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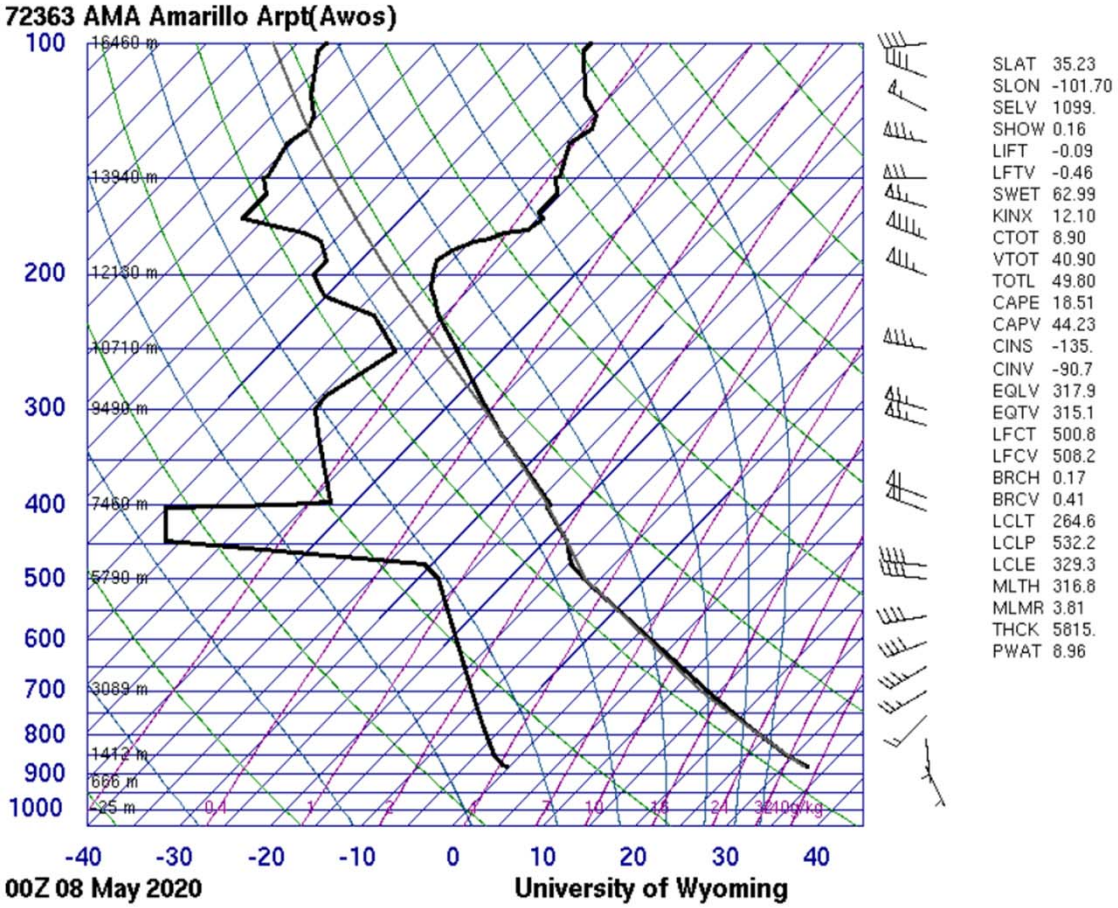
# For NWSFO Amarillo
# May 7, 2020 – Elevated, Short-Lived, Lightning Producing Storm Near Pantex

**Steve Kersh**
*Meteorologist – Electromagnetics Group, Facility Engineering*

August 20, 2020

# Meteorological Setup for May 7, 2020



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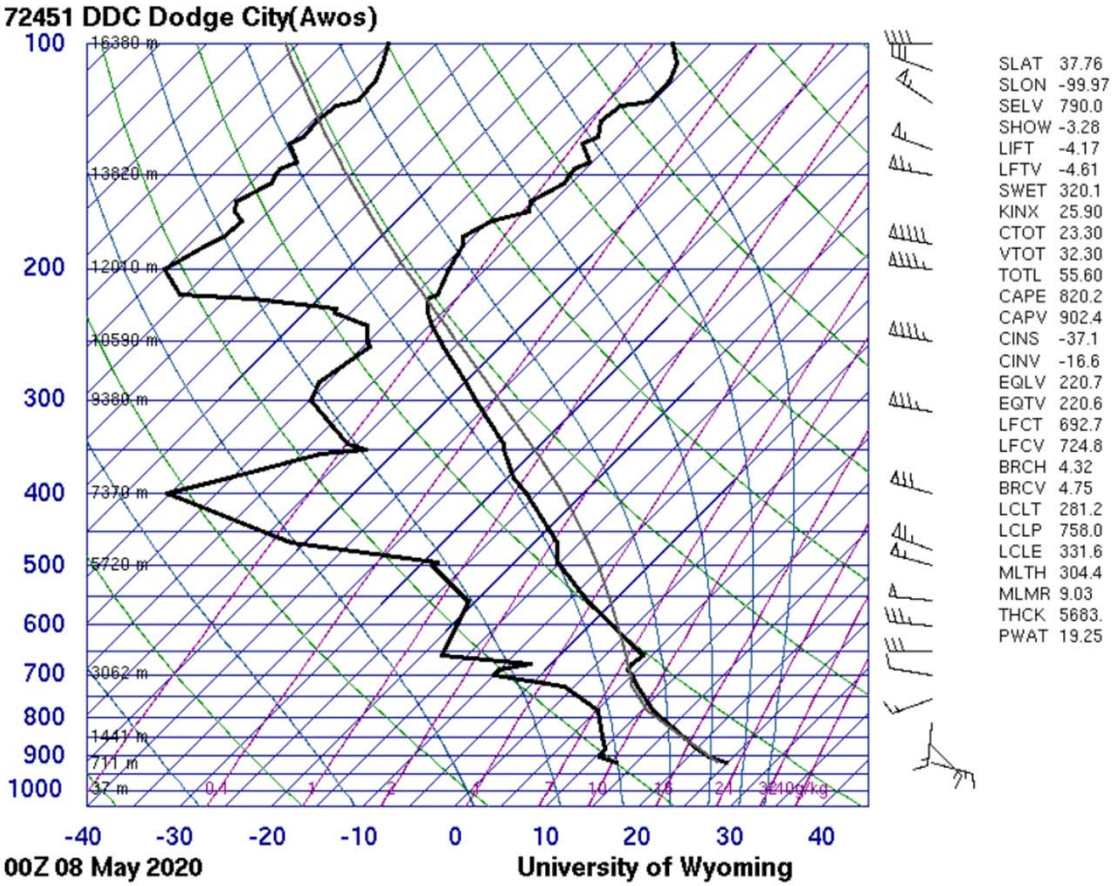
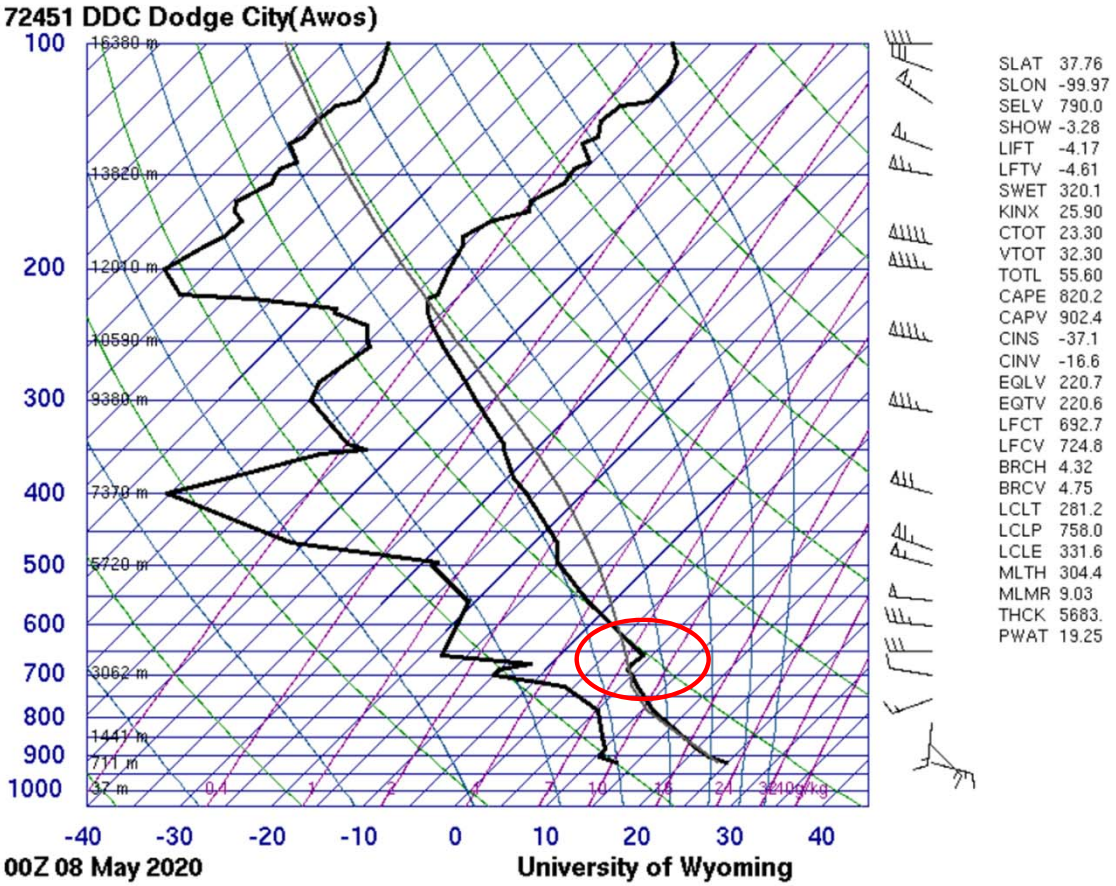


# Meteorological Setup for May 7, 2020



# Meteorological Setup for May 7, 2020

**72363 AMA Amarillo Arpt(Awos) Observations at 00Z 08 May 2020**

| PRES hPa | HGHT m | TEMP C | DWPT C | RELH % | MIXR g/kg | DRCT deg | SKNT knot | THTA K | THTE K | THTV K |
|---|---|---|---|---|---|---|---|---|---|---|
| 1000.0 | -25 | | | | | | | | | |
| 925.0 | 666 | | | | | | | | | |
| 881.0 | 1099 | 32.8 | -0.2 | 12 | 4.30 | 155 | 3 | 317.2 | 331.4 | 318.1 |
| 877.0 | 1139 | 32.2 | -0.8 | 12 | 4.13 | 147 | 3 | 317.0 | 330.6 | 317.8 |
| 850.0 | 1412 | 29.2 | -2.8 | 12 | 3.68 | 90 | 3 | 316.7 | 328.9 | 317.4 |
| 810.5 | 1829 | 25.3 | -5.1 | 13 | 3.23 | 175 | 5 | 316.9 | 327.7 | 317.5 |
| 782.8 | 2134 | 22.4 | -6.8 | 14 | 2.94 | 215 | 13 | 317.0 | 326.8 | 317.6 |
| 777.0 | 2199 | 21.8 | -7.2 | 14 | 2.88 | 217 | 14 | 317.0 | 326.7 | 317.6 |
| 755.5 | 2438 | 19.6 | -8.5 | 14 | 2.67 | 225 | 16 | 317.2 | 326.2 | 317.7 |
| 729.0 | 2743 | 16.9 | -10.3 | 15 | 2.42 | 250 | 23 | 317.5 | 325.7 | 317.9 |
| 700.0 | 3089 | 13.8 | -12.2 | 15 | 2.15 | 240 | 27 | 317.7 | 325.1 | 318.1 |
| 652.1 | 3658 | 8.4 | -15.5 | 17 | 1.77 | 240 | 34 | 318.2 | 324.3 | 318.5 |
| 604.5 | 4267 | 2.7 | -19.0 | 19 | 1.42 | 250 | 39 | 318.5 | 323.5 | 318.8 |
| 560.2 | 4877 | -3.1 | -22.5 | 21 | 1.13 | 260 | 39 | 318.7 | 322.7 | 318.9 |
| 500.0 | 5790 | -11.7 | -27.7 | 25 | 0.79 | 275 | 41 | 318.7 | 321.6 | 318.9 |
| 480.3 | 6096 | -14.5 | -30.5 | 24 | 0.63 | 275 | 42 | 318.9 | 321.2 | 319.1 |
| 479.0 | 6117 | -14.7 | -30.7 | 24 | 0.62 | 275 | 42 | 318.9 | 321.2 | 319.1 |
| 447.0 | 6638 | -17.5 | -61.5 | 1 | 0.02 | 282 | 51 | 321.8 | 321.9 | 321.8 |
| 407.9 | 7315 | -22.6 | -64.8 | 1 | 0.02 | 290 | 62 | 323.7 | 323.8 | 323.7 |
| 403.0 | 7405 | -23.3 | -65.3 | 1 | 0.01 | 290 | 62 | 323.9 | 324.0 | 323.9 |
| 400.0 | 7460 | -23.3 | -52.3 | 5 | 0.08 | 290 | 62 | 324.6 | 324.9 | 324.6 |
| 397.0 | 7515 | -23.7 | -47.7 | 9 | 0.13 | 290 | 62 | 324.8 | 325.3 | 324.8 |
| 391.2 | 7620 | -24.6 | -48.3 | 9 | 0.12 | 290 | 61 | 325.0 | 325.5 | 325.0 |
| 323.0 | 8982 | -36.3 | -56.3 | 11 | 0.06 | 286 | 65 | 327.1 | 327.4 | 327.1 |
| 315.5 | 9144 | -37.6 | -57.2 | 11 | 0.05 | 285 | 65 | 327.6 | 327.8 | 327.6 |
| 300.0 | 9490 | -40.3 | -59.3 | 11 | 0.04 | 285 | 67 | 328.4 | 328.6 | 328.5 |
| 289.0 | 9744 | -42.5 | -59.5 | 14 | 0.04 | 284 | 69 | 328.8 | 329.0 | 328.9 |
| 252.0 | 10658 | -49.7 | -56.7 | 44 | 0.07 | 280 | 76 | 331.3 | 331.6 | 331.3 |
| 250.0 | 10710 | -50.1 | -57.1 | 43 | 0.07 | 280 | 76 | 331.4 | 331.7 | 331.5 |
| 226.0 | 11361 | -55.7 | -62.7 | 41 | 0.04 | 285 | 75 | 332.6 | 332.8 | 332.6 |
| 214.0 | 11707 | -58.1 | -70.1 | 20 | 0.01 | 287 | 75 | 334.1 | 334.1 | 334.1 |
| 209.0 | 11855 | -59.3 | -71.3 | 20 | 0.01 | 288 | 74 | 334.5 | 334.5 | 334.5 |
| 200.0 | 12130 | -60.7 | -73.7 | 17 | 0.01 | 290 | 74 | 336.5 | 336.5 | 336.5 |
| 192.0 | 12383 | -61.7 | -73.7 | 19 | 0.01 | 295 | 80 | 338.8 | 338.9 | 338.8 |
| 186.0 | 12579 | -61.1 | -75.1 | 14 | 0.01 | 292 | 82 | 342.9 | 342.9 | 342.9 |
| 181.0 | 12748 | -59.5 | -76.5 | 9 | 0.01 | 290 | 84 | 348.2 | 348.2 | 348.2 |
| 180.0 | 12783 | -58.1 | -77.1 | 7 | 0.01 | 290 | 84 | 351.0 | 351.0 | 351.0 |
| 179.4 | 12802 | -57.9 | -77.5 | 7 | 0.01 | 290 | 84 | 351.6 | 351.6 | 351.6 |
| 177.0 | 12889 | -57.1 | -79.1 | 5 | 0.00 | 289 | 81 | 354.3 | 354.4 | 354.3 |
| 175.0 | 12961 | -54.9 | -80.9 | 3 | 0.00 | 289 | 79 | 359.1 | 359.1 | 359.1 |
| 169.0 | 13183 | -54.5 | -87.5 | 1 | 0.00 | 287 | 71 | 363.4 | 363.4 | 363.4 |
| 166.0 | 13297 | -55.5 | -87.5 | 1 | 0.00 | 286 | 68 | 363.6 | 363.6 | 363.6 |

