WMO Message Management for Dissemination Services

White Paper

Version 1.00

June 8, 2015

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Revision History

Revision	Date	Description of Revision	Author
1.00	6/8/2015	Initial Release	Donald Fletcher

Executive Summary

The United States is a member of the World Meteorological Organization (WMO). As a National Center within the WMO Information System (WIS), the National Weather Service (NWS) originates and disseminates hydrometeorological data and products through the Global Information System Center Washington (aka the Regional Telecommunications Hub Washington).

The NWS receives and disseminates data on a National, Regional, and global scale, responding to the needs of both Domestic and International customers. This data is in the format of WMO messages, which are assigned product headings according to WMO guidelines. Customers should be familiar with these product headings in order to identify the specific products needed to meet their data requirements.

This paper describes how the NWS Dissemination Systems Team uses product headings to manage and publish dissemination services content. It then puts forth considerations for data management on other dissemination systems.

WMO Message Management for Dissemination Services
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1.0   Introduction

To use data originated and broadcast by NOAA's National Weather Service (NWS), customers should understand the headings which precede the data and how those headings are managed. The NWS implements headings and manages NWS data within NOAA guidelines. NOAA follows World Meteorological Organization (WMO) data practices and procedures. The WMO sets standards for uniformity and standardization of data, information, and communications practices and procedures for facilitation of the free and unrestricted exchange of data and information. NWS and WMO data are preceded by headings which provide information that verifies customers are receiving the data they require or have requested.

This white paper is a collection of information needed to effectively use NWS data broadcast by the World Meteorological Organization's (WMO's) Global Telecommunication System/Regional Meteorological Data Communications Network (GTS/RMDCN). While multiple WMO references exist to provide information addressing different aspects of the GTS/RMDCN, the key aspects relevant to the information discussed in this paper are presented in the following publications:

- Manual on Global Telecommunication System–Global (WMO 386 Vol. I)
- Manual on Global Telecommunication System–Regional (WMO 386 Vol. II)
- Guide to WMO Information System (WIS) WMO-No. 1060
- Manual on the WMO Information System (WIS) WMO-No. 1061
- Weather Reporting (WMO 9)
- NWS Communication Identifier Policy

1.1   Background

Accountability, reliability, and timeliness are essential to providing weather, hydrologic, and climate data forecasts and warnings for protection of life and property in the United States (U.S.), its territories (American Samoa, Guam, Micronesia, Puerto Rico, Saipan, Virgin Islands), and adjacent waters and oceans. These attributes apply equally to dissemination of data and of products to WMO Regional Association IV (RA-IV) Member States, of which the U.S. is an active RA-IV member, as well as the designated Regional Telecommunication Hub and Global Information System Center (RTH/GISC).

The NWS Office of Dissemination/Dissemination Systems Team (NWS DISS/DST) has developed methods and procedures to improve the efficiency and effectiveness of managing data

on its dissemination services (listed in Appendix C). This paper documents the elements of WMO Message Management currently used by the NWS DISS/DST. The next step will be to identify and establish data management procedures that should be consistently applied to dissemination services in the future.

1.2   Purpose

This paper examines WMO Message Management on NWS DISS/DST dissemination services.

1.3   Scope

The information in this paper is presented in three sections: Identification and Management, Control, and Summary/Recommendations.

The term "WMO Message" is used to identify meteorological, hydrological and climatological information, data, and products which are exchanged over the GTS/RMDCN, and which conform to the technical description of a WMO meteorological message per WMO Manual No. 386. A brief summary of the format and message separator fields appearing in WMO Manual No. 386 is presented for reference in Appendix D, *WMO Message Format*.

2.0   Identification and Management

2.1   Message Heading Identification

The purpose of the WMO Heading is to:

    a) Provide a means by which communication data managers recognize a bulletin for telecommunication "switching" purposes.
    b) Permit uniqueness for a bulletin, which is sufficient enough to control the data for selective transmission required to meet the needs of the receiving end.
    c) Permit accountability in the transmission delivery process by the switching system for data management purposes.

Originally, the message heading was not intended for the data processing systems, as the first few lines of the text (bulletin content) further defined it for processing. (ref. WMO Codes Manual 306)

With the proliferation and widespread use of computers and information processing systems, WMO headings are now used to quickly identify message type, time of origination, originator, and even the geographical location of events.

2.1.1   WMO Abbreviated Headings

The abbreviated heading for the WMO Message is:
$T_1T_2A_1A_2ii$ CCCC YYGGgg [BBB]

Where:

      [ ] = Optional field

T_1T_2 = Data type and/or form designators.

A_1A_2 = Geographical and/or data type and/or time designators

ii = Number used to differentiate bulletins

CCCC = International four-letter location indicator of the station or center originating or compiling the bulletin, published in WMO-No. 9, Volume C1, Catalogue of Meteorological Bulletins.

