

Oklahoma Mesonet/ARS Quality Assurance Report October 2021

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- Mesonet technicians completed scheduled rotations of 14 batteries (BATV/BVAS), 2 barometers (PRES), 10 rain gauges (RAIN/TIP2), 13 relative humidity sensors (RELH/TSLO), 8 pyranometers (SRAD), 12 PRT thermometers (TAIR/TA9M), 1 thermistor, 2 wind directions (WDIR), 10 wind sentries (WS2M), 5 wind monitor nose cones (WSPD), and 5 current excitation modules.
- A suspected datalogger problem at Pawnee (PAWN) resulted in missed records on the morning of October 11. The logger was subsequently replaced on October 20. No missing records since the initial problems on October 11.

Mesonet QA Report for Standard Variables

| Variable | Status | Site | Ticket | Remarks |
|----------|---------|------|--------|--|
| TAIR | Current | NRMN | 45019 | Tech visit confirms damage to aspirated shelter. Photos reveal hailstone induced puncture in plastic on top of sensor enclosure. Please replace. |
| RELH | Current | NRMN | 45020 | Tech visit this morning confirms damage to sensor housing. Hailstone induced puncture in top most disc of radiation shield. Please replace radiation shield. |
| WSPD | | | | |
| WDIR | Current | NRMN | 45022 | Please inspect windmonitor body for potential hail damage. If damaged, please replace. Currently no problems seen in data. |

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|-------------|-----------------|-------------|--------------|--|
| PRES | Resolved | CAMA | 45027 | Values sometimes report much higher and more erratically than expected, particularly following rainfall. Suspect problem lies with warped/shrunken barometer tubing. Please replace barometer tubing with prepared sections of tube in FieldReady box. Bring old tube back to lab for examination. Replaced. |
| | Resolved | WOOD | 45025 | Values sometimes report much higher and more erratically than expected, particularly following rainfall. Suspect problem lies with warped/shrunken barometer tubing. Please replace barometer tubing with prepared sections of tube in FieldReady box. Bring old tube back to lab for examination. Replaced. |
| | Current | NOWA | 45028 | Values often report much higher than neighbors during morning hours following near zero dewpoint depression before stepping down to normal. Suspect problem lies with warped/shrunken barometer tubing. Please replace barometer tubing with prepared sections of tube in FieldReady box. Bring old tube back to lab for examination. |
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| SRAD | Resolved | OKEM | 44972 | Continuously reports significantly less than neighbors during daylight hours but still follows expected diurnal curve. Suspect dirty sensor. No significant rain chances in the next 10 days. Please clean and level sensor. Cleaned sensor, readings normal. |
| | Current | REDR | 45051 | Following tower leveling during most recent pass, sensor now unlevel to the west, diurnal curve slightly wider on the right side when plotted. Please ensure sensor is level, independent of the tower. |
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| RAIN | Current | BUFF | 45085 | Primary gauge drip tested 3 tips low for two consecutive post-cleaning tests. Please replace gauge. |
| | Current | PORT | 45053 | Gauge fails to record tips during first few hours of ongoing moderate rainfall according to |

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|------|----------|------|-------|--|
| | | | | radar. Suspect gauge may be clogged. |
| | Current | PORT | 45055 | Gauge does not record tips during the first few hours of ongoing moderate rainfall, before very rapidly increasing in reported tips, faster than radar would indicate. Suspect gauge is affected by a clog. |
| | Current | WATO | 45042 | Primary gauge misses events entirely while secondary gauge reports reasonable values. Cables already replaced just over a month ago. |
| | Current | MEDF | 45009 | Secondary rain gauge slowly responds to rain and reports a lower total than primary gauge. Suspect gauge is clogged. |
| | Current | SEIL | 45057 | Secondary gauge drip tested 3 tips low for two consecutive post-cleaning tests. Please replace gauge. |
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| TA9M | Current | NRMN | 45024 | Please inspect radiation shield for potential hail damage. If damaged, replace radiation shield. No problems currently seen in data. |
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| WS2M | Resolved | FITT | 45029 | 2m wind sensor initially stepped down for several hours, now barely spins even with WSPD > 7m/s. Timing does not readily indicate storm damage as problem started over an hour before storm arrival. Event two days prior just grazed the site, with no notable change in behavior during first event storm passage. NO ACTION TAKEN: Problem resolved automatically. |
| | Current | NRMN | 45021 | Tech visit confirms damage to WS2M sensor. Anemometer cup likely cracked by hailstone. Please replace sensor. |
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| TB10 | Resolved | HOBA | 44870 | Continuity 10cm bare sensor reporting -7999 or otherwise errant, negative values. Please replace sensor. Replaced. Original sensors were previously decapitated. |
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| TS05 | | | | |
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| TS10 | | | | |
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| TS25 | | | | |
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| TS60 | | | | |
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| TR05 | Current | FREE | 45086 | 5cm sod sensor stopped heating. Starting and final temperatures are the same. |
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| TRB10 | Resolved | ADAX | 44885 | 10cm under bare soil starting, final, and average soil temperature report -7999. Replaced. |
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| TRS10 | Resolved | HOLL | 44860 | Sensor heating less than expected, causing bad soil moisture data. Problem does not trace to any current_ex replacement. Please replace sensor. Replaced. |
| | Current | BREC | 44969 | After prolonged period of noisy data, 10cm sod final temperature now same as starting temp or reports random bad value. |
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| TR25 | Resolved | EUFA | 44967 | Soil moisture values errantly spike downward during high humidity. Please replace sensor. Replaced. Sensor damaged during retrieval. Unable to conduct post test. |
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| TR60 | Current | WASH | 44868 | Both soil temperature and moisture values reporting -7999. Please replace sensor. |

ARS QA Report for Standard Variables

| Variable | Status | Site | Ticket | Remarks |
|-------------|----------------|-------------|--------------|---|
| | | | | |
| RAIN | | | | |
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| VW05 | | | | |
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| VW25 | Current | A131 | 44871 | Voltages 1-3 reporting values near zero, resulting in errant soil moisture values. Please replace. |
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| VW45 | | | | |
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| V05T | | | | |
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| V25T | | | | |
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| V45T | | | | |
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FCARS QA Report for Standard Variables

| Variable | Status | Site | Ticket | Remarks |
|-------------|-----------------|-------------|--------------|--|
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| RAIN | | | | |
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| VW05 | Resolved | F102 | 45044 | Following heavy rain event on 10/10, sensor began reporting extreme diurnal variation in moisture values. Suspect one or more sensor prongs are exposed or extremely close to surface. Please rebury and ensure all logger connections are secured. Reburied sensor. Verified and reseated wires. |
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| VW25 | | | | |
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| VW45 | | | | |
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| V05T | | | | |
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| V25T | | | | |
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| V45T | | | | |
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'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.

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