

DAC Trajectory Workshop Report

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AST-19

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DAC Trajectory Workshop goals

- Held immediately following ADMT-18 and representatives from most DACs
- Goals were to improve consistency of trajectory v3.1 files by
 - Working in small groups by float type to assign measurement codes to raw float data; share results and reach consensus
 - Review real time QC tests for trajectory files
 - Review status of File Checker for trajectory files
 - Consider code sharing via Git Hub to ease burden on DACs when decoding new floats



Working group results

- Very successful exercise to match raw data to measurement codes (MCs)
 - DACs able to easily communicate how they dealt with missing data and in which file the data could be found
 - Newer DACs learned more about structure of v3.1 file
 - Learned that some DACs need access to more files than they are getting in order to fill all MCs
 - Much needed as new floats types have come out and didn't have float type experts defined for APEX floats
 - Feedback given on how to improve format of tables
- Tables were not entirely finished, but work has continued via email and will be published in updated DAC Trajectory Cookbook by ADMT-19



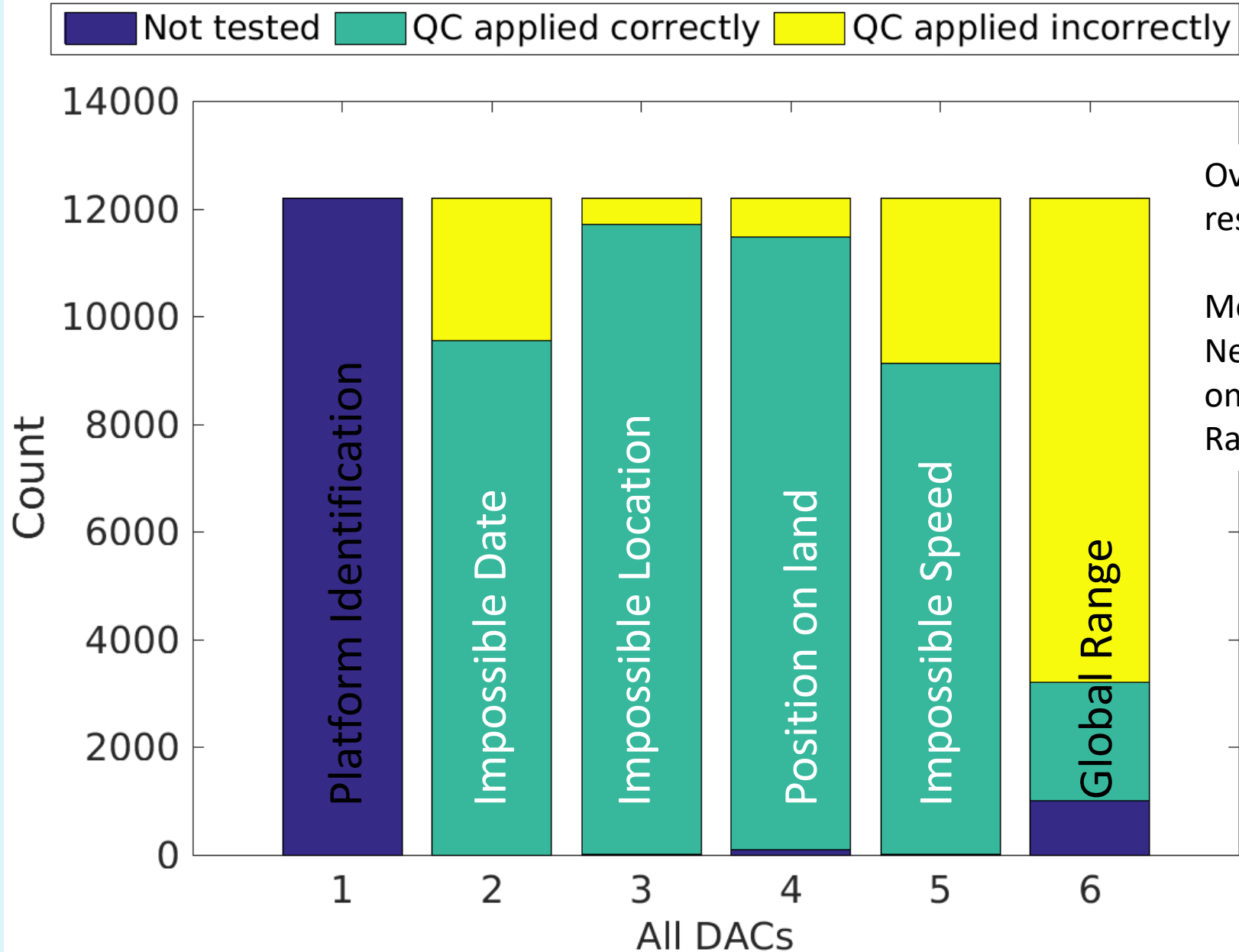
RT QC test analysis by R. Cowley

What was done?

- Read from every trajectory file
- Perform each test on the data
- Decide on the QC flag:
- E.g.
 - Pass, QC = 1
 - Fail, QC = 4
- Compare the QC flag with what is in the file

 Not tested  QC applied correctly  QC applied incorrectly

- <https://cloudstor.aarnet.edu.au/plus/s/aHUnvxglHELm8Wg>



Overall, good results

Most DACs
Need to work
on Global
Range check

Other things that could be done in real time

- Ran out of time to fully consider these items, but they were raised:
 - How to apply known pressure and salinity drifts in real time to trajectory files
 - How to adjust QC flags in trajectory file for greylisted floats
 - Possible improvements to QC test for GPS positions



File Checker exercise

- M. Ignazewski went through several examples of trajectory files that failed File Checker which has been running in test mode for several months
- Wanted to see if any tests should be changed
- Ended up confirming all example rejections and a couple more possible tests were discussed
- Working group formed to study these tests before ADMT-19
- Very helpful to see where DACs were not following format and how to fix files so they would pass



Should the File Checker go live?

