Sonic Entries


Resolving confusion about the wide array sonics 4b,5b,6b
Gordon Maclean posted on Oct 06, 2011
For the wide array, from Jun 26 to Jul 18, there is some confusion about the bottom level downwind sonic anemometers on towers 4, 5 and 6. The variable names from these sonics have suffixes of 4b, 5b and 6b, indicating what tower they were on. Intended Configuration for 4b,5b,6b The intended configuration for the sonics is as follows,…

- sonic


Removed Vazimuth data from boom_normal cal_files
Tom Horst posted on Mar 16, 2010
Some of the boom_normal cal_files have values for Vazimuth for some configurations. This is inconsistent with most of the boom_normal files and the intent for boom_normal data. Consequently, I set those Vazimuths to 0.0. Files changed: -rw-rw-r-- 1 6072 Mar 16 12:01 csat_8m.dat -rw-rw-r-- 1 6185 Mar 16 11:56 csat_8u.dat -rw-rw-r-- 1 6532 Mar 16 11:54 csat_7u.dat -rw-rw-r-- 1 6362 Mar 16 11:53 csat_6u.dat -rw-rw-r-- 1 6388 Mar 16 11:52 csat_11t.dat -rw-rw-r-- 1 6732 Mar 16 11:50 csat_6t.…

- sonic


Reconciliation of sensor height measurements
Tom Horst posted on Dec 14, 2009
Steve Oncley and I are reviewing the measurement of sensor heights with the goal of perhaps reconciling ambiguities in the sensor heights. Configuration 1 dimensions The horizontal arrays sonic heights were measured relative to the mean of the heights agl of the reference marks for both the upwind (1.534 m) and downwind (1.53 m) arrays. The profile heights appear to have been measured relative to the height of the reference mark on the profile towere (1.52 m).…

- sonic
- sht


Reconciliation of profile sonic boom angles
Tom Horst posted on Dec 09, 2009
Following are the profile sonic boom angles measured for the four configurations. Sonic Cnfg 1 cal Cnfg 2 cal Cnfg 3a Cnfg 3b cal Cnfg4 cal twh srs spo jm spo july 6-14 july 28 aug 1 aug 6 aug 12 1.5 m 132.3 0.6 131.6 -0.1 135.1 132.4 0.7 132.3 0.6 3 m 136.0 4.3 132.5* 0.8 137.0 134.2 2.5 133.1 1.4 4 m 133.6 1.9 129.8* -1.9 136.1* 132.5* 0.8 131.8 0.1 5.5 m 134.6 2.9 133.7* 2.0 138.…

- sonic


Test of shooting boom angles
Steve Oncley posted on Nov 02, 2009
I just set up a test with the digital theodolite in the far east parking lot. I chose to shoot SN0853, which had been used as "1b" in AHATS. In Tom/Rudy's plots, this shows a mean wind direction anomaly of about 4 degrees. I set the sonic up on the TRAM tower, facing the gate. I set the theodolite up near the gate (about 34m according to GoogleEarth). For my reference heading, I shot a recognizable tree on the Olde Stage ridgeline (about 6km away).…

- sonic


Checked sonic 8b, sn 0364, for cycle slip
Tom Horst posted on Mar 05, 2009
Laboratory checks of sonic S/N 0364 found "cycle slip" at temperatures below 20 C, in particular a temperature jump of about 1 deg C in path a around 16-18 deg C. (Other jumps occurred below 10 deg C, and thus at temperatures not attained during AHATS.) The temperature jump was an increase of about 1.8 deg C as temperature decreased and thus the sonic temperature would change by 0.6 deg C, since all three paths are averaged to give the output temperature.…

- sonic


Removed sonic data with bad 'diag' values

Tom Horst posted on Dec 30, 2008
Today I finished a first edit of the AHATS sonic data, putting NA's in the cal_files when the 5-minute averages of the sonic diagnostic variable exceeded ~0.5. During the first configuration, these usually occurred simultaneously on all channels of one of the four sonic adams, suggesting that the adam could not keep up with data ingest when there were transmission problems back to the base. After the first configuration,…

