

# Daily summary, July 10

July 10, 9:52 CDT [July 11]  
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  
thunder shower passage 9:00 to 11:00  
winds light from ESE early afternoon to SSE late evening

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

P: ok

T.2m: ok, stn1 about 0.5 degree cooler than stns 2-4 around 0:00-1:00  
stn 2 is about 0.5-0.75 degrees warmer than other sites in daytime, stn4 is slightly cooler than stns 1 & 3

RH.2m: 90-95% nighttime; 85% daytime after thunder storm passage  
early night: stn 4 5% RH higher than stn 1-3,  
daytime 12:30 to 4:00 stn 5% RH lower than stn1, stn 1 few %RH lower than stn 3 & 4  
early evening stns 1-2 few%RH lower than stns 3 & 4

H2O.2m: ok, 18 g/m<sup>3</sup> night, 26 g/m<sup>3</sup> day;  
stn 1 about 0.3-0.5 g/m<sup>3</sup> less than other sites most of overnight;  
daytime stn 1 0.5-0.7 g/m<sup>3</sup> less than stns 2 & 4, stn3 0.5 to 0.7 g/m<sup>3</sup> more than stn 2 & 4

Wetness: sensor response to dew at 20:00 [Jul 9] until 5:30 [Jul 10], sensor remaining wet following storm passage (9:00 thru 11:30)  
sensor dry by 13:00

T.10m: ok, stn 2 0.5 degree warmer than other sites between 0:00-1:00, 2:30-3:30  
daytime stn4 slightly cooler (0.25 degrees?) than other stations

RH.10m: ok, stn4 few%RH lower than other sites for several nighttime periods  
stn 1 slightly lower than other sites for daytime

H2O.10m: ok, nighttime: 0.5 g/m<sup>3</sup> less vapor at stn 4 vs. stn 2 (stns 1,3 in between the two)  
few daytime periods with 1 g/m<sup>3</sup> less vapor at stn 4 than stns 2-3, stn 4 drier, stn 1 in between all sites

Spd.10m: ok, stn 1 0.75-1.0 m/s lower than other sites from 1:00-2:00, 5:00-6:00 other times within 0.5 m/s less of other sites,  
daytime: stn 4 certain periods of slightly lower wspd than other sites

Dir.10m: ok, SSE to S flow much of night, ESE a few hours before rainfall, after storm passage winds from ESE to later SSE

T.10m - T.2m: ok, stns 1 & 4 0.5 degree warmer at 10 m vs. 2m than at stn 2,3 mostly before midnight on Jul 9

daytime stn2 warmer at 2m than 10 m at least by 0.75 degrees from 13:00-15:00 by as much as 1.5 degrees  
H2O.10m - H2O.2m: ok, stn 1 near zero gradient vs. than other sites (~0.5 g/m<sup>3</sup> drier at 10 m) most of night  
daytime stns 3 & 4 are drier (more negative gradient, ~3.0 g/m<sup>3</sup>, 10m-2m) than other sites (2.0 g/m<sup>3</sup>)  
daytime stn 1 slightly smaller dry gradient than at other sites

spd.4.5m: ok, see comments of Spd.10m

dir.4.5m: ok, larger nighttime variations noted at 4.5 vs. 10 m from 22:00 (Jul 9)-2:00 (Jul 10)  
stn 1 more SSE vs. other sites S wind at 4.5 m, all sites at 10m with S wind in this period

w.4.5m: ok, stn 2 more w>0 (0.03 m/s) from 22:00 (Jul 9) -4:00 (Jul 10) than other sites, stns 3 & 4 more w<0 (-0.05 m/s) during this period  
stn 1 closest to 0 in nighttime (0.02 m/s)  
after storm passage: stns 3-4 mostly w<0 (-0.10 m/s) much of daytime, stn2 closest to zero or slight ascent in daytime

tc.4.5m: ok, stns 1 & 2 about 0.5 degree cooler than stns 3-4 much of nighttime  
same sites also 0.3-0.5 degree cooler much of mid afternoon/evening

ldiag: ok, a few 100 samples missing around rainstorm

vh2ov: ok, stn 2 above 100 mV before rain fall, below 20 mV rest of period  
stn 4 above 100 mV most of night/morning; below 50 mV after the rain and the remainder of the period

kh2o: ok, stn 4 about 1 g/m<sup>3</sup> drier than stn 2 in night and daytime  
anomalies in reading until sensor dries out around 15:00 then stn 2 about 2 g/m<sup>3</sup> more moist than stn 4

h2o(licor): ok, btwn 16-24 g/m<sup>3</sup> for night to day behavior  
stn 1 close to stn 3 for night period  
daytime agreement with stn 1-3, these are about 0.5 g/m<sup>3</sup> drier than stn 4 and about 2 g/m<sup>3</sup> drier than stn 2

liidiag (licor): ok, a few samples not taking during and after rain fall (9:00-12:00)

TKE.4.5m: ok, stn 1 consistently lower TKE ( $0.20 \text{ m}^2/\text{s}^2$ ) in overnight than other sites ( $0.3\text{-}0.4 \text{ m}^2/\text{s}^2$ ), stn4 peak values ( $\sim 0.6 \text{ m}^2/\text{s}^2$ )  
slight periods where stn 3 & 4 have TKE close to stn 1 value  
daytime slightly lower TKE ( $0.3 \text{ m}^2/\text{s}^2$ ) at stn 3 & 4 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,  $0.05 \text{ m/s}$  lower at stn 1 vs. other sites for much of overnight, also pattern seen in u'w' and v'w'  
greater departure in stn 1 v.s other sites v'w' stress than u'w' stress

w'T' : ok, nighttime: stn 4 more cooling ( $-0.03 \text{ C m/s}$ ) than other sites ( $-0.01 \text{ C m/s}$ )  
daytime: no major differences among sites

w'h2o': ok, stn 3 & 4 give largest positive daytime flux max $\sim 0.20 \text{ g/m}^2/\text{s}$   
stn 2 least upward flux max $\sim 0.15 \text{ g/m}^2/\text{s}$ , about  $0.025 \text{ g/m}^2/\text{s}$  less than at stn 3

h2o'h2o': ok, stns 1,3 mostly in agreement

kh2o'kh2o': not ok, krypton sensors at sites 2,4 give high anomalous readings after the morning rainfall until 15:00

co2: ok, stn 1 > stn 3 by  $0.01 \text{ g/m}^3$  much of nighttime  
daytime stn 1 > stn 3 by  $0.02 \text{ g/m}^3$

w'co2': ok, see comments for co2 (slight 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  
after sensor dries from rain: slightly larger variance at stn 3 vs. stn 1 also in daytime