

- (e) Adding new significance qualifiers;
- (f) Adding entries for the representation of buoy last known position;
- (g) Adding entries for the representation of satellite “ascending vs. descending” orbit;
- (h) Adding new elements for oceanographic data.

MODIFICATIONS TO THE *MANUAL ON CODES* (WMO-NO. 306)

6.2.56 Noting further tests and experimental exchanges with the new FM 92 GRIB edition 2, the Commission recommended additional templates for the exchange of EPS fields and entries to support additional products of atmospheric transport model output, namely time-integrated airborne concentrations, and to support cloud mask products (see Annex 1 to [Recommendation 4 \(CBS-Ext.\(02\)\)](#)). The Commission noted also the need for increasing the maximum bulletin size (up to 500 K octets) on the GTS to accommodate the higher resolution fields and ensemble products formatted in GRIB edition 2.

6.2.57 Noting the stated requirements for improving the transmission of data from AWS, XBT/XCTD and subsurface floats, and CLIMAT stations as well as the resulting proposals developed by expert groups and CBS teams, the Commission recommended additions related to metadata and capability of sensors to FM 94 BUFR and FM 95 CREX tables (see Annex 2 to [Recommendation 4 \(CBS-Ext.\(02\)\)](#)).

6.2.58 The Commission further recommended additions to BUFR/CREX tables (see Annex 3 to [Recommendation 4 \(CBS-Ext.\(02\)\)](#)) for:

- (a) Exchanging geostationary satellite radiance data;
- (b) Transmission of ensemble tropical cyclone tracks;
- (c) Transmission of AMDAR data and AMDAR vertical profile (ascent/descent of aircraft);
- (d) New monitoring information;
- (e) New Common table C-11 for Originating centres;
- (f) New Table B descriptors for use with AMSU A/B satellite data;
- (g) Clarifying a regulation on replication operation in BUFR;
- (h) New Table B descriptors for use with next generation rawinsonde data (from the United States);
- (i) Descriptors used in reporting certain types of AIRS satellite data;
- (j) Supporting JASON satellite data;
- (k) Coding certain types of altimeter data;
- (l) For representation of ground-based global navigation satellite system data in BUFR format.

6.2.59 [At the request of CBS-XII, the modifications for reporting zero and 24-hour precipitation in synoptic reports were finalized and the Commission recommended their implementation in November 2003.](#)

The Commission recommended also an addition to one regulation for improving the coding of CLIMAT TEMP and CLIMAT TEMP SHIP reports (see Annex 4 to [Recommendation 4 \(CBS-Ext.\(02\)\)](#)).

6.2.60 After the clarifications of the requirement by ICAO, the Commission agreed that the names METAR,

SPECI or TAF should only be required at the beginning of each report, and should not be inserted at the beginning of the bulletin. The Commission recommended the new format and other changes due to Amendments 72 to ICAO Annex 3/WMO Technical Regulation [C.3.1], with a view to their operational implementation in November 2004 (see Annex 5 to [Recommendation 4 \(CBS-Ext.\(02\)\)](#)). The Commission agreed that, in order to ensure a coordinated implementation, the dates for implementation of amendments to the aeronautical codes should be conditioned by operational constraints and should be simultaneous with the dates of implementation of all other code changes. The Commission recommended that those modifications to aeronautical codes should be implemented on the first Wednesday following 1 November 2004.

6.2.61 The ICAO observer informed the session about future changes to the METAR/SPECI, TAF and WITEM code forms, which would have to be made as a consequence of Amendment 73 to Annex 3 (applicable in November 2004). Since Amendment 73 was still, in principle, subject to changes, which might result from the consultation with States, the Commission agreed not to include the corresponding amendment to the codes. It was concluded in that regard that, before approving any amendments to the *Manual on Codes* (WMO-NO. 306) which were consequential to ICAO Annex 3, the Annex 3 amendment must have been first finalized (i.e. reviewed by ICAO Air Navigation Commission). It was realized that that approach could delay the applicability date of the amendment to the *Manual on Codes*. The Commission noted that that would be the case with the code changes consequential to Amendment 73 to Annex 3.

6.2.62 The Commission adopted [Recommendation 4 \(CBS-Ext.\(02\)\)](#).

6.2.63 The Commission appreciated that the Expert Team on Data Representation and Codes had finalized templates for the transmission in BUFR or CREX of AWS data, of SYNOP, SYNOP MOBIL, SHIP, PILOT, PILOT SHIP, PILOT MOBIL, TEMP, TEMP DROP, TEMP SHIP, TEMP MOBIL, XBT/XCTD, sub-surface profiling floats, BUOY, AMDAR, AIREP, METAR/SPECI, CLIMAT, CLIMAT SHIP, CLIMAT TEMP and CLIMAT TEMP SHIP, as well as of new AMDAR, extracted AMDAR vertical profiles and tropical cyclone tracks. The Commission agreed that those templates should be made available on the WMO Web server and as an Attachment to Volume I.2 of the *Manual on Codes*. The Commission also agreed that new reporting practices linking observations with BUFR or CREX formats should also be listed as an Attachment to Volume I.2 of the *Manual on Codes*.

