CP #485

Title: Guidlelines for Summit Station RM Young Wind Monitor Alignment

1. Purpose: To provide direction to the Summit Station Science Technicians for annual alignment of wind monitors.

2. System Information: There are two RM Young wind monitors installed at Summit Station. The CPS RM Young wind monitor is installed on the Green House (GH) tower and provides data for (a) the weather readout in the GH vestibule, and (b) the summitcamp.org weather display. The NOAA RM Young wind monitor is installed on the TAWO tower and provides data for (a) the NOAA html weather display, (b) Summit Weather html, and (c) archived NOAA data records.

3. Annual Alignment Check:

The following check is performed annually for both the CPS and NOAA wind monitors (windbirds). The check should be completed mid-April prior to the arrival of the station opening LC-130 aircraft. This tasking requires three people (a climber, climber attendant, and data reader). Any required training will be completed prior to the alignment check.

a. Wait for a sunny day, as the shadow cast by the windbird's tail must be visible.
b. Before the climber accesses the tower, the data reader should open the solar calculator: http://www.esrl.noaa.gov/gmd/grad/solcalc/index.html.
    - Manually enter the location as 72.580N, -38.459W.
    - Set the time zone to UTC -3 for standard time or UTC -2 for daylight saving time. **Note:** solar calculations are based on the position at local time.
b. The climber then goes up the tower (best to go all the way to the top and make self comfortable, as this could take 10 or more minutes and it is necessary to look at the top of the windbird). Climber holds the windbird so the tail provides a shadow straight down the body of the anemometer. This will require spinning the bird around so that it's tail is pointing towards the sun. Hold for at least three minutes. It is very important to hold the windbird steady during this time.
c. While the climber is holding, the data reader watches the data readout for wind direction (which is being manually controlled by the climber who is holding the windbird steady with the shadow aligned). While the windbird is steady, the data recorder writes down three time and direction data points over the course of three minutes.
d. With the climber still on the tower, the data reader inputs the time into the solar calculator and compares calculated azimuth with the recorded data points. **Note:** The recorded data should be 180º off since the windbird was spun around for the tail to point at the sun.
e. If the calculated and recorded are within two degrees, no adjustments are required. If not, proceed to step 4.

4. Annual Alignment Adjustment:

If the CPS wind monitor is out of alignment, proceed with aligning it per the steps below. If the NOAA wind monitor is out of alignment, contact Brian Vasel (brian.vasel@noaa.gov) and GMD NOAA Met contact at _oar.esrl.gmd.met@noaa.gov (include underscore at beginning) to notify them and offer to realign.

a. Once the data reader determines that realignment is necessary, s/he should notify the climber that an adjustment of X degrees is needed.
b. Climber adjusts the windbird direction manually by carefully loosening the bottom screw of the two screws that hold the windbird in place. By loosening the screw slightly it is possible to twist the windbird to change its orientation. Make adjustments in small increments.
c. Repeat step 3 (b-e) until the windbird recorded directional data is within two degrees of the calculated azimuth.

5. Record Keeping

If any adjustments to the CPS wind monitor are made, send a note summarizing activity to Matt Okraszewski (matthew@polarfield.com).

For any alignment check or adjustment made to the NOAA wind monitor, record activity in the TAWO tower log on the FTP.