

# Oklahoma Mesonet / ARS Quality Assurance Report

**June 2019**

Prepared by Ethan Becker and Cindy Luttrell  
qamgr@mesonet.org

- Mesonet technicians completed scheduled rotations of 8 batteries (BATV, BVAS), 3 barometers (PRES), 5 rain gauges (RAIN, TIP2), 5 relative humidity sensors (RELH/TSLO), 1 pyranometer (SRAD), 6 PRT thermometers (TAIR/TA9M), 6 wind direction sensors (WDIR), 1 wind sentry (WS2M), 7 wind monitor nose cones (WSPD), and 2 current exciters.
- The CDM at the Nowata site (NOWA) was not operational for a brief period, causing loss of some data.
- A lightning strike at the Norman site (NRMN) damaged a few sensors, but didn't result in total loss of data.
- Stolen equipment at the A253 site resulted in data loss.

## Mesonet QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
TAIR				
RELH	Current	KENT	39259	Relative humidity and slow temperature report large negative values. Data failed altogether starting 9-Jun.
WSPD	Resolved	ELRE	39226	10m-wind speed has a starting threshold problem and a low bias during high winds. Replaced.
WDIR				
PRES	Resolved	PRYO	39147	Pressure samples sometimes 1-2mb too high. Most spikes do not affect average pressure. Replaced.
	Resolved	PUTN	39270	PRES reports errant values. Re-wired barometer.
SRAD	Current	HUGO	39321	Solar radiation reports errant values.

<b>RAIN</b>	<b>Resolved</b>	<b>ALV2</b>	<b>39169</b>	<b>Primary rain gauge sometimes reports significantly more than TIP2. Suspect cover problem. Cover replaced.</b>
	<b>Resolved</b>	<b>COPA</b>	<b>39216</b>	<b>TIP2 sometimes misses tips at start of rainfall. Replaced cable ends with soldered variety and cleaned.</b>
	<b>Resolved</b>	<b>OILT</b>	<b>39166</b>	<b>TIP2 sometimes much higher than RTIP. Replaced cover.</b>
	<b>Resolved</b>	<b>PRYO</b>	<b>39119</b>	<b>TIP2 over 10 percent higher than RTIP during heavy rain events. Suspect cover problem. Replaced cover.</b>
	<b>Current</b>	<b>KENT</b>	<b>39266</b>	<b>Primary rain gauge measured tips when no precip in area. Gauge now misses all rain events.</b>
	<b>Current</b>	<b>KENT</b>	<b>39380</b>	<b>Secondary rain gauge under reports during rain events compared to nearby cocorahs and radar.</b>
	<b>Current</b>	<b>KIN2</b>	<b>39386</b>	<b>Secondary gauge sometimes reports much more than expected. Replace gauge.</b>
<b>TA9M</b>				
<b>WS2M</b>	<b>Current</b>	<b>KENT</b>	<b>39273</b>	<b>2m-wind speed gust reported errant data.</b>
<b>TB10</b>	<b>Current</b>	<b>SLAP</b>	<b>39314</b>	<b>10cm bare sensor reports errant values.</b>
<b>TS05</b>	<b>Current</b>	<b>WAL2</b>	<b>40123</b>	<b>TS05 has similar diurnal variation as TS10. Check sensor depth and rebury if too deep.</b>
	<b>Current</b>	<b>MCAL</b>	<b>40127</b>	<b>TS05 has more diurnal variation than expected. Suspect sensor too shallow. Rebury.</b>
	<b>Current</b>	<b>MRSB</b>	<b>40135</b>	<b>TS05 has similar diurnal variation as TS10. Suspect sensor too deep. Rebury.</b>
	<b>Current</b>	<b>GOOD</b>	<b>39317</b>	<b>5cm sod sensor reports values much lower than expected.</b>
<b>TS10</b>	<b>Current</b>	<b>SEIL</b>	<b>40132</b>	<b>TS10 has similar diurnal variation to TS10 and peaks before neighbors. Rebury.</b>
<b>TS25</b>				
<b>TS60</b>				

<b>TR05</b>				
<b>TRB10</b>				
<b>TRS10</b>	<b>Resolved</b>	<b>NRMN</b>	<b>39296</b>	<b>Lightning strike. Sensor not heating. Replaced.</b>
	<b>Current</b>	<b>CLAY</b>	<b>39311</b>	<b>Sensor not heating.</b>
	<b>Current</b>	<b>KENT</b>	<b>39262</b>	<b>10cm soil temperature under sod reports errant values.</b>
<b>TR25</b>	<b>Resolved</b>	<b>NRMN</b>	<b>39300</b>	<b>Lightning strike. Sensor not heating. Replaced.</b>
	<b>Current</b>	<b>MRSH</b>	<b>40117</b>	<b>25-cm sensor reports errant values.</b>
<b>TR60</b>	<b>Resolved</b>	<b>NRMN</b>	<b>39306</b>	<b>Lightning strike. Sensor reports errant values. Replaced.</b>

### ARS QA Report for Standard Variables

<b>Variable</b>	<b>Status</b>	<b>Site</b>	<b>Ticket</b>	<b>Remarks</b>
<b>RAIN</b>				
<b>VW05</b>	<b>Resolved</b>	<b>A256</b>	<b>40109</b>	<b>5-cm soil moisture reports near 0 for all voltage readings. Wiring corrected.</b>
<b>VW25</b>	<b>Resolved</b>	<b>A256</b>	<b>39235</b>	<b>25 cm soil temperature reports errantly high values after rain events. Soil moisture data also affected. Replaced.</b>
<b>VW45</b>	<b>Resolved</b>	<b>A256</b>	<b>40114</b>	<b>45-cm soil moisture reports near 0 for all voltage readings. Wiring corrected.</b>
<b>V05T</b>				
<b>V25T</b>				

V45T	
------	--

### FCARS QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
<b>RAIN</b>	<b>Resolved</b>	<b>F111</b>	<b>39253</b>	<b>Gauge failed to record tips during last few rain events. Neighboring sites and radar indicate precip. Replaced gauge.</b>
<b>VW05</b>				
<b>VW25</b>				
<b>VW45</b>	<b>Resolved</b>	<b>F106</b>	<b>39160</b>	<b>45-cm soil moisture sometimes reports voltages near 0. Replaced.</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>