

Configuration 1 sonic azimuths

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.

Note that the tripods for the second upwind array are already set up roughly N of the profile tower. The data scope gives an angle of 156 deg magnetic from the leg of the SW tripod to the profile sonics, so the **profile winds** from directions greater than $156 + 180 + 13.7 = 349.7$ deg true should be used with **caution**.

The tables list three or more independent measurements of sonic azimuth. I measured each row at different times, requiring independent estimates of proper alignment of the datascope relative to the sonic, which is the biggest source of uncertainty. I found that the sun angle is much better for visibility of the sonics at 7 am than at 10 am, so I remeasured the azimuths done prior to 7/11/08.

The **cal_file** entries are the value used for the sonic azimuth in the cal_files in order to give winds in a coordinate system with the sonic u component normal to the array (positive for winds blowing into the array sonics) and v parallel to the array: $use + 13.7 - (325 - 180) = use - 131.7$

Upwind Array Sonics

date	3u	4u	5u	6u	7u	8u	9u	10u	11u
7/6	133.6	136.5	133.3	134.3	135.3	NA	133.9	134.9	133.1
7/6	133.4	135.8	132.3	134.4	134.8	132.4	133.2	134.0	133.7
7/6	133.0	135.4	132.1	134.4	134.7	134.0	131.8	132.8	132.3
7/14	133.2	133.6	132.0	132.2	134.0	133.3	132.6	132.3	132.6
7/14	132.8	135.0	131.6	132.5	133.2	131.5	132.9	132.6	132.4
7/14	132.6	135.0	132.1	132.3	133.5	132.0	132.8	132.2	131.3
use	132.9	135.0	132.1	132.3	133.6	132.3	132.8	132.4	132.1
cal_file	1.2	3.3	0.4	0.6	1.9	0.6	1.1	0.7	0.4

Profile tower Sonics

date	1.5 m	3m	4m	5.5 m	7m	8m
7/8	132.4	135.8	133.6	135.9	128.8	131.2
7/8	132.9	136.7	133.4	134.0	130.7	133.0
7/8	132.2	136.3	133.8	133.1	130.3	132.0
7/13	132.5	136.0	133.9	133.5	133.9	129.2
7/13	132.1	134.5	133.1	135.6	134.0	134.6
7/13	132.0	136.0	133.7	135.1	134.1	135.7
use	132.3	136.0	133.6	134.6	134.0	132.6
cal_file	0.6	4.3	1.9	2.9	2.3	0.9

Downwind Array, top sonics

date	3t	4t	5t	6t	7t	8t	9t	10t	11t
7/11	136.1	136.1	138.9	134.5	134.7	135.1	135.7	135.7	140.9
7/11	135.9	135.3	139.1	134.1	134.6	134.9	135.3	135.9	140.7
7/11	135.8	135.9	138.8	134.0	135.1	134.9	135.6	135.5	140.6
use	135.9	135.8	138.9	134.2	134.8	135.0	135.5	135.7	140.7
cal_file	4.2	4.1	7.2	2.5	3.1	3.3	3.8	4.0	9.0

Downwind Array, bottom sonics

date	1b	2b	3b	4b	5b	6b	7b	8b	9b	10b	11b	12B	13B
7/12	136.3	131.8	134.3	133.8	136.3	130.9	134.5	135.8	134.4	134.5	138.5	136.8	137.0
7/12	136.3	130.8	134.4	134.1	136.0	131.8	134.0	136.3	135.2	135.1	138.6	136.6	136.7
7/13	136.1	131.5	135.1	134.2	136.4	131.6	134.1	136.1	134.8	135.3	138.7	136.5	136.9
use	136.2	131.4	134.6	134.0	136.2	131.4	134.2	136.1	134.8	135.0	138.6	136.6	136.9
cal_file	4.5	-0.3	2.9	2.3	4.5	-0.3	2.5	4.4	3.1	3.3	6.9	4.9	5.2