YYGGgg = International date-time group (YY = day [01-31], GG = hour [00-24] gg = minute [00-59])

BBB = A three-letter indicator for a message addition, correction or amendment

(ref:http://www.wmo.int/pages/prog/www/ois/Operational_Information/Publications/WMO_386/AHLsymbols/AHLsymbols_en.html)

2.1.2   Advanced Weather Interactive Processing System Identifier

NWS adds the Advanced Weather Interactive Processing System (AWIPS) Identifier (NNNXXX) on the line immediately following the WMO abbreviated product (message) heading, forming a two-line product identifier named the AWIPS Product Identifier. Only messages generated on U.S. AWIPS workstations include the AWIPS Identifier as part of the message heading. Messages that contain the AWIPS Identifier are distributed to both National and International customers. While the International community does not generally recognize the AWIPS Identifier portion of the heading, it is needed to unambiguously identify the contents of some U.S. WMO messages. The AWIPS Product Identifier is shown below with both the carriage return (cr) and line feed (lf) separators:

$T_1T_2A_1A_2$ii CCCC YYGGgg   [BBB] (cr)(cr)(lf)
NNNxxx (cr)(cr)(lf)

Where:

NNN = 3-character product category

xxx = 1-3 character product designator field

(ref: http://www.nws.noaa.gov/tg/awips.php)

2.1.3   Message Heading Codes

WMO abbreviated message headings and the NWS AWIPS Identifier heading extension both employ codes that are provided in multiple related tables (i.e., table driven codes). A set of related tables in WMO and U.S. publications define the selection of alphanumeric characters that

are used for each heading type. The codes provide an abbreviated descriptor for the information contained in the message. A top level view of the message types and related tables is available online at:

http://www.nws.noaa.gov/tg/tables/tablea.php.

An image of this web page, which depicts the overall structure and relationship of the tables, is provided in Appendix E.

2.2   WMO Message Use

WMO messages are used to convey weather, water and climate information in the form of observations, forecasts, watches, and warnings. The general requirement for the exchange of WMO messages is found in WMO 386, including recommendations for telecommunication services to be used for the exchange of messages. To meet both the WMO and U.S. National service requirements, NWS operates and participates in multiple telecommunication services.

NWS uses the WMO Heading to identify, filter, and route WMO messages between incoming and outgoing telecommunication services. The NWS National Centers for Environmental Prediction (NCEP) Central Operations (NCO)-Silver Spring (SS), formerly the NWS Telecommunications Gateway (NWSTG), is the hub for the exchange of WMO messages on and between global, WMO regional, and U.S. national systems. The NCO-SS receives WMO message files from various sources, and then uses the WMO message heading in each file to identify and then route the message onto one or more specific lines to outgoing (dissemination) telecommunication services. This process is the foundation for the development of WMO message headings as a means of controlling the messages on dissemination services, and for distributing the dissemination service message content to existing and potential customers.

2.3   Dissemination Requirements

The NWS is responsible for meeting the requirements of the dissemination services it operates and manages. One specific requirement for these services is the WMO Message list. This list generally would be addressed prior to system development, as the number and size of the messages to be carried on a service are needed to help determine service bandwidth and storage requirements. Dissemination services which do not have a list of WMO messages carried by the service should: 1) document the current system specifications necessary for system management and control, 2) document system requirements, and 3) begin a list of messages passing through and maintained by the system.

2.4   Broadcast Product Baseline

The Broadcast Product Baseline (BPB) is a list of all the WMO messages that are authorized for dissemination on a specific service, whether the service is an active broadcast service (e.g., satellite broadcast) or a passive file repository (e.g., Internet file service). The BPB should, at a minimum, include the following WMO heading elements:

T₁T₂A₁A₂ii CCCC [NNNxxx]

The BPB does not specify the date/time field (YYGGgg) or the optional BBB field, as these fields change from message-to-message, creating a one-of-a-kind message. WMO messages generated on U.S. AWIPS systems should also include the AWIPS ID in order to identify the specific type of AWIPS product. A sample dissemination service BPB is provided as follows:

```
AXPZ20 KNHC
BMAA01 KNHC
FOPZ13 KNHC PWSEP3
SXXX70 KWNB
TCCA21 KNHC
WDXX01 EUMS
WEAK61 PAAQ TSUSPN
WEAK63 PAAQ TIBSPN
WXPF01 NTAA
WYUK31 EGGY
```

3.0   Control

3.1   Identifying the Broadcast Product Baseline

To track changes over time and to identify the valid BPB for a dissemination service at any particular point in time, the BPB is stored as a text file which is named using the format:

DS-Baseline-revyyyymmdd-tttt.txt

Where:

> **DS** = dissemination service (EMWIN, GIFS, GNCA)
>
> **yyyymmdd** = the date of the revision (year, month, day)
>
> **tttt** = time of the revision in 24 hour format (optional)

When the BPB has been modified, either by adding or deleting message headings as authorized by the BPB Change Authority, a new file will be created. For example, if a change is completed on January 5, 2015 at 2:30pm for the EMWIN Dissemination Service, the BPB text file could be named:

```
EMWIN-Baseline-rev20150105.txt
(optional) EMWIN-Baseline-rev20150105-1430.txt
```

3.2   Controlling WMO Messages on the Dissemination Service

Since the BPB serves as the list of authorized WMO messages for a particular dissemination service, it is the single, authoritative reference to be used when configuring switching and message processing equipment and filters for that service. Use of the BPB for these purposes

should be documented in a NWS System Management publication, which is coordinated with and approved by organizational stakeholders.

