

# Maintenance of CONFIG Parameters for the Meta netCDF

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# Maintenance of meta (CONFIG) tables



At ADMT17 an audit of various critical CONFIG parameters was presented, demonstrating the lack of consistency in their use within the meta netCDF.

The main issues identified by the “CONFIG Keyholders”

- 1) The number of configuration parameters are increasing quickly with more complicated float types (185 parameters last I checked), requiring significant resources for curation
- 2) The inclusion of configuration parameters within the meta netCDF is inconsistent across DACs and float types.
- 3) Currently, there is no formal procedure to confirm that mandatory configuration parameters are found within the correct meta netCDF.

Esmee van Wijk presented our ideas at AST18, on how to ease the maintenance of the CONFIG spreadsheet and a path forward to build the capability to bring increased consistency to the meta netCDF mission configuration section.



# Maintenance of meta (CONFIG) tables



1) *The number of configuration parameters is increasing quickly with more complicated float types (185 parameters last I checked), requiring significant resources for curation*

Curation: Determine the uniqueness and definition of the members of the CONFIG table. This requires the understanding of the exact behavior of the universe of Argo float types (and firmware).

Propose a small(er) subset of mission-critical parameters should be curated

- (I) CONFIGs that define the Core trajectory/mission (park time, etc)
- (II) CONFIGs that measure the accuracy of biases of the float (rise rate, etc)
- (III) Mission Modes (e.g. ice detection, surfacing at specific time of day)

Action: Does ADMT wish to amend this 'philosophy' as presented to the AST?



# Real World Use of a Split Curated Table



## The Curated 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)

## The 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)

A first pass through the CONFIG table (sure to change)

- 70 Curated 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)

Some consolidation of CONFIG names that have been representing the same behavior has been done.



# Maintaining Consistency of meta netCDF CONFIG



- 2) *The inclusion of the mandatory configuration parameters is inconsistent across DACs/floats.*
- 3) *Currently, there is no formal procedure to confirm that mandatory configuration parameters are found within the metafiles.*

Propose that mandatory CONFIGs with a mission characteristic that is globally shared and are critical to trajectory estimation, after an initial ramp-up period, be added to the file checker (Estimated Implementation...?ADMT20, 2019?).

Action Item 9: AST endorses the concept of mandatory CONFIG parameters and understands that DACs may need to estimate or calculate some of these.



# Proposed Mandatory CONFIG Applicable to File Checker



Determine mandatory CONFIG that are applicable to all floats (6).

CONFIG_Direction_Number	
CONFIG_CycleTime_hours	Accepted, ADMT17
CONFIG_ParkTime_hours	
CONFIG_SurfaceTime_hours	
CONFIG_ParkPressure_dbar	Accepted, ADMT17
CONFIG_ProfilePressure_dbar	Accepted, ADMT17

Trajectory Mission critical CONFIG, and  
have been expected in netCDF files prior to V3.1

Recall that AST was just fine with estimation  
(e.g. APEX SurfaceTimeOut = UpTime- estimate of ascent time )

Action: Does ADMT accept these as critical for users, and thus provided  
whether reported directly by the float or estimated?

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

DAC	CONFIG_	Park Time	Cycle Time	Surface Time	Park Pres	Profile Pres	Direction
AOML (6534)		46	46	0	100	100	11
PMEL (1047)		0	0	0	100	100	0
SIO (1685)		100	100	0	100	100	41
UW (1772)		0	0	0	100	100	0
WHOI (1366)		93	93	0	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



- 2) *The inclusion of the mandatory configuration parameters is inconsistent across DACs/floats.*
- 3) *Currently, there is no formal procedure to confirm that mandatory configuration parameters are found within the metafiles.*

Propose that the mandatory CONFIGs which are only applicable to a subset of floats be regularly audited (annually?) 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

- 1) To help DACs identify the CONFIGs applicable to their floats
- 2) 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

# Demonstrative Argo CONFIG spreadsheet record

Level of CONFIG importance and necessity inclusion.

M: Mandatory, if applicable this CONFIG must be included, and will be checked for compliance through file checker and/or regular audit. If mandatory for all floats, estimation may be required.

HD: Highly desirable, if applicable this CONFIG is strongly requested to be included. These do not have a clear audit mechanism.

O: Optional (curated or non-curated) CONFIG that may or may not be included within a meta netCDF, DACs prerogative



<b>Config Variable Name</b>	<b>Explanation</b>	<b>Mandatory / Highly Desirable / Optional</b>	<b>Category</b>	<b>Curated / Not Curated</b>	<b>Status</b>	<b>Relevant Float Types</b>
CONFIG_CycleTime_hours	For APEX and ARVOR floats this is the total....	M for all floats, estimate if required	Mission	C	Active	All Floats

# Demonstrative Argo CONFIG spreadsheet record

## Status:

The Status conveys the use of the CONFIG to the user and file checker

- The CONFIG is actively being used
- The CONFIG is pending (proposed)
- The CONFIG is going to be removed in the future, a suggestion is made for a replacement. At present the CONFIG will not be rejected, but a smooth transition to another CONFIG is warranted.
- The CONFIG is no longer allowed

Details still need to be worked out with Thierry and Mark



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CONFIG_CycleTime_hours	For APEX and ARVOR floats this is the total....	M for all floats, estimate if required	Mission	C	Active	All Floats

# Demonstrative Argo CONFIG spreadsheet record

List of float types/firmware that are applicable to the CONFIG:  
“All Floats” or List of applicable float types/firmware

Curated Mandatory CONFIGs will have an accurate list for audit.

For Curated Highly Desirable and Optional CONFIGs, if ‘Relevant Float Types’ is filled it is to aid for DACs and should not be considered absolute.

Mission Modes: Can we map the applicability of CONFIG to float identifiers?  
I’m doubtful, so likely Highly Desirable.



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CONFIG_CycleTime_hours	For APEX and ARVOR floats this is the total....	M for all floats, estimate if required	Mission	C	Active	All Floats Or List Float Types

Universe of ALL CONFIGS

Non-Curated

Curated

Optional

Argo Request

Mandatory, Globally Applicable, Audit to File Checker

Mandatory, Float Specific, Audit

Highly Desirable, no Audit possible

Going Forward....

January-February 2017 ..... Get to Work on mapping critical Mandatory CONFIG to Float types

March 2017 Release of Preliminary CONFIG table, with updated census of array-wide CONFIGs (6 presently) and Curated Mandatory CONFIGs

AST Action Item 10: Ask E. van Wijk and J. Gilson to send out new version of the meta table and the results of the census on the contents of the meta file.

Feedback, Feedback, Feedback....

Pre-ADMT, 2<sup>nd</sup> audit, revision of tables due to feedback.

Universe of ALL CONFIGS

Non-Curated

Curated

Optional

Argo Request

Mandatory, Globally Applicable, Audit to File Checker

Mandatory, Float Specific, Audit

Highly Desirable, no Audit possible

## Discussion and Proposal

Reduced number of Curated CONFIG

Basis to determine the Curated list

Acceptance of proposed globally applicable CONFIG list and agreement to fill as reported by the float or estimated

File Checker and Regular Audits

Slightly modified CONFIG spreadsheet