# Meteorological Setup for May 7, 2020

**72363 AMA Amarillo Arpt(Awos) Observations at 00Z 08 May 2020**

| PRES hPa | HGHT m | TEMP C | DWPT C | RELH % | MIXR g/kg | DRCT deg | SKNT knot | THTA K | THTE K | THTV K |
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| 925.0 | 666 | | | | | | | | | |
| 881.0 | 1099 | 32.8 | -0.2 | 12 | 4.30 | 155 | 3 | 317.2 | 331.4 | 318.1 |
| 877.0 | 1139 | 32.2 | -0.8 | 12 | 4.13 | 147 | 3 | 317.0 | 330.6 | 317.8 |
| 850.0 | 1412 | 29.2 | -2.8 | 12 | 3.68 | 90 | 3 | 316.7 | 328.9 | 317.4 |
| 810.5 | 1829 | 25.3 | -5.1 | 13 | 3.23 | 175 | 5 | 316.9 | 327.7 | 317.5 |
| 782.8 | 2134 | 22.4 | -6.8 | 14 | 2.94 | 215 | 13 | 317.0 | 326.8 | 317.6 |
| 777.0 | 2199 | 21.8 | -7.2 | 14 | 2.88 | 217 | 14 | 317.0 | 326.7 | 317.6 |
| 755.5 | 2438 | 19.6 | -8.5 | 14 | 2.67 | 225 | 16 | 317.2 | 326.2 | 317.7 |
| 729.0 | 2743 | 16.9 | -10.3 | 15 | 2.42 | 250 | 23 | 317.5 | 325.7 | 317.9 |
| 700.0 | 3089 | 13.8 | -12.2 | 15 | 2.15 | 240 | 27 | 317.7 | 325.1 | 318.1 |
| 652.1 | 3658 | 8.4 | -15.5 | 17 | 1.77 | 240 | 34 | 318.2 | 324.3 | 318.5 |
| 604.5 | 4267 | 2.7 | -19.0 | 19 | 1.42 | 250 | 39 | 318.5 | 323.5 | 318.8 |
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| 500.0 | 5790 | -11.7 | -27.7 | 25 | 0.79 | 275 | 41 | 318.7 | 321.6 | 318.9 |
| 480.3 | 6096 | -14.5 | -30.5 | 24 | 0.63 | 275 | 42 | 318.9 | 321.2 | 319.1 |
| 479.0 | 6117 | -14.7 | -30.7 | 24 | 0.62 | 275 | 42 | 318.9 | 321.2 | 319.1 |
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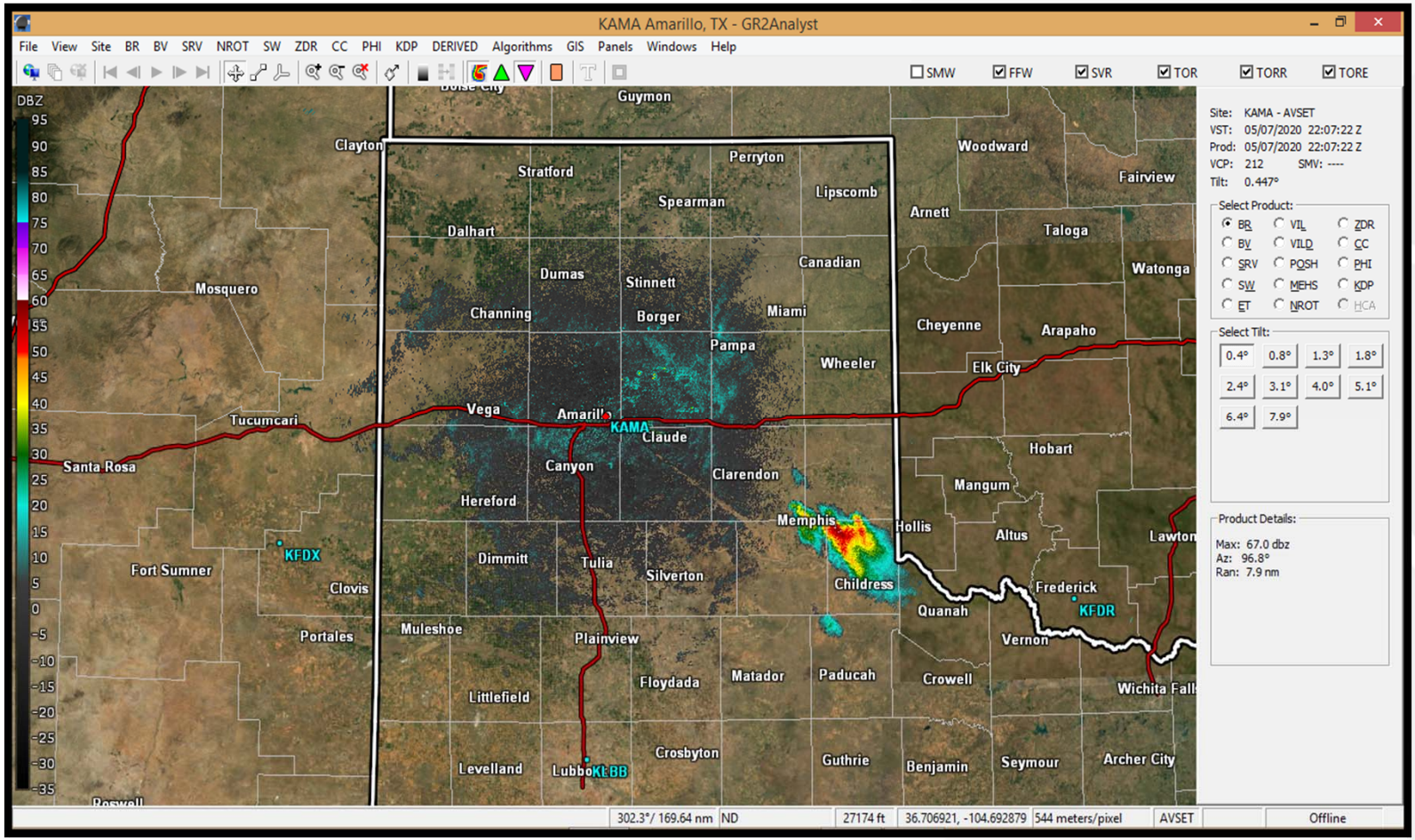
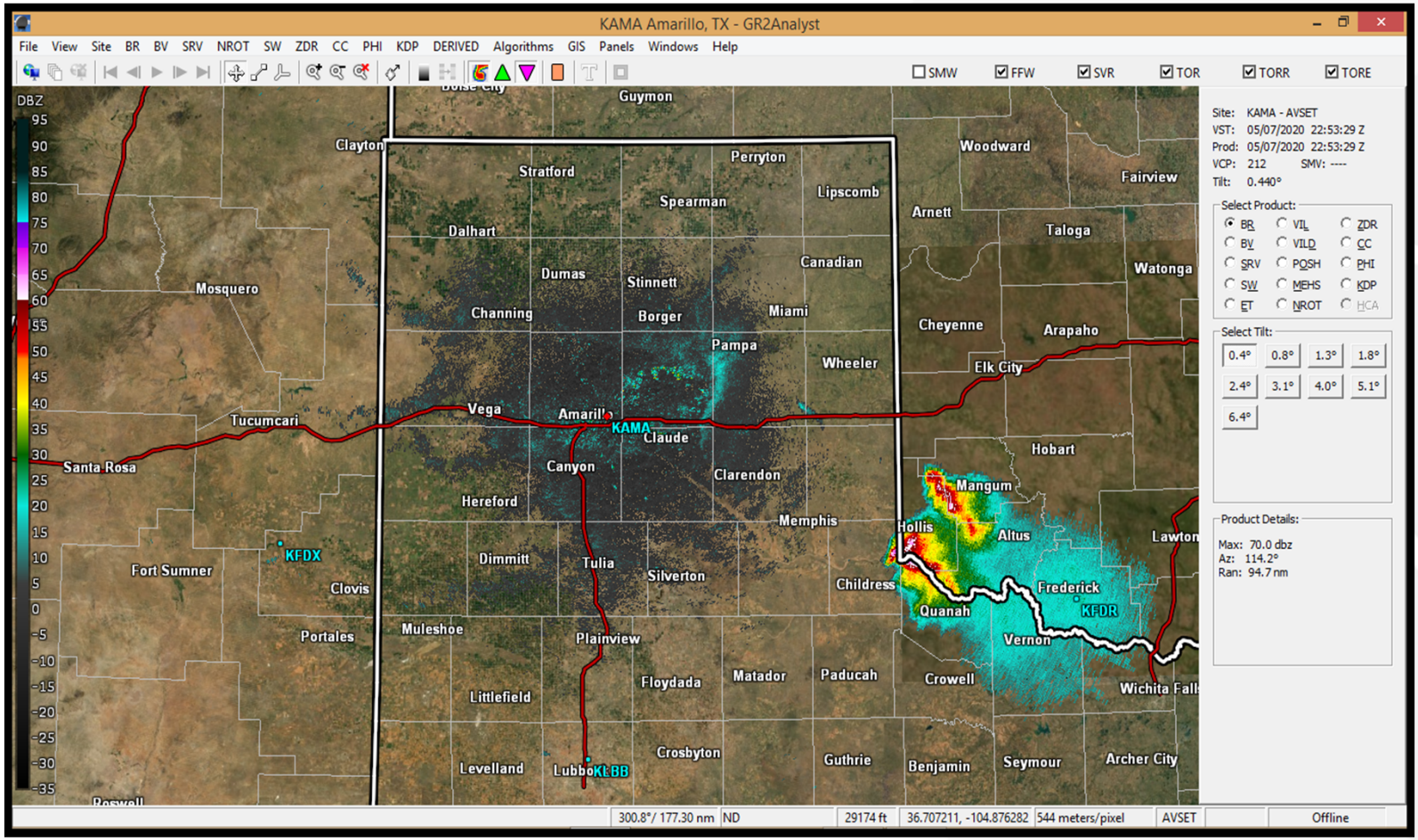
| 323.0 | 8982 | -36.3 | -56.3 | 11 | 0.06 | 286 | 65 | 327.1 | 327.4 | 327.1 |
| 315.5 | 9144 | -37.6 | -57.2 | 11 | 0.05 | 285 | 65 | 327.6 | 327.8 | 327.6 |
| 300.0 | 9490 | -40.3 | -59.3 | 11 | 0.04 | 285 | 67 | 328.4 | 328.6 | 328.5 |
| 289.0 | 9744 | -42.5 | -59.5 | 14 | 0.04 | 284 | 69 | 328.8 | 329.0 | 328.9 |
| 252.0 | 10658 | -49.7 | -56.7 | 44 | 0.07 | 280 | 76 | 331.3 | 331.6 | 331.3 |
| 250.0 | 10710 | -50.1 | -57.1 | 43 | 0.07 | 280 | 76 | 331.4 | 331.7 | 331.5 |
| 226.0 | 11361 | -55.7 | -62.7 | 41 | 0.04 | 285 | 75 | 332.6 | 332.8 | 332.6 |
| 214.0 | 11707 | -58.1 | -70.1 | 20 | 0.01 | 287 | 75 | 334.1 | 334.1 | 334.1 |
| 209.0 | 11855 | -59.3 | -71.3 | 20 | 0.01 | 288 | 74 | 334.5 | 334.5 | 334.5 |
| 200.0 | 12130 | -60.7 | -73.7 | 17 | 0.01 | 290 | 74 | 336.5 | 336.5 | 336.5 |
| 192.0 | 12383 | -61.7 | -73.7 | 19 | 0.01 | 295 | 80 | 338.8 | 338.9 | 338.8 |
| 186.0 | 12579 | -61.1 | -75.1 | 14 | 0.01 | 292 | 82 | 342.9 | 342.9 | 342.9 |
| 181.0 | 12748 | -59.5 | -76.5 | 9 | 0.01 | 290 | 84 | 348.2 | 348.2 | 348.2 |
| 180.0 | 12783 | -58.1 | -77.1 | 7 | 0.01 | 290 | 84 | 351.0 | 351.0 | 351.0 |
| 179.4 | 12802 | -57.9 | -77.5 | 7 | 0.01 | 290 | 84 | 351.6 | 351.6 | 351.6 |
| 177.0 | 12889 | -57.1 | -79.1 | 5 | 0.00 | 289 | 81 | 354.3 | 354.4 | 354.3 |
| 175.0 | 12961 | -54.9 | -80.9 | 3 | 0.00 | 289 | 79 | 359.1 | 359.1 | 359.1 |
| 169.0 | 13183 | -54.5 | -87.5 | 1 | 0.00 | 287 | 71 | 363.4 | 363.4 | 363.4 |
| 166.0 | 13297 | -55.5 | -87.5 | 1 | 0.00 | 286 | 68 | 363.6 | 363.6 | 363.6 |