3.3 Controlling Customer Service Expectations

Since the BPB provides a comprehensive listing of WMO messages carried by a dissemination service, the BPB for an unrestricted or public dissemination service should be published and available for access at any time, by anyone, anywhere (e.g., Internet access to the BPB). The public availability of the BPB provides customers with a timely, reliable reference to the approved WMO messages carried by the service. This enables customers to review the information at a convenient time and place and eliminates the need for repeated communication with Government personnel.

Some dissemination services have enhanced the customer support experience by creating a record of searchable metadata for the WMO messages. The content of and the responsibility for providing the metadata varies. The availability of searchable metadata can:

- Enhance the customer's information discovery process;
- Provide an understanding of what information is contained in the message;
- Identify the message description and format;
- Identify the geographic area and time frame to which the content of the message applies;
- Identify the source and point of contact for the message;
- Identify how and where the message can be received or retrieved.

For example, the metadata for the WMO Information System (WIS), provided in Appendix F, is compiled and submitted by the message center responsible for sending the message. The metadata for the GEONETCast Americas (GNC-A) satellite broadcast service, provided in Appendix G, is the responsibility of the organizations sending the WMO messages to the satellite hub for broadcast.

No single or standard set of recommendations exists for how customers should use metadata. The NWS DISS/DST may provide metadata in response to customer requests based upon local needs and requirements, provided resources are available.

3.4 Internal Controls

Customers should be confident that products are available and can be retrieved in a timely manner. The NWS dissemination service BPB is under strict configuration control and is carefully managed under a formal change process to ensure that only authorized changes are permitted. A BPB Change Authority, either an individual or a Configuration Control Board, is assigned in order to clearly identify the only individual or group with the authority to approve changes to the BPB. A Change Management Process (CMP) is used to control changes to the BPB. The CMP requires that a Request for Change (RC) is used to document BPB changes, and that they be properly reviewed, coordinated, and adjudicated prior to implementation. The BPB CMP used for NWS dissemination services is presented in Appendix H.

To confirm that WMO messages transmitted by the message processing equipment filters conform to the approved BPB, audits are conducted on a periodic basis. An audit compares the

message processing equipment filters with the BPB. If needed, the message processing equipment filters will be modified to comply with the BPB. The manner in which the message processing equipment filters previously were modified to diverge from the BPB should be investigated and resolved to preclude future occurrences. The BPB Audit process used for NWS dissemination services is presented in Appendix I.

4.0   Summary/Recommendations

The National Weather Service generates, receives, processes, and disseminates tens of thousands of broadcast products each day, over multiple dissemination services. These services have independently evolved over time and use different methods to meet the needs of different customers. In order to assure that products are transmitted efficiently and accurately, without overloading the service, the NWS DISS/DST uses a CMP to manage data on its dissemination services.

The NWS DISS/DST is examining each dissemination service with the intent of developing methods to unify the management of broadcast products. Each dissemination service should address the following management areas:

- **Documentation and Management of the BPB** – The BPB should be created for dissemination services that do not currently have one. Once created, the BPB can only be changed through formal change process.
- **Management of WMO Messages on the Dissemination Service** – The BPB serves as the authoritative reference for WMO messages which are approved for transmission on the service. Changes to the dissemination service are allowed only by changing the BPB.
- **Managing Customer Service Expectations** – The BPB provides customers with a searchable list of WMO Messages for each specific dissemination services.

While these methods provide a basic framework for the management of broadcast products, the NWS DISS/DST will continue to explore additional methods and controls to improve data management, with emphasis placed on improved customer service.

Global access to on-line search tools that can identify WMO products based on product characteristics (e.g., product originator, observation platform, geographical location to which the product applies) will improve customer identification and access to products in the future. The scope of the metadata developed to support these search tools varies from service to service, as is the case with the EUMETSAT Product Navigator and the GISC Washington WMO Information Service (WIS) Discovery, Access and Retrieval (DAR) system. An opportunity to improve both services exists through comparing and contrasting their respective metadata fields and search capabilities, and by incorporating the best each has to offer into a common set of capabilities. This could also lead to the development of a common set of metadata fields that would simplify the exchange of data between systems.

