Daily summary, July 11

July 11, 16:15 CDT

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Summary: Stations 1-4 operational, no ISFS staff on-site
thunder storm passage with very strong winds (25 m/s) 4:00-4:30
overnight wakes from ESE to SE direction (Stn 2 more under 'turbine influence')
before the storm wake from southerly direction
boundary passing in late morning switches turbine wakes to WNW to NW for the afternoon and evening
sensors functional except during/ few hrs. after rain events
krypton sensors possibly need cleaning

Vdsm: 13.5-13.8 V during day, down to 12.5 at night
P: ok
T.2m: ok, stn4 about 0.5 degree cooler than stns 2-4 from 9:30 (Jul 10) to 0:30 (Jul 11)
stn 2 is about 1.0 degree warmer than other sites in daytime

RH.2m: 95-100% nighttime; dropping to 75% by afternoon
night before rain: stn 4 few% RH higher than stn 2-3,
night after rain stn 1&3 few% RH lower than sites 2 & 4
daytime stns 3-4 ~ 5% RH higher than stn 2, stn 2 few %RH lower than stn 1

H2O.2m: ok, 22 g/m^3 night, after storm drop to 17 g/m^3; daytime rise to 23 g/m^3
stn 2 about 1.0 g/m^3 more than other sites from 22:00 Jul 10 - 0:00
after midnight stn 1& 3 agree and stn 2 & 4 agree about 0.75 g/m^3 less at sites 1, 3
after rainfall same pattern also seen stn 1,3 drier than 2,4
daytime stn 1 and 4 (sometimes) are 0.5-0.7 g/m^3 less than other stations

Wetness: dew collected on sensor by 8:30 [Jul 9] until 3:30 [Jul 10], sensor remaining wet following storm passage 3:30-4:30, continual shower until 6:30
sensor dry by 11:30

T.10m: ok, stn 2 0.75 degree warmer than stn 4 before midnight, other sites in btwn stn 2 & 4
stations in most agreement after rainfall and into the afternoon

RH.10m: ok, stn4 a few%RH lower than stn 2, other sites in between for night period before rain
stn 1 & 4 few% RH lower than other sites for afternoon

H2O.10m: ok, nighttime (before rain): 0.5 g/m^3 less vapor at stn 4 vs. stn 2 (stns 1,3 in between the two)
after rain this difference is 0.2 g/m^3 or less
few daytime periods with 1 g/m^3 less vapor at stn 4 than stns 2-3 as in H2O.2m

Spd.10m: ok, stn 2 0.5 m/s higher than other sites before midnight, less change after midnight,
daytime: stn 2 certain periods early afternoon of slightly lower wspd than other sites other wise good agreement

Dir.10m: ok, ESE to E flow much of evening, SSE a few hours before rainfall, after storm passage winds from NE to later S by 9:00
cold front passage around 9:30, winds mostly out of W to WNW in afternoon

T.10m - T.2m: ok, stns 4 0.5 degree warmer at 10 m vs. 2m than at stn 2,3 mostly before midnight
daytime stn2 warmer at 2m than 10 m at least by 1.0 degree from 11:00-16:00, late afternoon nearing 2.0 DT difference than other sites

H2O.10m - H2O.2m: ok, stn 1 and 3 slightly more moist gradient than site 2 &4, stn 4 about 0.5-0.75 g/m^3 drier than stns 1 & 3
daytime stns 3 & 4 are drier (more negative gradient, ~2.0 g/m^3 ,10m-2m) than other sites (1.5 g/m^3)
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 10)-1:00 (Jul 11)
stn 1 more ESE vs. other sites SE wind at 4.5 m, all sites at 10m with SE wind in this period

w.4.5m: ok, stn 2 more w>0 (0.03 m/s) in early evening but not so much after midnight, stns 3 &4 more w<0 (-0.05 m/s) for much of the night
stn 1 closest to 0 in nighttime (-0.02 m/s)
after storm passage: stns 3 mostly w<0 (-0.06 m/s), stn2 slightly w>0
pattern changes after cold front passage, afternoon max w at Site 4 (~0.08 m/s), min at stns 1 & 2 (-0.06 m/s)

tc.4.5m: ok, stn 2 about 0.6 degree warmer than stn 1 before midnight other sites in between (turbine wake from the ESE?)
before storm event stns 1 &2 are about 0.5 cooler than sites 3 & 4 (turbine wake from south)
site 1 slightly cooler than other sites for mid-late afternoon

ldiag: ok, a few 100s samples missing around thunderstorm event

vh2ov: ok, stn 2 below 10 mV before rainfall, above 80 mV after rainfall until mid afternoon
stn 4 below at or above 100 mV most of night; dropping to 50 mV by afternoon

kh2o: not ok, stn 4 and 2 affected by noise in overnight, signal is restored around late morning (values within those at sites 1 & 3)

h2o(licor): ok, btwn 12-25 g/m^3 for night to day behavior
stn 1 close to stn 3 for night period, though 5 g/m^3 more moist at stn 1 vs. stn 3 after the rainfall until 7:00

lidiag (licor): ok, a few samples not taken during and after rain fall (4:00-11:00)

TKE.4.5m: ok, for ESE flow before midnight stn 2 about 0.1 m^2/s^2 larger TKE than other sites
after midnight stn 3 & 4 about 0.25 m^2s^2 more than Site 1 and 2 for SSE to S winds
w'w': ok, see comment for TKE.4.5m, also similar pattern in v'v'
u* : ok, see comment for TKE.4.5m, also pattern seen in u'w' and v'w'
night: greater departure in stn 2 v.s other sites v'w' stress than u'w' stress

w'T' : ok, nighttime: stn 2 more cooling (-0.03 C m/s) than other sites (-0.01 C m/s)
daytime: stn 4 less max heat flux than other sites, stn 2 & 1 have highest daytime peak

w'h2o': ok, stn 4 and 2 least positive daytime flux max~0.15 g/m^2/s
stn 3 gives most flux > 0 about 0.18 g/m^2/s

h2o'h2o': ok, stns 1,3 mostly in agreement except during thunderstorm

kh2o'kh2o': not ok, krypton sensors at site 4 high anomalous readings during/after rainfall, agreement after late morning

co2: ok,

w'co2': ok, no consistent night pattern of flux > 0 at one site more than other
before frontal passage stn 3 more flux < 0 than stn 1
after cold front stn 1 often more negative flux than stn 3

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