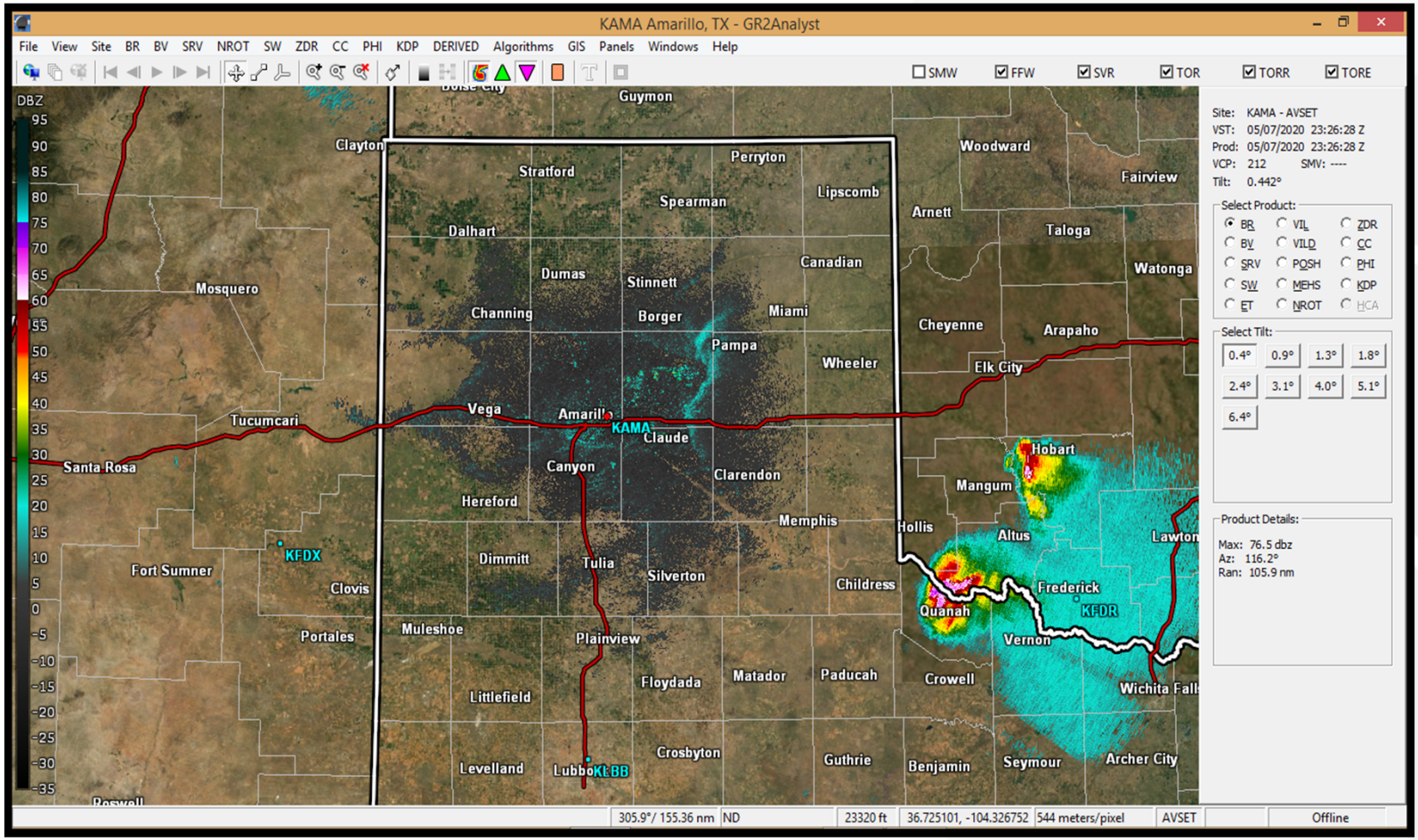
# KAMA 88-D – BR Scan – 17:07



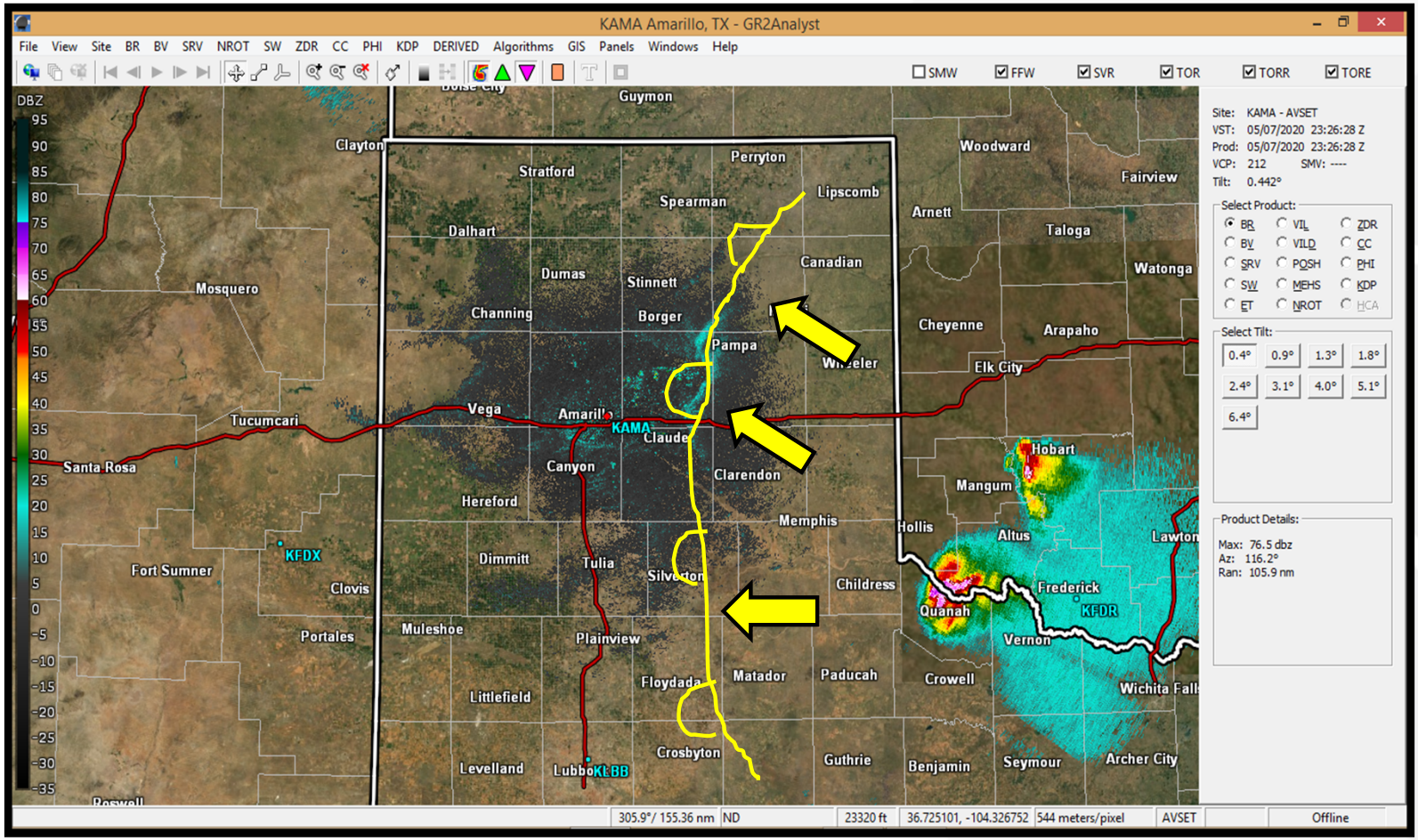
# KAMA 88-D – BR Scan – 17:53



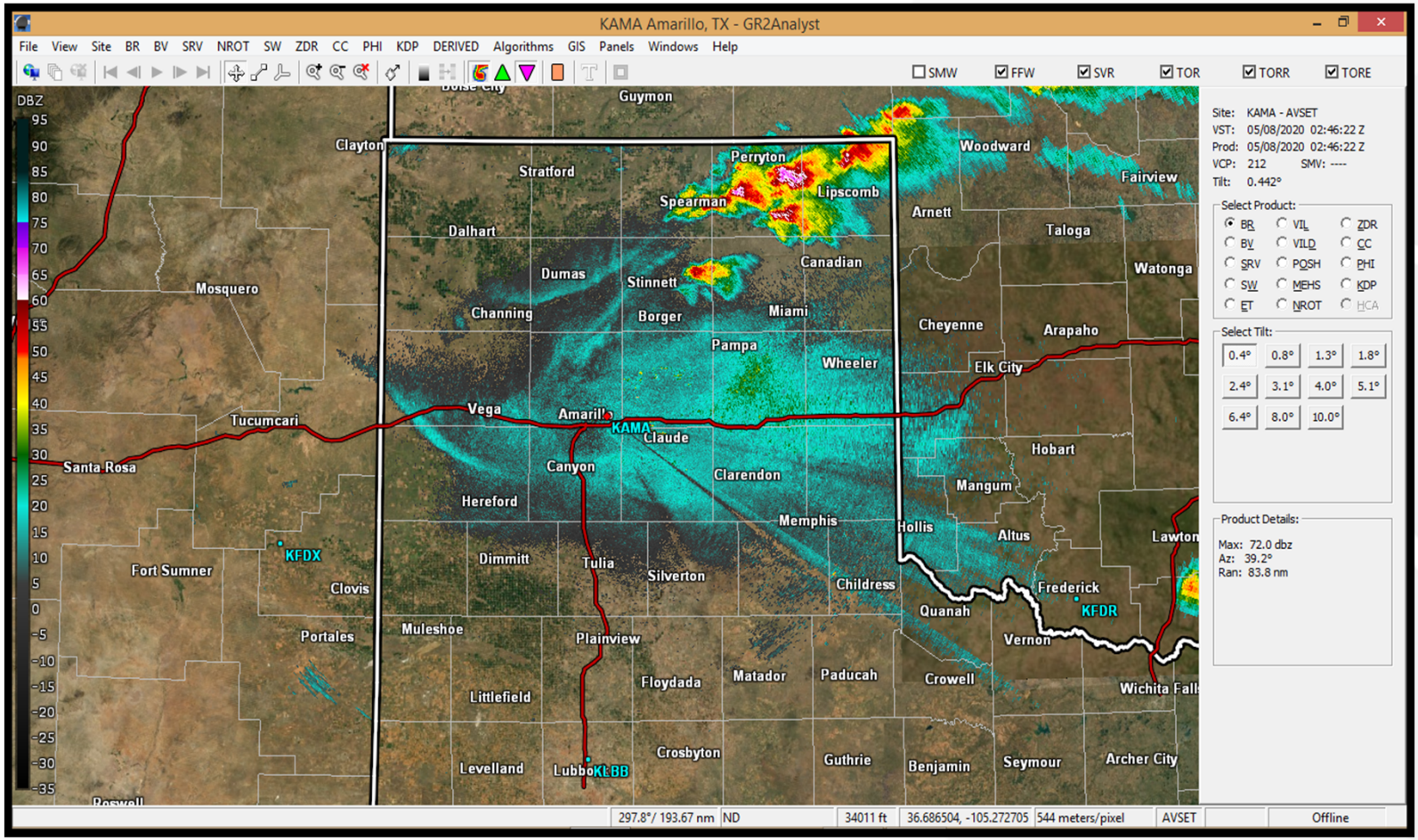
# KAMA 88-D – BR Scan – 18:26



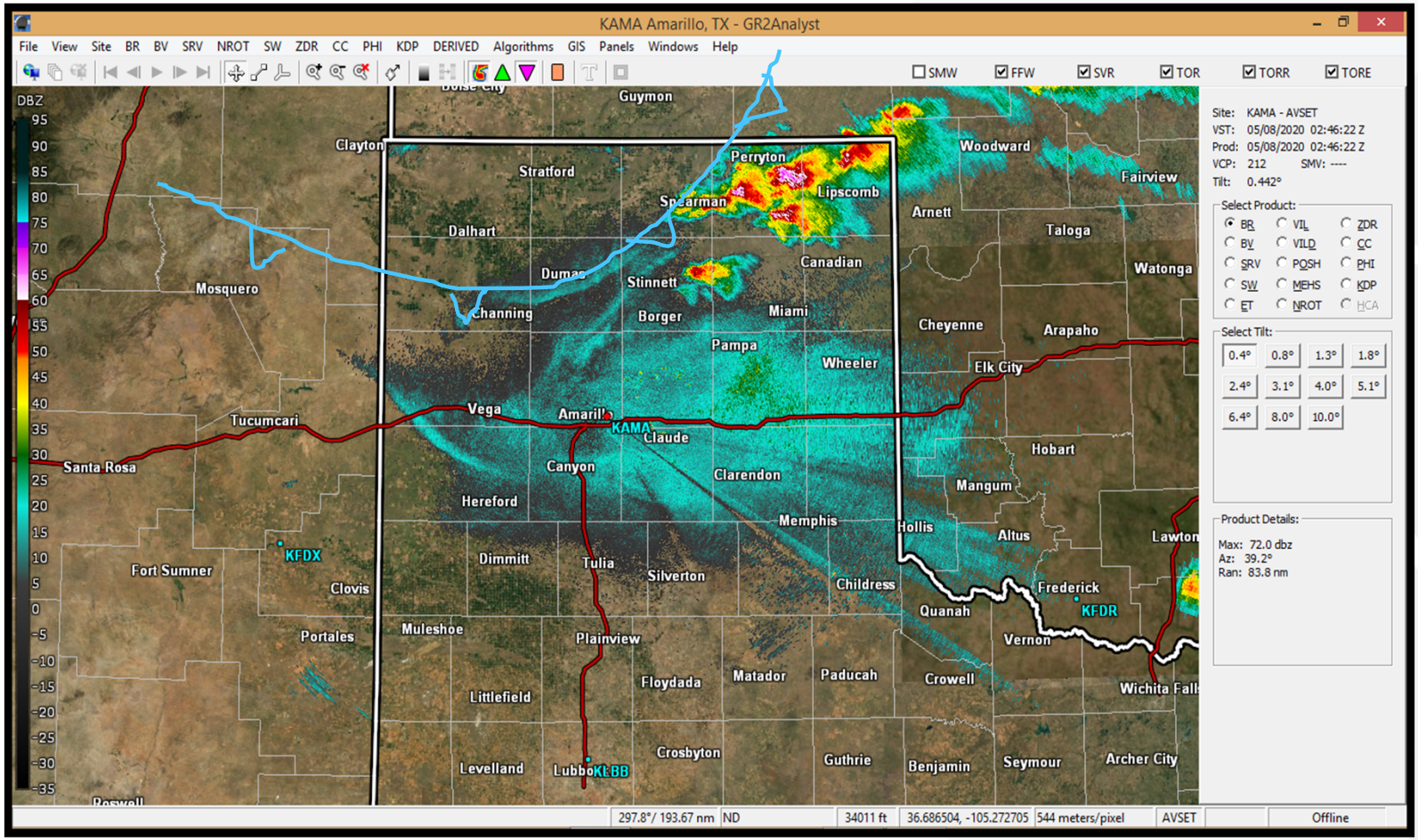
# KAMA 88-D – BR Scan – 18:26



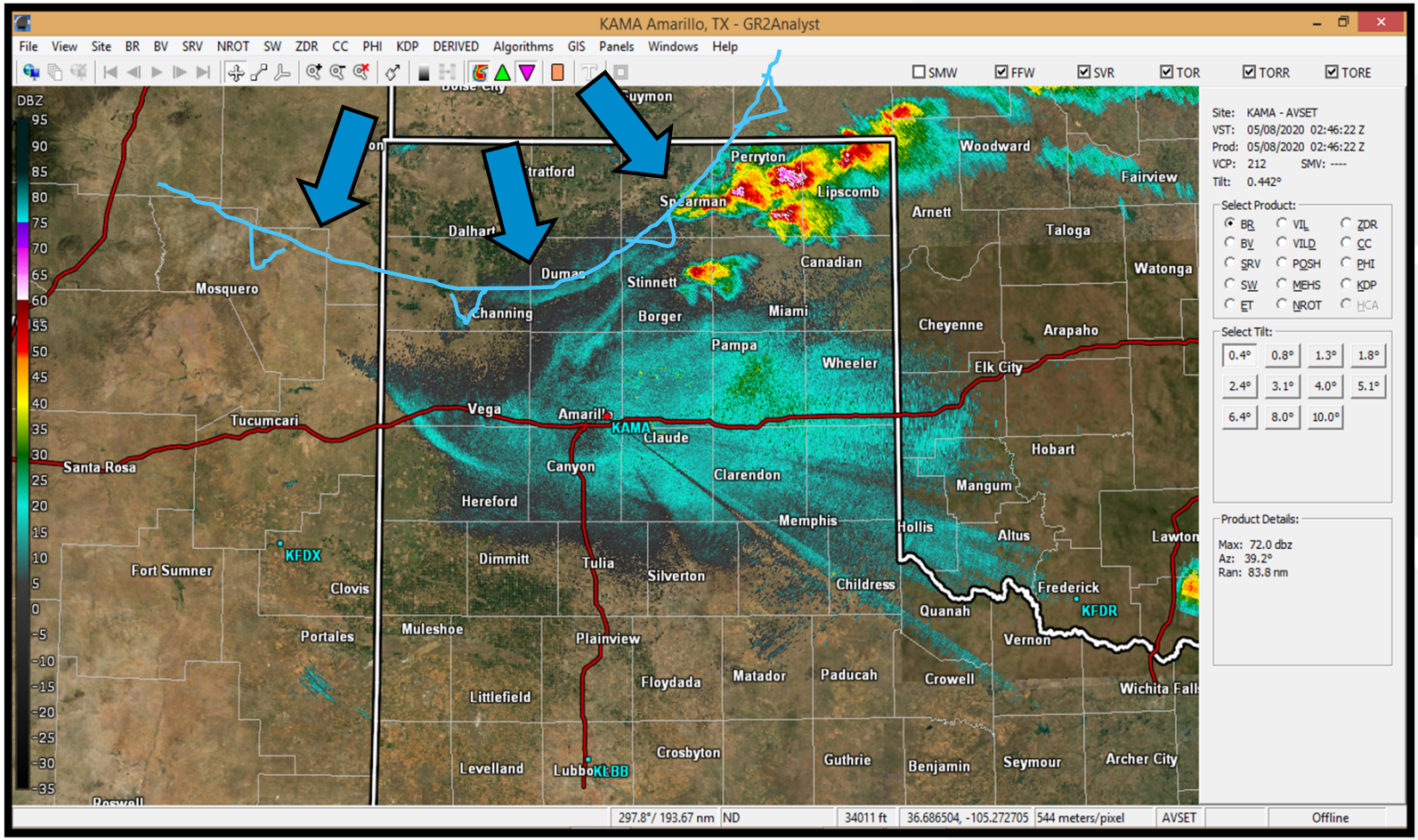
# KAMA 88-D – BR Scan – 21:46



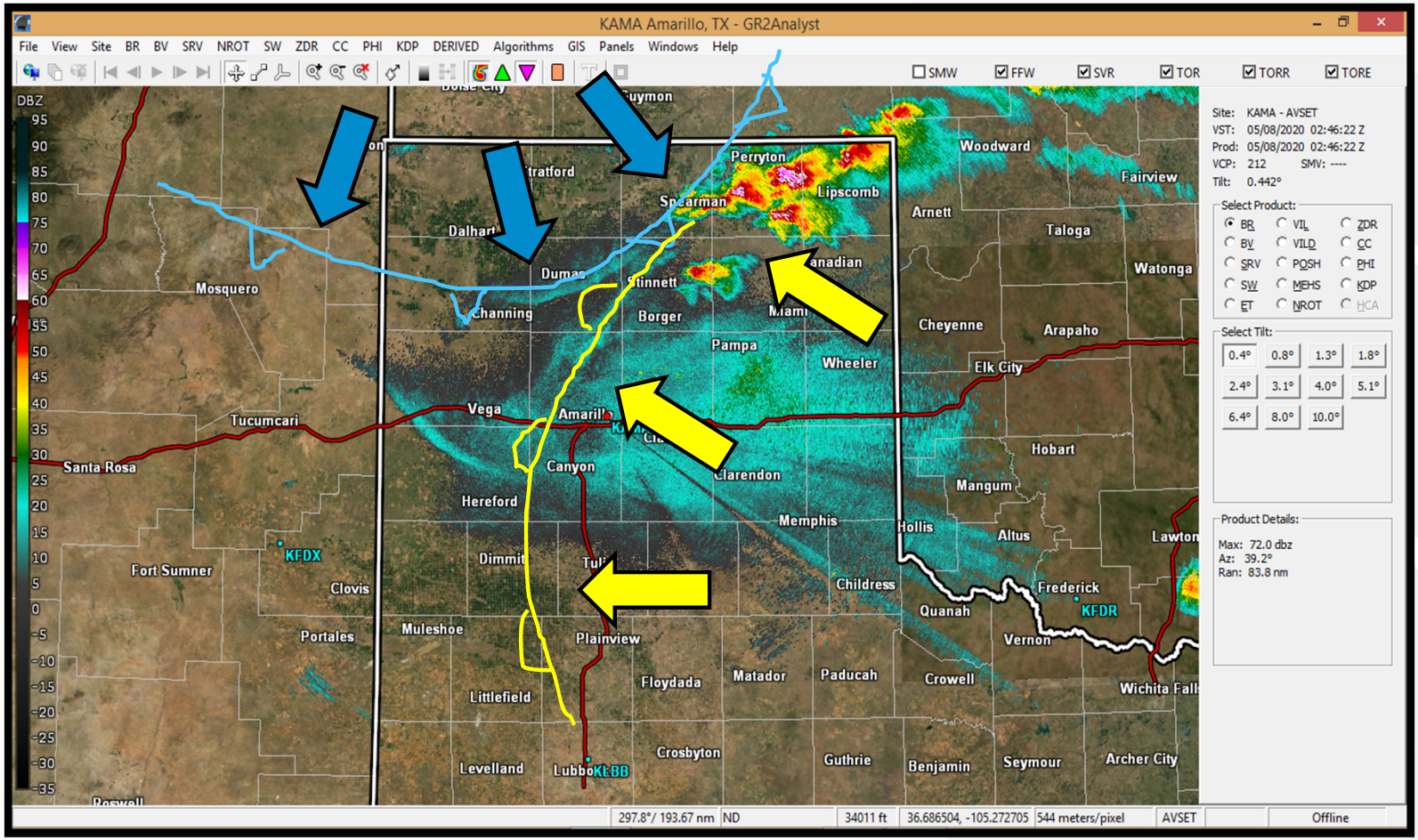
# KAMA 88-D – BR Scan – 21:46



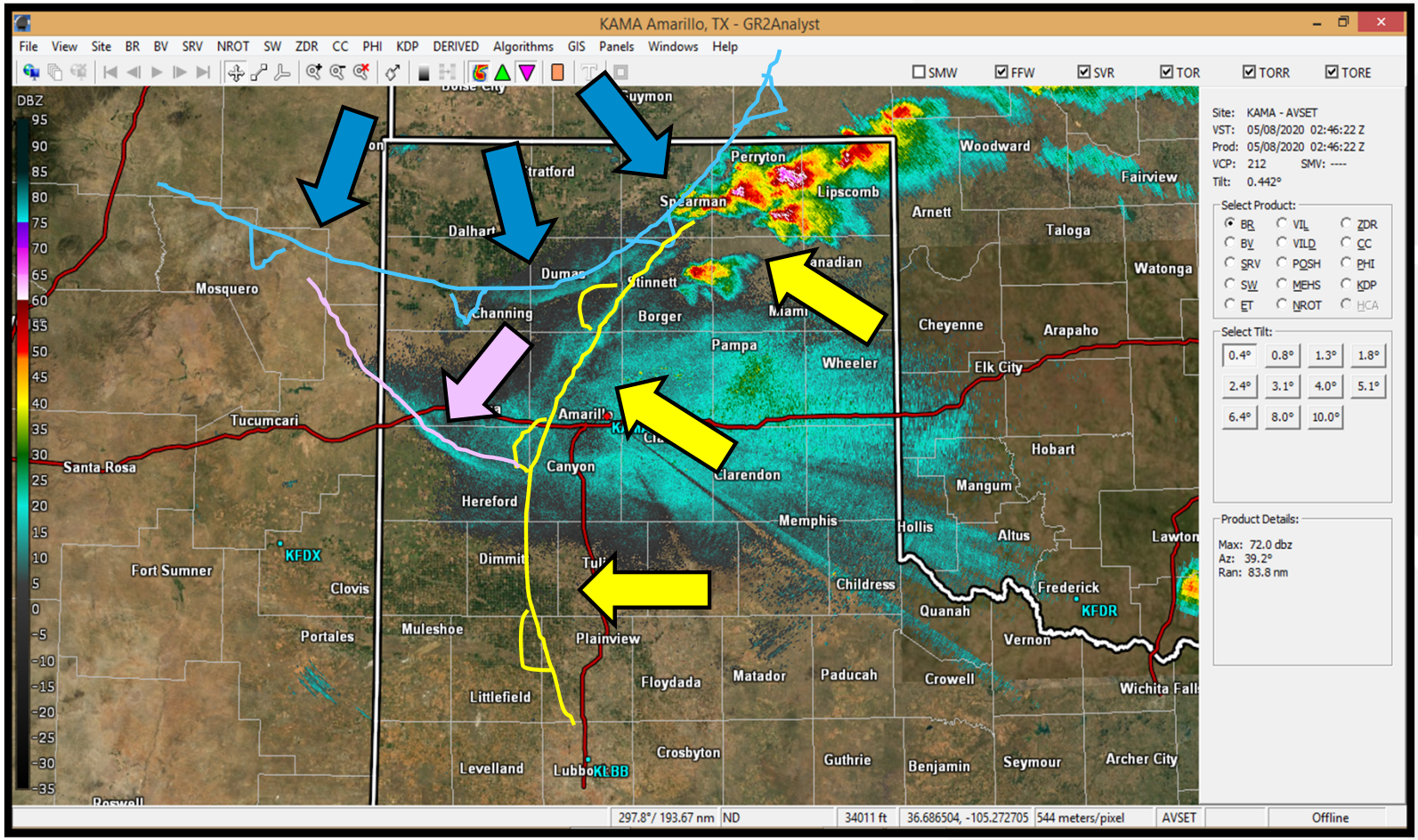
# KAMA 88-D – BR Scan – 21:46



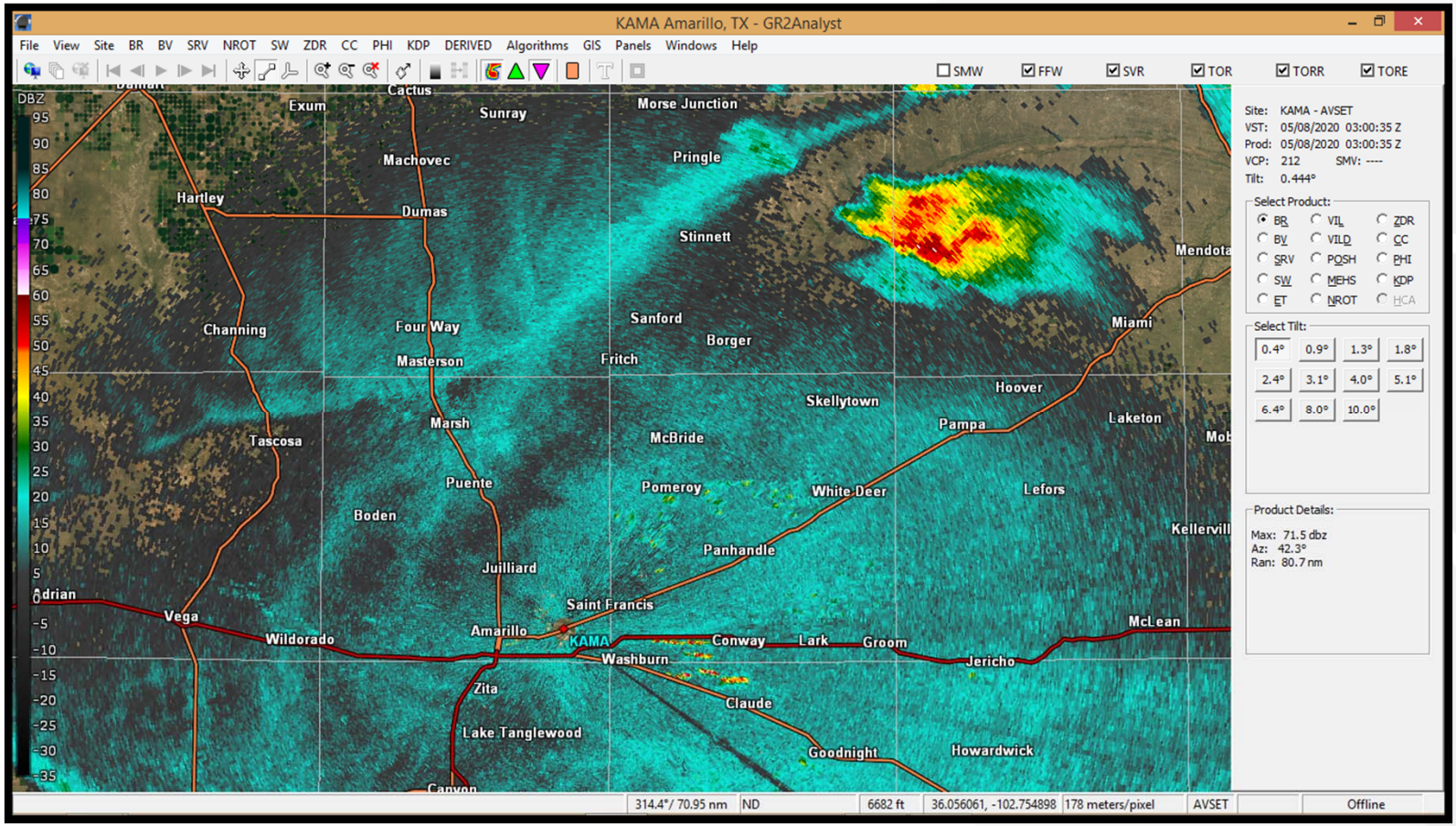
# KAMA 88-D – BR Scan – 21:46



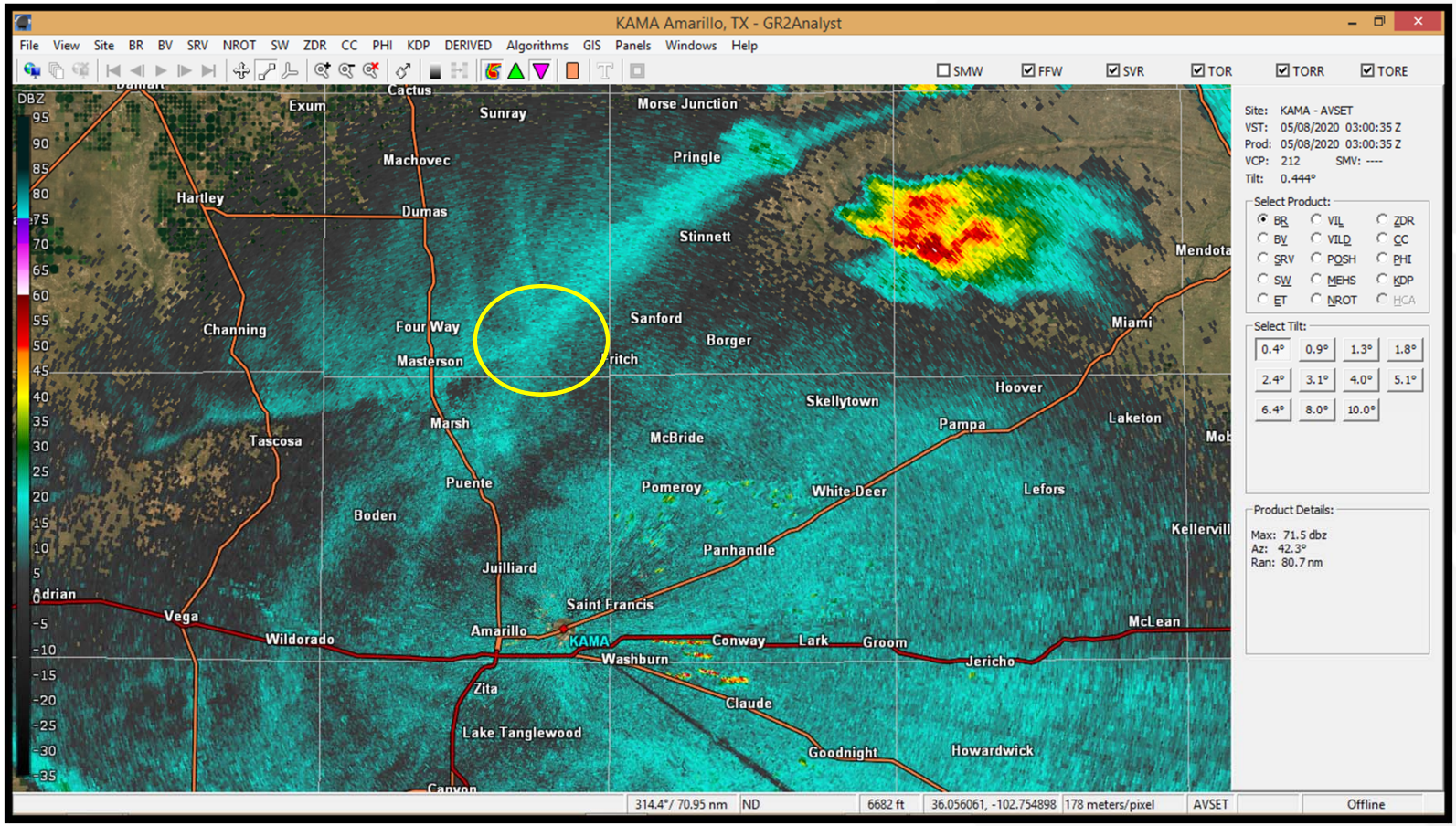
# KAMA 88-D – BR Scan – 21:46



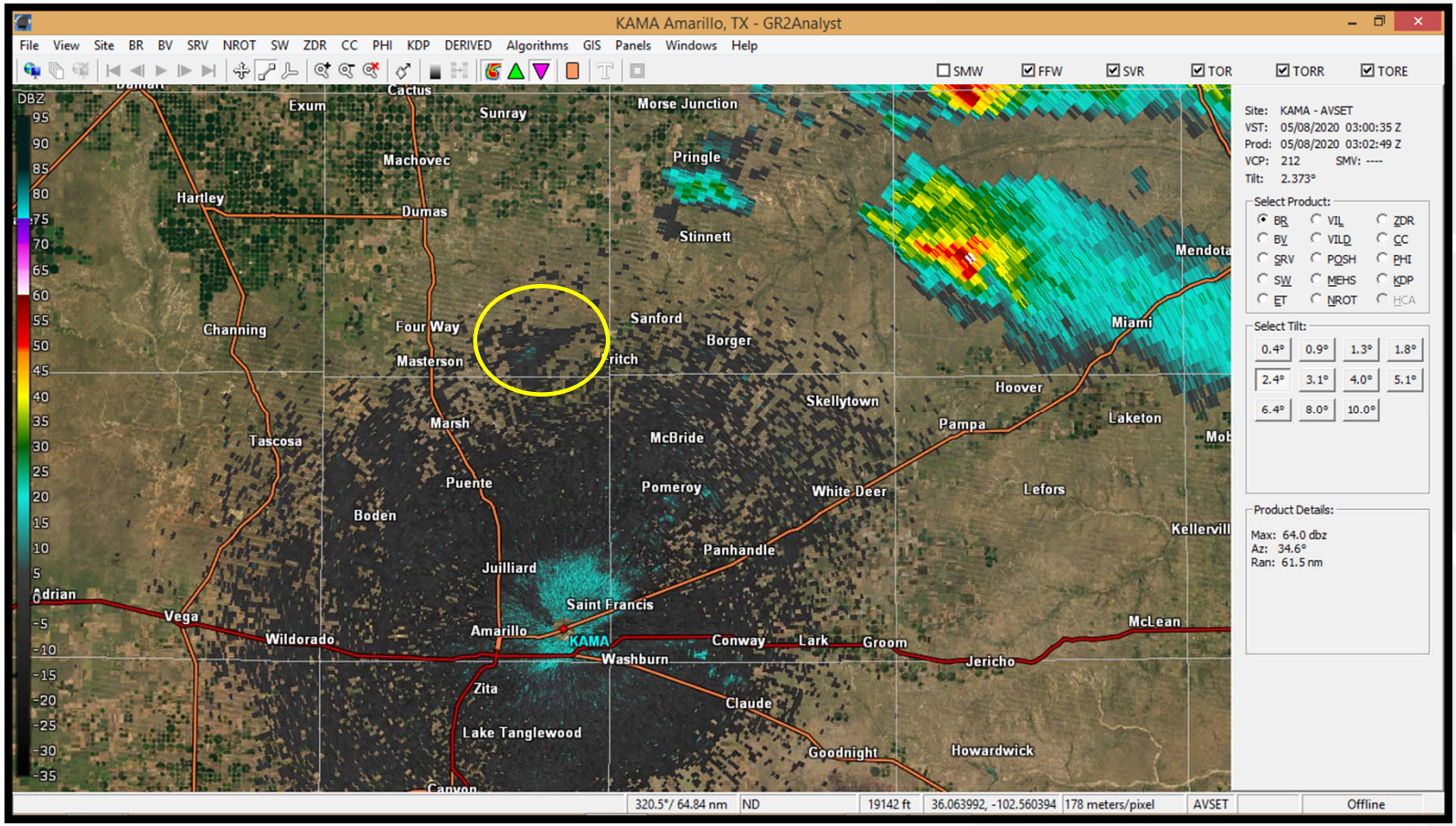
# KAMA 88-D – BR Scan – 22:00



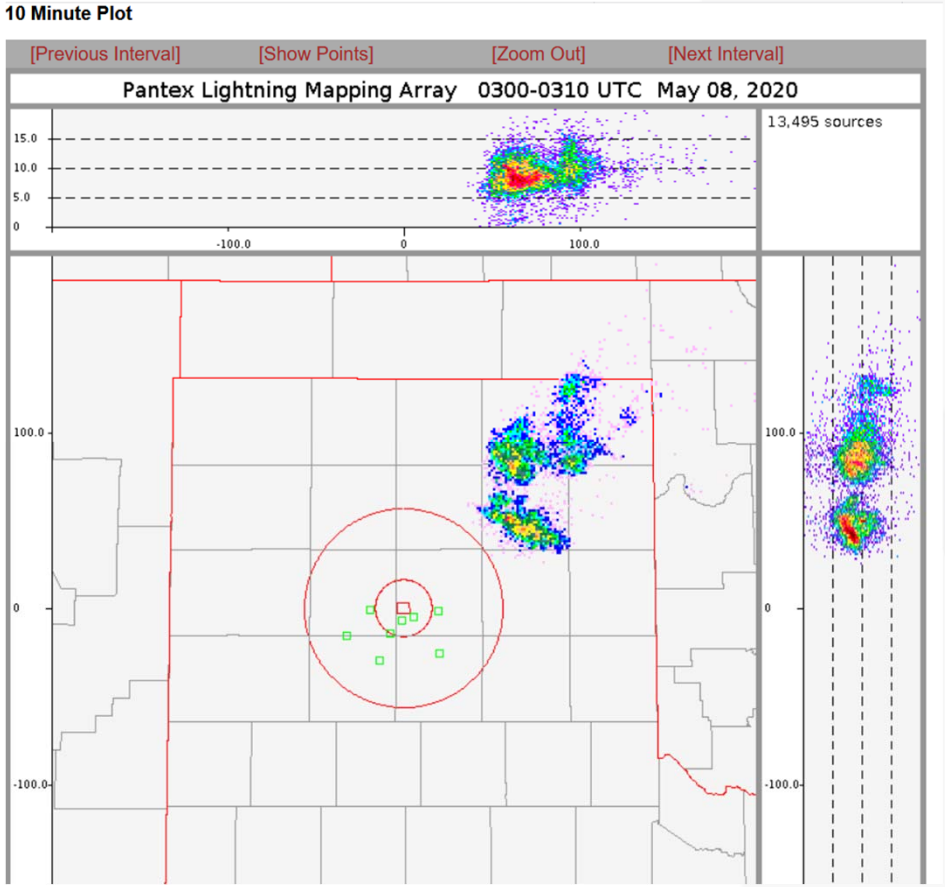
# KAMA 88-D – BR Scan – 22:00



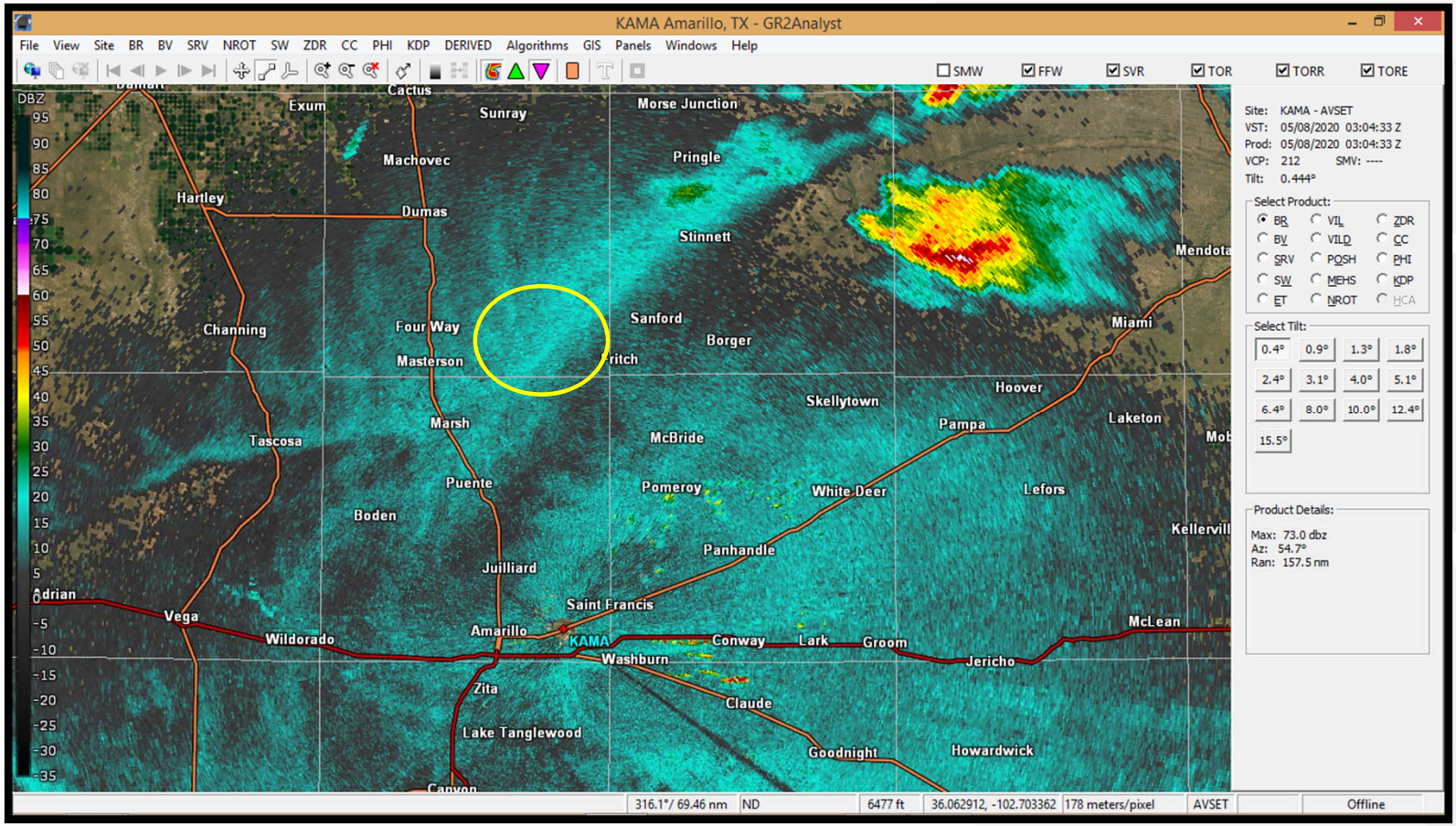
# KAMA 88-D – BR Scan (2.4 Degree Tilt) – 22:00



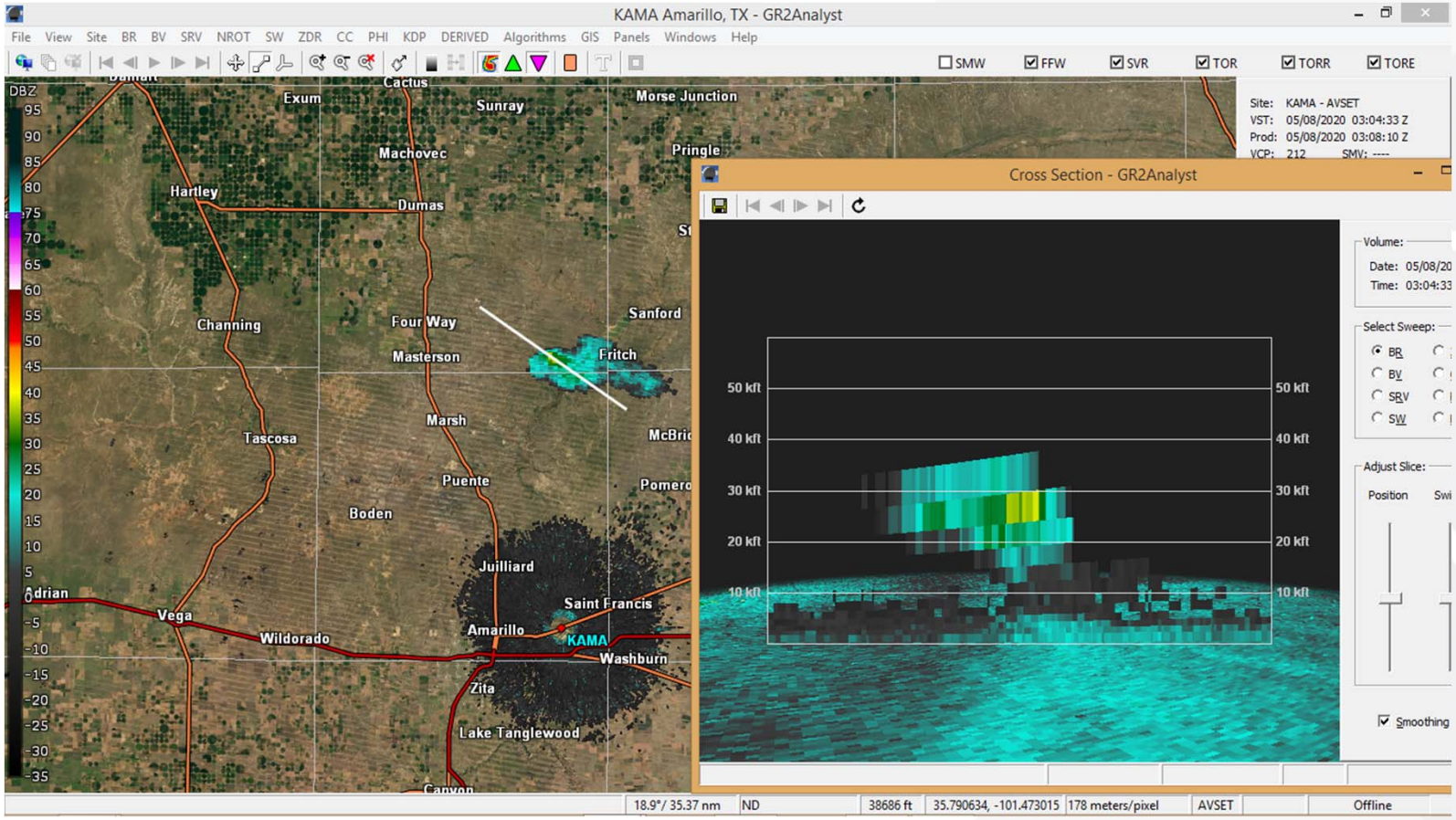