Appendix A: Acronym and Abbreviation List

AWIPS   Advanced Weather Interactive Processing System
BPB   Broadcast Product Baseline
BUFR   Binary Universal Form for data Representation
CM   Configuration Management
CMP   Change Management Process
DRG   Data Review Group
EMWIN   Emergency Managers Weather Information Network
GTS   Global Telecommunications System
GIFS   GTS Internet Files Service
GISC   Global Information System Center
GNC-A   GEONetCast Americas
GRIB   Gridded Binary
ISCS   International Services and Communications Systems
NCEP   National Centers for Environmental Prediction
NCO   NCEP Central Operations
NCO-SS   NCO-Silver Spring
NESDIS   National Environmental Satellite, Data, and Information Service
NOAA   National Oceanic and Atmospheric Administration
NWS   National Weather Service
NWS DISS/DST   NWS Office of Dissemination/Dissemination Systems Team
NWSTG   National Weather Service Telecommunications Gateway
NWWS   National Weather Wire Service
RA-IV   Regional Association IV
RC   Request for Change
RMDCN   Regional Meteorological Data Communications Network
U.S.   United States
WMO   World Meteorological Organization
WIS   WMO Information System
WWW   World Weather Watch

Appendix B: Dissemination Systems and Related Web Sites

1. Manual on the Global Telecommunication System (WMO 386 Vol 1)
   https://www.wmo.int/pages/prog/www/ois/Operational_Information/Publications/WMO_386/WMO_386_Vol_I_2009_en.pdf

2. Manual on the Global Telecommunication System (WMO 386 Vol 2)
   https://www.wmo.int/pages/prog/www/ois/Operational_Information/Publications/WMO_386/WMO_386_Vol_II_en.pdf

3. WMO No. 9
   https://www.wmo.int/pages/prog/www/ois/Operational_Information/VolumeD/VolumeD.pdf

4. International Services and Communications Systems (ISCS)
   http://www.nws.noaa.gov/ISCS/index.html

5. Emergency Managers Weather Information Network (EMWIN)
   http://www.nws.noaa.gov/emwin/

6. GEONetCast Americas (GNC-A)
    http://www.geonetcastamericas.noaa.gov/users-requestproduct.html

7. Global Telecommunications System Internet File Service (GIFS)
   https://ra4-gifs.weather.gov/index.php

8. National Weather Service http://www.weather.gov/

9. National Weather Wire Service (NWWS) http://www.nws.noaa.gov/nwws/

10. Telecommunications Headings and Codes http://www.nws.noaa.gov/tg/table.php

11. Guide to WMO Information System (WIS) WMO-No. 1060
    https://www.wmo.int/pages/prog/www/WIS/documents/Manual-on-WIS-en.pdf

12. Manual on the WMO Information System (WIS) WMO-No. 1061
    https://www.wmo.int/pages/prog/www/WIS/documents/Guide-to-WIS-en.pdf

Appendix C: Dissemination Services

The following telecommunication services are used for the dissemination of the broadcast products by the NWS DISS/DST.   In some cases, two or more dissemination services carry many of the same products. These are not redundant services, but rather are driven by customer needs or requirements.

EMWIN

As an integral part of its mission, the NWS recognizes the need to provide the emergency management community with access to a set of NWS warnings, watches, forecasts, and other products at no recurring cost. The Emergency Managers Weather Information Network (EMWIN) system was developed to meet this need. In partnership with the National Environmental Satellite, Data, and Information Service (NESDIS) and other public and private organizations, EMWIN has evolved into a fully operational and supported NWS service. EMWIN is a suite of data access methods, which make available a live stream of weather and other critical emergency information.

GNC-A

GNC-A (GEONetCast-Americas) is the Western Hemisphere component of GEONetCast, a near real time, global network of satellite-based data dissemination systems designed to distribute space-based, air-borne and in situ data, metadata and products to diverse communities.

GIFS

The GTS Internet File Service (GIFS) is provided by the NWS for WMO RA-IV Member States, and other WMO Regions that are adjacent to RA-IV, as a highly reliable Internet source of meteorological products. The purpose of GIFS is to provide access to WMO RA-IV related weather information in BUFR, GRIB, alpha-numeric text, and other data types, in order to facilitate access to information needed for operational and some research activities between the United States and nations in the Caribbean, North America, and Central America.

NWWS

NOAA Weather Wire Service (NWWS) is a satellite data collection and redistribution system operated by the National Weather Service (NWS). NWWS singular purpose is to provide timely meteorological, hydrological, climatological, and geophysical information to state and federal governments, emergency managers, commercial customers, media outlets (television, radio, social), and the general public.

Appendix D: WMO Message Format

WMO 386 Vol 1, Pg II-3 (Extract):

http://www.pme.gov.sa/en/WMO%20References/WMO_386_Vol_I_2009_en.pdf

2.1 Format of meteorological messages

2.1.1 A routine meteorological message transmitted on the Global Telecommunication System shall comprise:

A starting line		
An abbreviated Heading	Meteorological	Meteorological
A text	bulletin	Message
End-of-message signal		
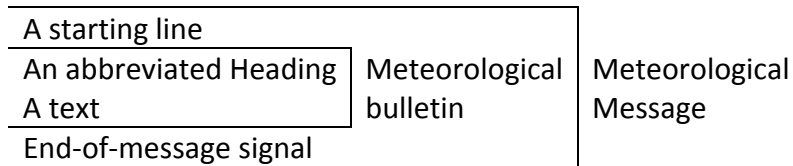
2.3 Message format for routine meteorological messages

