



Interpolation & Extrapolation Assignment of QC Flags

Claudia Schmid & Thierry Carval



Coriolis



How to manage QC flags 5 and 8

Currently:

- QC = 5 means "value changed"
- QC = 8 means "interpolated value" (not clear what type)
- No value for extrapolation

We need clarifications:

- Regarding the use for position (and time) as well as PARAM
- How to ensure that interpolated/extrapolated values are good
- If a value exists and is replaced (e.g. Chl-A quenching)
- Instructions for RT and D-mode may differ(?)



Case 1: interpolated values

- Only done to fill gaps (position or PARAM)
- Ideal: only interpolate using data flagged as 1 by automatic tests
- Problem: interpolation is done during decoding, i.e. before RT-QC
- For RT processing:
 - PASSED QC keep flag of 8
 - FAILED QC use flag 9 and FillValue
- For DM processing if interpolated value failed QC:
 - redo interpolation using values with QC 1
 - PASSED QC keep flag of 8
 - FAILED QC use flag 9 and FillValue
- Does interpolation method have to be specified? If so: where?



Case 2: extrapolation

Examples:

- positions in Argos traj files (D-mode)
- PARAM - CHLA quenching correction (RT and D-mode)

PARAM versus position – replace original value or not:

PARAM	ADJUSTED fields, replacement	fill SCIENTIFIC_CALIB fields
Position	No special fields, NO replacement	currently no field for details

How to flag extrapolation (prior to QC)?

Expand the definition of 8	Requires update of definition
Use 5	Requires update of definition
Introduce new flag value	More transparent



Case 2: extrapolation - continued

How to handle outcome of QC tests?

- PASSED keep flag for 'extrapolated'
- FAILED flag = 9 and replace value with FillValue **OR**
flag = 4 (RT & D-mode); maybe 2 or 3 (D-mode)
- Different approach for position versus PARAM may be needed

POSITIONING_SYSTEM and POSITION_ACCURACY:

- POSITIONING_SYSTEM = 'INTERP' variable (for profile files).
- What about POSITION_ACCURACY (traj files) - currently (table 5): 0,1,2,3,G,I (Note: absent are Argos location classes that are characters)



More on QC of position

- For profile location values, should interpolated and extrapolated locations be checked with RT tests #4 (position on land) and #5 (impossible speed)?
- For linear interpolation: speed checked will be passed if positions used for interpolation are good
- For extrapolation: speed check might fail, depending on method
- Should we add a dedicated positioning system
- POSITIONING_SYSTEM = 'INTERP' variable (for profile files).
- What about POSITION_ACCURACY (traj files) - currently (table 5): 0,1,2,3,G,I (Note: absent are Argos location classes that are characters)