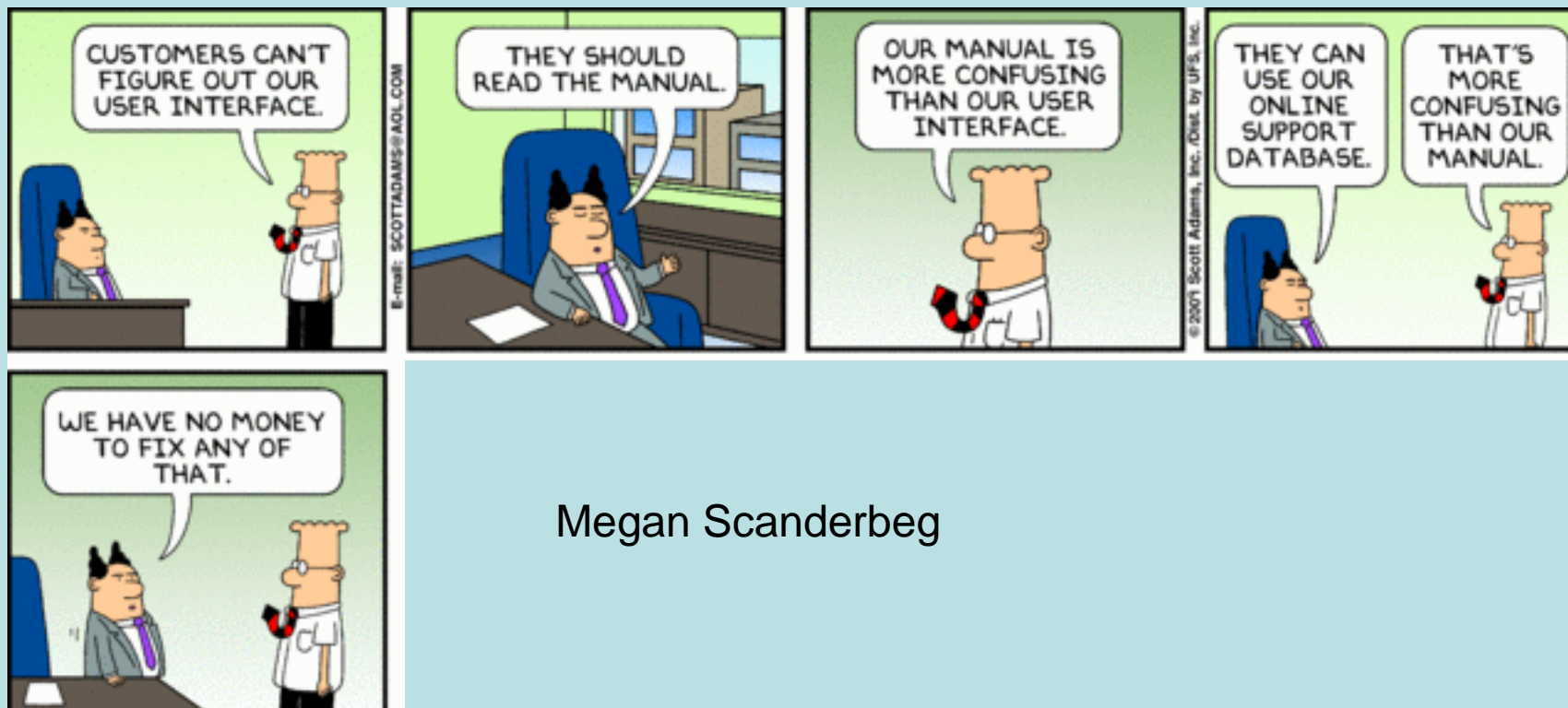


Report on Argo Trajectory Workshop 3



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Argo Steering Team Meeting
21 March, 2012



Objectives of the workshop

- (i) How do we improve the quality and consistency of data that is currently in trajectory files?
- (ii) How should the trajectory file format change to include more useful and accurate information to enable easier velocity calculations?
- (iii) How and over what time frame will Argo implement these changes?



