

Daily summary, July 9

July 9, 15:02 CDT
Dan Rajewski (in Ames)

Summary: Stations 1-4 operational, no ISFS staff on-site
winds from SE to SSW during night ~5m/s , southerly during daytime ~10 m/s
several data fields are suggesting influence from turbine wakes especially in the nighttime

Vdsm: 13.5-13.8 V during day, down to 12.5 at night

P: ok

T.2m: ok, stn1 about 1.0 degree cooler than stns 2-4 several night periods 0:00-2:00, 3:00-3:30 (southerly turbine wake)
stn 4 is slightly cooler than other sites in daytime

RH.2m: 80-95% nighttime; 70% daytime

early night: stn 4 5% RH higher than stn 2,3, stn 1 5%RH lower than 2,3

daytime: stn 1 few% RH lower than stns 2-4

H2O.2m: ok, 17 g/m³ night, 19 g/m³ day;

stn 1 about 0.5-1.0 g/m³ less than other sites from 23:00 (Jul 8) - 5:00 (Jul 9);

daytime stn 1 0.5 g/m³ less than other sites, stn4 highest vapor content

Wetness: sensor response to dew around midnight

wetness accumulation through 7:00; sensor dry by 8:30 CDT

T.10m: ok, stns 1 and 2 similar nighttime temp (0.5 degree cooler than stn 3 and 4) between 0:00-2:00, also slightly cooler at 4:00-5:00
daytime stn4 slightly cooler (0.2 degrees?) than other stations

RH.10m: ok, stns 1,2 few%RH higher than other sites from 0:00 to 2:00 also from 3:30-7:00 stns 1-3 few%RH higher than stn 4

H2O.10m: ok stns 2-3 few g/m³ higher than 1,4 from 22:00 (Jul 8) to 2:00 (Jul 9), also from 3:00-4:00

7:00-8:30 stn 4 slightly lower than other sites, remains driest site through afternoon

Spd.10m: ok, stn 1 0.5-0.75 m/s lower than other sites much of the nighttime, all stns have agreeable daytime speed

Dir.10m: ok, SE to SSE flow much of night, S in daytime

T.10m - T.2m: ok, stns 1 & 4 few degrees warmer at 10 m vs. 2m than at stn 2,3 from 23:00 (Jul8) to 2:00 (Jul 9)

daytime stn4 slightly warmer at 2m than 10m (dt~ -1.0) at other sites (-0.8)

H2O.10m - H2O.2m: ok, stns 1 about 1 g/m³ moist at 10m vs. 2 m than other sites (~ zero gradient nighttime) from 23:00 (Jul 8) to 4:00 (Jul 9)

daytime stns 3 & 4 are drier (more negative gradient, ~2.0 g/m³ ,10m-2m) than other sites

daytime stn 1 smallest dry gradient of all sites (-1.0 g/m³ less at 10m-2m)

spd.4.5m: ok, see comments of Spd.10m for nighttime, daytime stn 1&2 about 0.5 m/s greater speed than sites 3-4

dir.4.5m: ok, larger nighttime variations noted at 4.5 vs. 10 m from 23:00 (Jul 8)-2:00 (Jul 9)

stn 1 more ESE vs. other sites SSE wind at 4.5 m, all sites at 10m with SSE wind in this period

w.4.5m: ok, stn 2 more w>0 (0.03 m/s) from 23:00 (Jul 8) -2:00 than other sites, stns 3 & 4 more w<0 during this period

stn 4 largest subsidence for nighttime (-0.06 m/s)

stn 1 closest to 0 in nighttime (0.02 m/s), stn2 mostly above zero most of night and daytime (0.04 m/s)

stns 1,3-4 mostly w<0 much of daytime, stn3 has greatest subsidence (-0.12 m/s or smaller)

tc.4.5m: ok, stns 1 & 2 about 0.75-1.0 degree cooler than stns 3-4 from 0:00-2:00 and again from 4:00-5:30

sites all in agreement for much of daytime

ldiag: ok, a few samples missing around 0:00 GMT at stn 2

vh2ov: ok, stn 2 btwn 100-150 mV

stn 4 slightly higher up to 200 mV in early morning (dew impacts?) then returning to around 100 mV

kh2o: ok, stn 2 about 1 g/m³ drier than stn 4 in night and daytime

anomalous drop in stn 4 around period of heaviest dew formation 5:00-7:00

h2o(licor): ok, btwn 15-20 g/m³ for night to day behavior

stn 1 about 0.75 g/m³ drier than stn 3 for night period

daytime agreement with stn 1-3, but about 1.0 g/m³ more moist than stn 4 and about 2 g/m³ more moist than stn 2

lidiag (licor): ok

TKE.4.5m: ok, stn 1 consistently lower TKE (0.10 m²/s²) in overnight than other sites (0.25-0.3), stn4 peak values (~0.5 m²/s²)

daytime slightly lower TKE (0.3 m²/s²) at stn 3 vs. other sites

w'w': ok, see comment for TKE.4.5m, also similar pattern in u'u' and v'v'

u* : ok, see comment for TKE.4.5m, 0.10 m/s lower at stn 1 vs. other sites for much of overnight, also pattern seen in u'w' and v'w'

w'T' : ok, nighttime: stn 1 less cooling (-0.01 C m/s) than other sites (-0.02 to -0.04 C m/s)

daytime: well-mixed situations so no major differences among sites

w'h2o': ok, slightly flux > 0 at stn 2-4 during the night, stn 1 flux ~0!

stn 1 & 4 give largest positive daytime flux max~0.16 g/m²/s

stn 2 least upward flux max~0.125 g/m²/s

h2o'h2o': ok, stns 1,3 mostly in agreement, daytime: stn 3 a bit higher than stn 1

kh2o'kh2o': ok, large spike in stn 4 around 5:00-5:30 but daytime response after dew ok

stn 2 about 0.10 (g/m³)² less than stn 4

co2: ok, stn 1 > stn 3 by 0.10 g/m³ during 22:00 (Jul 8) to 1:00 (Jul 9)

another smaller difference (0.04 g/m³) from 3:00-5:00

daytime stn 1 > stn 3 by 0.015 g/m³

w'co2': ok, see comments for co2 (more flux >0 at stn 3 vs. stn 1 in overnight)

more flux < 0 at stn 3 vs. stn 1 during daytime

co2'co2': ok, very small, but less variance at stn 3 than stn 1 for most of nighttime

slightly larger variance at stn 3 vs. stn 1 also in daytime