6.2.64 The Commission was pleased that the new *Guide on BUFR and CREX* had been completed and made available on the WMO server. The Commission recommended, as suggested by Hong Kong, China, the development of a suite of computer programs for encoding and decoding the different types of data mentioned in the previous paragraph in BUFR and CREX codes to facilitate migration. Those programs should be made

RECOMMENDATION 4 (CBS-Ext.(02))

AMENDMENTS TO THE *MANUAL ON CODES* (WMO-No. 306), VOLUME I.1, ALPHANUMERIC CODES AND VOLUME I.2, BINARY CODES AND COMMON FEATURES

THE COMMISSION FOR BASIC SYSTEMS,

NOTING:

- (1) The report of the Expert Team on Data Representation and Codes (22–26 April 2002),
- (2) The report of the Implementation Coordination Team on Information Systems and Services (9–13 September 2002),

CONSIDERING the requirement:

- (1) For additional parameters exchanged in EPS fields, atmospheric transport model output and satellite cloud mask products,
- (2) To report metadata and capability of sensors to improve the transmission of data from AWSs, of XBT/XCTD and subsurface floats profiles, and of CLIMAT data,
- (3) For new additions to BUFR/CREX tables,
- (4) For reporting zero and 24-hour precipitation in synoptic reports and for improving the coding of CLIMAT TEMP reports,
- (5) For amendments to aeronautical codes resulting from corresponding changes in ICAO Annex 3/WMO Technical Regulation [C.3.1],

RECOMMENDS that the following amendments be adopted for use as from 5 November 2003:

- (1) Additions to FM 92-XII GRIB defined in Annex 1 to this recommendation;
- (2) Additions to FM 94-XII BUFR and FM 95-XII CREX tables, defined in Annexes 2 and 3 to this recommendation;
- (3) Amendments to FM 12-XI Ext. SYNOP, FM 13-XI Ext. SHIP, FM 14-XI Ext. SYNOP MOBIL, FM 75-XII CLIMAT TEMP and FM 76-XII CLIMAT TEMP SHIP, defined in Annex 4 to this recommendation;

RECOMMENDS that the following amendments be adopted for use as from 3 November 2004:

Amendments to FM 15-XII METAR, FM 16-XII SPECI and FM 51-XII TAF, defined in Annex 5 to this recommendation;

REQUESTS the Secretary-General to arrange for the inclusion of these amendments in Volumes I.1 and I.2 of the *Manual on Codes* (WMO-No. 306).

ANNEX 4 TO RECOMMENDATION 4 (CBS-Ext.(02))

**AMENDMENTS TO FM 12-XII SYNOP, FM 13-XII SHIP AND FM 14-XII SYNOP MOBIL FOR REPORTING
PRECIPITATION AND ITS GLOBAL HARMONIZATION**

Change regulation 12.2.5.4 to read:

This group shall be:

- (a) Coded with RRR = 000, (3 zeros) when precipitation is measured but no precipitation occurred during the reference period;
- (b) Coded with RRR = ///, (3 solidi) when precipitation is normally measured but is not available for the current report;
- (c) Omitted when precipitation is not normally measured. In this case, i_R should be coded as 4.
- (d) Existing automated weather stations (AWS) may continue to report no precipitation with i_R coded as 3 and the 6RRR t_R group omitted. New systems and human observer should report the 6RRR t_R group with RRR = 000, (3 zeros) to indicate no precipitation occurred during the reference period.

Change regulation 12.4.1 to read:

The inclusion of groups with indicator figures 1 up to 6, and 8 and 9 shall be decided regionally. However group 7R₂₄R₂₄R₂₄R₂₄ shall be included by all stations (with the exception of stations situated in the Antarctic) capable of doing so, once a day at one appropriate time of the main standard times (0000, 0600, 1200 or 1800 UTC).

Add for correct encoding in FM 75-XII CLIMAT TEMP and FM 76-XII CLIMAT TEMP SHIP a next sentence at the end of regulation 75.4 to read:

Solidi (////) shall be reported for any missing value in the groups of a level for which any element or all are not available. No group shall be omitted at any level. Any missing element shall be reported by solidi.