- In late November, 12% of trajectory files were being rejected by File Checker
- Much discussion followed on whether to make FileChecker live and decided to ask AST for guidance
- Many fewer files being rejected now than when File Checker first starting testing, but number has plateaued
- Currently, files fail for a variety of reasons and checker could be modified to allow warnings for some and rejection for others
 - Would first need to identify which can get a warning, etc.
 - Then Mark would have to reprogram File Checker
- If we turned it on, would not be able to replace 12% of trajectory files, but previous file remains on GDAC



Code Sharing

- Need for better way to share codes for decoding floats, running QC tests, etc. was discussed to improve consistency and to reduce burden on each DAC to develop similar code
- Two-prong approach discussed:
 1. Work with manufacturers to request decoder as part of tender exercise
 2. Explore developing one decoder (for new floats) for all DACs
 - Need place to do this (GitHub, etc.)
 - Who can edit code (small group of experts, maybe including manufacturer)?
 - What is desired outcome (ascii file, netCDF Argo)?
 - B. King and R. Cowley to work with TWR on APF11 decoder

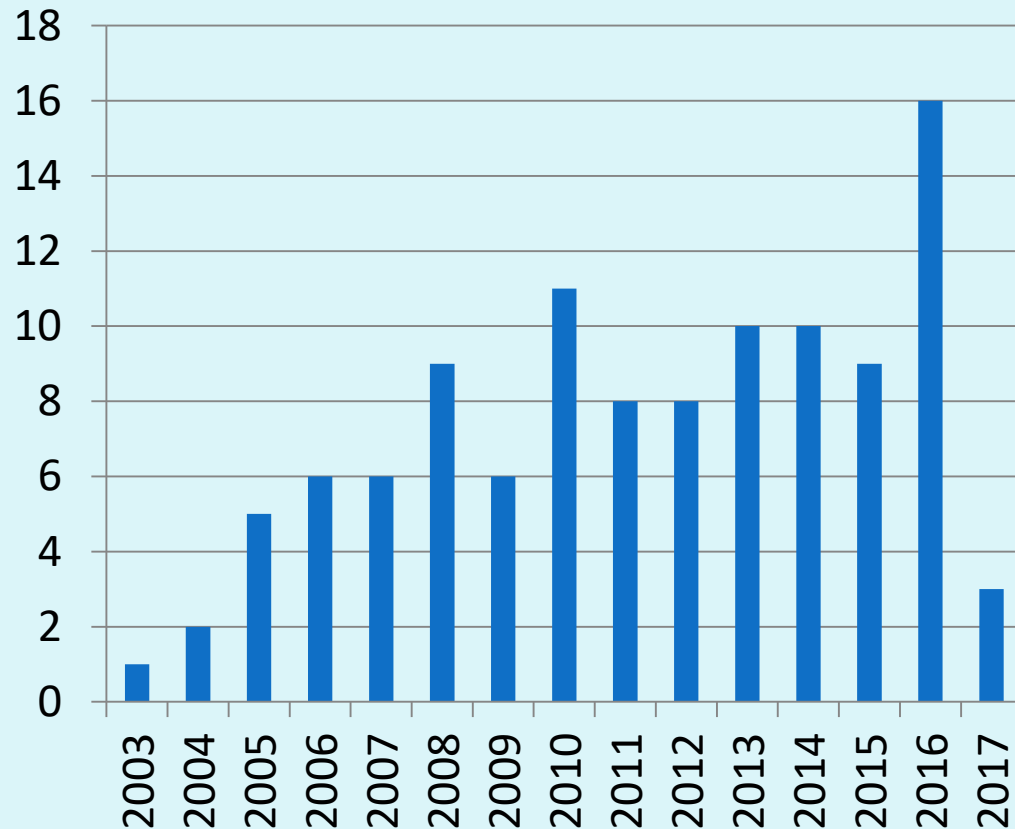


Workshop Final Thoughts

- It was successful and helpful to DACs who were struggling to understand v3.1 format
- Need to pursue the action items from meeting to help improve consistency of trajectory dataset
- Thoughts on trajectory FileChecker going live? Go for it or make adjustments to go with warnings and rejections until DACs can catch up?
- Consider asking for a decoder in float tender process; continue working with manufacturers on this



Papers using Argo trajectory files



- 100+ papers
- 4 papers focused on global velocity fields
- Most are regional studies
- 21+ papers used YoMaHa
- 12+ papers used ANDRO
- 8+ paper used gridded velocity products (G-YoMaHa or AGVA Grey-Riser product)
- 3+ assimilated into models

Potential ways to get velocities from Argo files

- Use traj files from GDACs
- Calculate velocities using preferred method of estimation
- Grid data if desired

- Use 'curated' trajectory files like ANDRO or YoMaHa
- Grid data if desired

Use a gridded velocity product based on Argo like AGVA or G-YoMaHa

- Majority of papers still use GDAC data to calculate velocities
- Over time, likely that more papers will be published using other data sources as has been seen with Argo profile data