(a) International Alphabet No. 5:

(b) Starting Line:

| S O H | C R | C R | L F | nnn   hex: <u>01 0D 0D 0A 6E 6E 6E</u> |

2.3.2 Abbreviated heading

| C R | C R | L F | $T_1T_2A_1A_2II$ | S P | CCCC | S P | YYGGgg   (| S P | BBB) |

2.3.3 Contents of meteorological bulletins

2.3.3.1 The following procedures shall apply to the compilation of the **text of a meteorological bulletin**:

(c) The text of a bulletin shall be in alphanumeric or binary representation. It shall start by the following sequence:

| C R | C R | L F | hex: <u>0D 0D 0A</u> |

2.3.3.2 *Text of meteorological bulletins in <u>alphanumeric representation:</u>*

2.3.3.2.1 Each individual meteorological report shall start at the beginning of a new line.

2.3.3.2.2 … Signal 3/13 of International Alphabet No. 5 [= , hex 3D] shall be used as a meteorological report separation signal.

2.3.3.3 *Text of meteorological bulletins in <u>binary representation</u>:*

2.3.3.3.1 The text of meteorological bulletins in binary representation <u>shall consist of one single message</u> and start by the sequence:

C	C	L
R	R	F

hex: <u>0D 0D 0A</u>

followed by the code indicator coded in International Alphabet No. 5.

2.3.4 End-of-message signals

(b) International Alphabet No. 5:

C	C	L	E
R	R	F	T
			X

hex: <u>0D 0D 0A 03</u>

Appendix E: WMO Message Heading Table Driven Codes

WMO abbreviated message headings and the NWS AI heading extension employ table driven codes. The root table is available at the NWS web site:

http://www.nws.noaa.gov/tg/tables/tablea.php

National Weather Service
Telecommunication Operations Center

| Site Map | News | Organization |

Home > Organization > OPS > TOC > The Gateway > The WMO > Codes & Headings > Heading Tables > Table A

TABLE A

Table Definitions
Table A
Table B1
Table B2
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Table B4
Table B5
Table B6
Table C1
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Table C3
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Table C6
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Table D1
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National Tables
Table B7
Table C8
Table C9
Table C10
Table D3

Data Type Designator T₁ Matrix Table
for
T₂A₁A₂ii definitions

T₁	Data type	T₂	A₁	A₂	ii	Priority	Max Length
A	Analyses	B1	C1	C1	**	3	15,000
B	Service message	***	***	***	***	1/2/4*	15,000
C	Climatic data	B1	C1	C1	**	4	15,000
D	Grid point information (GRID)	B2	C3	C4	D2	3	15,000
E	Satellite imagery	B5	C1	C1	**	3	(1)
F	Forecast	B1	C1	C1	**	3	15,000
G	Grid point information (GRID)	B2	C3	C4	D2	3	15,000
H	Grid point information (GRIB)	B2	C3	C4	D2	3	15,000
I	Binary observation - BUFR	B3	C6	C3	**	3	15,000
J	forecast Information - BUFR	B3	C6	C4	D2	3	15,000
K	CREX	C7	C7	C3	**	2	15,000
L	--						
M	--						
N	Notices	B1	C1	C1	**	4	15,000
O	Oceanographic (GRIB)	B4	C3	C4	D1	3	15,000
P	Pictorial information(binary)	B6	C3	C4	D2	3	15,000
Q	Pictorial information regional	B6	C3	C5	D2	3	(1)
R	--						
S	Surface data	B1	C1/C2	C1/C2	**	2/4*	15,000
T	Satellite data	B1	C3	C4	**	2	15,000
U	Upper-air data	B1	C1/C2	C1/C2	**	2	15,000
V	National data	(3)	C1	C1	**	(2)	(1)
W	Warnings	B1	C1	C1	**	1	15,000
X	GRID regional use	B2	C3	(2)	D2	3	15,000
Y	GRIB regional use	B2	C3	(3)	D2	3	15,000
Z	GRIB National use	(3)	(3)	(3)	(3)	3	15,000

* Priority level:

- 1 is allocated to service messages 2 is allocated to data and request messages
- 4 is allocated to seismologic data (T₁T₂ = SE) or administrative messages

By using the **T₁T₂A₁A₂ii** portion of the WMO message, a customer can decode the type of message and the area covered by using the appropriate tables.

For example, the **T₁T₂A₁A₂ii** value of **ACUS01** can be decoded as follows:

Data Type	Value	Description
T_1	A	Analyses
T_2	C	Cyclone (From table B1)
A_1A_2	US	United States (From table C1)
ii	01	Used to differentiate two or more bulletins which contain data in the same code, originate from the same geographical area, and have the same originating center. ii = 01-19 inclusive for global distribution

Appendix F: WIS Metadata

The following Metadata Details are for the " GTS Bulletin: FCSW31 LSSW - Forecast" in the GISC Washington Global Information System Center

link: http://giscportal.washington.weather.gov/openwis-user-portal/srv/en/main.home

Searched for the term "taf" (without the quote) in the query box the clicked on the metadata "eyeball" (👁) link.

