

Array 1 dimensions

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	2.66	2.67	2.66	2.66		

*Note positions are numbered from NE to SW

mean downwind reference height = 1.53 m, mean lower sonic height above reference = $1.663+0.053$ m (total mean height = 3.25 m)

mean upper sonic height = $2.664+0.053$ m (total mean height = 4.25 m)

3/17/09, TWH: Why did I use 5.5 cm rather than 5 cm as the height of the sonic above its boom?

12/14/09, TWH answer: To account for thickness of saddle on sonic boom; perhaps 5.3 cm would be better

Upwind sonic heights

Position	3	4	5	6	7	8	9	10	11
reference mark height (m agl)	1.48	1.55	1.53	1.52	1.55	1.54	1.575	1.57	1.49
top of sonic boom (m above ref)	2.17	2.17	2.165	2.17	2.17	2.17	2.17	2.17	2.17

mean upwind reference height = 1.534 m; mean sonic height above ref= $2.169+0.053$ m (total mean height = 3.76 m)

From 12:17 until 12:55, July 1, Gordon and Tom *lowered the upwind sonics* by 0.5 m to match the height of the lower downwind array.

Sonic spacing

Position	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13
Downwind (m)	4.04	3.97	4.00	3.99	3.99	4.00	3.98	4.01	3.97	4.02	4.01	3.98
Upwind (m)			3.98	4.00	4.02	3.99	3.96	4.01	4.01	3.99		

Mean downwind sonic spacing = 3.997 m

Mean upwind sonic spacing = 3.995 m

Array spacing

Position	3	7	11
Separation (m)	16.07	16.07	16.09

Upwind check dam

The sonic 7u (upwind array) is 40m downwind of the check dam along azimuth 131 deg magnetic.

The check dam is parallel to azimuth 258.1 deg magnetic.

The sonics on the profile tower are 35m downwind of the check dam.

Profile tower

Reference height agl = 1.52 m

Sonics are 5.3 cm above top of boom; SHT inlets are 37 cm below top of boom

Note that often we could not place sonic and SHT boom mounts at the ideal heights

nominal height	1.5	3	4	5.5	7	8
top of sonic boom above ref (m)	-0.02	1.725	2.665	3.955	5.505	6.475
sonic height agl (+ 1.573 m)	1.55	3.30	4.24	5.53	7.08	8.05
top of SHT boom above ref (m)	0.355	2.105	3.08	4.315	5.855	6.855

TRH height agl (+1.15 m)	1.505	3.255	4.23	5.465	7.005	8.005
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