- sonic

 array 4 boom angles
Steve Oncley posted on Aug 12, 2008
Here are angles I shot today with the DataScope from 1030-1130 today. John and I don't completely trust datascope readings, but they did seem internally consistent (i.e. when I thought the angle should have been more southerly than the previous reading, it was). Note that the 3 sonics on each trident are <reasonably> consistent -- especially 9/10/11u. Trident 6/7/8u is definitely rotated with respect to trident 9/10/11u. 11t of 130 degrees and 3t and 10t of 134 are not typos. Finally,</reasonably>…

- sonic

 array 4 heights
Steve Oncley posted on Aug 12, 2008
ref3 is ~1.505m above top of profile's plate. center of sonic is 0.053m above top of boom TRH is 0.37m below top of boom, thus top of TRH boom should be 0.42m above top of sonic boom. In array 4: East side of array is has height of the top of 1b's boom 5.37m above ref4 We set upwind's sonics to this same top of boom (plate) being 5.37m above Ref4 Ref4 is 0.040m above Ref3 Ref3 is 0.027m above top of "1.55m" sonic THUS, + profile "7m" top of sonic boom should be 5.447m above "1.55m" sonic.…

- sonic

 sonic IDs
Steve Oncley posted on Aug 12, 2008
array4 list, collected 8/11/08 (after replacing 8m sonic) profile: rs 1 profile EEProm_sig=39009. Prom_sig=17263. \n>\r\n>??\r\nET= 60 ts=i XD=d GN=112a TK=1 UP=5 FK=0 RN=1 IT=1 DR=102 rx=2 fx=038 BX=0 AH=1 AT=0 RS=1 BR=0 RI=1 GO=00 000 HA=0 6X=3 3X=2 PD=2 SD=0 ?…

- sonic

 spd 8m now highest
Steve Oncley posted on Aug 05, 2008
John and Khoung just swapped 7m and 8m sonics. Now 8m speeds are higher. 7m speeds are perhaps a bit low. Now S/N720 is at 8m and 369 is at 7m. (I just interrupted the data stream to determine this.) I guess this means that 720 has been reading high all this time (and still is)? 6-4-09 (twh) swap occurred from 14:45 - 15:25

- sonic

 8m speed problems
Steve Oncley posted on Aug 05, 2008
I finally been able to look at the data from when John removed the etherant yesterday. During the entire 5-hour period, the speeds from 7m are higher than those at 8m. Thus, the difference is not due to flow around the etherant. (I had suspected that this would be the case several days ago when I noted that the speed difference (all u-component) was not a function of wind direction.) John and Khoung are now swapping the 7m & 8m sonics to diagnose this problem further.

- sonic

 profile heights
Steve Oncley posted on Aug 03, 2008
Profile boom heights from top of boom (inside of clamp on the other side) to the ref 3 mark: 8m 6.468m 7m 5.544m 5.8m 4.256m 4.8m 3.316m 3.3m 2.110m 1.5m -0.026m

- sonic

 moved 7m sonic

Steve Oncley posted on Aug 03, 2008
We noticed that a guy wire was rubbing on the bottom of the 7m sonic array, so we moved it up by about 4-5cm. In the process, we tightened the setscrew which pitched the array up a bit. This was done at 0941.

- sonic

 replaced 8m profile sonic
Steve Oncley posted on Aug 03, 2008
Since the winds (u-component) have seemed to be about 0.3m/s low (since the beginning of this experiment), we replaced it (~0830-0930 this morning). We removed S/N 733 and installed S/N 369.

- sonic

 array3 boom angles
Steve Oncley posted on Aug 01, 2008
I just shot angles for all sonics. I'll enter into the cal_files after lunch. P.S. These are now entered (subtracting 131.7) and statsproc restarted. Note0: that some of the times I entered as 29 jul and some as 31 jul, depending on when the sonic was last moved. NOTE1: Sonic U5 s/n 712's upper arm was bent / misaligned with the lower claw when checked on 8/6/08. The value shown is for the lower arm alignment. jwm Note2: On 8/6/08 beginning at 10:20PDT, JohnMilitzer,…

- sonic

 13b rewired
Steve Oncley posted on Aug 01, 2008
We just realized that 13b was still "Tee" wired into the 3.3m sonic, where it should have been changed during the array2->array3 shift to the sonic now at 4.8m. I just did this at 1136am. Unfortunately, Gordon will have to do his magic to fix this for the first 3 days of array3. Sorry...

