

Daily summary, July 13

July 13, 17:02 CDT

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Summary: Stations 1-4 operational, no ISFS staff on-site

NE nighttime flow, ENE wind in mid morning switching to E before noon

long afternoon period of easterly flow to capture likely 'wake influences' from the turbines at stns 1 & 2 and less so at stns 3-4

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

P: ok, for night and early morning: stns 1&2 about 0.5 mb higher than stn 3, stn3 about 0.25 mb lower than stn 4

T.2m: ok, stn4 about 0.5 degree cooler than stns 1 & 3 1 hr before midnight;

stn 2 warmer by 0.25 degrees than other sites for most of night and early morning

late morning to afternoon stn 2 about 1.0-1.5 degree warmer than other sites

RH.2m: 90-95% nighttime; dropping to 70%-75% by afternoon

night: stns 4 5% RH higher than other sites around midnight, few%RH higher rest of night

daytime stns 4 ~5%RH higher than stns 1 & 3, stn 2 about 5%RH lower than stns 1 & 3

H2O.2m: ok, 18 g/m³ before midnight night, drop to around 13 g/m³ before sunrise, back to 17 g/m³ in late afternoon

stn 1 about 0.3 g/m³ drier than other sites all of nighttime

stn 4 about 0.5 to 1.0 g/m³ more moist than stns 1-2, 3 from late morning-late afternoon

stns 1-2 slightly drier than stn 3 also in afternoon

Wetness: sensor lost wetness around 19:00 (Jul 12) from previous afternoon showers and remained dry for next daily cycle

T.10m: ok, stn4 1hr before midnight: see comments for T.2m,

other sites in pretty good agreement for daytime and nighttime, stns 1 & 2 slightly warmer than 3-4

RH.10m: ok, most of night stn 2 few%RH higher than other sites; daytime stn 1 few%RH lower than other sites

H2O.10m: ok, nighttime: stn 2 about 0.5 g/m³ more moist than stn 4, stns 1&3 are in between these sites

stn 4 about 0.5 g/m³ lower than other sites in daytime, stn 3 generally highest

Spd.10m: ok, before midnight: stn 1 fastest speed vs. stns 2 & 3 slowest speed (difference of close to 1.0 m/s)

after midnight: sites in close agreement except stns 1&3 slightly higher speed than stn 2 from 6:00-7:00

daytime: no discernible differences among the sites

Dir.10m: ok, NE flow much of night and early morning. ENE to E by late morning, Easterly in the afternoon

more stn scatter of direction (Site 1 & 2) to E winds (overlapping wakes from several turbines?)

T.10m - T.2m: ok, stn 2 is slightly warmer at 2m vs. 10 m for much of overnight, other stations have no to little temp gradient in nighttime

daytime stn2 1.0 to 1.5 degrees warmer at 2m vs. 10 m than other sites

H2O.10m - H2O.2m: ok, stn 4 slightly drier gradient than sites 1-3 much of the night,

daytime stn 4 is 1.0 g/m³ drier at 10m vs. 2m than other other sites (earlier planted corn drawing out more water?)

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

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

w.4.5m: ok, night: stn 4 less descent (-0.02 m/s) than stns 2 & 3 (-0.06 m/s), less fluctuation in w (-0.04 m/s) for stn 1

daytime stn 3 more w<0 (-0.12 m/s) 9:00-13:00 and again at 16:00

daytime stn 2 w~-0.1 m/s mid morning but going slightly positive to -0.02 m/s after 11:00-16:00 (multiple turbine wake influence?)

tc.4.5m: ok, stn 2 about 0.3 degree cooler than other sites most of night

ldiag: ok

vh2ov: ok, stn 2 above 100mV, early morning rise to over 200 mV and returning to 150mV by late afternoon

stn 4 above 100 mV, similar pattern as at Site 2

kh2o: ok, stn 4 is reading about 0.5 g/m³ more moist than other sites in night, 1.0 g/m³ more moist than stn 2 in daytime

h2o(licor): ok, btwn 17-13 g/m³ for night to day behavior

stn 1 slightly drier than stn 3 for night, about 0.3 g/m³ drier than stn 3 in daytime

ldiag (licor): ok, a few samples are questionable from 13:00 to 17:00

TKE.4.5m: ok, stn 3 slightly higher TKE than other stns up through 3:00

stns 2 & 4 lowest TKE of the group for nighttime

daytime, all sites have comparable values with the significant scatter (intersecting wakes reaching the towers for E wind?)

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

u* : ok, stn 3 about 0.05 m/s higher from 1:00-3:00; see comment for TKE.4.5m, also pattern seen in u'w'

w'T' : ok, nighttime: most stations in agreement

daytime: stn 4 less heat flux than other sites, stn 3 has highest heat flux; about 0.06 C m/s between the two

w'h2o': ok, stn 2 least daytime vapor flux $-0.12 \text{ g/m}^2/\text{s}$, other stns 1&3 about $0.16 \text{ g/m}^2/\text{s}$

h2o'h2o': ok, morning: more variance ($0.05 \text{ (g/m}^3)^2$) at stns 1 & 3 than sites 2 & 4

early afternoon: stn 1&3 about -0.80 max, stn 4 about 0.6, stn 1 about 0.45

kh2o'kh2o': ok,

co2: ok,

w'co2': ok, no consistent night pattern of flux > 0 at one site more than other

daytime stn 3 greater co2 uptake several periods in afternoon (more Easterly wind vs. NE in late night/early morning)

co2'co2': ok, fairly similar among both site 1 & 3