

# Oklahoma Mesonet / ARS

## Quality Assurance Report

November 2020

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- Mesonet technicians completed scheduled rotations of 10 rain gauges (RAIN/TIP2), 11 batteries (BVAS/BATV), 1 aspirator fan (FANS), 8 barometers (PRES), 12 relative humidity sensors (RELH/TSLO), 7 pyranometers (SRAD), 10 PRT thermometers (TAIR/TA9M), 1 wind direction (WDIR), 11 wind sentries (WS2M), 7 wind monitor nose cones (WSPD), 6 current excitation modules.

### Mesonet QA Report for Standard Variables

| Variable | Status   | Site | Ticket | Remarks  |
|----------|----------|------|--------|--|
|          |          |      |        |  |
| TAIR     | Resolved | MANG | 43424  | TAIR reports over 3 degrees warmer than TSLO during sunny conditions. Problem began during ice melt following October winter storm. Check aspirated enclosure for damage. Sensor enclosure replaced. |
|          | Resolved | PAUL | 43433  | 1.5m sensor reports -7999 or otherwise lower than expected errant values. Wires reseated, cable fine. Continue to monitor.   |
|          |          |      |        |  |
| RELH     |          |      |        |  |
|          |          |      |        |  |
| WSPD     |          |      |        |  |
|          |          |      |        |  |
| WDIR     |          |      |        |  |
|          |          |      |        |  |
| PRES     |          |      |        |  |
|          |          |      |        |  |
| SRAD     |          |      |        |  |

|             |                 |             |              |  |
|-------------|-----------------|-------------|--------------|--|
|             |                 |             |              |  |
| <b>RAIN</b> | <b>Resolved</b> | <b>FORA</b> | <b>43288</b> | <b>Primary gauge drip tests lower than desired. Please replace gauge. Gauge replaced.</b>  |
|             | <b>Resolved</b> | <b>FORA</b> | <b>43285</b> | <b>Secondary gauge drip tested 3 tips low for two consecutive post-cleaning tests. Please replace gauge. Gauge replaced.</b>   |
|             | <b>Current</b>  | <b>BYAR</b> | <b>43445</b> | <b>Secondary gauge underreports tips during rain events. Replace cable on primary gauge for consistency.</b>   |
|             | <b>Current</b>  | <b>BYAR</b> | <b>43443</b> | <b>Secondary gauge misses or underreports tips during rain events. Please replace rain gauge cable.</b>  |
|             | <b>Current</b>  | <b>BIXB</b> | <b>43409</b> | <b>Secondary gauge drip tested 3 tips low for two consecutive post-cleaning tests. Please replace gauge.</b>   |
|             |                 |             |              |  |
| <b>TA9M</b> | <b>Resolved</b> | <b>HECT</b> | <b>43439</b> | <b>Sensor reports errant values at or near -248C for several hours then returns to normal. Please replace sensor cable. Replaced cable.</b>                                      |
|             |                 |             |              |  |
| <b>WS2M</b> | <b>Current</b>  | <b>HECT</b> | <b>43459</b> | <b>Mice nest found inside enclosure. Technician confirmed damage to WS2M cable. Damage patched with electrical tape. No problems found in data at this time. Replace sensor.</b> |
|             |                 |             |              |  |
| <b>TB10</b> |                 |             |              |  |
|             |                 |             |              |  |
| <b>TS05</b> |                 |             |              |  |
|             |                 |             |              |  |
| <b>TS10</b> |                 |             |              |  |
|             |                 |             |              |  |
| <b>TS25</b> |                 |             |              |  |
|             |                 |             |              |  |
| <b>TS60</b> |                 |             |              |  |
|             |                 |             |              |  |

|       |          |      |       |  |
|-------|----------|------|-------|--|
| TR05  | Resolved | ACME | 43449 | Sensor reports errant spikes in values during high humidity and rain. Original Sensor. Please replace. Replaced.   |
|       | Resolved | HOLL | 43434 | Sensor slow to reach or doesn't reach saturation following heavy rain events. Original sensor. Please replace. Sensor replaced.  |
|       |          |      |       |  |
| TRB10 |          |      |       |  |
|       |          |      |       |  |
| TRS10 | Resolved | ACME | 43311 | Both soil temperature and soil moisture reporting -7999 or otherwise errant, erratic values. Reseated wiring and changed ports in CE. No change in readings. Replaced.   |
|       | Current  | EUFA | 43278 | Sensor returns erratic, noisy moisture values. Soil temperature fine. Suspect failing heater. Replace.   |
|       | Current  | TAHL | 43377 | Soil moisture values very erratic. Starting temperature reasonable, final temperature changing more rapidly than expected. Soil temperature fine.  |
|       |          |      |       |  |
| TR25  | Resolved | CHEY | 43384 | Soil moisture values errantly spike downward during high humidity. Soil temp fine. Original sensor. Please replace. Sensor replaced.   |
|       |          |      |       |  |
| TR60  | Resolved | HINT | 43381 | Soil moisture values errantly spike downward during high humidity and rain. Soil temperature unaffected. Pass photos from 2019 reveal exposed sensor wiring exiting equipment enclosure and near base of tower. Please replace. Sensor replaced. |
|       | Current  | EVAX | 43257 | Both soil temperature and soil moisture frequently report -7999. Please replace sensor.  |
|       | Current  | NEWK | 42247 | 60-cm sensor doesn't heat as expected, resulting in bad soil moisture data. Soil temperature is fine.  |
|       |          |      |       |  |

