

Meta and tech tables

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Overview

- Recommendations from Profiling Float and Sensor Technical Workshop
- Update on standardizing meta CONFIG parameters and auditing them
- Exploring how to improve vocabulary on tables and machine-to-machine readability
- Meta files will need to be re-written to accommodate recommendations

Recommendations from workshop

- Worked with manufacturers to try to improve sensor and float reliability which led to some requests made both from manufacturers and scientists to:
 - Clean up controller board version
 - Improve firmware version (ask floats to send this information on test cycle)
 - Add a new float type (Navis EBR)
 - Improve battery information by adding variables on manufacturer, energy storage, etc. to better track float energy use
- For more information, please read the report:
http://www.argo.ucsd.edu/apex_users_group.pdf

Control entry for `CONTROLLER_BOARD_TYPE_*` by adding a managed table

99 different controller board types currently exist in meta files. Rationalize to:

Apex floats:	Navis and SOLO:	Others:
APF	N1	CTF
APF9	N2	CTS
APF9E	GG32	DORSON-BATHYSYSTEMS
APF11	HC12	HM2000
APF3		I535
APF6		MetOcean
APF7		PID7008
APF8		015880-100
APF8B		1535
APF8C		41722
APF8R		A9SSU

Updates to BATTERY_TYPE and BATTERY_PACKS:

- Introduce controlled values for battery-related variables and some new variables with new dimension of N_PACK

BATTERY_TYPE (*already in place, new dimensioning for N_PACK, introduce controlled list*)

Alkaline, Lithium, Hybrid(?)

BATTERY_PACKS (*already in place, new dimensioning for N_PACK, introduce controlled list*)

4DD, 1C, O (other), U (unknown)

BATTERY_MANUFACTURER (*new variable, [N_PACK, string 32], controlled list*)

Electrochem, Tadiran

BATTERY_MODEL (*new variable, N_PACK, string 64, free text*)

Eg 3PD1404

BATTERY_ENERGY_MJ (*float*)

XX

BATTERY_ENERGY_USE (*N_PACK, integer*)

Use a binary system to indicate energy distribution

Sensor	Binary value
PUMP	1
CONTROLLER	2
TELEMETRY	4
CTD (assuming CTD is in N_SENSOR index 1-3)	8
SENSOR_INDEX4	16
SENSOR_INDEX5	32
etc	etc

Review of meta config parameters

- Argo has agreed to split the meta config parameters into a curated and non-curated list
- Propose a small(er) subset of mission-critical parameters should be curated:
 - CONFIGs that define the Core trajectory/mission (park time, etc)
 - CONFIGs that measure the accuracy of biases of the float (rise rate, etc)
 - Mission Modes (e.g. ice detection, surfacing at specific time of day)
- Proposing to audit list annually for improved consistency across DACs and float types; only mandatory configs will be audited for presence in metafiles; value will not be checked

Split meta config lists

Curated List (rules governing use are similar to current list)

- Will have Mandatory, Highly Desirable, and Optional CONFIGs
- Uniqueness of the CONFIG will be maintained against all other Curated and Non-Curated CONFIGs
- New Curated CONFIGs can be added if they fall under one of the previously mentioned categories (e.g. document possible bias)

70	Curate CONFIGS (reduced from 185)
18	Non-Mission-Mode Mandatory CONFIGs (6 applicable to all floats)
4	Highly Desirable
18	Optional
30	Mission Mode (e.g. Ice detection, Surfacing at specific time of day)

Non-Curated List

- Optional CONFIGs only
- Uniqueness is not guaranteed against other Non-Curated CONFIGs
- New CONFIGs can be added, with reduced oversight of curators (e.g. spelling, best practice)

Vocabulary and readability

- Exploring using NERC Vocabulary Server (NVS) to:
 - Clearly define some meta config parameters with a unique resource identifier (URI)
 - Obtain machine-to-machine access to allow for easier monitoring by AIC and faster updates to FileChecker
- If desired, an Argo vocabulary governance committee needs to be set up to develop the vocabulary (terms, definitions, etc.)
- BODC informed Argo that significant work would need to be done to import the Argo ref tables into NVS
- EuroArgo is working on a proposal to fund this work

Conclusions

- Meta and tech information is important when monitoring the health of Argo fleet
- Working to improve communication between manufacturers and Argo to clearly define meta and tech parameters
- Working to improve consistency in meta and tech files across DACs and float types through clearly defined parameters and yearly audits
- Considering how best to make these lists machine readable
- Meta files will need to be re-written to accommodate some changes; if AST sees something else to change, please let ADMT know

Census of Argo-wide CONFIG parameters in V3.1 meta netCDF (Nov 20, 2017)

DAC	CONFIG_ ParkTime	Cycle Time	Park Pres	Profile Pres	Direction
AOML (6534)	46	46	100	100	11
PMEL (1047)	0	0	100	100	0
SIO (1685)	100	100	100	100	41
UW (1772)	0	0	100	100	0
WHOI (1366)	93	93	100	100	0
BODC (632)	0	9	98	97	7
CORIOLIS (1801)	0	100	100	100	93
CSIO (368)	0	100	100	100	100
CSIRO (805)	48	48	98	98	0
INCOIS (376)	71	88	100	100	11
JMA (1547)	100	100	98	100	100
KMA (68)	100	100	100	100	100
MEDS (472)	0	100	100	100	100
NMDIS (15)	0	100	100	100	100

Consistency of meta (CONFIG) tables

- Inclusion of mandatory config parameters is inconsistent across DACs/floats.
- Propose that mandatory CONFIGs which are only applicable to a subset of floats be regularly audited for their presence within the meta netCDF.
- The CONFIG Keyholders, van Wijk, Klein, Gilson, will work to determine the necessary link between a CONFIG and a distinct float identifier
 - To help DACs identify the CONFIGs applicable to their floats
 - As a basis for a CONFIG audit
- If audit is possible, the CONFIG is 'Mandatory'
- If audit is not possible, the CONFIG is 'Highly Desirable'
- Audit only on Names (presence within the netCDF), not Values
- Allow fillvalue, but can track % with fillvalue?
- Audit is to identify missing CONFIGs and CONFIGs used in an incorrect float type