VALIDATION REPORT

New BUFR sequence and code table for satellite-derived winds

Doc 2.4(9)

**1. Responsible Organizations**

 Leading organization (if any): EUMETSAT

 Participating organization(s): ECMWF, DWD

**2. Requirements and Purposes**

 The BUFR sequences 3-10-067 is malformed and cannot be fully interpreted without the use of a spreadsheet which is circulated informally between users. At the IPET-CM II meeting in Offenbach, a new sequence was proposed which will fix these issues.

**3. Description of Proposal**

 See attachment.

**4. Declaration of Validation Complete**

 Proposal has been Validated.

 Participating organizations: ECMWF, DWD, EUMETSAT

 Proof documents: [x]

**5. Proposed Implementation Date and Procedure**

 Implementation date: November 2018

 Applicable procedure: Fast-track

**6. Deviation from initial proposal**

No changes

**7. Remarks**

 The following page contains the proposed sequence and Code table. Deviations from 3-10-067 are highlighted.

|  |  |  |  |
| --- | --- | --- | --- |
| 3 10 077 |  | (Satellite-derived winds) |  |
|  |  | *Processing information* |  |
|  | 0 01 033 | Identification of originating/generating centre |  |
|  | 0 01 034 | Identification of originating/generating sub-centre |  |
|  | 0 25 061 | Software identification and version number |  |
|  | 0 25 062 | Database identification |  |
|  |  | *Satellite/Instrument identification* |  |
|  | 0 01 007 | Satellite identifier |  |
|  | 0 02 153 | Satellite channel centre frequency |  |
|  | 0 01 012 | Direction of motion of moving observing platform |  |
|  | 2 01 138 | Change data width |  |
|  | 0 02 026 | Cross-track resolution |  |
|  | 0 02 027 | Along-track resolution |  |
|  | 2 01 000 | Cancel change data width |  |
|  |  | *Methods* |  |
|  | 0 02 028 | Segment size at nadir in x-direction (target box size) |  |
|  | 0 02 029 | Segment size at nadir in y-direction (target box size) |  |
|  | 0 02 161 | Wind processing method |  |
|  | 0 02 164 | Tracer correlation method |  |
|  | 0 02 023 | Satellite derived wind computation method  |  |
|  | 0 08 012 | Land/sea qualifier |  |
|  | 0 08 013 | Day/night qualifier |  |
|  |  | *Final AMV data* |  |
|  | 0 01 124 | Grid point identifier | . |
|  | 0 05 001 | Latitude (high accuracy) |  |
|  | 0 06 001 | Longitude (high accuracy) |  |
|  | 0 04 001 | Year |  |
|  | 0 04 002 | Month |  |
|  | 0 04 003 | Day |  |
|  | 0 04 004 | Hour |  |
|  | 0 04 005 | Minute |  |
|  | 0 04 006 | Second |  |
|  | 0 04 086 | Long time period or displacement (seconds) |  |
|  | 0 02 162 | Extended height assignment method |  |
|  | 0 07 004 | Pressure |  |
|  | 0 11 001 | Wind direction  |  |
|  | 0 11 002 | Wind speed |  |
|  | 0 11 003 | Wind u-component |  |
|  | 0 11 004 | Wind v-component |  |
|  | ~~0 02 162~~ | ~~Extended height assignment method~~ |  |
|  | ~~0 07 004~~ | ~~Pressure~~ |  |
|  | 0 12 001 | Temperature |  |
|  | 0 20 014 | Height of top of cloud |  |
|  | 0 07 024 | Satellite zenith angle |  |
|  | 0 01 023 | Observation sequence number  |  |
|  | 1 04 000 | Delayed replication of 4 descriptors |  |
|  | 0 31 001 | Delayed descriptor replication factor |  |
|  | 0 02 162 | Extended height assignment method |  |
|  | 0 07 004 | Pressure |  |
|  | 0 12 001 | Temperature |  |
|  | 0 20 014 | Height of top of cloud |  |
|  |  | *Image information (for each image used)* |  |
|  | 1 13 000 | Delayed replication of 13 descriptors |  |
|  | 0 31 001 | Delayed descriptor replication factor |  |
|  | 0 04 086 | Long time period or displacement (seconds) |  |
|  | 0 02 020 | Satellite classification |  |
|  | 0 01 007 | Satellite identifier |  |
|  | 0 02 019 | Satellite instruments |  |
|  | 0 05 042 | Channel number |  |
|  | 0 02 153 | Satellite channel centre frequency |  |
|  | 0 05 040 | Orbit number |  |
|  | 0 07 024 | Satellite zenith angle |  |
|  | 0 05 021 | Bearing or azimuth |  |
|  | 0 02 162 | Extended height assignment method |  |
|  | 0 07 004 | Pressure |  |
|  | 0 12 001 | Temperature |  |
|  | 0 20 014 | Height of top of cloud |  |
|  |  | *Intermediate vectors (for each component vector)* |  |
|  | 1 19 000 | Delayed replication of 19 descriptors |  |
|  | 0 31 001 | Delayed descriptor replication factor |  |
|  | 0 04 086 | Long time period or displacement (seconds) |  |
|  | 0 04 086 | Long time period or displacement (seconds) |  |
|  | 0 05 001 | Latitude (high accuracy) |  |
