MAST 467/667: Introduction to Polar Oceanography (Fall 2021)

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Workshop/Homework-6: Early quality control and averaging

Data: Ocean Melts Greenland (OMG) at https://omg.jpl.nasa.gov/portal/

Introduction. For our sixth workshop we will use our first graphics to define data screening criteria.

Goal. Remove spurious data that may have been flagged as such.

Assignment. Expand on prior work using either gawk, MatLab, or RStudio to produce higher quality vertical profile of temperature and salinity using either gawk or your command shell script nasa.cmd with which your created output.dat

1_Rewrite your scripts (in the gawk script or Matlab or RStudio) such as to screen out bad data that may have been flagged as such. For example, it is not possible to have ocean salinities higher than 50 psu or ocean temperatures colder than -2 degrees C. Please remove all such data that fall outside this range. Also remove data from all depths less than 2-m, say, on account that temperatures and salinities may be biased high or low as the sensors passed the atmosphere before impacting the ocean and may take some time to adjust to the "new" temperature and salinities.

2_After quality control, average all data from within your study region into a single profile. Keep track (and plot separately) the number of profiles that enter the average profile at each depth.

3_Select reasonable scales to plot temperature and salinity both as a function of depth (profile) and of each other (T-S plots). "Reasonable" here means to minimize the amount of "white space."

4_Can you discern a vertical depth at which the salinity and/or temperature scales vary at different rates [Hint: Surface and bottom waters have very different ranges of values between large and small numbers and how much they vary with depth.]