- sonic

 bird
Steve Oncley posted on Aug 01, 2008
A bird (small hawk?) was sitting on the top of the array of 11u this morning as we arrived at about 0800.

- sonic

 H-frame sonics moved
Steve Oncley posted on Jul 31, 2008
Today, since the winds were too easterly and since we wanted to work on the pressure tubing anyway, we lowered both horizontal arrays to adjust the sonics to be more level. We dropped the east array ~1030 and worked on it until ~1400. We then dropped the west array and worked on it until ~1700. A long, hot, day... I now estimate that the heights of these sonics are within +/- 3cm of each other and with the upwind sonics. The most different sonics are now the fixed ones on the profile mast.…

- sonic

 config 3 dimensions
Steve Oncley posted on Jul 30, 2008
The config3 transition yesterday went: 1. Move the east horiz array up 3 slots. (This measured at ~4.87m for the top of 5b's boom to the base plate.) [started ~0600] 2. Move the west horiz array up 3 slots. 3. Move 6t and 6b up. 4. Move 12b up. 5. Move 5.5m and 4.3m up to ~5.8m and ~4.8m (also T /RHs) [done by 0830] 6. Tear-down upwind and move to staggered upwind, sequence 11u -> 3u [done by 1230] 7. Remove upwind bases [1530-1630] When we started to build config 3, we measured 3.…

- sonic

 config 2 dimensions
Steve Oncley posted on Jul 30, 2008

Tom asked us to remeasure heights of the config2 upwind array as we tore it down yesterday: 3 191.1 4 190.8 5 190.8 6 193.7 7 191.7 8 191.9 9 191.3 10 192.2 11 192.6 There were some stray marks on the towers. I wouldn't rule out the possibility that we chose the wrong reference line on some of the towers (note the the marks ended up underneath the masts sometimes). In particular, I wonder if 6u's measurement was wrong.…

- sonic


8m sonic data
Steve Oncley posted on Jul 28, 2008
I've looked a bit at the data from the 8m sonic. I plotted u,v,w components from 7m&8m as a function of wind direction. If the etherant were causing flow distortion, I would expect a signature that depends on wind direction. I also would expect vertical velocity to have a negative bias for winds into the array. What I see is u.8m being lower than u.7m, v.8m being equal to v.7m, and w.8m being higher than w.7m, all independent of wind direction. Thus,…

- sonic


more config2 dimensions
Steve Oncley posted on Jul 26, 2008
Tom asked that we measure the crosswind spacings between the Rohn towers. I think these are what he wanted: 5t 1.327m 6t 1.279m 7t 5u 1.325m 6u 1.282m 7b 11b 1.283 12b 1.283m 13b

- sonic


config2 boom angles
Steve Oncley posted on Jul 26, 2008
Steve Cohn and I just shot boom angles for config#2. A few notes: - We were standing upwind of the sonics near the berm from about 12:00-13:30 doing this, during a period when the winds were good. A critical investigator may want to remove these data. - Where there are 2 values, Cohn's are listed second (no reflection on him or his measurements) - 3u and 8u are not misprints--they really did look quite different - 5t was behind 5u's PAM mast,…

- sonic


sonic data issues
Steve Oncley posted on Jul 22, 2008
My status reports have noted issues with 4u and 8m. 8m: By just playing with offsets, I'm able to get better looking profiles by adding 0.3 m/s to dat ("u"). As yet, I have no justification for doing this. Tom wondered about flow distortion around the etherant, but this seems only a remote possiblity after looking at it today. The next step would be to move the etherant. 4u: At 09:10 on 20 July, tc on this jumps by 0.25 degC.…

- sonic


profile sonics correctly set
Steve Oncley posted on Jul 22, 2008
To check the 8m speeds being low, we checked the physical serial numbers on the tower. They are: Height (m) S/N 8 733 7 720 5.5 537 4 740 3 739 1.5 732 These are exactly as recorded in the file sonics/sonic.configs.

