Daily summary, July 29

July 29, 20:20 CDT

Dan Rajewski (in Ames)

Summary: Stations 1-4 operational, Dan, Russ, and Jimmy serviced the wind cubes and the NCAR flux stations
Mixture of clouds and sun with warm and humid conditions with very light winds, reduction in horizontal visibility from 8:30 to 10:15 (fog-break up process)
Several sensors with anomalous readings during very wet periods (night and early morning)
Bug screens were placed on the 2mTRH inlets between 10:30 and 11:50 (see upcoming blog post)

Vdsm: 13.5-13.7 V during day, down to 12.4 at night
P: ok, pressure rising 5mb throughout the period, somewhat steady by noon

T.2m: night: stn 1 about 0.7-1.0 degree C warmer than stn 2 from 21:00-22:00, and from 2:00-4:00, periodic sensor spikes from dew/fog between 5:00-10:30; day: after the fog breakup stn 4 slightly cooler than other sites
RH.2m: similar spikes as in T.2m during overnight and early morning; after fog dissipation stn 4 5%RH higher than other sites
H2O.2m: stn 4 about 0.7-1.0 g/m^3 more vapor than stns 1 & 3 during the night, dew/fog problems part of the overnight and morning; after inversion breakup stn 4 about 1.0-1.5 g/m^3 more vapor than Sites 1-3 during the day

Wetness: heavy dew event from 20:30 to 6:30, sensor dry by 10:00

T.10m: stn 1 about 1.0 degree warmer than stn 2 for 20:00-21:00, otherwise sensors in close agreement during night and day (spikes also evident in hours before and after sunrise and at stn 3 during the inversion breakup
RH.10m: night: similar to T.10M but with stn 2 5%RH higher than stn 1, daytime stn 1 about 5%RH lower than sites 3 & 4 much of daytime after the fog breakup
H2O.10m: night: sites within +/- 0.5 g/m^3 of each other, sensor spikes also evident after 1:00 through 11:30; daytime: stn 1 & 4 about 1.0 g/m^3 less vapor than at stns 3 & 4

Spd.10m: ok, few period with stn 1 0.7-1.0 m/s lower than other sites from 2:00 to 4:00, also before sunrise and after stns 2 & 3 about 0.5 m/s less speed than at Sites 1 &4, daytime: stn 4 0.5 m/s lower than other sites

Dir.10m: ok, mostly NW to NE wind at night (few SW to S winds though), switching to ENE around sunrise and during fog breakup event, E to SE by afternoon

T.10m - T.2m: stn 2 warmer by 0.7-1.0 degrees at 10 m than 2 m from 2:00-4:00, close agreement in daytime thermal gradient after inversion breakup
H2O.10m - H2O.2m: stn 4 least moist at 10m vs. 2m during night, stn 2 & 3 about 1.0 g/m^3 wetter at 10 m vs. 2m. than for stn 4; noon and later, stn 4 about 1.5 g/m^3 more vapor at 2m than 10m vs. the other sites

spd.4.5m: ok, similar for Spd.10m, but not exactly the same pattern from 2:00-4:00
dir.4.5m: ok, see comments for Dir.10m
w.4.5m: ok, stns 2 & 3 more positive velocity and stn 4 more w<0 most of the night up through sunrise, stn 1 starts in w>0 mode and switches to w<0 by 3:00
tc.4.5m: ok, night: several short periods where stn 1 is ~1.0 degrees C warmer than stn 2, stns 3 &4 in between the others; day: close agreement before and during fog breakup, afterward stn 1 & 2 about 0.5 degree cooler than sites 3 & 4

ldiag: ok
kh2oV: stns 2 & 4 above 100mV before fog/dew, dropping a few times to ~0mV, recovering to above 100mV after the inversion breakup
kh2o: stn 2 & 4 about 2.0-2.5 g/m^3 more moist than stns 1 & 3 during night, several spikes and high anomalous values during fog/dew; closer agreement at stn 2 in the daytime after the fog breakup, stn 4 about 3.0 g/m^3 more vapor than stns 1 &3
h2o(licor): ok, good nighttime agreement, several spikes caused by dew/fog, afternoon: stn 1 about 0.7-1.0 g/m^3 drier than stn 3
lidiag (licor): ok, few spikes corresponding to effect with dew/fog; no fictitious response in the afternoon

TKE.4.5m: ok, mostly in agreement few night periods where stn 1 is about 0.1-0.15 m^2/s^2 more than other sites; similar values at all sites during and after the inversion breakup
w'w': ok, similar to TKE.4.5m, also in u'u' and v'v'
u*: ok, similar to TKE4.5m, similar pattern also somewhat in u'w' and v'w'

w'tc': ok, higher TKE at stn 1 corresponds to somewhat more negative heat flux, close agreement in morning and afternoon
tc'tc': ok, all sites have overnight spikes at irregular intervals, good agreement in daytime

w'h2o': ok, overnight: several spikes at all sites noted (less severe at stn 1); morning and afternoon: slightly less flux (0.02 g/m^2/s) at stns 2 & 4 vs. stns 1 & 3
h2o'h2o' (licor): ok, several spikes during night but otherwise stn 1 & 3 in close agreement at these sites between periods of' spikes' and also during the day
kh2o'kh2o': stn 2 & 4 more anomalous high variances (in between 'spike' events) also these sites are 0.1 (g^m^3)^2 lower than other stations in early-mid afternoon
w'co2': ok, a bit more positive flux at stn 1 vs. stn 3 most of the night; close agreement during/after fog breakup
co2'co2': ok, several spikes in overnight, good daytime agreement