 Km Shear = 45 Kt

Synoptic situation based on 24 hour AVN model forecast (00Z 7/12 run)...

- ...Surface thermal trough.
- ...low level Theta e ridge.
- ...H500 PVA on southerly flow.
- ...short wave in southerly flow possibly negatively tilted.
- ...region under divergent entrance region of jet max, possibly in favorable region of 2 jets.



Radar identified Supercell characteristics...

- ...Low level hook echo
- ...Mid level pulsing BWER
- ...RFD flanking line feature
- ...Well defined low level velocity inflow region with cyclonic convergence
- ...Deep rotation (at least 10Kft, some scans over 15 Kft deep)
- ...Persistent rotation(at least 50 minutes)
- ...40-45 Kft echo top
- ...Right moving

Radar indications of only marginal severe weather potential...

- ...Rotation was minimal mesocyclone strength according to the OSF Meso Recognition Chart.
- ...Reflectivity signature was rather weak, with the general arrowhead/kidney bean shape of the cell composed of 30 to 45 dBz pixels with only a small core of strong reflectivity, seldom exceeding 60 dBz .
- ...VIL stayed in the 25 to 30Kg/m range through most of the cells life. As the cell collapsed The VIL pulsed up to 45 to 50 Kg/m, but this was after the cell had already lost it's supercell characteristics.
- ...A clear RFD was identifiable on the velocity 0.5 cut, but no significant radial velocities were apparent behind the RFD, only up to the 15 to 25 kt, with a few 35 kt color code pixels.

Storm top divergence was unavailable due to the closeness to the radar of the cell (cone of silence).

Sequence of events from radar observation notes...

This cell began south of Grandview probably around 6pm. Valarie, the lead at the time, reported in the new log that several cells were forming in this region with a TVS alarm noted from one of them. A Nowcast was issued for these storms.

At 6:30 from my Columbia Village apartment I saw what appeared to be a wall cloud on the southeast flank of one of these storms. A call to Val at the office confirmed that the cell was rotating at that time. Val and Jeanne noted some lowering cloud bases on other cells in the vicinity.

At 7:10 I arrived at the office and assumed the radar watch. VM showed me a velocity cross section indicating deep but weak rotation on the cell in question. At 7:10 the storm was between Grandview and Bruneau. The 0110Z volume scan clearly showed a hook echo on the 0.5 slice, and a BWER on the 2.4 slice.

By 7:15 the BWER disappeared into a simple WER, the storm was right moving and a minimal mesocyclone was apparent from 14Kft to 33Kft, with echo tops 40 to 45 Kft. At this time reflectivity was rather weak with a core in the 45 to 50 dBz range.

At 7:30 (the 0130Z scan) the BWER returned. The low level hook signature was ill defined by this time, but on the 0.5 base velocity cut there was very clear inbound wedge in the 15 to 25 kt color funneling into the inflow region of the storm, surrounded by outbound opposing flow of the 15 to 25 kt color code range. On reflectivity a classic RFD flanking line signature was observed at the nose of the aforementioned outbound velocity region approaching MUO. At this time VIL was 25 to 30Kg with max reflectivity increasing to a small region of 65 dBz.

