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| --- | --- | --- |
| WORLD METEOROLOGICAL ORGANIZATION  COMMISSION FOR BASIC SYSTEMS  -----------------------------  FOURTH MEETING OF  INTER-PROGRAMME EXPERT TEAM ON DATA REPRESENTATION MAINTENANCE AND MONITORING  GENEVA, SWITZERLAND, 30 MAY - 3 JUNE 2016 |  | IPET-DRMM-IV / Doc. 3.2 (7)  (23. 5. 2016)  -------------------------  ITEM 3.2  ENGLISH ONLY |

BUFR AND CREX

**Additional bio-geochemical sequences for data from Argo profiling floats**

*Submitted by JCOMM (David Berry), UKMO (Jon Turton)*

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**Summary and Purpose of Document**

Proposal for new sequences for reporting additional bio-geochemical data from Argo profiling floats.

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**ACTION PROPOSED**

Review and make recommendations on the proposed sequences.

**ANNEXES:**

1.

**DISCUSSIONS**

This document contains new sequences for the reporting of additional bio-geochemical data from Argo profiling floats. These sequences have previously been reviewed by the Argo Steering Team and Argo Data Management Teams.

**PROPOSAL**

**BUFR/CREX Table B**

**Class 13 – Hydrographic and hydrological elements**

*Add*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table reference** | | | **Element name** | **BUFR** | | | | **CREX** | | |
| **F** | **XX** | **YYY** | **Unit** | **Scale** | **Ref. value** | **Data width (bits)** | **Units** | **Scale** | **Data width (characters)** |
| 0 | 13 | 161 | pH scale | Code table | 0 | 0 | 3 | Code table | 0 | 1 |

**Class 41 – Marine bio-geochemical data**

*Add*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table reference** | | | **Element name** | **BUFR** | | | | **CREX** | | |
| **F** | **XX** | **YYY** | **Unit** | **Scale** | **Ref. value** | **Data width (bits)** | **Units** | **Scale** | **Data width (characters)** |
| 0 | 41 | 006 | Backscattering | m-1 | 5 | 0 | 19 | m-1 | 5 | 6 |

**BUFR/CREX Table D**

**Sequence 3-06-043 for chlorophyll-A profile data**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table Reference** | | | **Table References** | | | **Element Name** |  |
| F | X | Y |
| 3 | 06 | 043 |  |  |  | Chlorophyll-A (fluorescence) profile data |  |
|  | | | 1 | 09 | 000 | Delayed replication of 9 descriptors |  |
|  | | | 0 | 31 | 002 | Extended delayed descriptor replication factor | Gives number of depths |
|  | | | 0 | 07 | 062 | Depth below sea / water surface | Code as missing |
|  | | | 0 | 08 | 080 | Qualifier for quality class | Code as missing |
|  | | | 0 | 33 | 050 | GTSPP quality class | Code as missing |
|  | | | 0 | 07 | 065 | Water pressure |  |
|  | | | 0 | 08 | 080 | Qualifier for quality class (set to 10, indicates pressure at a level) |  |
|  | | | 0 | 33 | 050 | GTSPP quality class |  |
|  | | | 0 | 41 | 002 | Chlorophyll-A (fluorescence) | In kg l-1 (= 109 mg m-3) |
|  | | | 0 | 08 | 080 | Qualifier for quality class (set to 21, chlorophyll-A at a level) |  |
|  | | | 0 | 33 | 050 | GTSPP quality class |  |

Code depth related descriptors as missing as water pressure is used as the vertical axis

Chlorophyll-A specified in range 0 to 65.535 mg m-3 with a resolution of 0.001 mg m-3.

**Sequence 3-06-044 for dissolved nitrate profile data**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table Reference** | | | **Table References** | | | **Element Name** |  |
| F | X | Y |
| 3 | 06 | 044 |  |  |  | Dissolved nitrate profile data |  |
|  | | | 1 | 09 | 000 | Delayed replication of 9 descriptors |  |
|  | | | 0 | 31 | 002 | Extended delayed descriptor replication factor | Gives number of depths |
|  | | | 0 | 07 | 062 | Depth below sea / water surface | Code as missing |
|  | | | 0 | 08 | 080 | Qualifier for quality class | Code as missing |
|  | | | 0 | 33 | 050 | GTSPP quality class | Code as missing |
|  | | | 0 | 07 | 065 | Water pressure |  |
|  | | | 0 | 08 | 080 | Qualifier for quality class (set to 10, indicates pressure at a level) |  |
|  | | | 0 | 33 | 050 | GTSPP quality class |  |
|  | | | 0 | 41 | 003 | Dissolved nitrate | In μmol kg-1 |
|  | | | 0 | 08 | 080 | Qualifier for quality class (set to 22, nitrate at a level) |  |
|  | | | 0 | 33 | 050 | GTSPP quality class |  |

Code depth related descriptors as missing as water pressure is used as the vertical axis.

