

Oceanographic quality flag schemes and mappings between them

Version: 1.8

Reiner Schlitzer, Alfred Wegener Institute for Polar and Marine Research, 27568 Bremerhaven, Germany. e-mail: Reiner.Schlitzer@awi.de

Following below are the quality flag code definitions of 16 widely used oceanographic flagging schemes (in black) as well as the mappings between them (in gray), as implemented in the *Ocean Data View* software.

History:

- 2010-11-11 (v1.1): Quality flag mappings to/from WOCEBOTTLE, WOCECTD, and WOCESAMPLE flag "5" changed.
- 2011-01-26 (v1.2): *Missing value* flag mappings between many schemes modified. *OceanSITES* scheme added.
- 2012-05-30 (v1.3): *SeaDataNet* weblink updated.
- 2013-05-24 (v1.4) IODE quality flag scheme added
- 2018-04-10 (v1.5) Flag Q added to SEADATANET quality flag scheme
- 2018-11-09 (v1.6) Mappings of SEADATANET quality flags '5', '6' and 'Q' to ODV flags changed from '1' to '0'.
- 2019-11-04 (v1.7) QARTOD flagging scheme and its mappings corrected.
- 2020-02-05 (v1.8) BODC and SMHI flag mappings to SEADATANET changed.

ODV QFSetName= **ODV**

Set Description: ODV generic quality flags

Reference: ODV Users Guide, <http://odv.awi.de/en/documentation/>

Flag Description	<u>ODV</u>	<u>GTSPP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
good quality	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
unknown quality	1	0	0	0	0	0	0	2	2	2	0	blank	*	blank	0	2
questionable quality	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
bad quality	8	4	4	4	4	4	3	4	4	7	1	K	?	B	4	4

ODV QFSetName= **GTSP**

Set Description: GTSP quality flags

Reference: http://www.meds-sdmm.dfo-mpo.gc.ca/meds/Databases/OCEAN/GTSPcodes_e.htm

Flag Description	<u>ODV</u>	GTSP	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
no quality control (QC) was performed	1	0	0	0	0	0	0	2	2	2	0	Q	*	blank	0	2
QC was performed; good data	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
QC was performed; probably good data	0	2	2	2	1	0	0	2	2	2	3	blank	blank	blank	2	1
QC was performed; probably bad data	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
QC was performed; bad data	8	4	4	4	4	4	3	4	4	7	1	K	/	B	4	4
the value was changed as a result of QC	1	5	5	5	2	0	0	2	2	2	3	R	*		5	2
the value is missing	1	9	9	9	9	0	0	5	5	5	9	N	*	B	9	9

ODV QFSetName= **ARGO**

Set Description: ARGO quality flags

Reference: Argo data management, User's manual, Version 2.1, <http://www.usgodae.org/argo/argo-dm-user-manual.pdf>

Flag Description	<u>ODV</u>	<u>GTSPP</u>	ARGO	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
no QC was performed	1	0	0	0	0	0	0	2	2	2	0	Q	*	blank	0	2
good data	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
probably good data	0	2	2	2	1	0	0	2	2	2	3	blank	blank	blank	2	1
probably bad data that are potentially correctable	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
bad data	8	4	4	4	4	4	3	4	4	7	1	K	/	B	4	4
value changed	1	5	5	5	2	0	0	2	2	2	0	R	*		5	2
interpolated value	1	5	8	8	2	0	0	2	2	2	0	T	*		8	2
missing value	1	9	9	9	9	0	0	5	5	5	9	N	*	B	9	9

ODV QFSetName= **SEADATANET**

Set Description: SEADATANET quality flags

Reference: <http://vocab.nerc.ac.uk/collection/L20/current/>

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	SEADATANET	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCEAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
no quality control	1	0	0	0	0	0	0	2	2	2	0	Q	*	blank	0	2
good value	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
probably good value	0	2	2	2	1	0	0	2	2	2	3	blank	blank	blank	2	1
probably bad value	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
bad value	8	4	4	4	4	4	3	4	4	7	1	K	/	B	4	4
changed value	0	5	5	5	2	0	0	2	2	2	0	R	*		5	2
value below detection	0	0	0	6	0	0	0	2	2	2	0	<	<	<	0	2
value in excess	1	0	0	7	0	0	0	2	2	2	0	>	>	>	0	2
interpolated value	1	0	8	8	2	0	0	2	2	2	0	T	*		0	2
missing value	1	9	9	9	9	0	0	5	5	5	9	N	*	B	9	9
value phenomenon uncertain	1	0	0	A	0	0	0	2	2	2	0	Q	*	B	0	2
value below limit of quantification	0	0	0	Q	0	0	0	2	2	2	0	blank	*	blank	0	2