# Pantex LMA (Lightning Mapping Array) – 0300-0310



# KAMA 88-D – BR Scan – 22:04



# KAMA 88-D – Cross Section Scan– 22:04



# KAMA 5/8 00z RAOB Raw Data

**72363 AMA Amarillo Arpt(Awos) Observations at 00Z 08 May 2020**

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| 782.8 | 2134 | 22.4 | -6.8 | 14 | 2.94 | 215 | 13 | 317.0 | 326.8 | 317.6 |
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| 729.0 | 2743 | 16.9 | -10.3 | 15 | 2.42 | 250 | 23 | 317.5 | 325.7 | 317.9 |
| 700.0 | 3089 | 13.8 | -12.2 | 15 | 2.15 | 240 | 27 | 317.7 | 325.1 | 318.1 |
| 652.1 | 3658 | 8.4 | -15.5 | 17 | 1.77 | 240 | 34 | 318.2 | 324.3 | 318.5 |
| 604.5 | 4267 | 2.7 | -19.0 | 19 | 1.42 | 250 | 39 | 318.5 | 323.5 | 318.8 |
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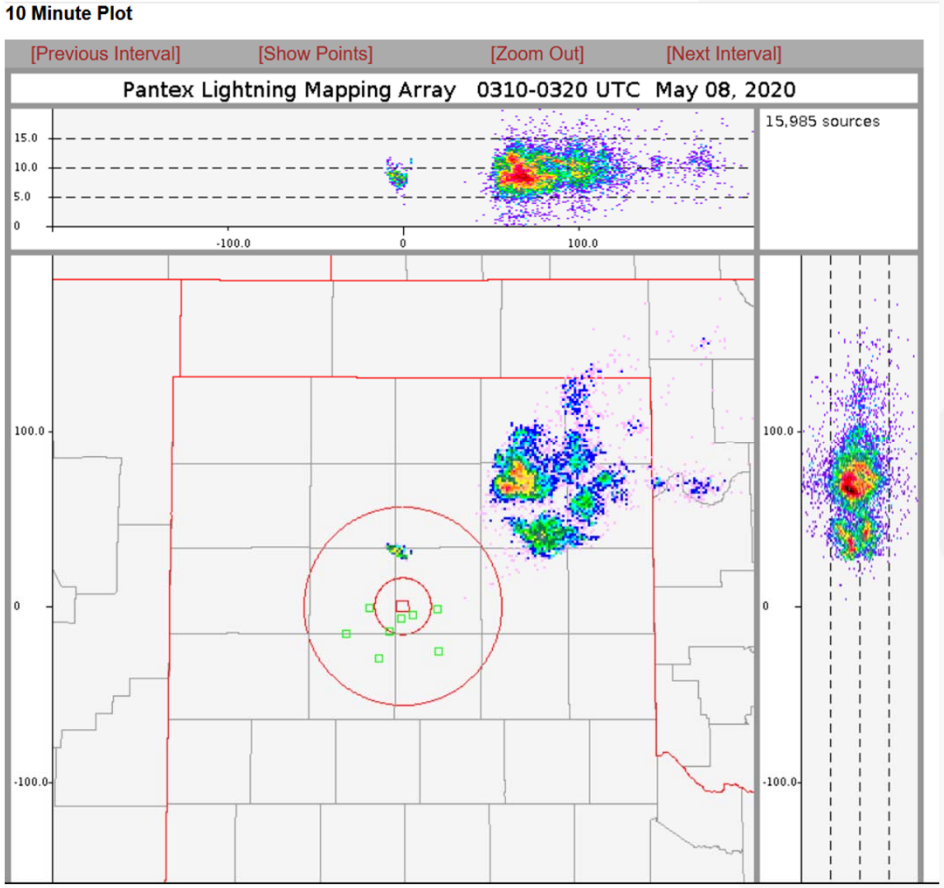
# Pantex LMA (Lightning Mapping Array) – 0310-0320