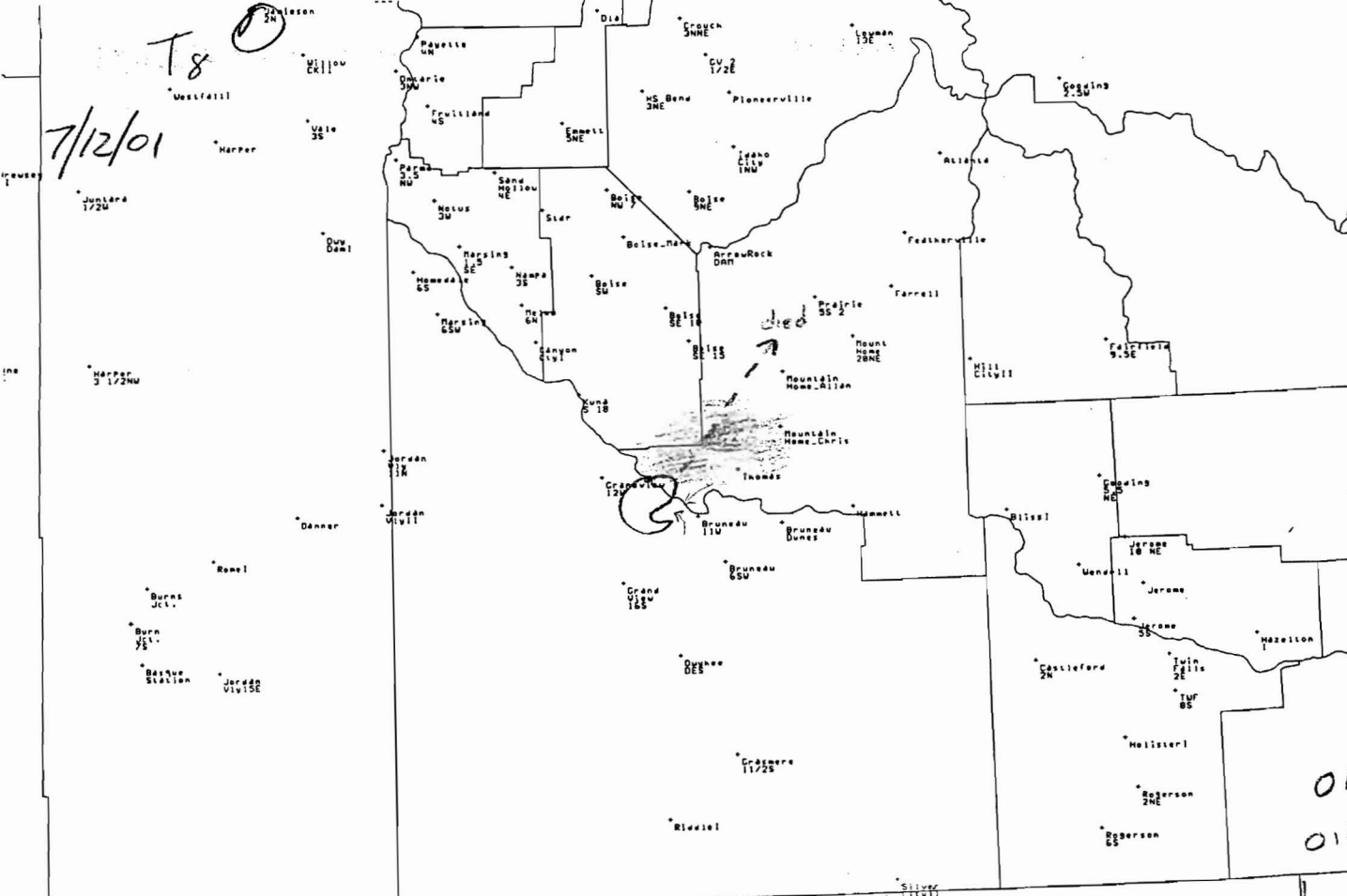
By 7:45 the BWER had once again turned into a simple WER. Deep minimal meso rotation continued.

At 7:55 the cell crossed I-84. Deep minimal meso rotation persisted, but the WER had devolved into a simple overhang. VIL was 25 to 30 Kg. Max reflectivity was 55 to 60 dBz. Echo top was 35 to 40 Kft.

After crossing I-84 the cell began to fall apart. By 0210Z the identifiable meso had disappeared. There was a short period of 45 to 50Kg/m VIL during this volume scan. By the 0220Z scan no supercell indications remained.

7/12/01

T8



0115 - overhang/wer
NS MIN MESO @ 20 kft
right movg

0120 - wer,
MIN MESO 14 kft 2kt
thru 23 kft
detat to 33 kft

0125 - overhang,
MIN MESO 20-30 kft
25 v1 40-45 top

0130 ~~key overhang~~
not cab RFD and sty
inflow on .5" slice
MIN MESO, 11k-27kft
65 dbz BWER

0135 MIN MESO, BWER
- AWIPS crash -

0145 - wer min meso
0150 - overhang, weak rotation
crossed 184 at best

0155 25-30 v1 35-40 top
55-60 dbz

0200 - nebulous structure, kind of verticle
min meso

0205 min meso 13kft - 20kft
cycle convergence low lvt

0210 weak shear 45-50 v1

0220 supercell is dead!

0240 T8 NMalver
McDermott

70-80 KT STD
Jansen 2N - nothing yet

0250 T8 60-80 K STD

0255 T8 60-80 K STD 30-35 v1

Baker storm F8

0300 - 60-80 K STD T8

F8 - 50KT PPT -30KT
vert stack 60-65 dbz

0310 BRE cnty 25-40 v1 60-65 dbz 35-40KT
← 40-50 → 25 @ 60-70 std

25
30