Current status

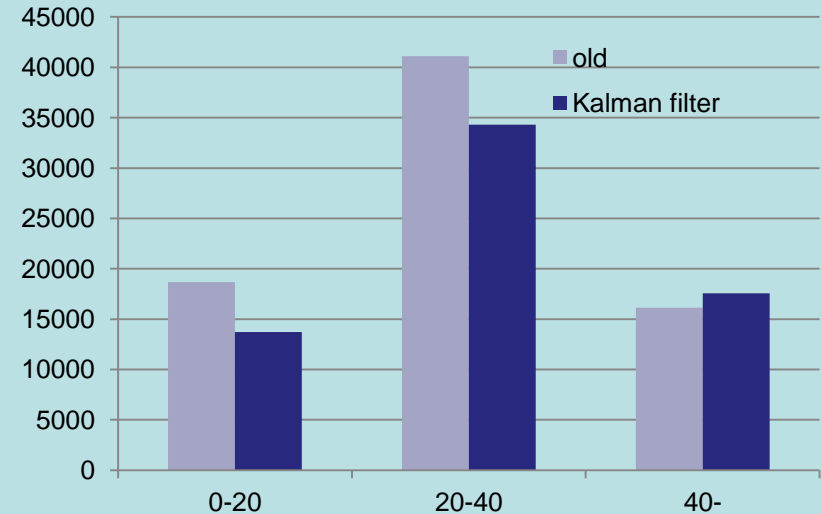
- Inconsistencies exist in the way that DACs fill the trajectory files and the current format lacks some variables and clear instructions on how to fill different variables for each float type
- New floats are coming on the market that measure more cycle timing information and need a way to report that in traj files
- Small working group spent ~one year looking at current trajectory files and developing an updated trajectory file format
- Variety of perspectives considered: data managers, float deployers and users making velocity calculations
- Important to update trajectory file format in a way that includes future flexibility and minimizes work for the DACs and for our users
- Concluded that a few new variables are needed as well as better communication and documentation on how to fill some variables to make it similar across DACs
- Trajectory files are a lower priority than the profile files at most DACs, especially ones that are already busy



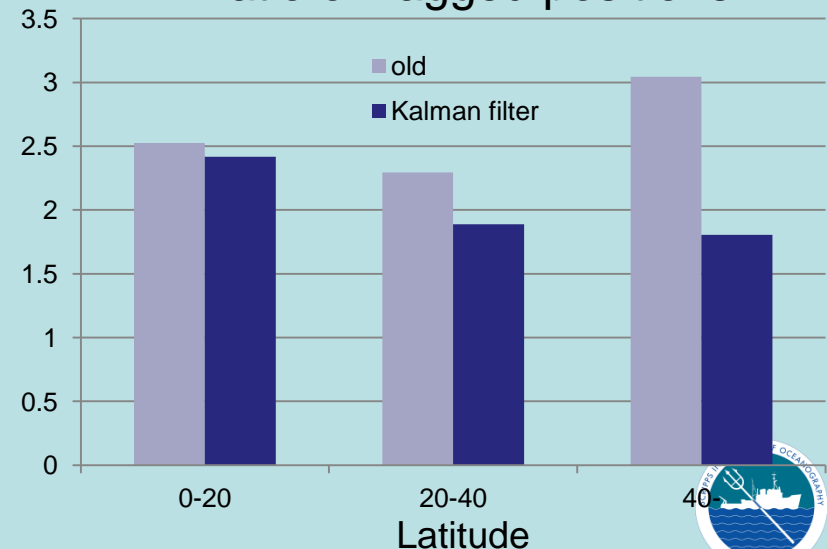
Real time QC of position using JAMSTEC method