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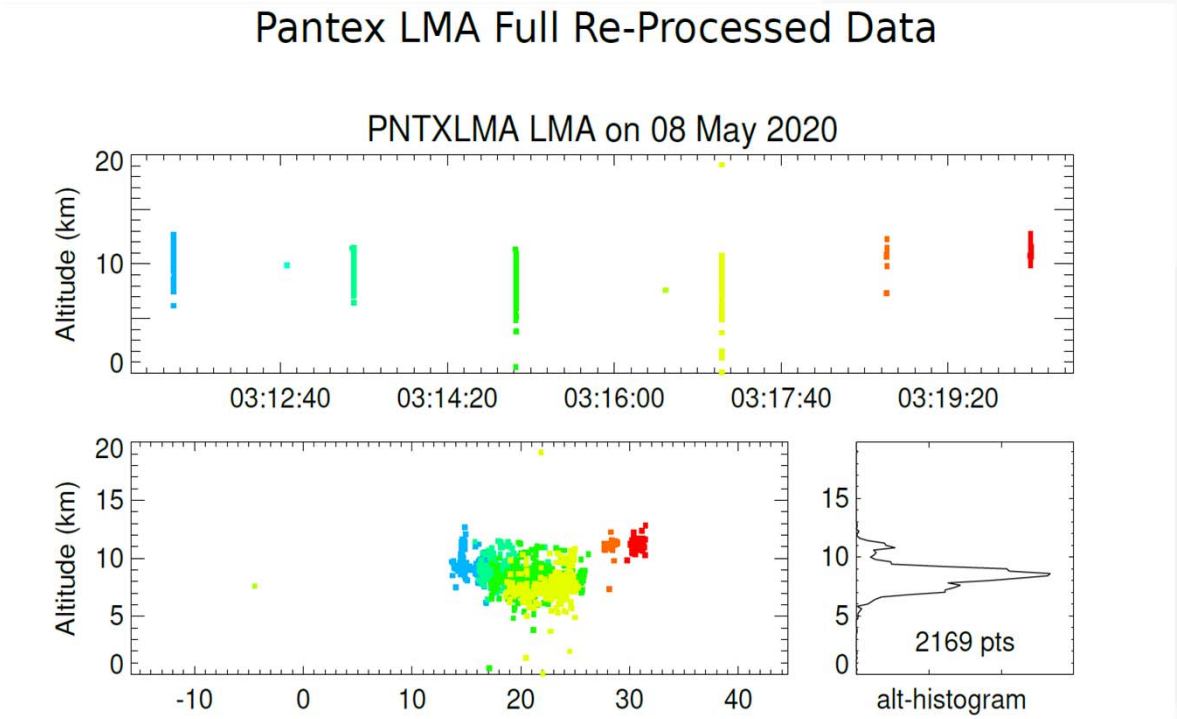

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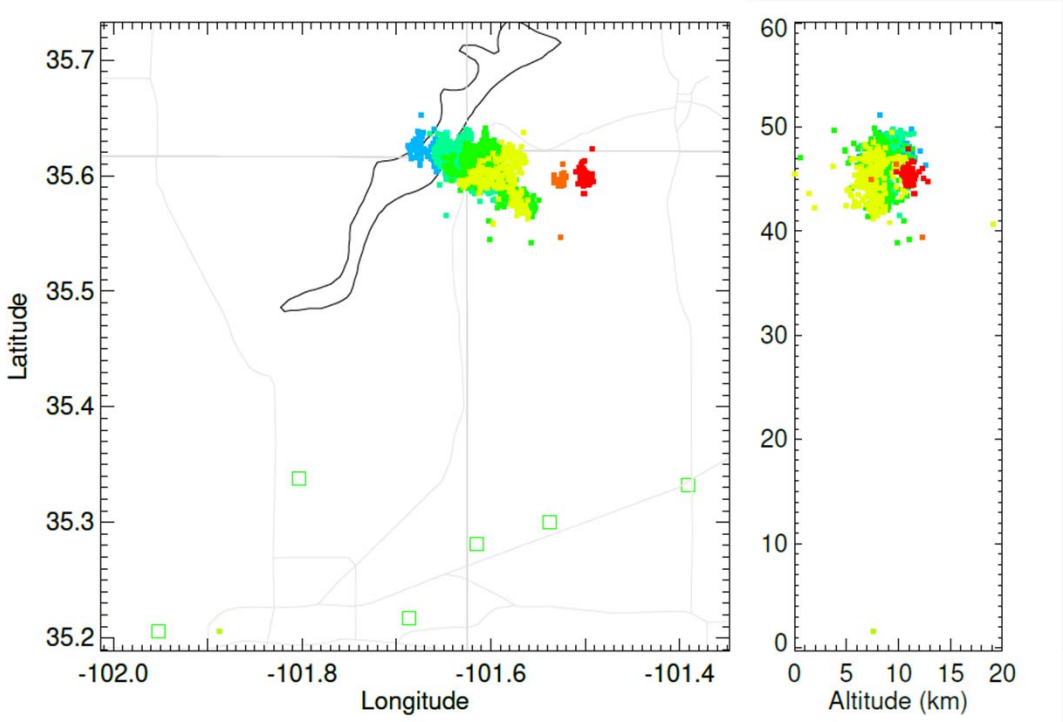
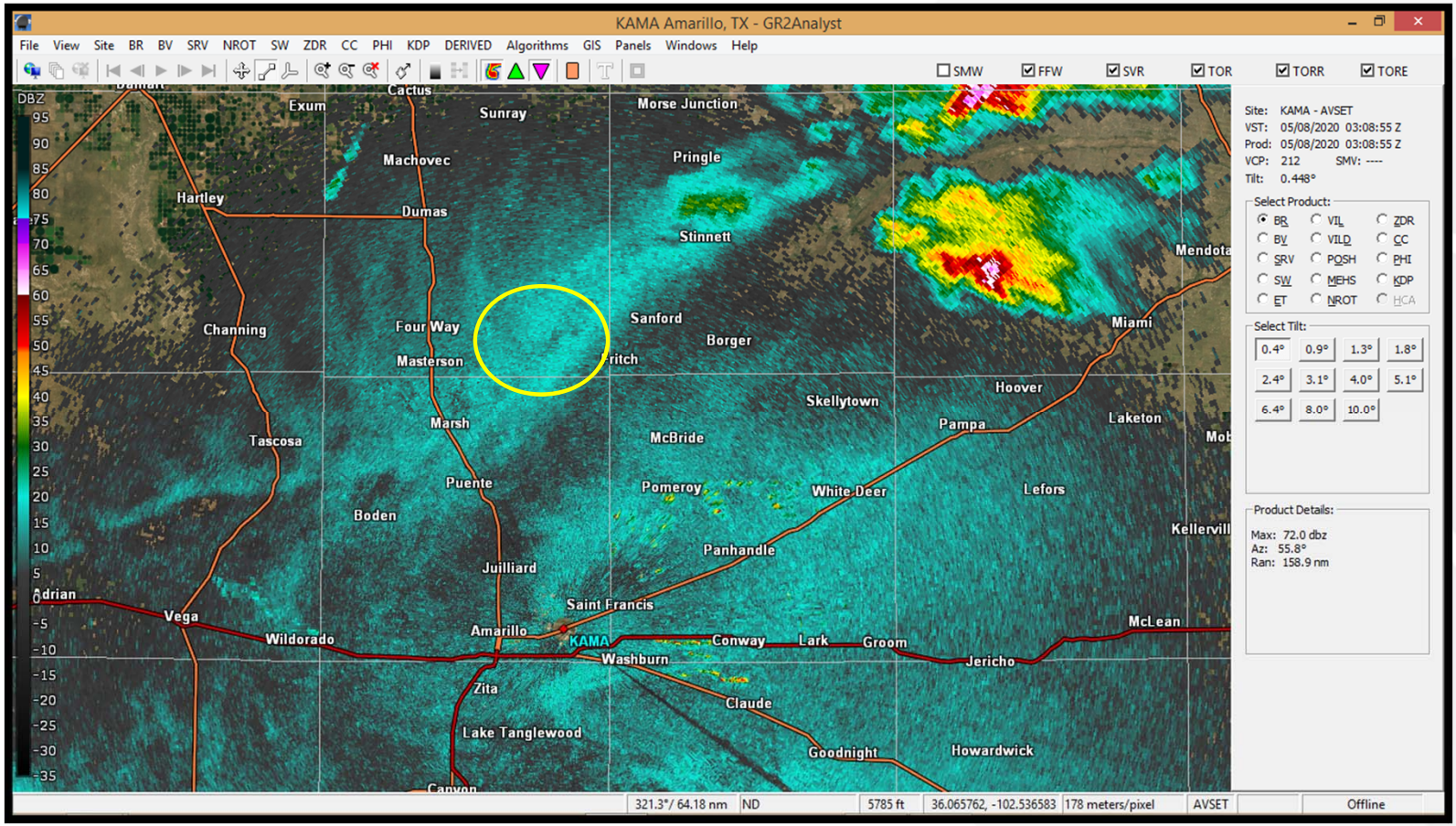
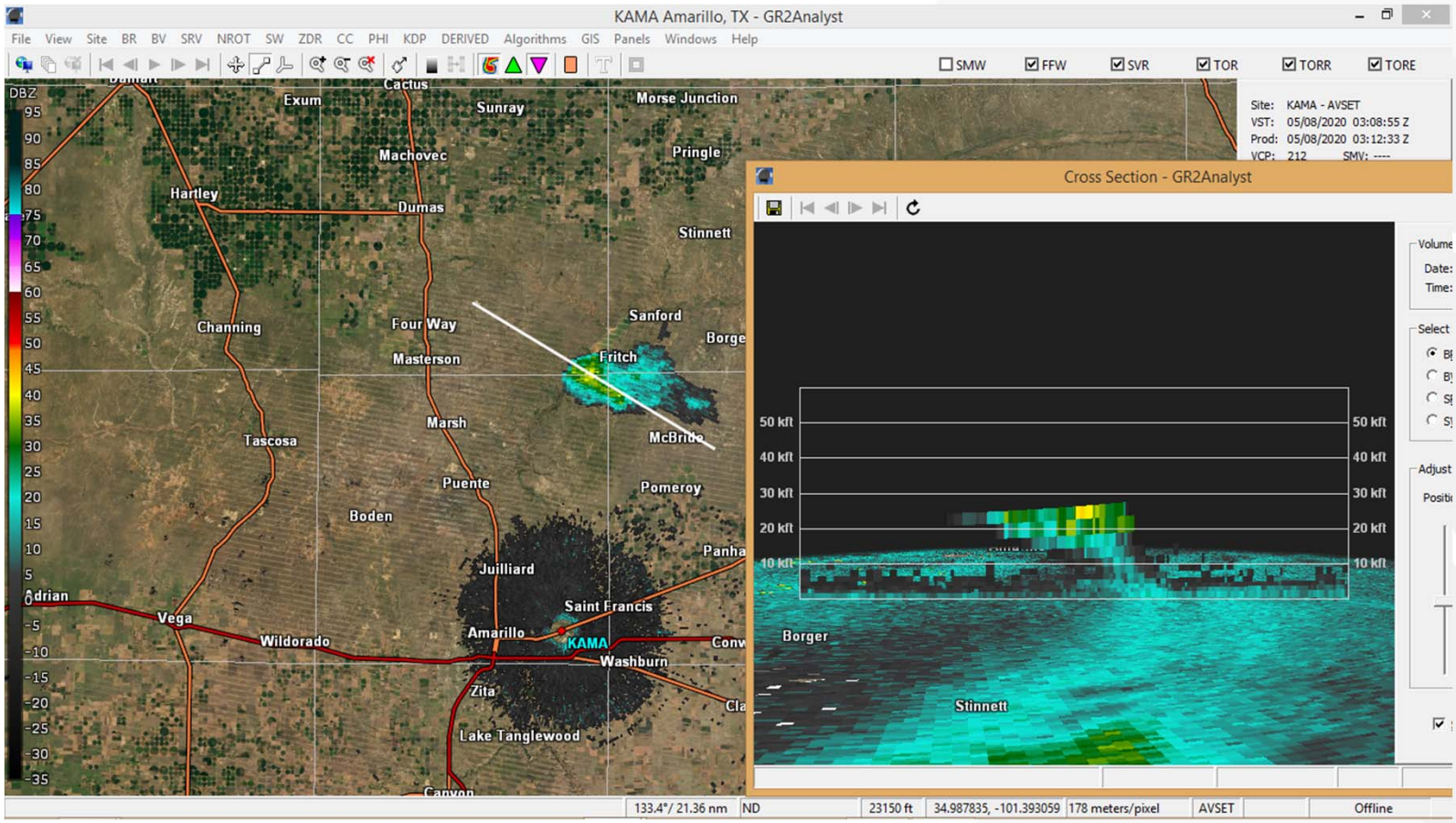


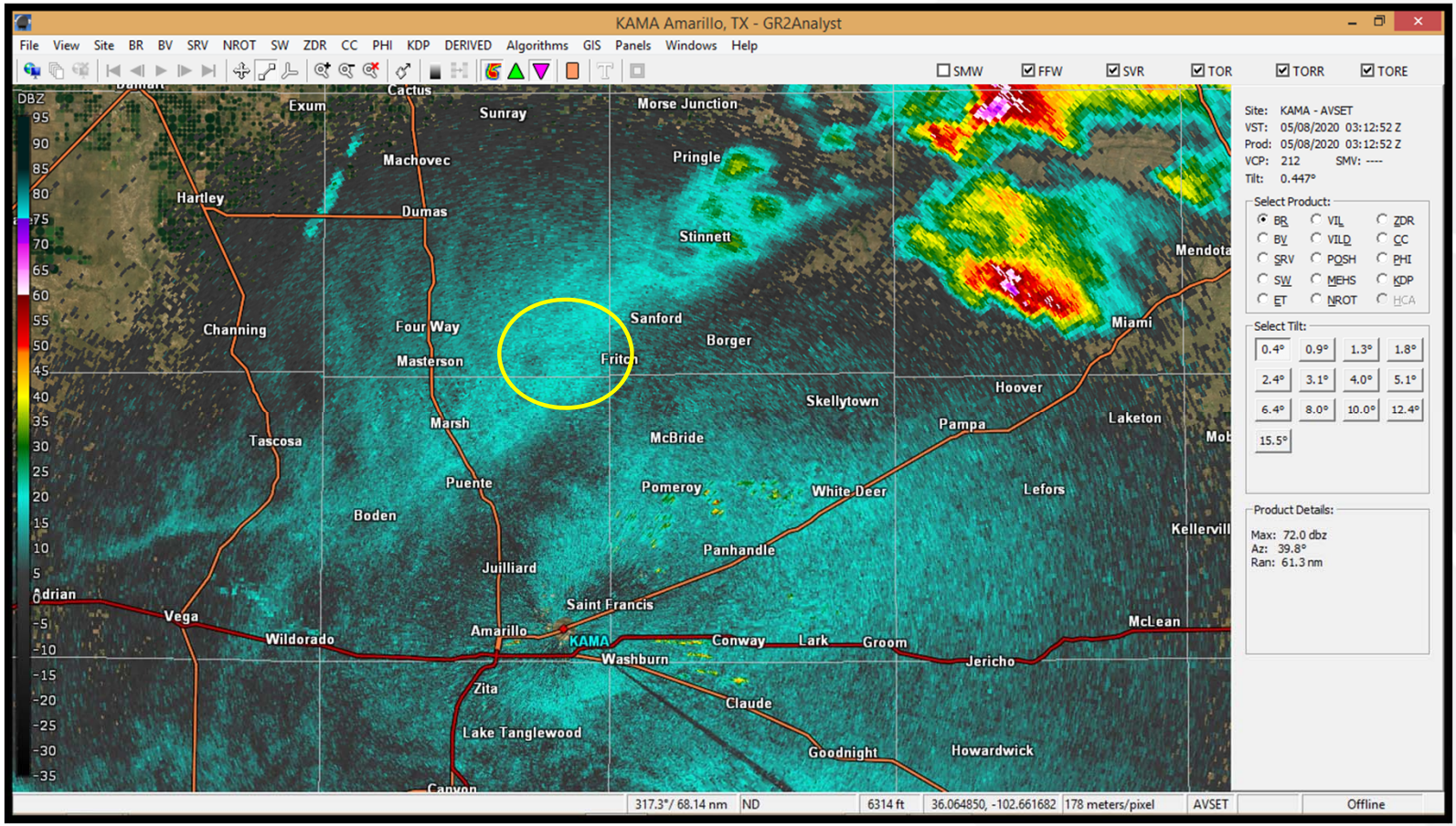
# KAMA 88-D – BR Scan– 22:08



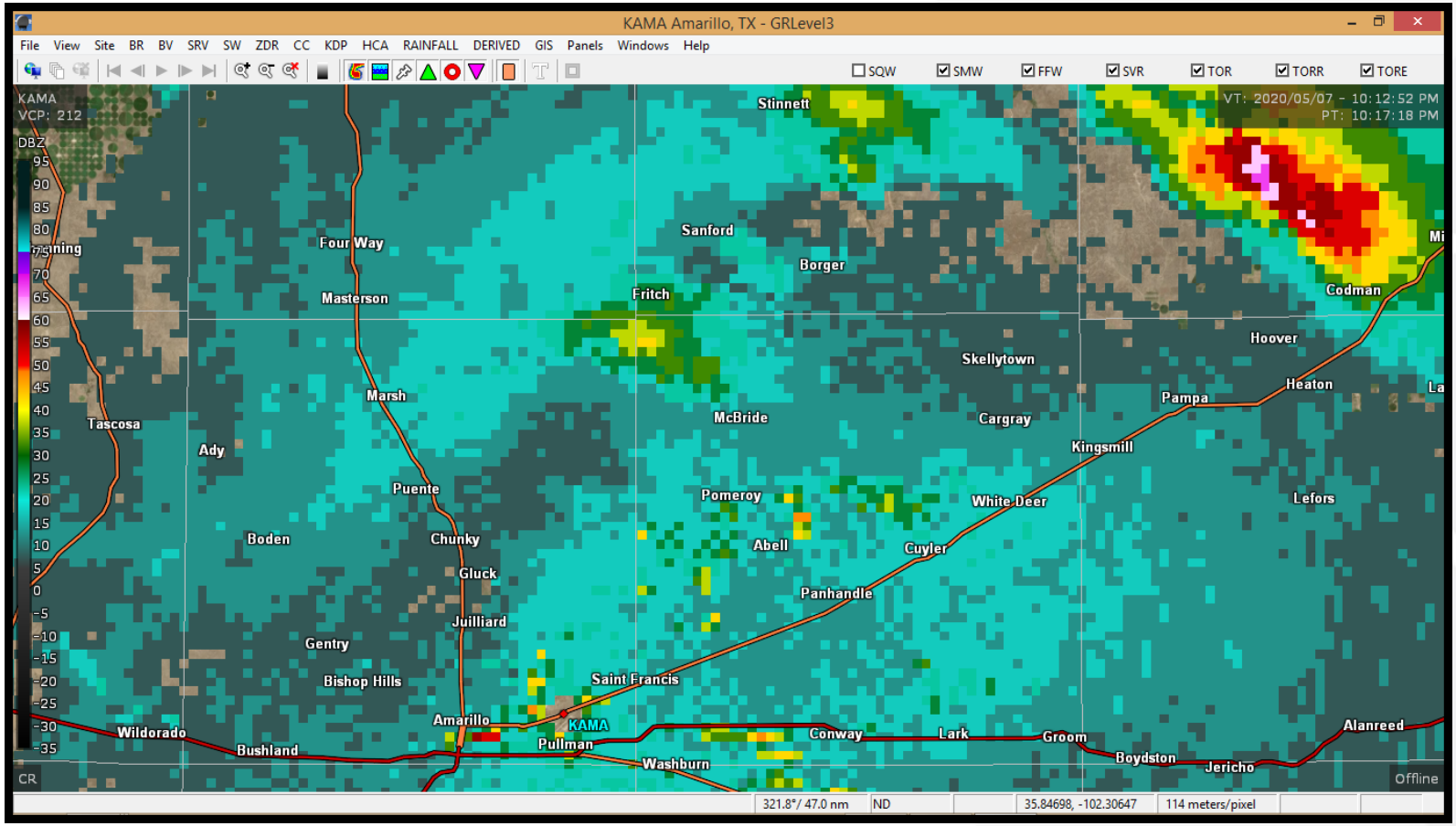
# KAMA 88-D – BR Scan (Cross-Section Scan) – 22:08