ODV QFSetName= **ESEAS**

Set Description: European Sea Level Service quality flags

Reference: http://www.e seas.org/e seas-ri/deliverables/d1.2/ESEAS_QC_29032005.doc

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	ESEAS	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
no quality control	1	0	0	0	0	0	0	2	2	2	0	Q	*	blank	0	2
correct value	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
interpolated value	1	0	8	8	2	0	0	2	2	2	0	T	*		0	2
doubtful value	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
isolated spike or wrong value	8	4	4	4	4	4	3	4	4	7	1	K	/	B	4	4
correct but extreme value	0	1	1	1	5	0	0	2	2	2	3	blank	blank	blank	1	1
reference change detected	1	0	0	0	6	0	0	2	2	2	0	U	*	B	0	2
constant values for more than a defined time interval	1	0	0	0	7	0	0	3	3	3	0	Q	*	B	0	2
out of range	4	3	3	3	8	4	3	3	3	7	2	K	?	B	3	3
missing value	1	9	9	9	9	0	0	5	5	5	9	N	*	B	9	9

ODV QFSetName= **WOD**

Set Description: World Ocean Database individual observed level quality flags

Reference: ftp://ftp.nodc.noaa.gov/pub/WOD05/DOC/wod05_tutorial.pdf

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	WOD	<u>WODSTATION</u>	<u>WOCEBOTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
accepted value	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
range outlier (outside of broad range check)	4	3	3	3	3	1	3	3	3	7	2	K	?	?	3	3
failed inversion check	4	3	3	3	3	2	3	3	3	7	2	K	?	?	3	3
failed gradient check	4	3	3	3	3	3	3	3	3	7	2	K	?	?	3	3
observed level "bullseye" flag and zero gradient check	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
combined gradient and inversion checks	4	3	3	3	3	5	3	3	3	7	2	K	?	?	3	3
failed range and inversion checks	8	4	4	4	4	6	3	4	4	7	1	K	/	B	4	4
failed range and gradient checks	8	4	4	4	4	7	3	4	4	7	1	K	/	B	4	4
failed range and questionable data checks	8	4	4	4	4	8	3	4	4	7	1	K	/	B	4	4
failed range and combined gradient and inversion checks	8	4	4	4	4	9	3	4	4	7	1	K	/	B	4	4

ODV QFSetName= **WODSTATION**

Set Description: World Ocean Database entire station quality flags

Reference: ftp://ftp.nodc.noaa.gov/pub/WOD05/DOC/wod05_tutorial.pdf

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	WODSTATION	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
accepted station	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
failed annual standard deviation check	4	3	3	3	3	4	1	3	3	7	2	K	?	?	3	3
two or more density inversions (Levitus, 1982 criteria)	4	3	3	3	3	4	2	3	3	7	2	K	?	?	3	3
flagged cruise	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
failed seasonal standard deviation check	4	3	3	3	3	4	4	3	3	7	2	K	?	?	3	3
failed monthly standard deviation check	4	3	3	3	3	4	5	3	3	7	2	K	?	?	3	3
failed annual and seasonal standard deviation check	4	3	3	3	3	4	6	3	3	7	2	K	?	?	3	3
bull's-eye from standard level data or failed annual and monthly standard deviation check	4	3	3	3	3	4	7	3	3	7	2	K	?	?	3	3
failed seasonal and monthly standard deviation check	4	3	3	3	3	4	8	3	3	7	2	K	?	?	3	3
failed annual, seasonal and monthly standard deviation check	4	3	3	3	3	4	9	3	3	7	2	K	?	?	3	3

ODV QFSetName= **WOCEBOTTLE**

Set Description: WOCE WHP bottle parameter data quality flags

Reference: http://cchdo.ucsd.edu/WHP_Exchange_Description.pdf

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	WOCEBOTTLE	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
sample for this measurement was drawn from water bottle but analysis not received	1	9	9	9	9	0	0	1	5	5	9	blank	*	blank	9	9
acceptable measurement	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
questionable measurement	4	3	3	3	3	4	4	3	3	7	2	K	?	?	3	3
bad measurement	8	4	4	4	4	4	4	4	4	7	1	K	/	B	4	4
not reported	1	9	9	9	9	0	3	5	5	5	9	blank	blank	blank	9	9
mean of replicate measurements	1	0	0	0	0	0	0	6	6	5	0	blank	*	blank	0	2
manual chromatographic peak measurement	1	0	0	0	0	0	0	7	5	5	0	blank	*	blank	0	2
irregular digital chromatographic peak integration	4	0	0	0	0	4	4	8	3	7	2	K	?	?	3	3
sample not drawn for this measurement from this bottle	1	9	9	9	9	4	4	9	9	7	9	N	*	B	9	9