- The JAMSTEC method of real time QC of surface positions for each new trajectory for Argos floats was implemented at JMA DAC from beginning of 2011 through September 2011.
- Additionally, this method has been applied by the ANDRO team and a number of other users who all agree it is more effective at identifying erroneous surface fixes than current speed test and it has no major problems.
- The Trajectory Workshop recommended that DACs implement this in real time. This was adopted by the ADMT and agreed that it should be implemented by ADMT 13

Number of profiles

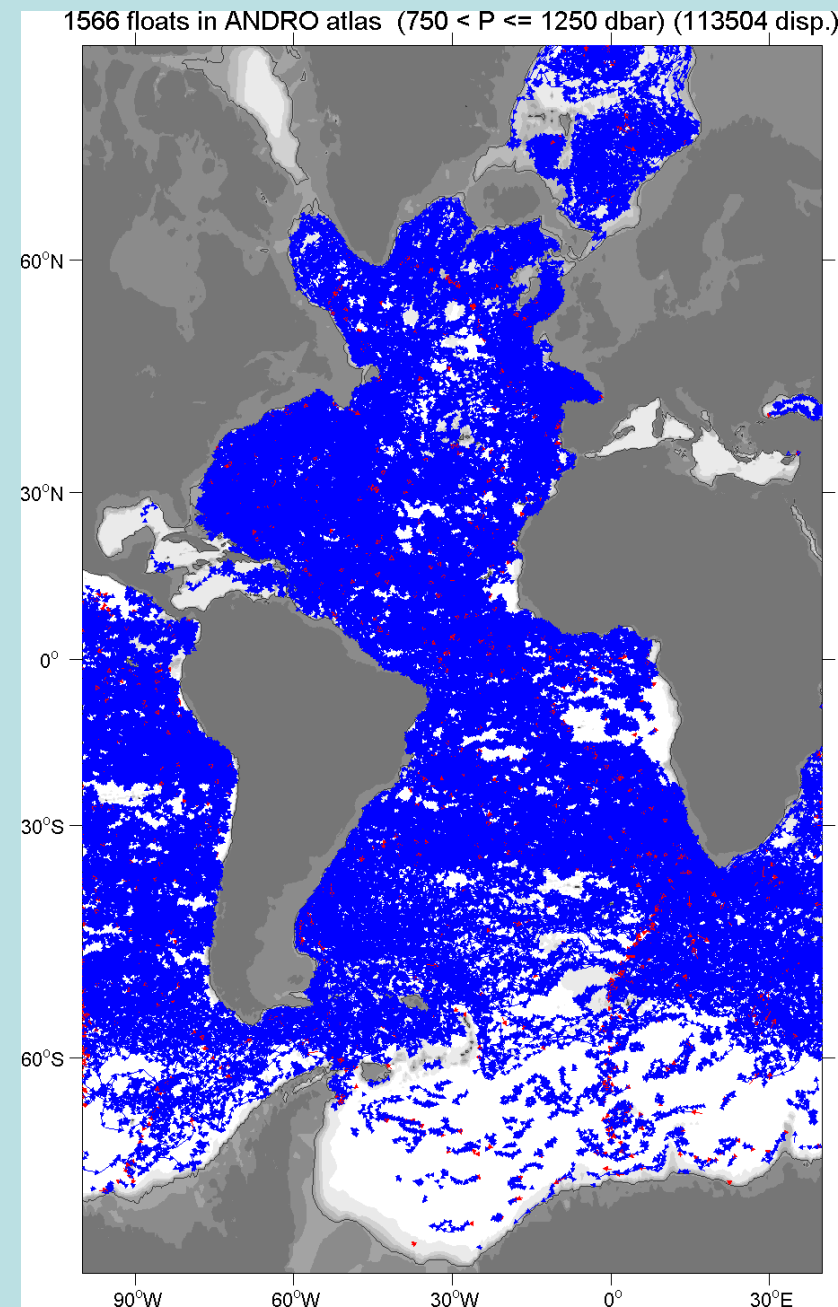


Ratio of flagged positions



ANDRO Atlas update

- ANDRO Atlas compiled based on Argo files and the decoding of raw Argos hex files. Value has been added by finding and correcting errors in the decoding process. DACs have been cooperative.
- Each float has DEP file containing information gathered from the raw hex files, trajectory, profile, tech files and additional quality control.
- The trajectory work has been completed through 2008 at all DACs. 2009 work is complete except for AOML and JMA. Awaiting KORDI hex files.
- ANDRO Atlas to be published in July 2012.
- ANDRO team is willing to update all files through 2011, but are funded through 2009 files. Estimate it takes roughly 0.5 FTE per year of data.
- DACs were asked to investigate anomalies discovered by ANDRO team if they have not already done so.



How to translate work done in ANDRO to trajectory files

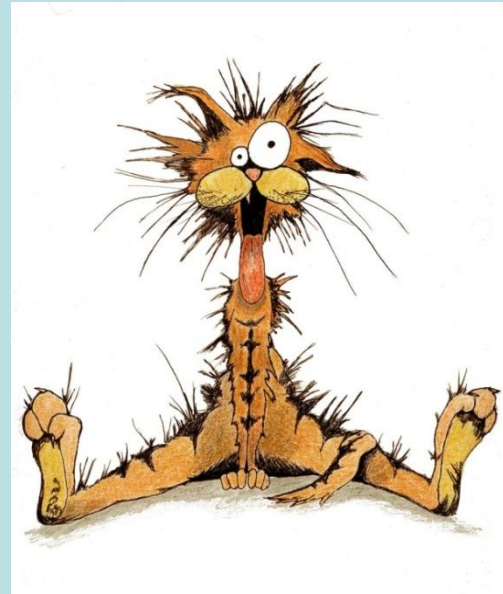
- ANDRO team willing to give Argo access to DEP files after work is published
 - Time period covered by ANDRO is limited
 - Access to DEP files will not be in real time
 - Provides higher quality “old” data
- Suggest creating a separate velocity product file (traj2.nc) that is based on the trajectory and DEP files.