|  | 0 06 001 | Longitude (high accuracy) |  |
|  | 0 11 003 | u-component |  |
|  | 0 11 004 | v-component |  |
|  | 0 11 113 | Tracking correlation of vector |  |
|  | 0 25 148 | Coefficient of variation |  |
|  | 1 03 000 | Delayed replication of 3 descriptors |  |
|  | 0 31 001 | Delayed descriptor replication factor |  |
|  | 0 08 023 | First order statistics  |  |
|  | 0 11 003 | u-component |  |
|  | 0 11 004 | v-component |  |
|  | 0 08 023 | First order statistics  | Set to missing (cancel) |
|  | 1 03 000 | Delayed replication of 3 descriptors |  |
|  | 0 31 001 | Delayed descriptor replication factor |  |
|  | 0 20 111 | x-axis error ellipse major component |  |
|  | 0 20 112 | y-axis error ellipse minor component |  |
|  | 0 20 114 | Angle of x-axis in error ellipse |  |
|  |  | *Corresponding forecast data* |  |
|  | 0 01 033 | Identification of originating/generating centre |  |
|  | 0 08 021 | Time significance  | = 27 First guess |
|  | 0 07 004 | Pressure |  |
|  | 0 11 095 | u-component of the model wind vector |  |
|  | 0 11 096 | v-component of the model wind vector |  |
|  | ~~0 07 004~~ | ~~Pressure~~ |  |
|  | 0 08 021 | Time significance  | = 4 Forecast |
|  | 0 07 004 | Pressure |  |
|  | 0 11 095 | u-component of the model wind vector |  |
|  | 0 11 096 | v-component of the model wind vector |  |
|  | ~~0 07 004~~ | ~~Pressure~~ |  |
|  | 0 08 021 | Time significance  | Set to missing (cancel) |
|  | 0 08 086 | Vertical significance for NWP  | = 10 Level of best fit |
|  | 0 07 004 | Pressure |  |
|  | 0 11 095 | u-component of the model wind vector |  |
|  | 0 11 096 | v-component of the model wind vector |  |
|  | ~~0 07 004~~ | ~~Pressure~~ |  |
|  | 0 08 086 | Vertical significance for NWP  | Set to missing (cancel) |
|  |  | *Final AMV quality* |  |
|  | 1 02 004 | Replicate 2 descriptors 4 times |  |
|  | 0 01 044 | Standard generating application |  |
|  | 0 33 007 | Per cent confidence |  |
|  | 0 08 092 | Measurement uncertainty expression  | = 0 Standard uncertainty |
|  | 0 07 004 | Pressure |  |
|  | 0 11 003 | u-component |  |
|  | 0 11 004 | v-component |  |
|  | ~~0 07 004~~ | ~~Pressure~~ |  |
|  | 0 08 092 | Measurement uncertainty expression  | Set to missing (cancel) |
|  | 0 33 066 | AMV Quality Flag |  |
|  |  | *Cloud data and microphysics (refers to the nominal image used for HA)* |  |
|  | 0 20 081 | Cloud amount |  |
|  | 0 20 012 | Cloud type  |  |
|  | 0 20 056 | Cloud phase  |  |
|  | 1 17 000 | Delayed replication of 17 descriptors |  |
|  | 0 31 001 | Delayed descriptor replication factor |  |
|  | 0 08 023 | First order statistics  |  |
|  | 0 20 016 | Pressure at the top of cloud |  |
|  | 0 08 092 | Measurement uncertainty expression | = 0 Standard uncertainty |
|  | 0 08 003 | Vertical significance (satellite observations) | = 2 Cloud top |
|  | 0 12 001 | Temperature |  |
|  | 0 08 003 | Vertical significance (satellite observations) | Set to missing (cancel) |
|  | 0 20 016 | Pressure at the top of cloud |  |
|  | 0 08 092 | Measurement uncertainty expression  | Set to missing (cancel) |
|  | 0 25 149 | Optimal estimation cost |  |
|  | 0 20 016 | Pressure at top of cloud |  |
|  | 0 20 014 | Height of top of cloud |  |
|  | 0 13 093 | Cloud optical thickness |  |
|  | 0 13 109 | Ice/liquid water path |  |
|  | 0 40 038 | Cloud particle size |  |
|  | 0 08 011 | Meteorological feature | = 12 Cloud |
|  | 0 14 050 | Emissivity |  |
|  | 0 08 011 | Meteorological feature  | Set to missing (cancel) |
|  | 0 08 023 | First order statistics  | Set to missing (cancel) |

*Add* the following elements to BUFR Table B/01:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Descriptor** | **Name** | **Units** | **Scale** | **Reference** | **Width** |
| 0-01-044 | Standard generating application | Code table | 0 | 0 | 6 |

*Add* the following associated code table:

0-01-044 Standard generating application

|  |  |
| --- | --- |
| ***Code Figure*** | ***Description*** |
| 0 | Reserved |
| 1 | Full weighted mixture of individual quality tests |
| 2 | Weighted mixture of individual tests, but excluding forecast comparison |
| 3 | Recursive filter function |
| 4 | Common QI without forecast |
| 5 | Quality index without forecast |
| 6 | Quality index with forecast |
| 7 | Estimated Error (EE) in m/s converted to a percent confidence |
| 8-62 | Reserved |
| 63 | Missing value |