ODV QFSetName= **WOCECTD**

Set Description: WOCE WHP CTD data quality flags

Reference: http://cchdo.ucsd.edu/WHP_Exchange_Description.pdf

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	WOCECTD	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
not calibrated	1	0	0	0	0	0	0	5	1	5	0	blank	*	blank	0	2
acceptable measurement	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
questionable measurement	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
bad measurement	8	4	4	4	4	4	3	4	4	7	1	K	/	B	4	4
not reported	1	9	9	9	9	0	3	5	5	5	9	blank	blank	blank	9	9
interpolated over >2 dbar interval	1	0	0	0	0	0	0	5	6	5	0	blank	*	blank	0	2
despiked	1	0	0	0	0	0	0	5	7	5	0	blank	*	blank	0	2
not sampled	1	9	9	9	9	0	0	9	9	9	9	N	*	B	9	9

ODV QFSetName= **WOCESAMPLE**

Set Description: WOCE WHP quality flags for the water bottle itself

Reference: http://cchdo.ucsd.edu/WHP_Exchange_Description.pdf

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	WOCESAMPLE	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
bottle information unavailable	1	0	0	0	0	0	0	5	5	1	0	blank	*	blank	0	2
no problems noted	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
leaking	4	3	3	3	3	4	3	3	3	3	2	K	?	?	3	3
did not trip correctly	8	3	3	3	3	4	3	3	3	4	2	K	?	?	4	4
not reported	1	9	9	9	9	0	0	5	5	5	9	blank	blank	blank	9	9
significant discrepancy in measured values between Gerard and Niskin bottles	4	3	3	3	3	4	3	3	3	6	2	K	?	?	3	3
unknown problem	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
pair did not trip correctly	4	3	3	3	3	4	3	3	3	8	2	K	?	?	3	3
samples not drawn from this bottle	1	9	9	9	9	0	0	9	9	9	9	N	*	B	9	9

ODV QFSetName= **QARTOD**

Set Description: QARTOD quality flags.

Reference: https://cdn.ioos.noaa.gov/media/2017/12/QARTOD-Data-Flags-Manual_Final_version1.1.pdf

Flag Description	<u>ODV</u>	<u>GTSPP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	QARTOD	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
missing data	1	9	9	9	9	0	3	5	5	5	9	N	blank	blank	9	9
quality not evaluated	1	0	0	0	0	0	0	2	2	2	2	blank	blank	blank	0	2
fail	8	4	4	4	4	4	3	4	4	7	4	K	/	B	4	4
suspect or of high interest	4	3	3	3	3	4	3	3	3	7	3	K	?	?	3	3
pass	0	1	1	1	1	0	0	2	2	2	1	blank	blank	blank	1	1

ODV QFSetName= **BODC**

Set Description: One of the following quality control flags may appear against an individual data value. A blank flag indicates that the value is good.

Reference: http://www.bodc.ac.uk/data/codes_and_formats/request_format/

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCEAMPLE</u>	<u>QARTOD</u>	BODC	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
acceptable value	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
below detection limit	4	3	3	6	3	0	0	3	3	7	2	<	<	<	3	2
in excess of quoted value	4	3	3	7	3	0	0	3	3	7	2	>	>	>	3	2
taxonomic flag for affinis (aff.)	1	0	0	0	0	0	0	2	2	2	0	A	blank	blank	0	2
beginning of CTD down/up cast	1	0	0	0	0	0	0	2	2	2	0	B	blank	blank	0	2
taxonomic flag for confer (cf.)	1	0	0	0	0	0	0	2	2	2	0	C	blank	blank	0	2
thermometric depth	1	0	0	0	0	0	0	2	2	2	0	D	blank	blank	0	2
end of CTD down/up cast	1	0	0	0	0	0	0	2	2	2	0	E	blank	blank	0	2
extrapolated value	1	0	0	0	0	0	0	2	2	2	0	H	blank	blank	0	2
taxonomic flag for single species (sp.)	1	0	0	0	0	0	0	2	2	2	0	I	blank	blank	0	2
improbable value, unknown quality control source	8	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
improbable value, originators quality control	8	3	3	3	3	4	3	3	3	7	2	L	?	?	3	3
improbable value, BODC quality control	8	3	3	3	3	4	3	3	3	7	2	M	?	?	3	3

null value	1	0	0	0	0	0	0	5	5	5	0	N	blank	blank	0	2
improbable value, user quality control	8	3	3	3	3	4	3	3	3	7	2	O	?	?	3	3
trace/calm	1	0	0	0	0	0	0	2	2	2	0	P	blank	blank	0	2
indeterminate	1	0	0	0	0	0	0	5	5	5	0	Q	blank	blank	0	2
replacement value	1	0	0	0	0	0	0	2	2	2	0	R	blank	blank	0	2
estimated value	1	0	0	0	0	0	0	2	2	2	0	S	blank	blank	0	2
interpolated value	1	0	0	8	0	0	0	2	2	2	0	T	blank	blank	0	2
uncalibrated	1	0	0	0	0	0	0	2	2	2	0	U	blank	blank	0	2
control value	1	0	0	0	0	0	0	2	2	2	0	W	blank	blank	0	2
excessive difference	1	0	0	0	0	0	0	3	3	3	0	X	blank	blank	0	2

