

# Daily summary, July 15

July 15, 19:55 CDT

Dan Rajewski (in Ames)

Summary: Stations 1-4 operational, ISU crew serviced towers 2 & 4 to clean krypton sensors

SSE to S flow, rain shower toward end of the afternoon

after cleaning sensors, krypton voltage still a bit low (high humidity impact still creating anomalous variances and means?)

Vdsm: 13.5-13.8 V during day, down to 12.5 at night, morning clouds/showers reduced voltage until 11:00 CDT

P: ok, pressure mostly steady at 973 mb until early afternoon 13:00; falling to 971 mb and leveling off during shower onset ~16:30

T.2m: ok, before midnight stn4 about 0.7-1.0 degree cooler than other sites

stn 2 warmer by 0.7-1.0 degrees than other sites most of daytime (before rain shower occurrence)

RH.2m: 85-100% nighttime; dropping to 80% by afternoon

night: stns 4 5-7% RH higher than other stns 1 & 3 and about few%RH higher than other stn 2

daytime stns 4 ~5-7%RH higher than stns 1 & 2, and ~few%RH higher than stn 3 [moisture effects due to mature corn with larger Potential evapo-transpiration at Stn 4?]

H2O.2m: ok, nighttime from 21 to 18 g/m<sup>3</sup>, up to 26 g/m<sup>3</sup> by mid afternoon

night: stn 1 about 0.5-0.7 g/m<sup>3</sup> drier than stn 4, 0.5 g/m<sup>3</sup> drier than stn 2 and somewhat stn 3

day: stn 1 about 1.0-1.5 g/m<sup>3</sup> drier than stn 4, 0.5 g/m<sup>3</sup> more dry than stn 2, few g/m<sup>3</sup> more moist than stn 3

Wetness: dew collection on sensor from 3:30-7:00, wetness disappears by 8:00, rainfall 17:30-18:00, sensor still wet afterward

T.10m: ok, before midnight stn 4 about 0.5 degree cooler than stn 1, stn 2 and 3 in between 1 & 4

stn 1 about 0.5-0.7 degree warmer than other sites for later morning to afternoon (before rain, then stn differences are negligible)

RH.10m: ok, before midnight stns 1 few%RH lower other sites; daytime from 8:30 to 14:00 stn 1 few%RH lower than other sites

H2O.10m: ok, nighttime: stn 2 0.3 g/m<sup>3</sup> more moist than stn 4 (other sites in btwn 2 & 4)

stn 4 sometimes few g/m<sup>3</sup> less than other sites for the mid morning and late afternoon

Spd.10m: ok, sites mostly with same speed for much of overnight except for a ~1.0 m/s less at stn 1 than other sites (LLJ 'ramp-down' occurrence for SE flow from 3:00-6:00)

daytime: close agreement for all sites, slightly less speed at stn 3 and slightly higher speed at stn 2

Dir.10m: ok, ESE flow before midnight, shifting to SE in period of LLJ cascade? , SSE in early-mid morning followed by S to slightly SSW around noon then back to SSE

T.10m - T.2m: ok, night: stn 4 is about 0.3-0.5 degree warmer at 10 m vs. 2m than for other sites

day: stn2 1.0 to 1.5 degrees warmer at 2m vs. 10m than for stn 1, about 0.7 degrees more unstable than stns 3 & 4

later afternoon rainfall: stn 4 about 0.5-0.7 warmer at 10 m vs. 2 m than for stn 2, few tenths difference btwn stn 4 and stn 1 & 3

H2O.10m - H2O.2m: ok, stn 4 slightly drier gradient (0.7-1.0 g/m<sup>3</sup> more moist at 2m v.s 10m) than sites 1 & 3, 0.5 more moist at 2m than for site 2

daytime stn 4 is 1.0 g/m<sup>3</sup> drier at 10m vs. 2m than other sites (again earlier planted corn drawing out more water?)

