

# ARL sonic directions

So far, it appears that we have been handling the ARL wind directions incorrectly. Specifically, qc\_geo\_tiltcor now shows tnw13 directions 180 degrees from the other 4 ARL towers and none agree with tnw11 for one case that I am investigating. Ed never replied to my email of 7 Nov 2017 with an answer, so I'm trying to work things out.

1. The sonics are Gill WindMasters, appear to be with the "pipe mount" from my tnw12 photo
2. Guessing from Gill literature that the "north spar" would be opposite the electronics box for the pipe mount
3. From my tnw12 photo, it appears that this places the north spar pointing perpendicular to the boom. In tnw12's case, this is counter-clockwise. From Robert's multistation scan, tnw12's boom was pointing from 89–93 degrees (east), thus the north spar would have pointed approximately north!
4. From Gordon's wind direction quick reference, a windmaster Vaz should be 90 degrees counterclockwise from the boom direction, or about 270 degrees.
5. From Robert's scan, and looking in detail at the tnw12 photo, tnw13 had booms on the opposite side of the tower from the other 4 ARL towers.
6. However, from plotting wind direction in noqc\_instrument, it appears that the wind directions are (approximately) the same from all 5 ARL towers.
7. Thus, I assume that the sonics still had the north spar on the north side of the boom for tnw13 and thus that we should use the reciprocal of the boom direction to determine the true tnw13 Vaz.
8. In other words, Vaz from all ARL sonics should be approximate 270 degrees. This is not how we have been processing them to date.

So...I'm going to try out this theory...

P.S. Trying this manually on one case looked excellent. I've just updated all the cal files.