**Sequence 3-06-045 for pH profile data**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table Reference** | | | **Table References** | | | **Element Name** |  |
| F | X | Y |
| 3 | 06 | 045 |  |  |  | pH profile data |  |
|  | | | 1 | 09 | 000 | Delayed replication of 9 descriptors |  |
|  | | | 0 | 31 | 002 | Extended delayed descriptor replication factor | Gives number of depths |
|  | | | 0 | 07 | 062 | Depth below sea / water surface | Code as missing |
|  | | | 0 | 08 | 080 | Qualifier for quality class | Code as missing |
|  | | | 0 | 33 | 050 | GTSPP quality class | Code as missing |
|  | | | 0 | 07 | 065 | Water pressure |  |
|  | | | 0 | 08 | 080 | Qualifier for quality class (set to 10, indicates pressure at a level) |  |
|  | | | 0 | 33 | 050 | GTSPP quality class |  |
|  | | | 0 | 13 | 161 | pH scale |  |
|  | | | 0 | 13 | 080 | pH | dimensionless |
|  | | | 0 | 08 | 080 | Qualifier for quality class (set to 23, pH at a level) |  |
|  | | | 0 | 33 | 050 | GTSPP quality class |  |

Code depth related descriptors as missing as water pressure is used as the vertical axis.

**Sequence 3-06-046 for backscattering profile data**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table Reference** | | | **Table References** | | | **Element Name** |  |
| F | X | Y |
| 3 | 06 | 046 |  |  |  | Backscatter profile data |  |
|  |  |  | 0 | 02 | 071 | (Spectrographic) wavelength | m |
|  | | | 1 | 09 | 000 | Delayed replication of 9 descriptors |  |
|  | | | 0 | 31 | 002 | Extended delayed descriptor replication factor | Gives number of depths |
|  | | | 0 | 07 | 062 | Depth below sea / water surface | Code as missing |
|  | | | 0 | 08 | 080 | Qualifier for quality class | Code as missing |
|  | | | 0 | 33 | 050 | GTSPP quality class | Code as missing |
|  | | | 0 | 07 | 065 | Water pressure |  |
|  | | | 0 | 08 | 080 | Qualifier for quality class (set to 10, indicates pressure at a level) |  |
|  | | | 0 | 33 | 050 | GTSPP quality class |  |
|  | | | 0 | 41 | 006 | backscattering | m-1 |
|  | | | 0 | 08 | 080 | Qualifier for quality class (set to 24, backscatter at a level) |  |
|  | | | 0 | 33 | 050 | GTSPP quality class |  |

Code depth related descriptors as missing as water pressure is used as the vertical axis.

**BUFR / CREX Code Tables**

**Code / flag tables 02**

*Amend*

**0 02 149**

**Type of data buoy**

|  |  |
| --- | --- |
| **Code figure** | **Meaning** |
| 31 | Coastal sub-surface float |
| 32 | Deep sub-surface float |

**Code / flag tables 08**

*Amend*

**0 08 080**

**Qualifier for GTSPP Quality Flag**

|  |  |
| --- | --- |
| **Code figure** | **Meaning** |
| 21 | Chlorophyll-A at a level |
| 22 | Nitrate at a level |
| 23 | pH at a level |
| 24 | Backscattering at a level |

**Code / flag tables 13**

*Add*

**0 13 161**

**pH scale**

|  |  |
| --- | --- |
| **Code figure** | **Meaning** |
| 0 | Seawater scale |
| 1 | Freescale |
| 2 | Total scale |
| 3 to 6 | not used |
| 7 | missing |

**Code / flag tables 22**

*Amend*

**0 22 067**

**Instrument type for water temperature/salinity profile measurement**

|  |  |
| --- | --- |
| **Code figure** | **Meaning** |
| 836 | PROVOR III |
| 872 | S2X |
| 869 | DOVA |
| 870 | NAMI |
| 871 | HM2000 |