Metadata details

Identification info	
Title	GTS Bulletin: FCSW31 LSSW - Forecast (details are described in the abstract)
Date	2012-10-15Z
Date type	
Publication	Date identifies when the resource was issued
Date	2014-10-29Z
Date type	
Revision	Date identifies when the resource was examined or re-examined and improved or amended
	:
Code	urn:x-wmo:md:int.wmo.wis:: FCSW31 LSSW
Codespace	http://wis.wmo.int
Presentation form	
Digital document	Digital representation of a primarily textual item (can contain illustrations also)
Other citation details	The dot notation recommended by WMO-CBS IPET-MDRD is used to build the code identifier
Abstract	The FCSW31 TTAAii Data Designators decode as: T1 (F): Forecast T1T2 (FC): Aerodrome (VT < 12 hours) A1A2 (SW): Switzerland (The bulletin collects reports from stations: LSZB;BERN BELP ;LSZR;ST GALLEN ALTENRHEIN ;LSZG;GRENCHEN ;LSZC;BUOCHS ;LSZA;LUGANO ;LSZS;SAMEDAN ;LSGS;SION ;LSGC;LES EPLATURES ;LSZL;LOCARNO ;) (Remarks from Volume-C: XXX)

Purpose	WMO GTS Bulletin - Intended for global Exchange
Point of contact	
Organization name	NMC SWITZERLAND - MeteoSwiss
Role	
Originator:	Party who created the resource
Voice	T+41 44 2569770
Facsimile	F+41 44 2569278
Delivery point	Postfach 257
City	Zürich-Flughafe n
Postal code	8058
Country	SWITZERLAND
Electronic mail address	dwhservice@meteoswiss.ch
Maintenance and update frequency	
Continual	Data is repeatedly and frequently updated
Update scope	
Dataset	Information applies to the dataset
Maintenance note	The details of the update frequence are described in the temporal Element
Descriptive keywords	21, 18 , 15 , 12 , 09 , 06 , 03 , 00 (temporal).
Metadata uuid	temporal
Descriptive keywords	wind , weatherForecast , weather , visibility , turbulence , temperature , speed , significant , present , overcast , maximum , icing , ice , forecast , cloud , airport , aerodrome , TAF , ICAO , Aerodrome (VT < 12 hours) , meteorological (theme).
Metadata uuid	theme
Descriptive keywords	meteorology (theme).
Metadata uuid	theme
Descriptive keywords	GRENCHEN , LSZG , BUOCHS , LSZC , LES EPLATURES , LSGC , SION , LSGS , SAMEDAN , LSZS , BERN BELP , LSZB , ST GALLEN ALTENRHEIN , LSZR , LUGANO , LSZA , LOCARNO , LSZL (place).
Metadata uuid	place
Descriptive keywords	Meteorological geographical features
Metadata uuid	GEMET
Descriptive keywords	GlobalExchange (dataCentre).
Metadata uuid	globalexchange
Use limitation	WMOOther
Access constraints	
Other restrictions	Limitation not listed
Use constraints	
Other restrictions	Limitation not listed
Other constraints	WMOOther
Other constraints	GTSPriority3
Character set	

UTF8	8-bit variable size UCS Transfer Format, based on ISO/IEC 10646	
Topic category code	Climatology, meteorology, atmosphere	

Extent	
Description	The product/data covers the following region/bounding box: Switzerland Geographic bounding box
North bound	47.8066
East bound	5.96701
South bound	10.4882
West bound	45.8294

Temporal Extent	
Begin date	2012-10-15Z

Extent	
Description	Links for the place of stations with google
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=LOCARNO &latitude=46.1608&longitude=8.8786&height=198&feature id =LSZL
xlink:title	LOCARNO
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=LOCARNO &latitude=46.1608&longitude=8.8786&height=198&feature id =LSZL
xlink:title	LOCARNO
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=LOCARNO &latitude=46.1608&longitude=8.8786&height=198&feature id =LSZL
xlink:title	LOCARNO
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=LOCARNO &latitude=46.1608&longitude=8.8786&height=198&feature id =LSZL
xlink:title	LOCARNO
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=LUGANO &latitude=46.0043&longitude=8.9106&height=279&feature id =LSZA
xlink:title	LUGANO
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=ST GALLEN ALTENRHEIN