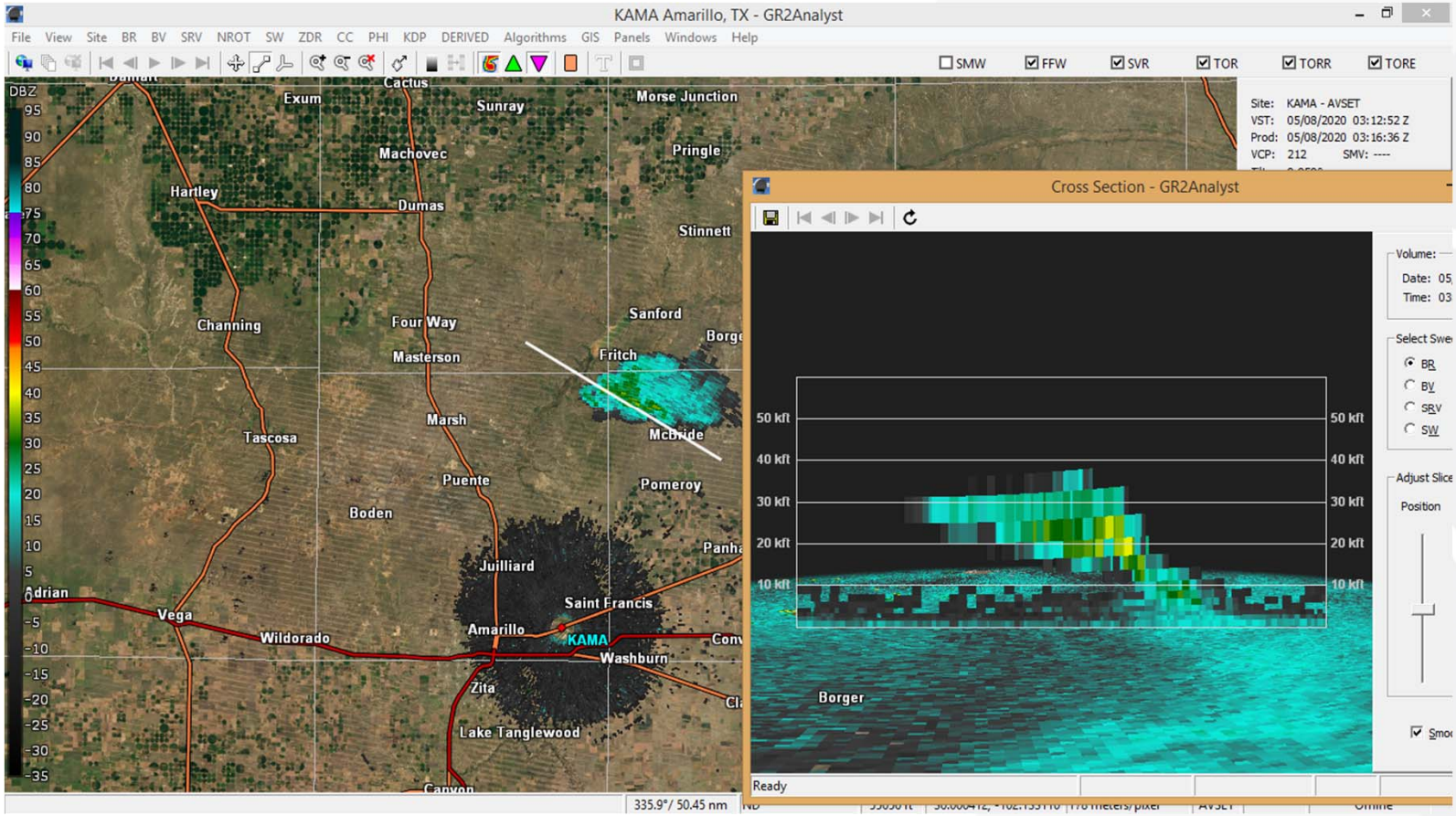
# KAMA 88-D – BR Scan – 22:12



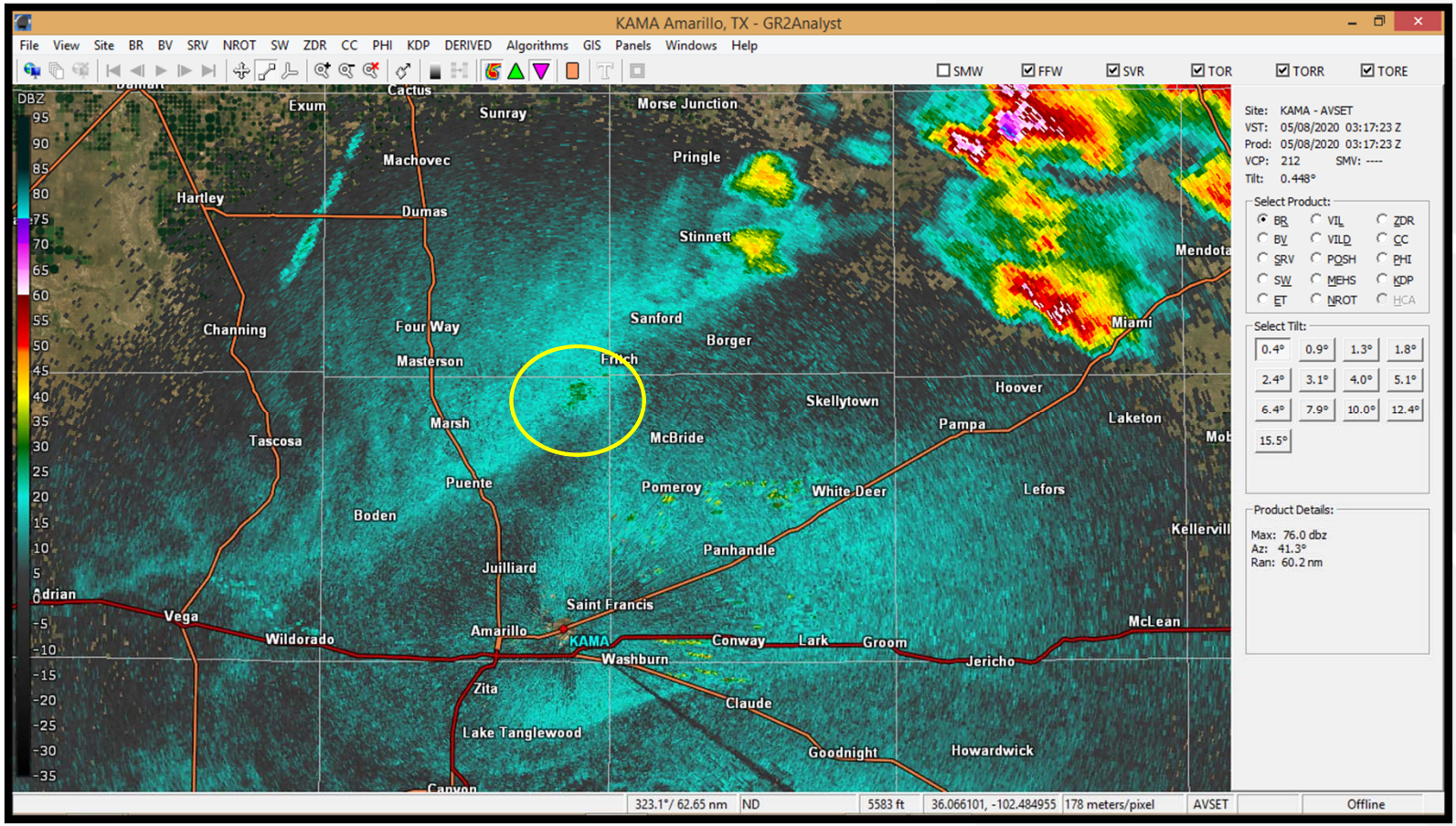
# KAMA 88-D – CR Scan– 22:12



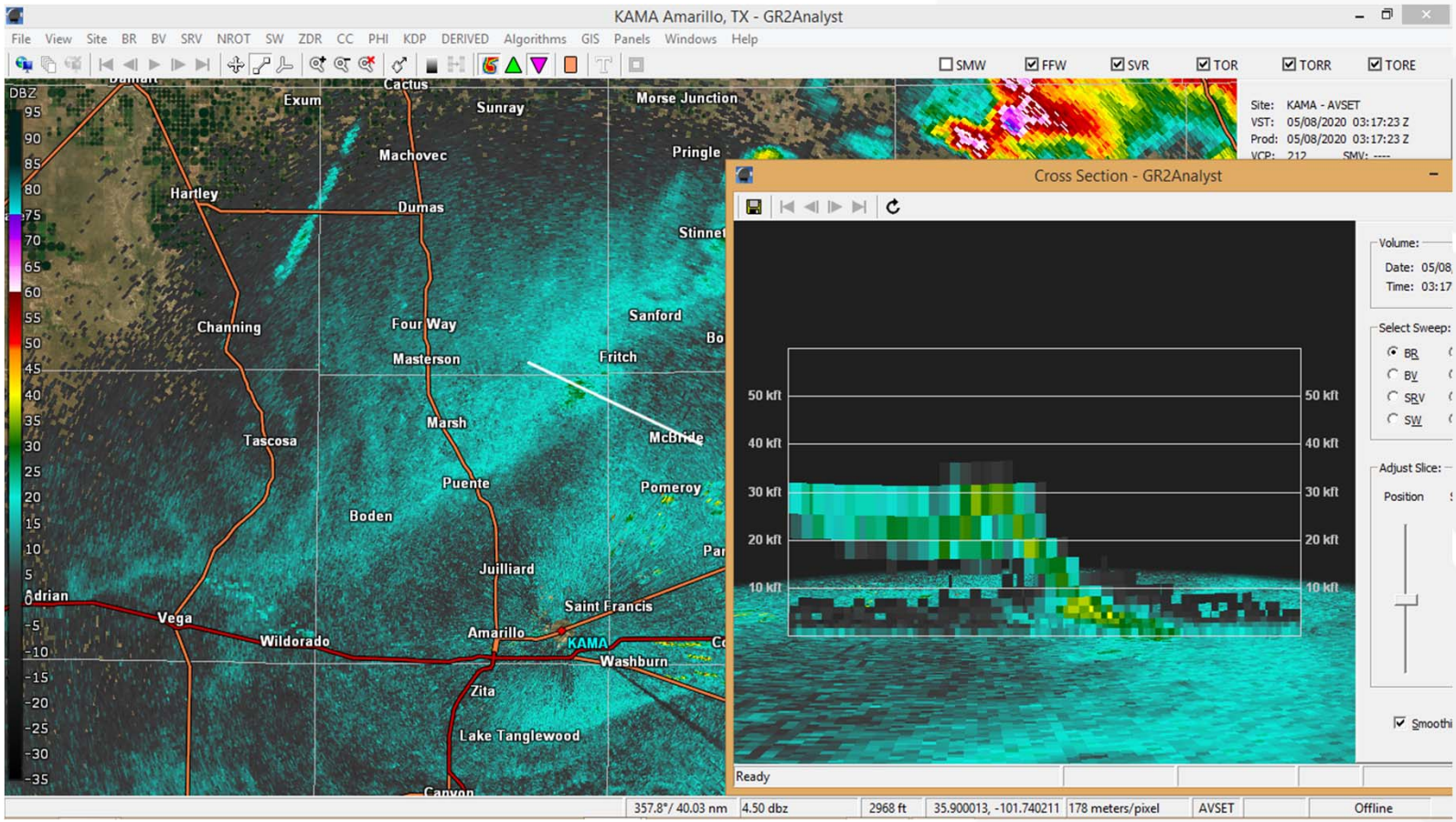
# KAMA 88-D – BR Scan (10 Degree Tilt) – 22:12



# KAMA 88-D – BR Scan– 22:17



# KAMA 88-D – Cross Section Scan– 22:17



# First Intra-Cloud (CC) Strike Occurs At 22:17

**Lightning Event List**

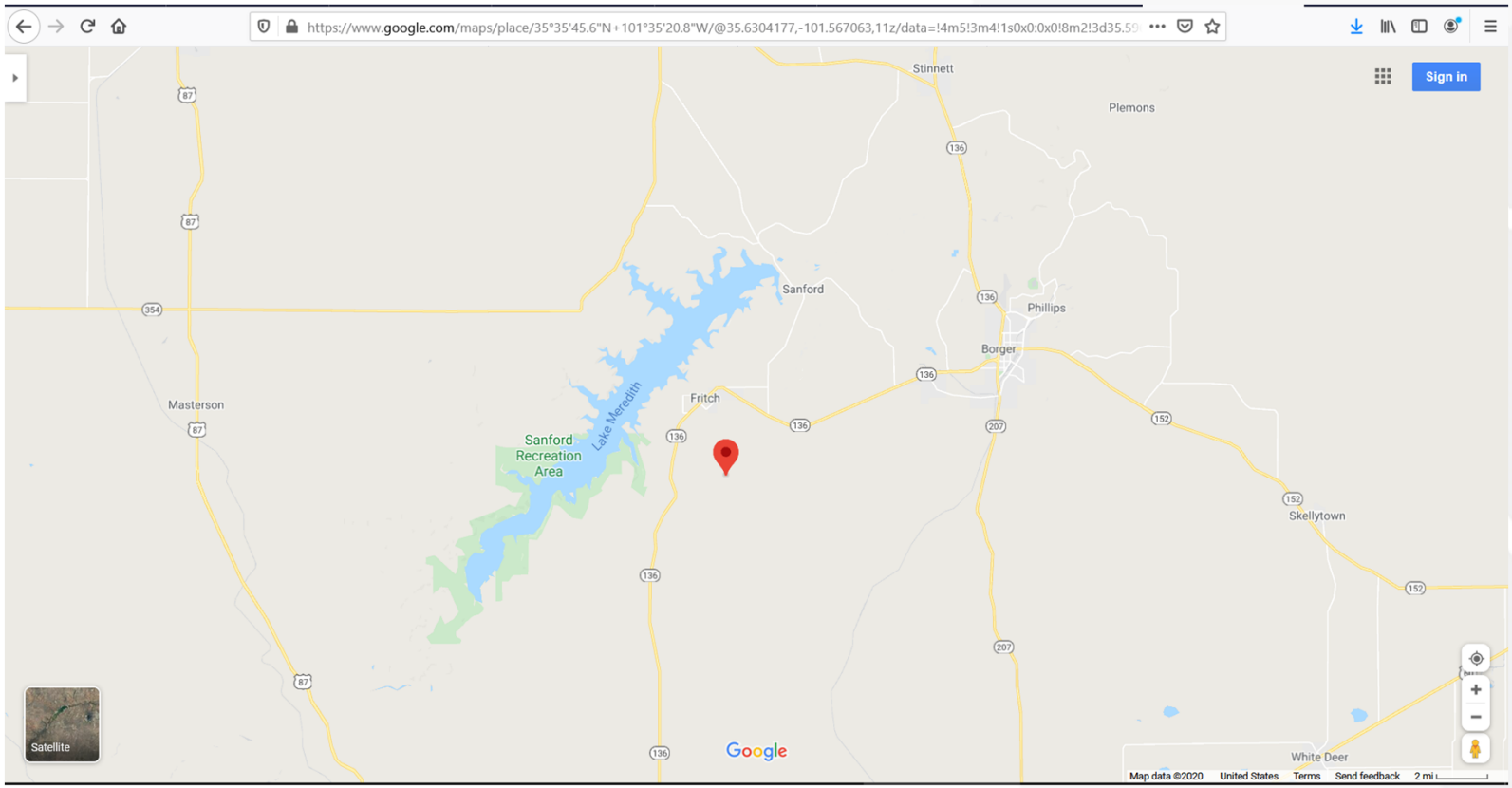
| Date/Time | Latitude | Longitude | Amps | Distance | Bearing (°) |
|---|---|---|---|---|---|
| May 7, 2020 10:17:04 PM CDT | 35.5960 | -101.5891 | -4699 amps | 18.7792 miles | 357.9934 |

# First Cloud-To-Ground (CC) Strike Occurs At 22:17

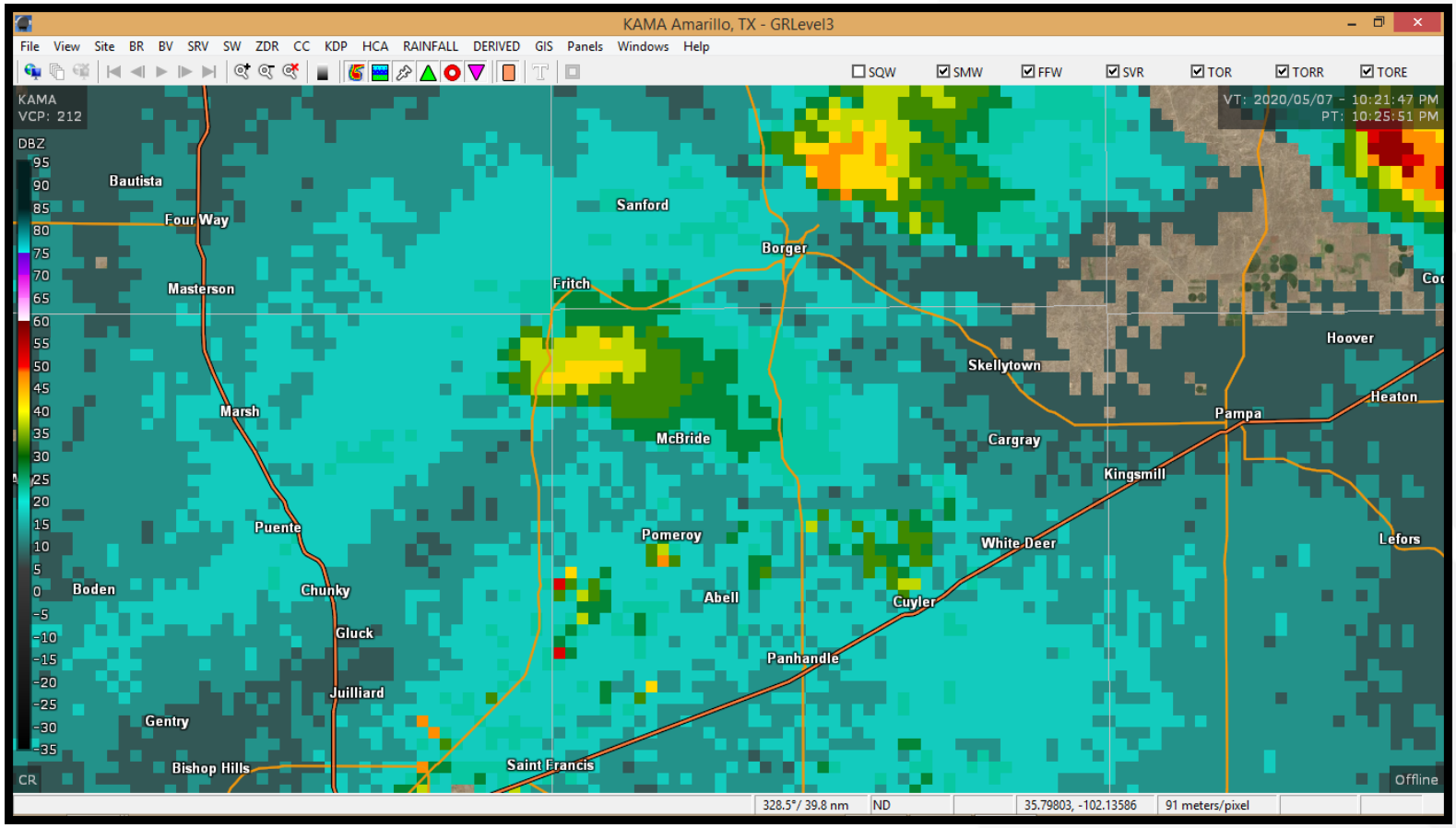
**Lightning Event List**

| Date/Time | Latitude | Longitude | Amps | Distance | Bearing (°) |
|---|---|---|---|---|---|
| May 7, 2020 10:17:04 PM CDT | 35.6093 | -101.5740 | -4828 amps | 19.6829 miles | 0.5589 |

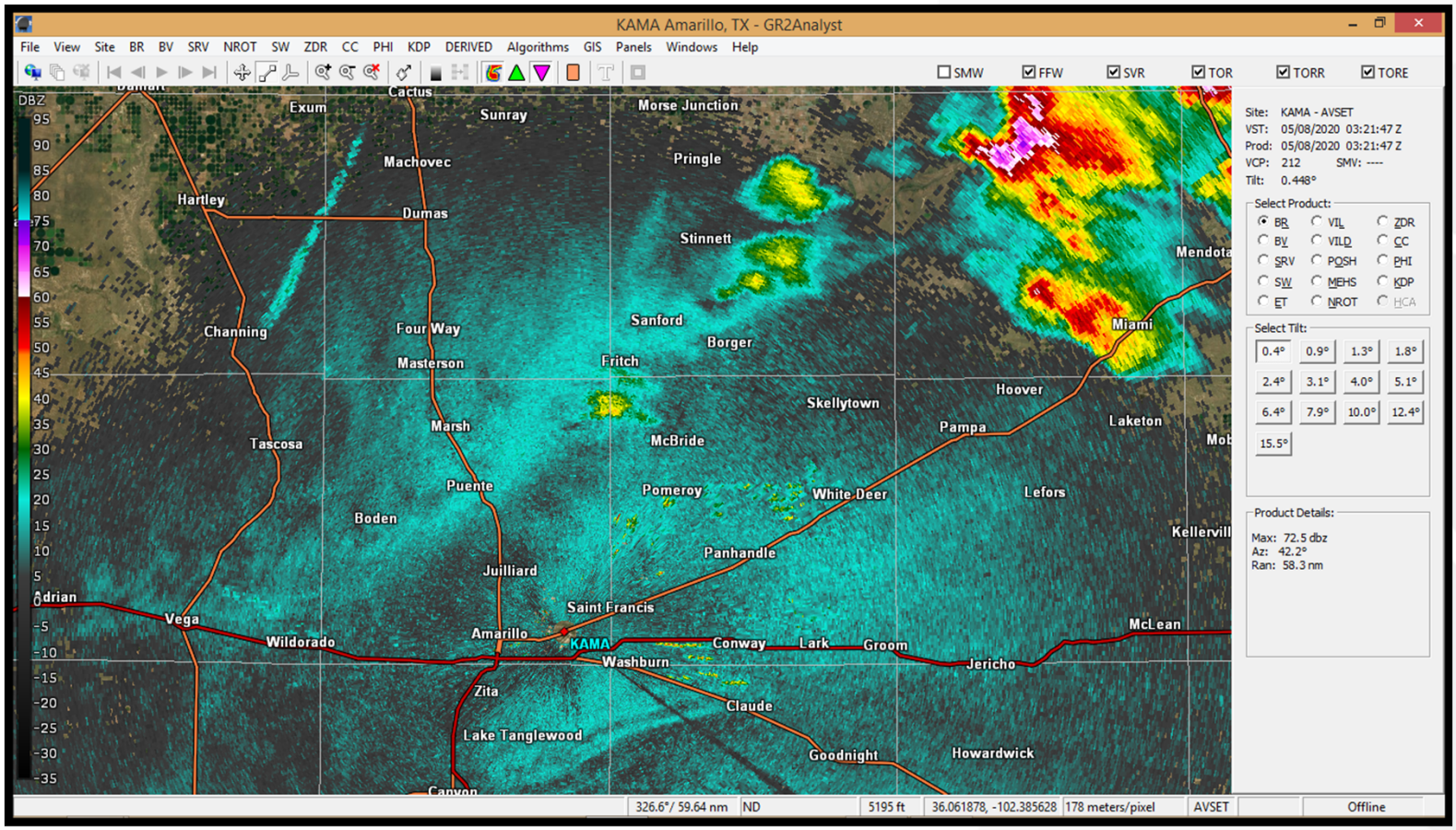
# Location of First CC/CG Strike at 22:17