ODV QFSetName= PANGAEA

Set Description: QF symbols are prefixes to data values (no blank in between). Values without any QF symbol are qualified as being valid.

Reference: http://wiki.pangaea.de/wiki/Quality_flag

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	PANGAEA	<u>SMHI</u>	<u>OceanSITES</u>	<u>IODE</u>
valid	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
questionable	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
not valid	8	4	4	4	4	4	3	4	4	7	1	K	/	B	4	4
unknown	1	0	0	0	0	0	0	2	2	2	0	blank	*	blank	0	2
individual definition (e.g. missing value)	1	0	0	0	0	0	0	5	5	5	0	blank	#	blank	0	2
larger than	4	3	3	3	3	4	3	3	3	7	2	>	>	>	3	2
less than	4	3	3	3	3	4	3	3	3	7	2	<	<	<	3	2

ODV QFSetName= **SMHI**

Set Description: Swedish Meteorological and Hydrographic Institute quality flags

Reference:

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCEAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	SMHI	<u>OceanSITES</u>	<u>IODE</u>
good value	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
extreme/suspicious value, checked manually and compared with other relevant parameters and found correct	0	1	1	1	1	0	0	2	2	2	3	blank	blank	!	1	1
questionable value	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
bad value	8	4	4	4	4	4	3	4	4	7	1	K	/	B	4	4
below detection limit / less than	4	3	3	6	3	4	3	3	3	7	2	<	<	<	3	2
above detection limit / greater than	4	3	3	7	3	4	3	3	3	7	2	>	>	>	3	2
manually interpolated /extrapolated	1	0	0	8	0	0	0	2	2	2	0	T	blank	 	0	2
value from CTD temp/salin/fluor/oxyg	1	0	0	0	0	0	0	2	2	2	0	blank	blank	C	0	2
zero by definition	4	3	3	3	3	4	3	3	3	7	2	K	?	Z	3	2

ODV QFSetName= **OCEANSITES**

Set Description: OceanSITES quality flags

Reference: http://www.oceansites.org/docs/oceansites_user_manual_version1.2.doc

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	OceanSITES	<u>IODE</u>
no QC was performed	1	0	0	0	0	0	0	2	2	2	0	Q	*	blank	0	2
good data	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
probably good data	1	2	2	2	1	0	0	2	2	2	3	blank	blank	blank	2	1
bad data that are potentially correctable	4	3	3	3	3	4	3	3	3	7	2	K	?	?	3	3
bad data	8	4	4	4	3	4	3	4	4	7	1	K	/	B	4	4
value changed	1	5	5	5	0	0	0	2	2	2	3	R	*	blank	5	2
nominal value	1	0	0	0	0	0	0	2	2	2	3	R	*	blank	7	2
interpolated value	1	0	0	8	2	0	0	2	2	2	3	R	*		8	2
missing value	1	9	9	9	9	0	0	5	5	5	9	N	*	B	9	9

ODV QFSetName= **IODE**

Set Description: IODE quality flag scheme

Reference: http://www.iode.org/index.php?option=com_oe&task=viewDocumentRecord&docID=10762

Flag Description	<u>ODV</u>	<u>GTSP</u>	<u>ARGO</u>	<u>SEADATANET</u>	<u>ESEAS</u>	<u>WOD</u>	<u>WODSTATION</u>	<u>WOCEBOTTLE</u>	<u>WOCECTD</u>	<u>WOCESAMPLE</u>	<u>QARTOD</u>	<u>BODC</u>	<u>PANGAEA</u>	<u>SMHI</u>	<u>OceanSITES</u>	IODE
good quality	0	1	1	1	1	0	0	2	2	2	3	blank	blank	blank	1	1
not evaluated, not available or unknown quality	1	0	0	0	0	0	0	2	2	2	0	blank	*	blank	0	2
questionable/suspect quality	4	3	3	3	3	8	1	3	3	7	2	K	?	?	3	3
bad quality	8	4	4	4	4	8	1	4	4	7	1	K	/	B	4	4
missing data	1	9	9	9	9	8	1	5	5	5	9	K	/	B	9	9