	&latitude=47.485&longitude=9.5608&height=398&featurei d= LSZR
xlink:title	ST GALLEN ALTENRHEIN
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=BERN BELP &latitude=46.9141&longitude=7.4971&height=510&feature id =LSZB
xlink:title	BERN BELP
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=SAMEDAN &latitude=46.5341&longitude=9.8841&height=1707&featu rei d=LSZS
xlink:title	SAMEDAN
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=SION &latitude=46.2197&longitude=7.3269&height=483&feature id =LSGS
xlink:title	SION
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=LES EPLATURES &latitude=47.0839&longitude=6.7928&height=1027&featu rei d=LSGC
xlink:title	LES EPLATURES
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=BUOCHS &latitude=46.9744&longitude=8.3969&height=450&feature id =LSZC
xlink:title	BUOCHS
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=GRENCHEN &latitude=47.1816&longitude=7.4172&height=430&feature id =LSZG
xlink:title	GRENCHEN
Geographic element	Links for the place of stations with google
xlink:href	googleMaps?name=SAMEDAN &latitude=46.5341&longitude=9.8841&height=1707&featu rei d=LSZS
xlink:title	SAMEDAN

Distribution Information	
Name	FM 51
Version	XIII
Specification	**http://www.wmo.int/pages/prog/www/WMOCodes.html**

Transfer options	
OnLine resource	WMO Information System, download products/data through GISC Offenbach, Deutscher Wetterdienst

Reference System Information	
Code	WGS 84
Codespace	World Geodetic System

Data quality info		
Hierarchy level		
	Dataset	Information applies to the dataset
Title		COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services
Date		2010-12-08
Date type		
	Publication	Date identifies when the resource was issued
Explanation		See the referenced specification
Pass		true
Statement		High data quality controlled according to the procedures of the WIS
Description		This metadata record was created automatically as a representation of the bulletin declaration found in WMO # 9 Volume C1. Other references were used in the process, including WMO References such as WMO # 9 Volume A, WMO # 386 Manual on the GTS and WMO # 306 Manual on Codes. Other elements of information were also collected or created for the purpose of the GTS Metadata Generation. This work, as well as the creation of the representation of the WMO references was done by Deutscher Wetterdienst (DWD) on a "best effort" basis.

Metadata		
File identifier		urn:x-wmo:md:int.wmo.wis::FCSW31LSSW
Character set		
	UTF8	8-bit variable size UCS Transfer Format, based on ISO/IEC 10646
Hierarchy level		
	Dataset	Information applies to the dataset

Hierarchy level name	Series of WMO GTS Bulletins
Date stamp	2014-10-29T14:47:02Z
Metadata standard name	WMO Core Metadata Profile of ISO 19115 (WMO Core), 2003/Cor.1:2006 (ISO 19115), 2007 (ISO/TS 19139)
Metadata standard version	1.3

Contact	
Organization name	NMC SWITZERLAND - MeteoSwiss
Role	
Point of contact	Party who can be contacted for acquiring knowledge about or acquisition of the resource
Voice	T+41 44 2569770
Facsimile	F+41 44 2569278
Delivery point	Postfach 257
City	Zürich-Flughafe n
Postal code	8058
Country	SWITZERLAND
Electronic mail address	dwhservice@meteoswiss.ch

Attribute description	FCSW31 : GTS Bulletin: FCSW31 LSSW - Forecast (details are described in the abstract)
Content type	
Thematic classification	Code value with no quantitative meaning, used to represent a physical quantity
OnLine resource	WMO Core Profile version 1.3

Appendix G: GNCA Metadata

The following Metadata Details are for the "Animated Ozone Countour Map" in the EUMETSAT Product Navigator

link:
http://navigator.eumetsat.int/discovery/Start/Explore/Quick.do;jsessionid=97B11752E437E4B5FCE71D95DA0438C3

entered "8a-super" (without the quote) in the query box, then click the START QUERY button.

<p align="center"><u>Metadata details</u></p>

Description	
Collection Reference	EO:EUM:DAT:MULT:AOCM
Collection Name	Animated Ozone Contour Map
Acronym	AOCM
Description	The animated contour maps, much like radar images showing precipitation, display the hourly formation and movement of ground-level ozone pollution.
Product Status	-
Date	
creation	3/23/2009
revision	9/24/2010
Time Range	
Begin	-
End	-
Geographic Bounding Box	
West Bound Longitude	-180
East Bound Longitude	180
North Bound Latitude	90
South Bound Latitude	-90
Point of Contact	
Role	originator
Originating Centre	U.S. Environmental Protection Agency
Short name	USEPA
URL	http://www.epa.gov
Telephone	-
Fax	-
Address	1200 Pennsylvania Avenue, N.W.
City	20460 Washington, DC
Administrative Area	U.S. Environmental Protection Agency, Ariel Rios Building
Country	USA
E-Mail	info@epa.gov

Categorization	
Collection Type	Dataset
Theme Keywords	
distribution	EUMETCast-Europe, EUMETCast-Americas, GEONETCast-Americas, EUMETCast
theme	Atmospheric conditions, Aerosol, Atmosphere
societal benefit area	Weather
Orbit Type	-
Satellite	-
Satellite Description	-
Spatial Coverage	Continental USA, Southern Canada
Content Description	to be defined
Thumbnails	http://navigator.eumetsat.int:80/smartEditor/previ...
Online Resources	U.S._Environmental_Protection_Agency