## ARS QA Report for Standard Variables

| Variable | Status | Site | Ticket | Remarks |
|----------|--------|------|--------|---------|
|          |        |      |        |         |
| RAIN     |        |      |        |         |
|          |        |      |        |         |
| VW05     |        |      |        |         |
|          |        |      |        |         |
| VW25     |        |      |        |         |
|          |        |      |        |         |
| VW45     |        |      |        |         |
|          |        |      |        |         |
| V05T     |        |      |        |         |
|          |        |      |        |         |
| V25T     |        |      |        |         |
|          |        |      |        |         |
| V45T     |        |      |        |         |
|          |        |      |        |         |

## FCARS QA Report for Standard Variables

| Variable    | Status          | Site        | Ticket       | Remarks   |
|-------------|-----------------|-------------|--------------|---|
|             |                 |             |              |   |
| <b>RAIN</b> |                 |             |              |   |
|             |                 |             |              |   |
| <b>VW05</b> | <b>Resolved</b> | <b>F114</b> | <b>43191</b> | <b>5-cm soil sensor frequently reports bad values. Please replace sensor. Sensor replaced.</b>  |
|             |                 |             |              |   |
| <b>VW25</b> | <b>Resolved</b> | <b>F105</b> | <b>43275</b> | <b>25 cm sensor continues to report lower voltage readings than expected, especially for 1st voltage. Please replace sensor. Sensor replaced.</b> |
|             |                 |             |              |   |
| <b>VW45</b> |                 |             |              |   |
|             |                 |             |              |   |
| <b>V05T</b> |                 |             |              |   |
|             |                 |             |              |   |
| <b>V25T</b> |                 |             |              |   |
|             |                 |             |              |   |
| <b>V45T</b> |                 |             |              |   |
|             |                 |             |              |   |

'Current' tickets are the unresolved tickets as of the last day of the month OR those tickets added based on the Monthly QA analysis.

'Resolved' tickets are the sensor problems that were fixed during the entire month.

| <b>Variable</b> | <b>Description</b>   |
|-----------------|--|
| <b>TAIR</b>     | <b>Air temperature at 1.5 meters</b>                                     |
| <b>RELH</b>     | <b>Relative humidity at 1.5 meters</b>                                   |
| <b>WDIR</b>     | <b>Wind direction at 10 meters</b>                                       |
| <b>WSPD</b>     | <b>Wind speed at 10 meters</b>   |
| <b>PRES</b>     | <b>Air pressure</b>  |
| <b>SRAD</b>     | <b>Incident solar radiation</b>  |
| <b>RAIN</b>     | <b>Rainfall</b>  |
| <b>TA9M</b>     | <b>Air temperature at 9 meters</b>                                       |
| <b>WS2M</b>     | <b>Wind speed at 2 meters</b>  |
| <b>TB10</b>     | <b>Soil temperature at 10 cm under bare soil</b>                         |
| <b>TS05</b>     | <b>Soil temperature at 5 cm under native sod</b>                         |
| <b>TS10</b>     | <b>Soil temperature at 10 cm under native sod</b>                        |
| <b>TS25</b>     | <b>Soil temperature at 25 cm under native sod</b>                        |
| <b>TS60</b>     | <b>Soil temperature at 60 cm under native sod</b>                        |
| <b>TR05</b>     | <b>Soil moisture: Calibrated DeltaT at 5 cm under native sod</b>         |
| <b>TRB10</b>    | <b>Soil moisture: Calibrated DeltaT at 10 cm under bare soil</b>         |
| <b>TRS10</b>    | <b>Soil moisture: Calibrated DeltaT at 10 cm under native sod</b>        |
| <b>TR25</b>     | <b>Soil moisture: Calibrated DeltaT at 25 cm under native sod</b>        |
| <b>TR60</b>     | <b>Soil moisture: Calibrated DeltaT at 60 cm under native sod</b>        |
| <b>VW05</b>     | <b>Soil moisture: Volumetric water content at 5 cm under native sod</b>  |
| <b>VW25</b>     | <b>Soil moisture: Volumetric water content at 25 cm under native sod</b> |
| <b>VW45</b>     | <b>Soil moisture: Volumetric water content at 45 cm under native sod</b> |
| <b>V05T</b>     | <b>Soil temperature at 5 cm under native sod</b>                         |
| <b>V25T</b>     | <b>Soil temperature at 25 cm under native sod</b>                        |
| <b>V45T</b>     | <b>Soil temperature at 45 cm under native sod</b>                        |