

## **GRAINEX EMESH Surface Station Observations**

### **Dataset Authors-**

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**Time of Interest-** 2018/05/23 07:11:52 - 2018/08/03 21:31:23

### **Area of Interest-**

Latitude 40.3900 to 41.3875

Longitude -97.8028 to -95.8769

### **Data Frequency-**

5 minutes between met obs.

15 minutes between soil obs.

### **Data Spatial Type-**

Text Table contains latitude, longitude, and altitude above mean sea level of each EMESH station.

### **General Dataset Description-**

This dataset contains data collected from a dense network of Environmental Monitoring, Economical Sensor Hubs (EMESH) stations from the University of Alabama at Huntsville (UAH). These EMESH stations were deployed during the GRAINEX (Great Plains Irrigation Experiment) project to acquire meteorology, soil moisture and soil temperature observations. Specifically, this dataset contains 2m temperature, 2m pressure, 2m relative humidity, 3m wind, non-cumulative rainfall, 5cm soil temperature, 30cm soil temperature, 5cm soil moisture, and 30cm soil moisture.

### **Observations are written to CSV files with one file per station per day UTC.**

File name structure is "YYYYMMDDSS.txt"

YYYY is the year

MM is the month

DD is the day

**SS is the EMESH station number**

**Data Restrictions-** None

### **GCMD Keywords-**

Rain, Wind Speed, Wind Direction, Relative Humidity, Air Temperature, Surface Pressure, Soil Moisture, Soil Temperature

### Data Notes-

EMESH data header is:

Date (UTC), Hour (UTC), Minute, Second, 2m Temp ('C), RH (%), Backup 2m Temp ('C), 2m Pres (Pa), Wind Speed (m/s), Wind Dir. ('), 5cm Soil Moisture (m3/m3), 30cm Soil Moisture (m3/m3), 5cm Soil Temp ('C), 30cm Soil Temp ('C), Rainfall (mm)

### Issues and Limitations-

Wind speeds prior to 2018-06-07 are artificially limited to 4 m/s. This impacts 32 stations.

Station 29 wind direction is biased 72' to the west after June 9th.

Stations are numbered sequentially, but there are gaps in station numbers.

### EMESH Station information-

#EMESH	USGS #DEP	1/3arcsec elevation m	Deploy Lat	Deploy Lon
00	476.08		40.988434	-97.446083
02	365.43		40.639881	-96.263397
05	387.68		40.926434	-96.245682
06	314.93		40.523132	-95.876884
07	391.02		40.844776	-96.30323
08	369.12		40.685299	-96.083023
09	455.89		40.755745	-97.287193
10	393.36		40.582561	-96.395584
11	323.15		40.535522	-96.13131
12	453.02		40.52261	-96.837204
13	456.38		40.947853	-97.123779
14	477.94		41.003136	-97.225594
15	441.82		40.451408	-96.760788
16	442.68		40.893276	-97.10611
17	512.65		41.007311	-97.601398
18	416.84		40.608696	-96.670998
19	479.37		40.719784	-97.352592
20	423		40.5659	-96.978798
21	451.85		40.770378	-97.075439
22	363.96		40.488762	-96.24234
23	521.54		40.881024	-97.751436
24	498.34		41.104444	-97.015278
25	440.06		40.6202	-97.1786
26	484.09		40.887566	-97.352325
27	418.94		41.3875	-97.073611
29	449.07		40.669202	-97.111472
30	466.99		41.321904	-97.124335
31	442.44		41.337778	-97.274167
32	495.2		40.480547	-97.557901
33	499.11		40.636501	-97.578926
34	481.59		40.3974	-97.5016

35	439.18	40.480556	-96.906667
37	433.82	40.466974	-96.856525
38	467.81	41.073611	-96.937222
39	353.7	41.175556	-96.400556
40	360.76	41.177222	-96.543611
41	370.76	41.103333	-96.516389
42	442.9	41.386944	-96.846111
43	390.3	41.379861	-96.621315
44	483.27	41.125565	-97.292068
46	502.65	41.252676	-97.004182
47	396.03	41.248043	-96.454172
48	384.55	41.307295	-96.653555
49	472.47	41.303889	-96.909722
50	486.99	41.199063	-97.156801
51	493.41	41.184921	-97.368172
52	479.53	40.537895	-97.306984
53	417.85	41.107827	-96.7741
54	505.81	40.944981	-97.598019
55	404.88	40.823889	-96.335
57	490.02	40.662239	-97.48423
60	441.81	40.510283	-96.710199
64	403.64	40.345181	-96.416626
65	419.7	40.550406	-97.049913
66	440.53	40.596111	-96.886944
67	475.43	40.738128	-97.598331
68	474.31	40.642918	-97.283821
69	485.13	40.486959	-97.463584
70	441.77	40.509444	-97.083333
71	433.74	40.65263	-96.916253
80	432.81	40.468929	-96.611069
81	495.14	40.437725	-97.32605
82	398.56	40.452881	-96.523888
83	431.55	40.48	-97.0375
84	422.83	40.474494	-96.969534
85	431.87	40.639914	-96.990204
86	424.31	40.450556	-96.883889
87	418.06	40.380367	-96.731491
89	373.4	40.484444	-96.349722
94	522.81	40.78515	-97.802786
95	512.44	41.162701	-97.5976
96	508.6	41.167515	-97.550169
97	500.99	40.870413	-97.559541
98	513.52	41.078229	-97.601773
99	404.93	40.913495	-96.87143

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