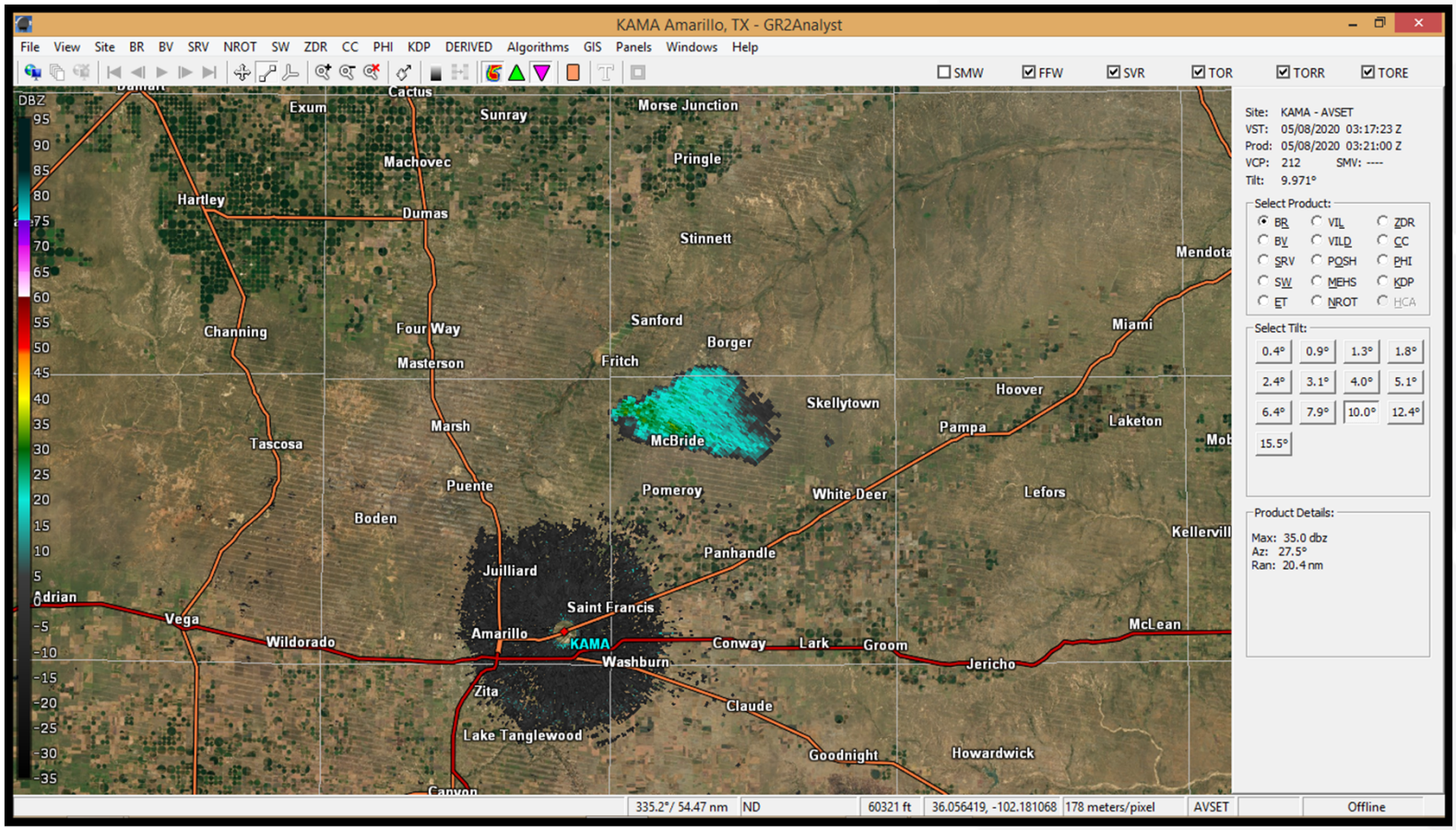
# KAMA 88-D – CR Scan– 22:21



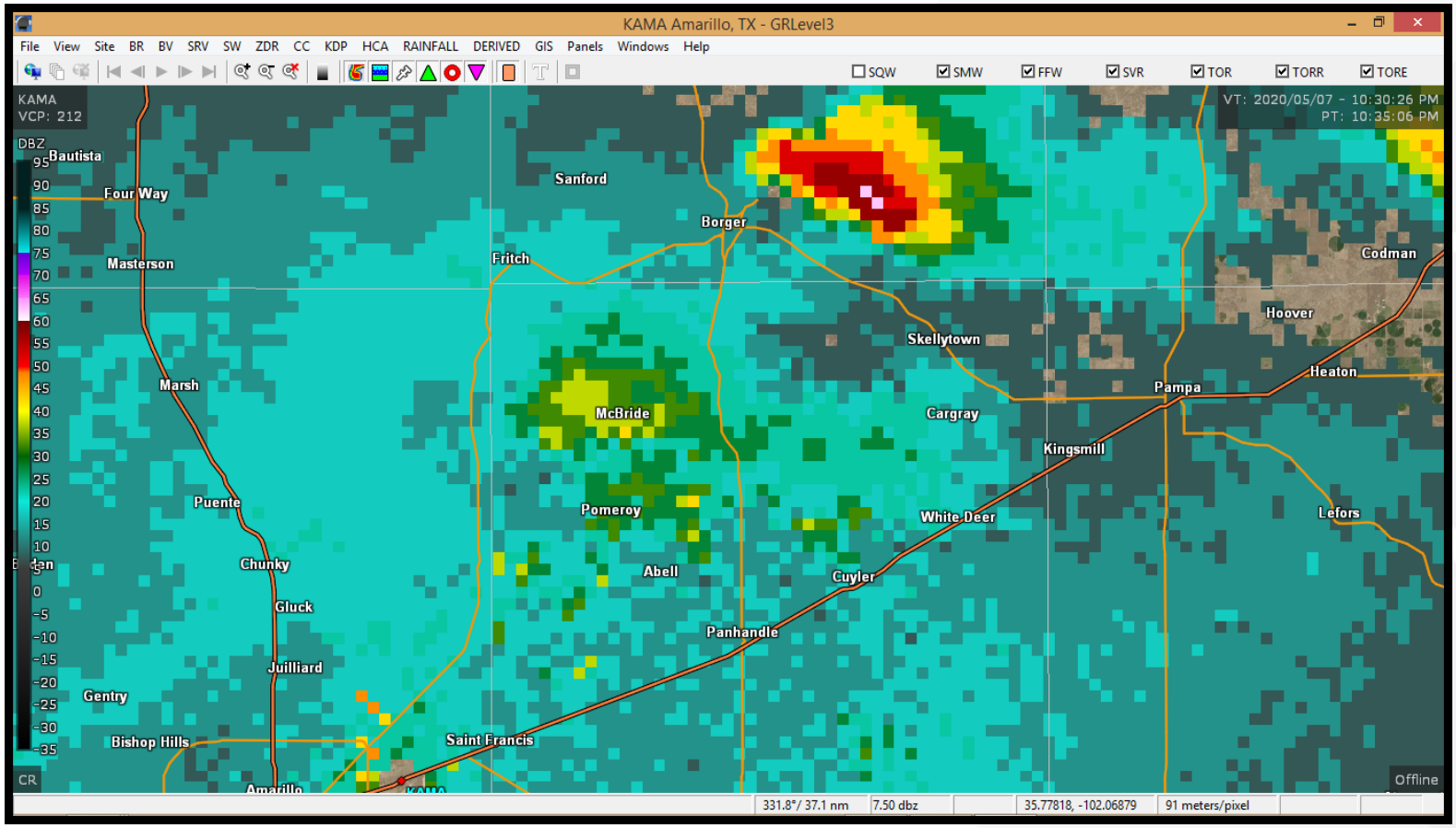
# KAMA 88-D – BR Scan– 22:21



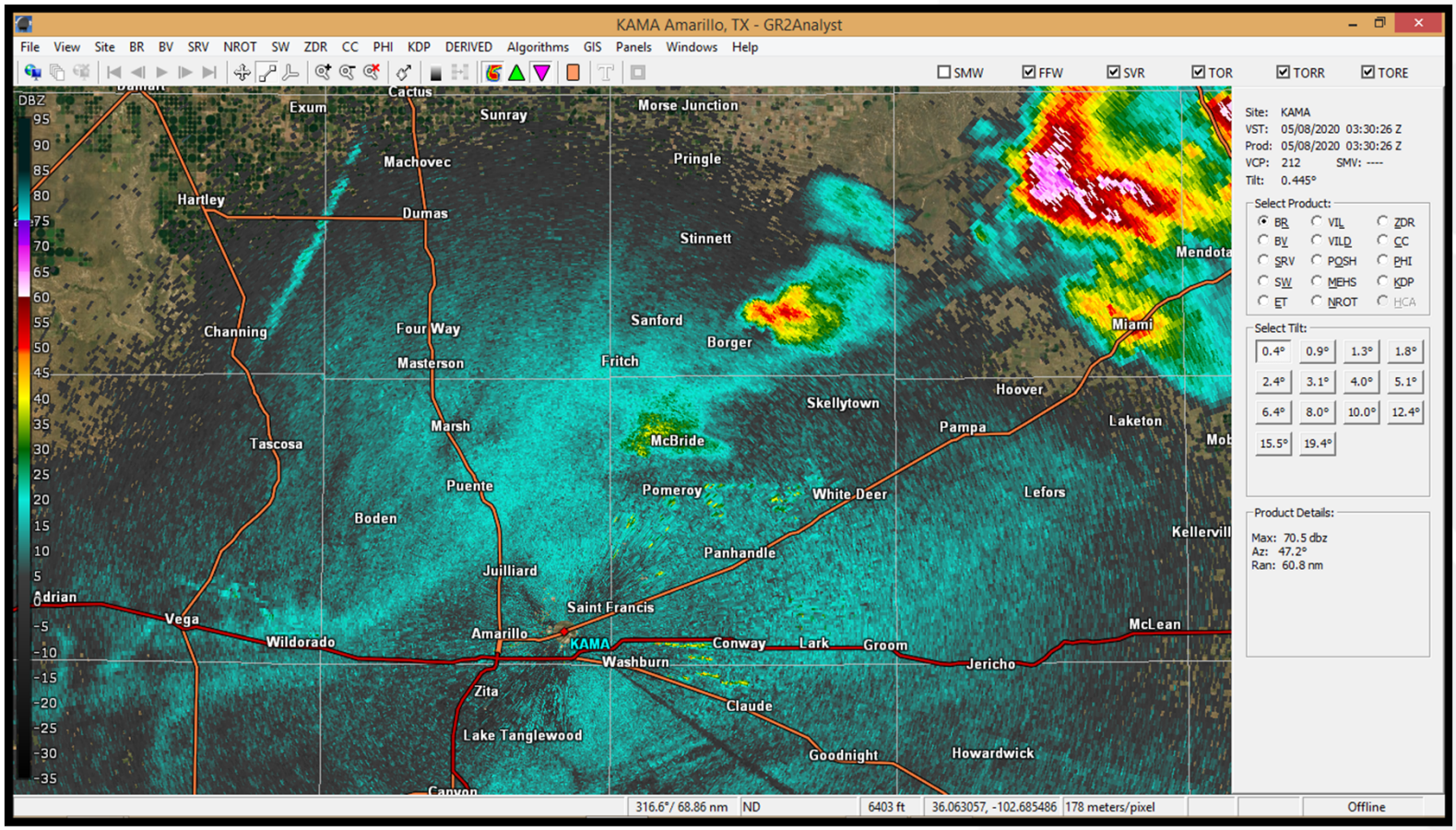
# KAMA 88-D – BR Scan (10 Degree Tilt) – 22:21