 - Allows Argo to take “immediate” advantage of DEP files without asking DACs to fix current trajectory files which will take time
 - Relies on an individual or small group to create product file
- In longer term - update trajectory file format and train DACs to fill it properly

Velocity product files

- Creation of traj2.nc “velocity product” files
- Will contain best possible trajectory information and velocity estimate
- Format still under development, but will be similar to 2.3 without the N_CYCLE array and more measurement_codes
- Production of these files now will be largely based on work done by ANDRO from their DEP files and extrapolation and calculation by B. King
- ANDRO only goes through 2009 (maybe 2011), so questions remain as to how to continue this process. If new file format 2.3 is correctly filled by the DACs, it should be possible to continue with the traj2.nc product.
- Where will this product be served? How often will it be updated? Should it eventually replace the current trajectory files?

A new file format?!

- Format 2.3 is in the new version of data user manual that will be coming out soon. Not drastically different from previous proposed format 2.3
- Trajectory file format 2.3 allows DACs to make the trajectory files more accurate, consistent and useful for velocity calculations building on work done by ANDRO
- Includes changes to both the N_MEASUREMENT and N_CYCLE arrays
- DAC cookbook is being compiled with detailed instructions on how to fill the more complicated variables like the cycle timing variables for each float type
- Goal is to begin transitioning to format 2.3 after DAC cookbook is published and after GDACs will accept this new format. Draft of DAC cookbook almost ready for circulation.
- Format is backwards compatible, so DACs can progress at their own speed for the changeover. Expect some DACs to do this transition by ADMT 13; others will take longer.