stn 2 about 0.5 g/m<sup>3</sup> drier at 10m vs. 2m than for stn 1

spd.4.5m: ok, see comments of Spd.10m, also higher speed at stn 1 than other sites a 1-1.5 hours before midnight (more ESE flow?)

dir.4.5m: ok, see comments of dir.10m

w.4.5m: ok, night: stns 1 & 2 less descent (-0.02 m/s) than stns 3 & 4 (-0.08-to -0.12 m/s)

early to mid morning: 3 & 4 more w<0 (-0.14 m/s) (-0.12 m/s) than stn 1 (-0.02 m/s) or stn 1 (-0.06 m/s)

later morning to early afternoon w in agreement at all sites; after rain, stn3 & 4 more w<0 than other stations

tc.4.5m: ok, before midnight ESE flow: stns 1 about 0.5 degree warmer than other sites

after midnight SE flow: stn 1&2 about 0.5 degree cooler than sites 3 & 4

late morning to afternoon stn 3 & 4 slightly warmer than stn 2

ldiag: ok

vh2ov: ok, stn 2 mostly btwn 50-100 mV, down to near zero during rain periods, leveling to 70 mV by early evening

stn 4 mostly btwn 50-70 100 mV, similar pattern as at Site 2 but lower voltage by late afternoon (under 50 mV)

kh2o: ok, after cleaning sensors? nighttime is fair agreement except for drop at Stn 4 (sensor getting wet?)

daytime: stn 4 about 0.5-0.7 degree warmer than stn 2

h2o(licor): ok, btwn 14-24 g/m<sup>3</sup> for night to day behavior

stn 3 about 0.5 to 0.7 g/m<sup>3</sup> more vapor than stn 1 during much of night

daytime: close agreement

lidiag (licor): ok

TKE.4.5m: ok, stn 4 slightly lower TKE (~0.20 m<sup>2</sup>/s<sup>2</sup>) than Sites 1 & 2 from 9:30 (July 14) to midnight (during LLJ ramp-up?)

stn 1 0.2 m<sup>2</sup>/s<sup>2</sup> lower than other sites from 3:00-6:00 (during LLJ cascade-down?)

w'w': ok, see comment for TKE.4.5m, also similar pattern in u'u' and somewhat in v'v'  
u\* : ok, similar to pattern in TKE.4.5m, also seen in u'w' and v'w' stress

w'T' : ok, before midnight slightly more negative flux at stn 3 & 4  
from 3:00-6:00 about -0.02 C m/s more negative flux at sites 3 & 4 than 1 & 2  
daytime: close to same heat flux at all sites

w'h2o': ok, all sites in close agreement for nighttime flux  
stn 2 least daytime vapor flux of all sites: max ~0.10 g/m<sup>2</sup>/s, other stns 1&3 flux max at about 0.18 g/m<sup>2</sup>/s

h2o'h2o': more variance (0.10 (g/m<sup>3</sup>)<sup>2</sup>) at stns 1 & 3-4 than sits 2, Sites 1 & 3 in close agreement

kh2o'kh2o': not ok night through early morning: spikes during raising/lowering the tower masts and the evening rain events,  
early-mid afternoon: stn 2 about 0.30 (g/m<sup>3</sup>)<sup>2</sup> smaller flux than stn 4, ~0.40 (g/m<sup>3</sup>)<sup>2</sup> less than at stns 1 & 3

co2: ok,

w'co2': ok, slight period of night when flux >0 (2.5<sup>-10</sup>-4 g/m<sup>2</sup>/s) at stn 3 vs. stn 1 (during LLJ ramp-up and ramp-down period?)  
daytime stn 3 a bit greater co2 uptake mostly from 14:00-15:30 and from 19:00-20:00  
after rain event more flux >0 at site 3 vs. site 1 (but small as in the previous night)

co2'co2': ok, similar pattern to w'co2' from 14:00-15:00 otherwise Site 1 & 3 in good agreement