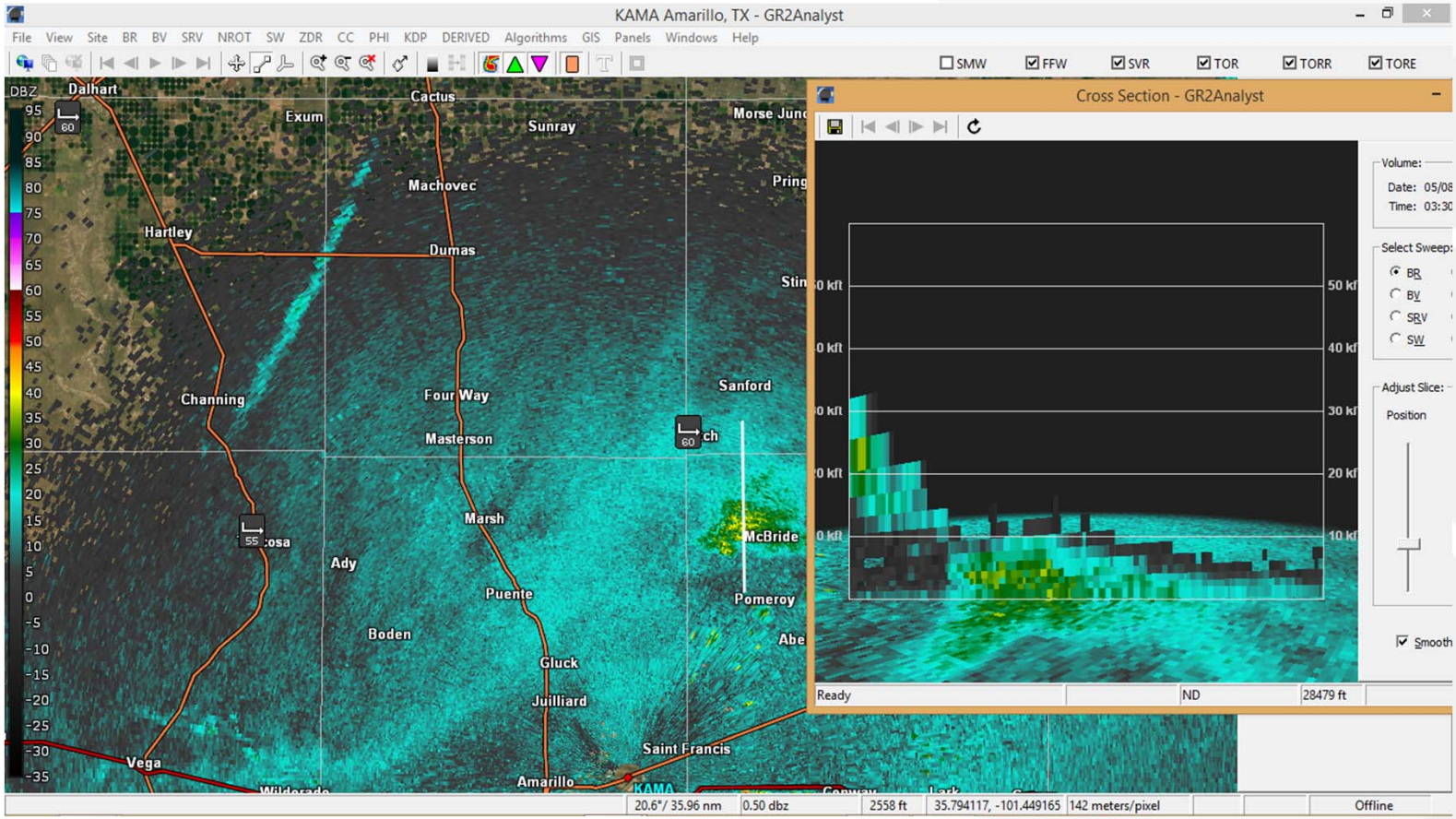
# KAMA 88-D – CR Scan – 22:30



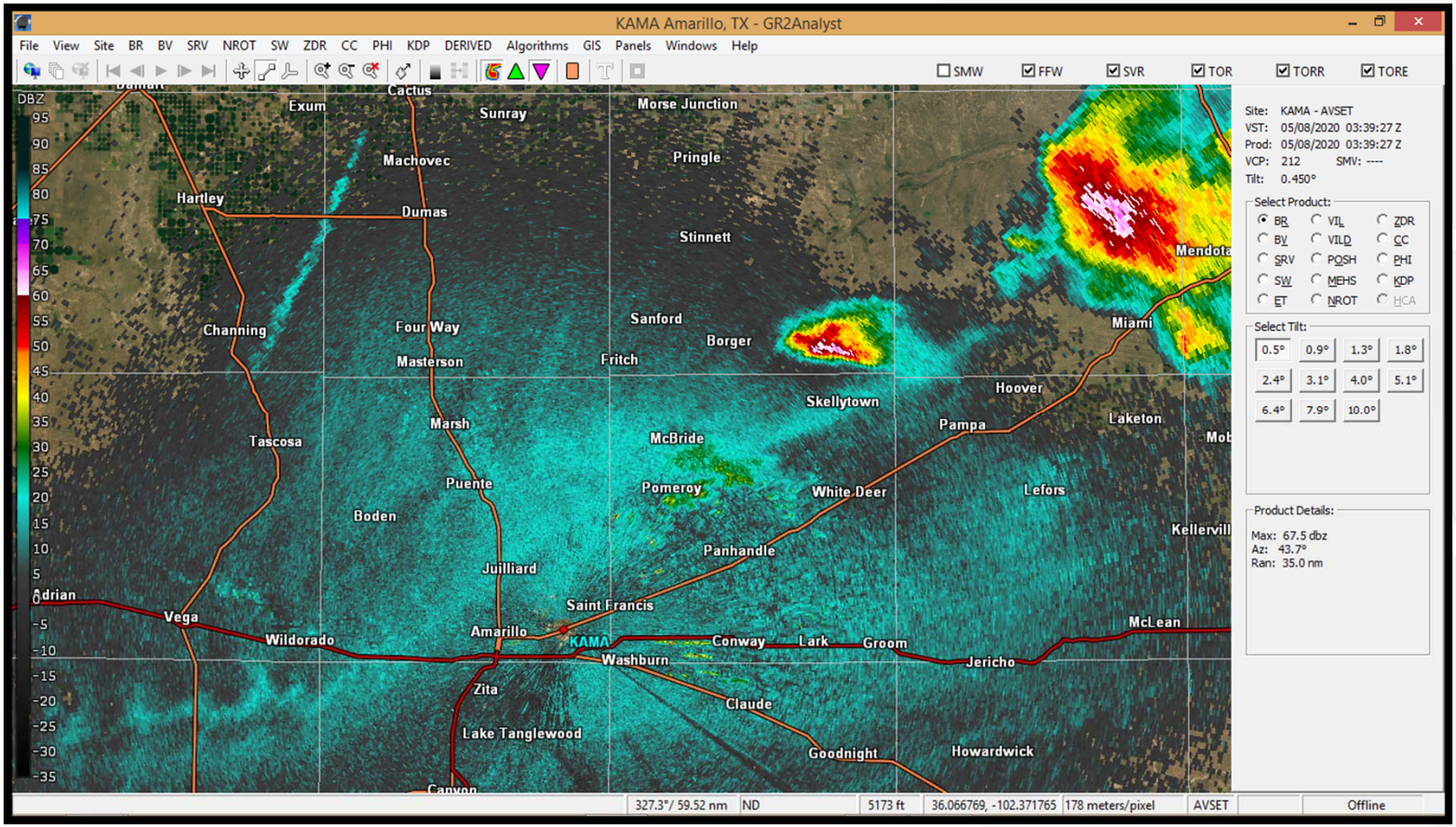
# KAMA 88-D – BR Scan – 22:30



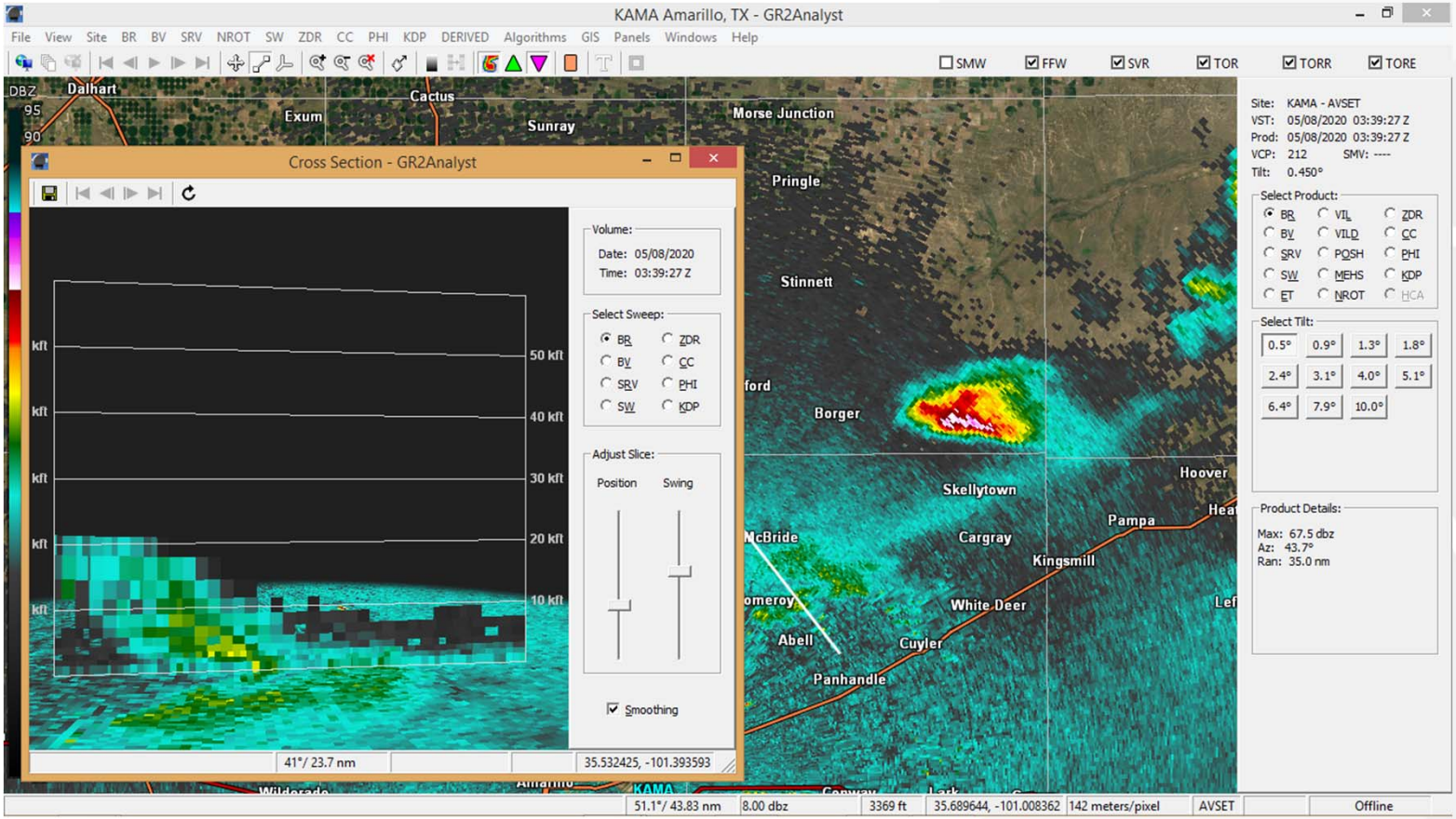
# KAMA 88-D – Cross-Section Scan – 22:30



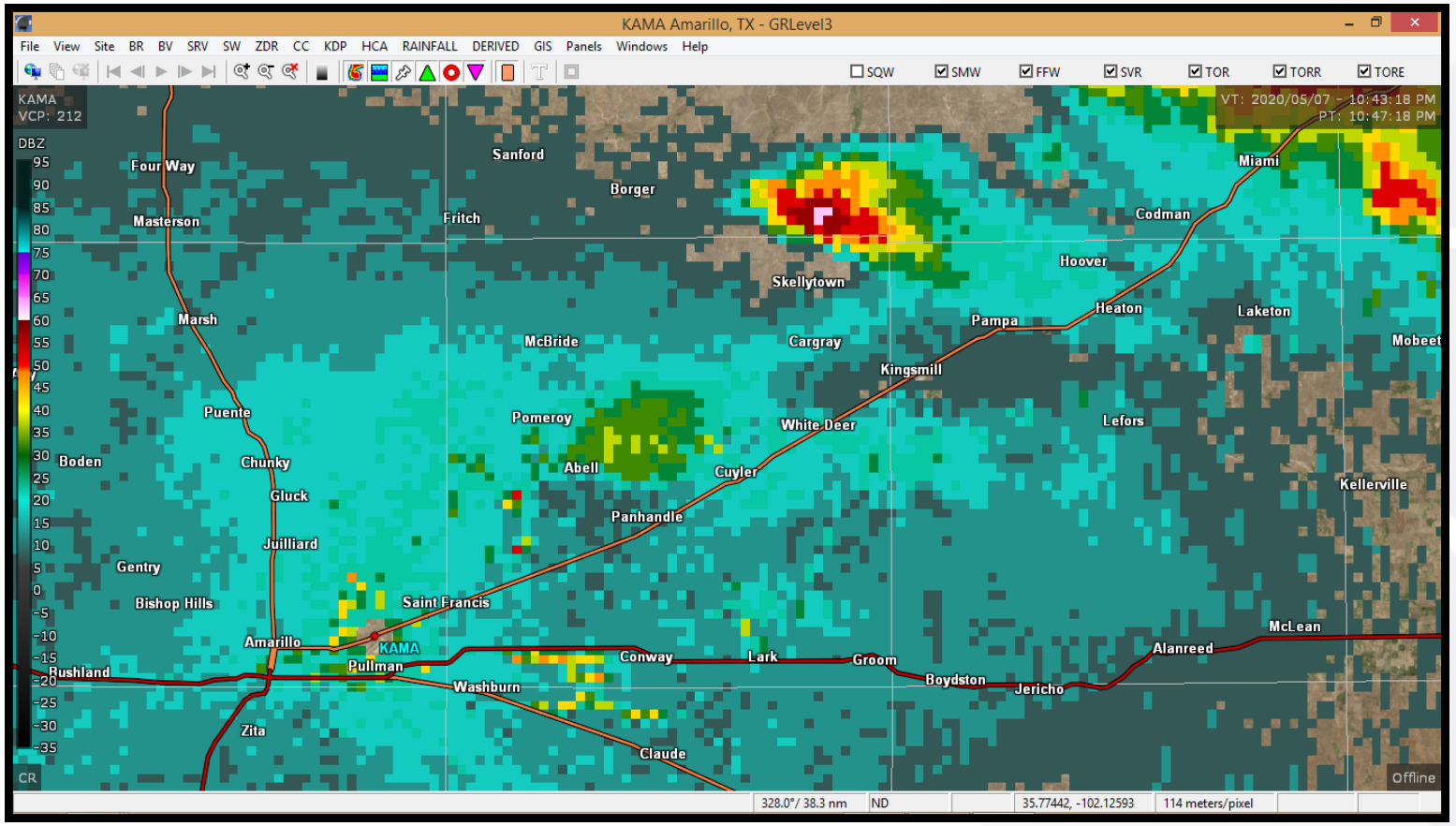
# KAMA 88-D – BR Scan – 22:39



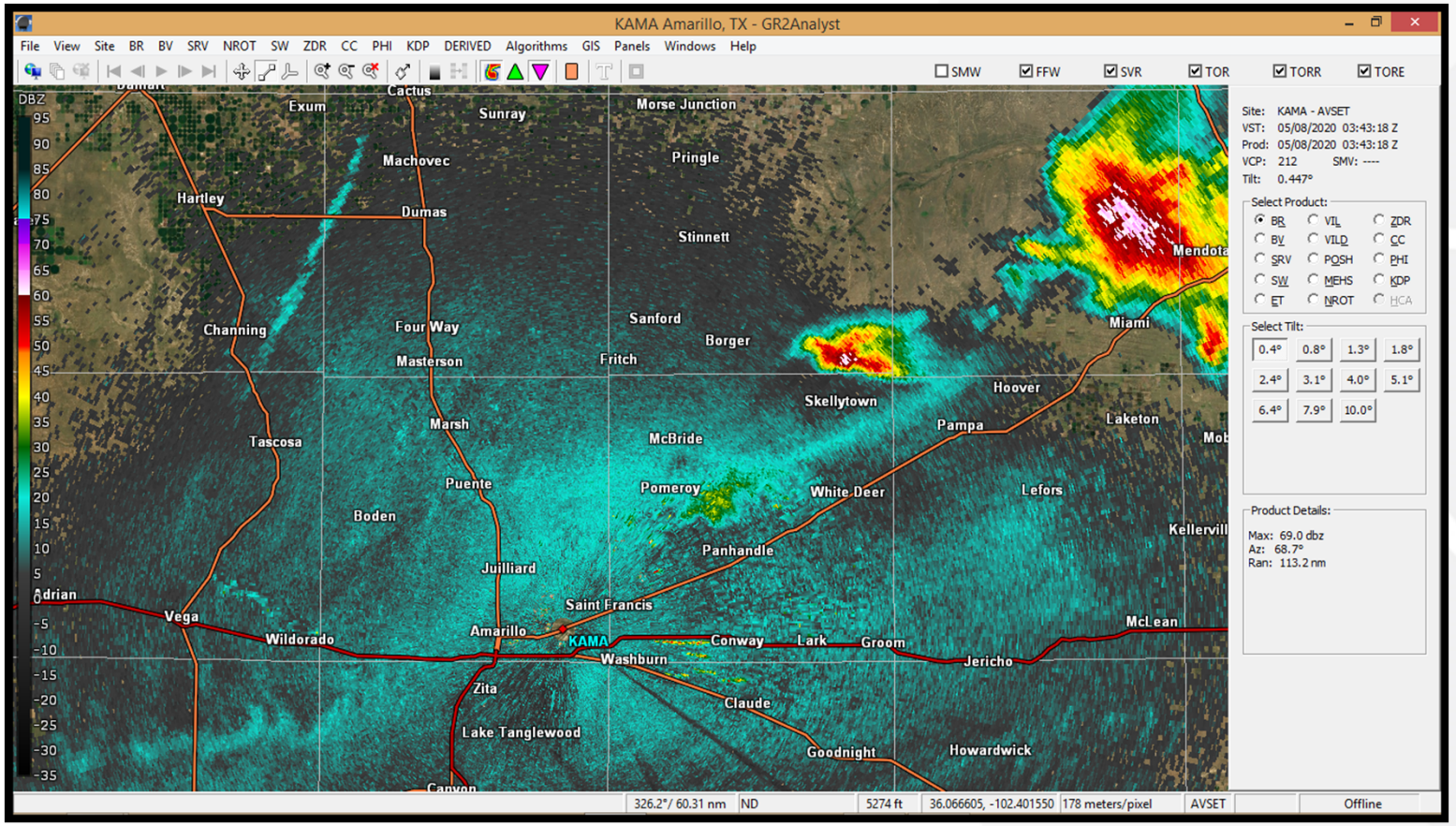
# KAMA 88-D – Cross-Section Scan – 22:39



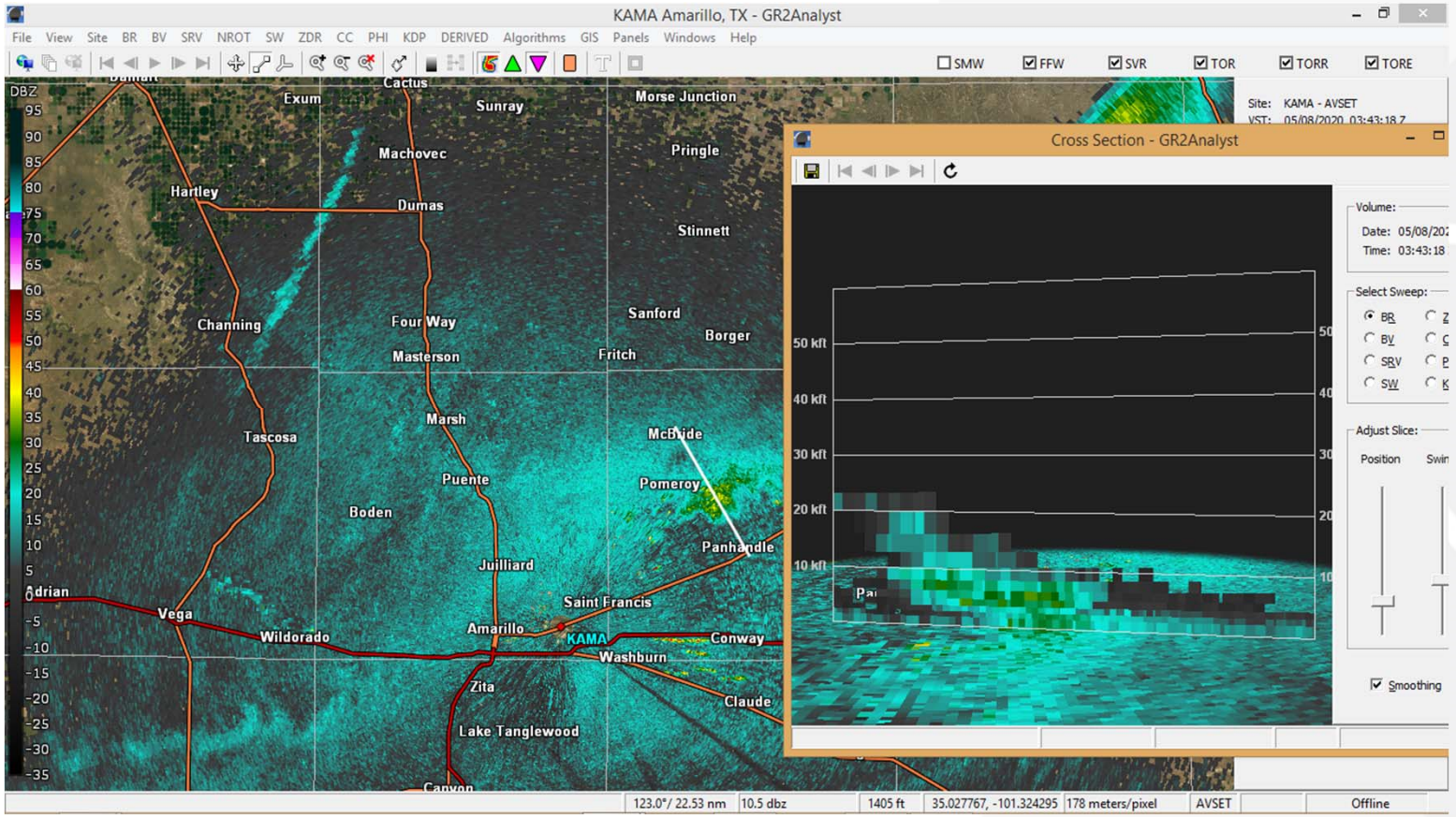
# KAMA 88-D – CR Scan – 22:43



# KAMA 88-D – BR Scan – 22:43



# KAMA 88-D – Cross-Section Scan – 22:43



# Lessons Learned / Summary Of 5/7/20 Storm

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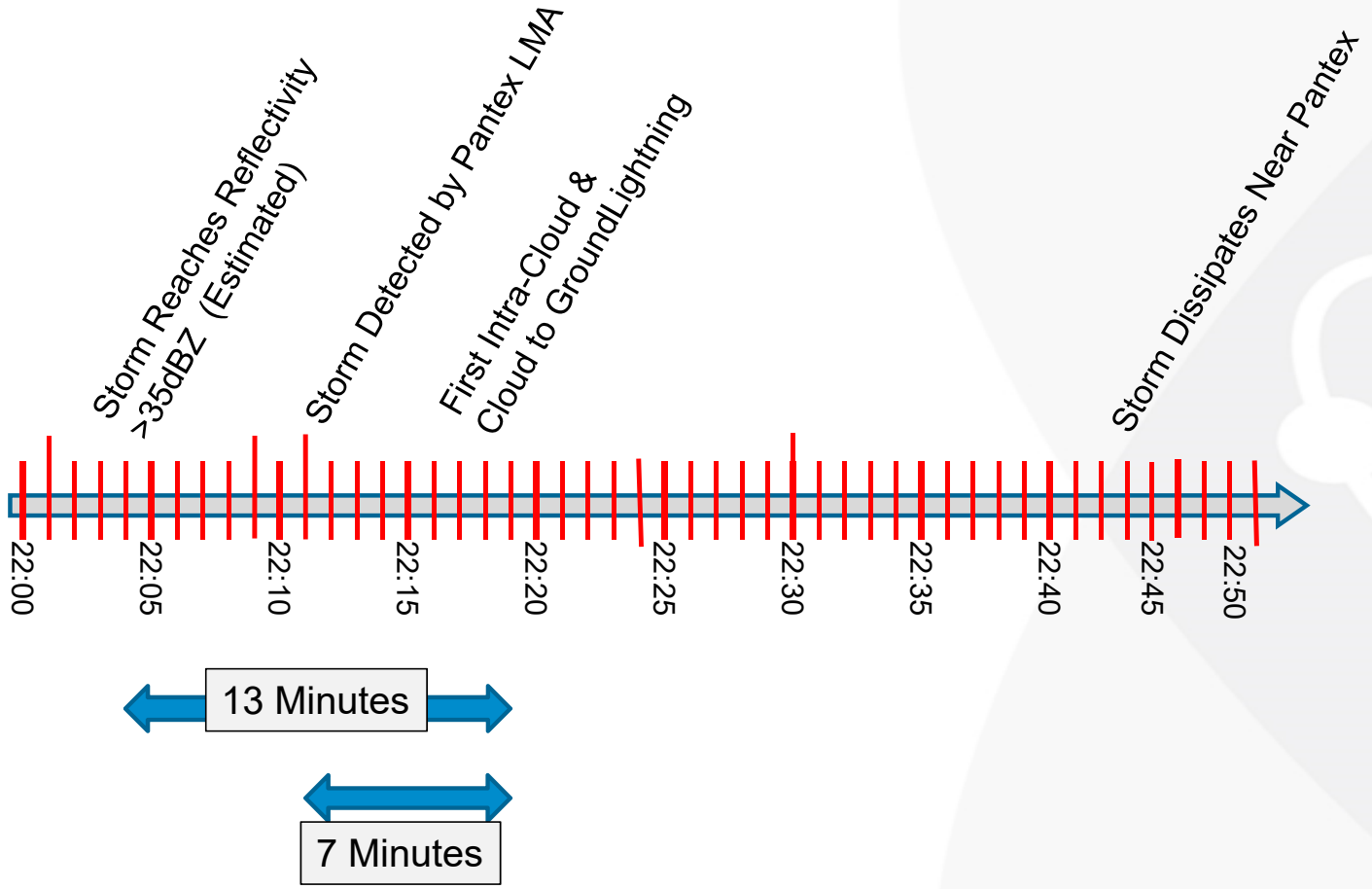
# Lessons Learned / Summary Of 5/7/20 Storm

1. The storm developed along multiple surface boundaries, but was “elevated” in nature.
2. The storm appears to have reached a 35-40 dbz threshold around 22:04.
3. Pantex’s LMA detects “flash densities” at 22:11, or 7 minutes later.
4. The first intra-cloud (CC) and cloud-to-ground strikes occurred simultaneously at 22:17, just south of Fritch.

# Lessons Learned / Summary Of 5/7/20 Storm

5. We had 13 minutes of lead time between the first time the storm reached 35-40 dbz to the first CC/CG lightning strike.

# Timeline for May 7, 2020 Storm Event



PanTEX

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