Changes to N_MEASUREMENT Array

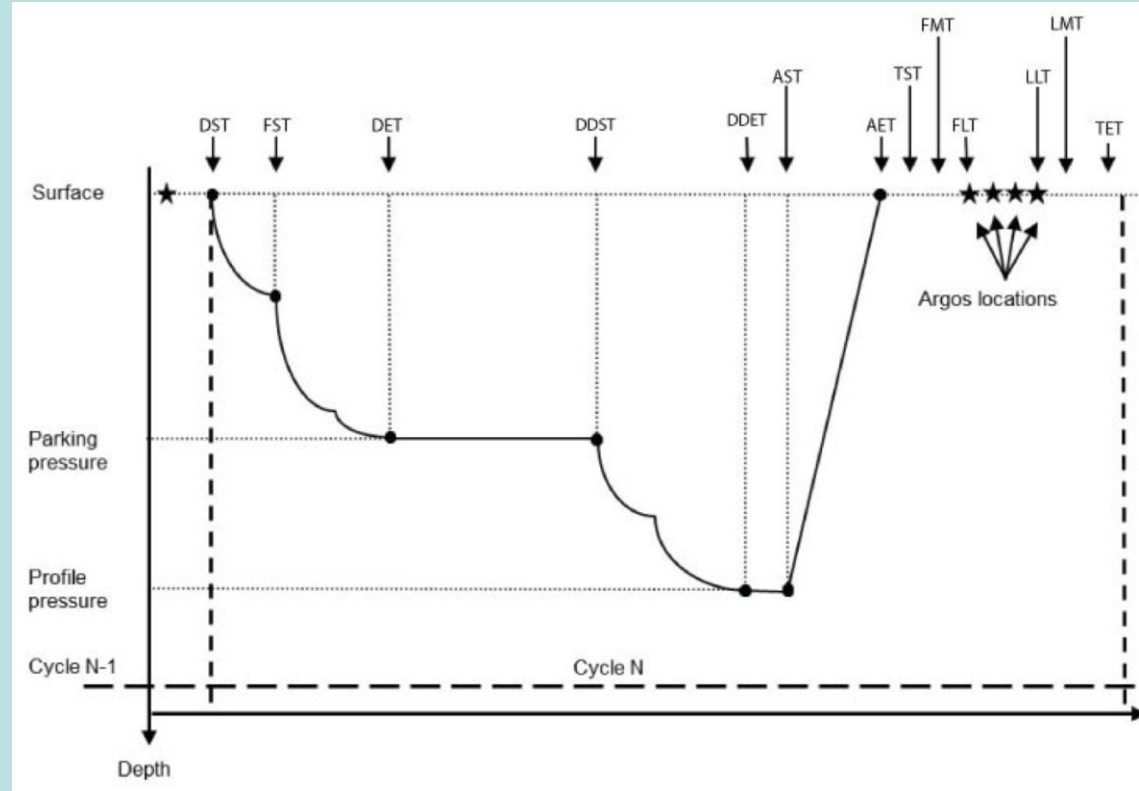
Measure- ment code	Meaning	Definition	Transmitted by listed float type
0	Launch	Launch time and location of the float	All float types
1	Measurements at descent to drift pressure start (DST)	All measurements made at the start of the descent of the float to drift pressure. Time (JULD_DESCENT_START) Location Surface pressure measurement (APEX) Surface temperature measurement (PROVOR)	Time: PROVOR, ARVOR, SOLO-II, WHOI SOLOIR, NEMO, NEMOIR, APEX APF9, APEXIR APF9

- Inclusion of a new measurement code table that clearly indicates where in the cycle each measurement is occurring. Allows for multiple measurements with the same code (ie time and position of launch will both have measurement_code of 0)



N_CYCLE Array

- Additional variable to clearly indicate which index goes with which cycle
- Additional cycle timing variables and more accurate and consistent methods to calculate float cycle timing variables for each float type
- Update of grounded flag to reflect grounding during descent to drift depth or grounding during descent to profile depth



Typical timings for a float cycle

DST	Descent Start Time	AST	Ascent Start Time	LLT	Last Location Time
FST	First Stabilization Time	AET	Ascent End Time	LMT	Last Message Time
DET	Descent End Time	TST	Transmission Start Time	TET	Transmission End Time
DDST	Deep Descent Start Time	FMT	First Message Time		
DDET	Deep Descent End Time	FLT	First Location Time		