- sonic


Used a serial y cable for 3m profile, 13b sonics
Tom Horst posted on Jul 21, 2008
The 3m profile sonic is doing double duty as a profile sonic and also sonic 13b in the horizontal array. Steve made a y cable to connect this sonic to both profile S2 and downwind2 S10. 11/23/09, TWH: It appears from the 5-minute covars that the connection of the 3m profile sonic to Serial channel 10 on the downwind2 adam was made around 09:30 on July 21.

- sonic


Replaced sonic 2b (SN 1117) with 13b (SN 0741).
Tom Horst posted on Jul 21, 2008
After the reconfiguration, sonic 2b (s/n 1117) would not start operating. We replaced it with the sonic previously used at 13b (s/n) 0741. For configurations 2 and 3 we are using a matching sonic from the profile tower for sonic 13b, i.e. the 3m and 7m sonics.

- sonic

 Configuration 2 Sonic configs
Tom Horst posted on Jul 21, 2008
Upwind S1: (3u) EEProm_sig=05088. Prom_sig=17263. \n>??D\r\nET= 60 ts=i XD=d GN=322a TK=1 UP=5 FK=0 RN=1 IT=1 DR=102 rx=2 fx=038 BX=0 AH=1 AT=0 RS=1 BR=0 RI=1 GO=00000 HA=0 6X=3 3X=2 PD=2 SD=0 ?d tf=02600 02600 02600\r\nWM=o ar=0 ZZ=0 DC=1 ELo=010 010 010 ELb=010 010 010 TNo=cdb d TNb=cbb JD= 007\r\nC0o=-2-2-2 C0b=-2-2-2 RC=0 tlo=8 8 8 tlb=8 8 8 CA=1 TD= duty=094 AQ= 60 AC=1 CD=0 SR=1 UX=0 MX=0 DTU=02320 ss=1 XP=2 RF=018 DS=007 SN0539 06nov07 JC=3 CB=3 MD=5 DF=05000 RNA=1 sa=1 rev 3.…

- sonic

 Configuration 2 Dimensions
Tom Horst posted on Jul 20, 2008
Reference height for Configuration 2 is 1.76m above ground level, measured at NE tower of horizontal array. Top of sonic boom = 1.91m above reference; note sonic is 5.3 cm above top of boom, so actual sonic height is 1.76+1.91+0.053 = 3.72m (and 4.72m). Sonic 12b is 1.92m above reference. Moved 5.5 m sonic and SHT up to make way for raising 3m and 4m sonics. The heights are now 3.99m above reference for the sonic (= 5.80m actual) and 4.43 m for the SHT (=1.76+4.43-0.37 = 5.82m actual).…

- sonic
- sht

 Sonic 2b restarted
Tom Horst posted on Jul 10, 2008
Sonic 2b stopped around 15:30 PDT, July 10, and restarted around 4:43, July 10.

- sonic

 changed serial cards at upwind, downwind2
Gordon Maclean posted on Jul 07, 2008
The serial card problem is a bit mystifying. It didn't happen in CHATS, and we had about the same or more load on the data system. Systems with the Emerald 8P cards seem to be the ones that are failing. I don't believe we had those at CHATS. So I'm removing them from our systems. upwind: had 1 8P card and 1 8M. It was only using 7 ports on the 8P and none on the 8M, so I removed the 8P and cabled the 8M as the first and only card. There is still an available port for the 15th pressure system.…

- ahats
- data-system
- sonic

 Configuration 1 sonic azimuths
Tom Horst posted on Jul 06, 2008
Started to measure the sonic azimuths with the datascope. Set declination = 0. Array orientations Sighting along the PAM masts, the orientation of the upwind array is 221 deg and the downwind array is 40 deg. Adding 90 and 270 degrees and the declination (13.7 deg) gives 324.7 degrees true for the upwind array and 323.7 deg true for the downwind array, which are close to the design value of 325 deg.…

- sonic

 Upwind serial board stopped
Tom Horst posted on Jul 06, 2008
Upwind adam serial board stopped around 01:10 PDT. No data from sonics 5u-11u. Restarted around 09:02.

- ahats
- sonic

 sonic 6u offset
Tom Horst posted on Jul 05, 2008

Sonic 6u appears to have an offset in the u component (from the mean of all 9 upwind sonics) of about +15 cm/s. However the range of u and v offsets (from the mean) for all 9 sonics is about +/- 20 cm/s. 6u stands out because there is no other sonic with a positive offset this large, while there are a couple of sonics with a u component offset near -20 cm/s.

- ahats
- sonic


Rebooted upwind serial board
Tom Horst posted on Jul 04, 2008
The serial board on the upwind adam stopped around 03:10, July 4. Gordon rebooted the adam around 07:40. Lost data from sonics 5u-11u.

- data-system
- sonic


Lost power and data at upwind adam
Tom Horst posted on Jul 04, 2008
The transformer at the array blew a fuse in its surge protector around midnight, July 3. The batteries for the upwind adam apparently went below a critical voltage at 09:15, July 4, and the adam shut down. Power was restored around 11:50. Changed the load on the two legs of the transformed by moving the sodar data power to the same leg as the ISFS data systems, leaving the sodar air conditioner on the other leg.

- ahats
- power
- sonic


Downwind-2 serial board stopped
Tom Horst posted on Jul 03, 2008
Rebooted downwind-2 at 18:08, July 3. Serial board stopped around 14:10. Missing data from sonics 9b-13b.

- data
- sonic


Array 1 dimensions
Tom Horst posted on Jul 01, 2008
Chenning and Tom finished measuring the array dimensions this morning, July 1, from around 9:30 until 10:20 am. Downwind sonic heights Position* 1 2 3 4 5 6 7 8 9 10 11 12 13 reference mark height (m agl) 1.50 1.495 1.51 1.58 1.55 1.55 1.57 1.51 1.51 1.53 1.525 1.54 1.52 top of lower sonic boom (m above ref) 1.67 1.67 1.665 1.655 1.655 1.66 1.67 1.66 1.67 1.66 1.66 1.66 1.67 top of upper sonic boom (m above ref) 2.675 2.67 2.665 2.66 2.66 2.…

- ahats
- dimensions
- sht
- sonic


Restarted sonic 2b
Tom Horst posted on Jun 30, 2008
Sonic 2b stopped around 18:50 on 6/29; restarted around 16:50 6/30.

- sonic


Time periods working on the pressure measurement system near sonics
Chenning Tong posted on Jun 29, 2008
Chenning and Khuong working on the pressure measurement system at these times: June 27, 2008: Morning. Hung the horizontal pressure reference line. 4:45-5:15 PM. Working on the 1/4 in tubing, connecting them to the pressure transducers. June 28, 2008 9:00-11:00am. Put 1/16 in couplers to the transducers on the lower array. The tubing on the transducer is hard and the coupler cannot be inserted directly, a heat gun was used to melt the tubing in order to insert the coupler.…

- pressure
- sonic

 Changed 3m profile sonic
Tom Horst posted on Jun 27, 2008
When we raised the 3m sonic, we pinched the cable from the head at the connector (bent it back on itself). This appears to have damaged the cable (high diag and questionable wind direction data), so this morning (June 27) we replaced sonic S/N 0739 with S/N 1124 around 11:30 am. 10/27/08: It appears that S/N 1124 was recalibrated on 7/31/08, so it is possible that these serial numbers are reversed, i.e. we replaced 1124 with 0739.

- sonic
- ahats

 Changed profile heights
Tom Horst posted on Jun 27, 2008
Yesterday afternoon, June 26, Kurt and Laura raised 3m and 4m sonics and TRH about a foot to match as-built heights of horizontal array sensors. Will measure actual heights soon.

- ahats
- sonic
- trh

 Sonic Locations at Setup for Wide Array
John Militzer posted on Jun 26, 2008
Specific Sonic Locations; Wide Array: Note: Sensors shown in table organized from Southwest end of array to the Northeast end of the array. UpWind Array of PAM tripods (spacing nominally 4m, array line parallel to and 16m NW from 'downwind'). SW NE horiz index 11 10 9 8 7 6 5 4 3 3.2m sonic s/n 1122 1123 1121 673 1119 674 677 536 539 upwind serial port 11 10 9 8 7 6 5 2 1 DownWind Array of PAM tripods (spacing nominally 4m)….

- ahats
- sonic
- pressure