Distribution

EUMETCast,EUMETCast-Americas,EUMETCast-Europe

Channel(s)	Americas-CH1
Data Access	EO Portal Registration
	Reception Station Set-up
Available Format	
GIF	
Version	-
Typical File Name	8a-super.gif
Average File Size	1.0 MB
Frequency	24 (per day)

GEONETCast-Americas

Data Access	GEONETCast-Americas
Available Format	
GIF	
Version	-
Average File Size	1.0 MB

Legal Constraints

Use Limitation	-
Access Constraint	Copyright
Use Constraint	Copyright

Metadata

Browse by theme	Aerosol (theme.par.Aerosol)
	Atmosphere (theme.par.Atmosphere)
	(theme.par.GEONETCast)
	Weather (SBA.Weather)
	EUMETCast-Europe (dis.EUMETCast-Europe)
	EUMETCast-Americas (dis.EUMETCast-Americas)

	GEONETCast-Americas (dis.GEONETCast-Americas)
	EUMETCast (dis.EUMETCast)
Language	English
Characterset	utf8
Entry date	1/13/2014
Internal Identifier	EO:EUM:DAT:MULT:AOCM

Appendix H: BPB Change Management Process

Accounting for the addition, modification, and deletion of products requires that a Change Management Process (CMP) exist for the Dissemination Services. The CMP documents that all proposed BPB changes are properly reviewed, coordinated, adjudicated and implemented.

The process for modifying the BPB shall be as follows:

1.0   Request for Change - A request for change (RC) may occur due to one of the following situations:
    1.1   **Problem report** - A problem report is a "reactive" event where a problem has been noted in the Broadcast Product Baseline (BPB). Examples would be if a valid broadcast product has not been implemented in the BPB or if an invalid product exists in the BPB.
    1.2   **DRG RC (NWS)** - The Data Review Group (DRG) provides an orderly, logical, and expeditious review and processing of Requests for Change (RC) to data products communicated over the NWS communication networks under NWS Configuration Management (CM).
    1.3   **Data Product(s) RC** - In some cases, a WFO or WMO will generate an RC to add/delete products provided. In most cases, these RCs will be processed through DRG however they may be sent directly to OPS17.

2.0   **Valid need for BPB Modification** - The DS Change Authority will evaluate the request to determine if the need is valid. If the need is determined to be valid then a Request for Change (RC) will be created to describe what changes are to be made, who is responsible for each change, and the timeline for completing the change.

3.0   **Approval of the RC** - The RC is reviewed and then approved or returned for corrections by the Dissemination Service Change Authority

4.0   **Update BPB and the Dissemination Service product list** – the BPB is updated with the changes requested by the RC and the Dissemination Service product list filters are adjusted as requested by the RC.

5.0   **Download the Dissemination Service product list** – download the filtered Dissemination Service product list.

6.0   **Compare the BPB and Dissemination Service product list**
    6.1   Unauthorized products are those that are in the Dissemination Service product list but not in the BPB.
    6.2   Missing products are those that are in the BPB, but not in the Dissemination Service product list.

7.0   **Send Non Compliance Report** if there are any unauthorized or missing products.
    7.1   The BPB Project Authority and Dissemination Service Administrator should be notified that the Dissemination Service product list is not in compliance with the BPB.

8.0   **Make corrections to the Dissemination Service product list**.
    8.1   Remove unauthorized products from the Dissemination Service.
    8.2   Restore missing products to the Dissemination Service.

9.0   Repeat steps 5.0 to 9.0 until all discrepancies have been resolved.

10.0   **Notify Customers of change to the BPB** – notification can be made by posting on a web site, by Email, or by other methods.

Modify the Broadcast Product Baseline (BPB)
for a Dissemination Service (DS)

```
  ( Problem Report )    ( DRG RC        )    ( Data Product(s) RC )
                        (  (NWS)        )

                        < Valid need
                          for BPB
                          Modification? > ─────────────────────────┐
                              │                                     │
                              Y                                     │
                              ▼                                     │
                        [ Generate RC ]                             │
                              │                                     │
                              ▼                                     │
  [ Make Corrections to ]─▶ [ Submit RC     ]                       │
  [         RC          ]   [ for Review    ]                       │
       ▲                         │                                  │
       │                         ▼                                  │
       └────N──── < Approved? >                                     N
                              │                                     │
                              Y                                     │
                              ▼                                     │
                        [ Update BPB and the ]                      │
                        [ DS Product List    ]                      │
                              │                                     │
                              ▼                                     │
  [ Correct the       ]─▶ [ Download the DS  ]                      │
  [ DS Product List   ]   [ Product List     ]                      │
       ▲                         │                                  │
       │                         ▼                                  │
  [ Send Non          ]   [ Compare the BPB and ]                   │
  [ Compliance Report ]   [ the DS Product List ]                   │
       ▲                         │                                  │
       │                         ▼                                  │
       └──Y──── < Unauthorized and/or                               │
                  missing Products? >                               │
                              │                                     │
                              N                                     │
                              ▼                                     ▼
                        [ Notify customers ]────────────────▶ ( Finish )
                        [ of change        ]
```
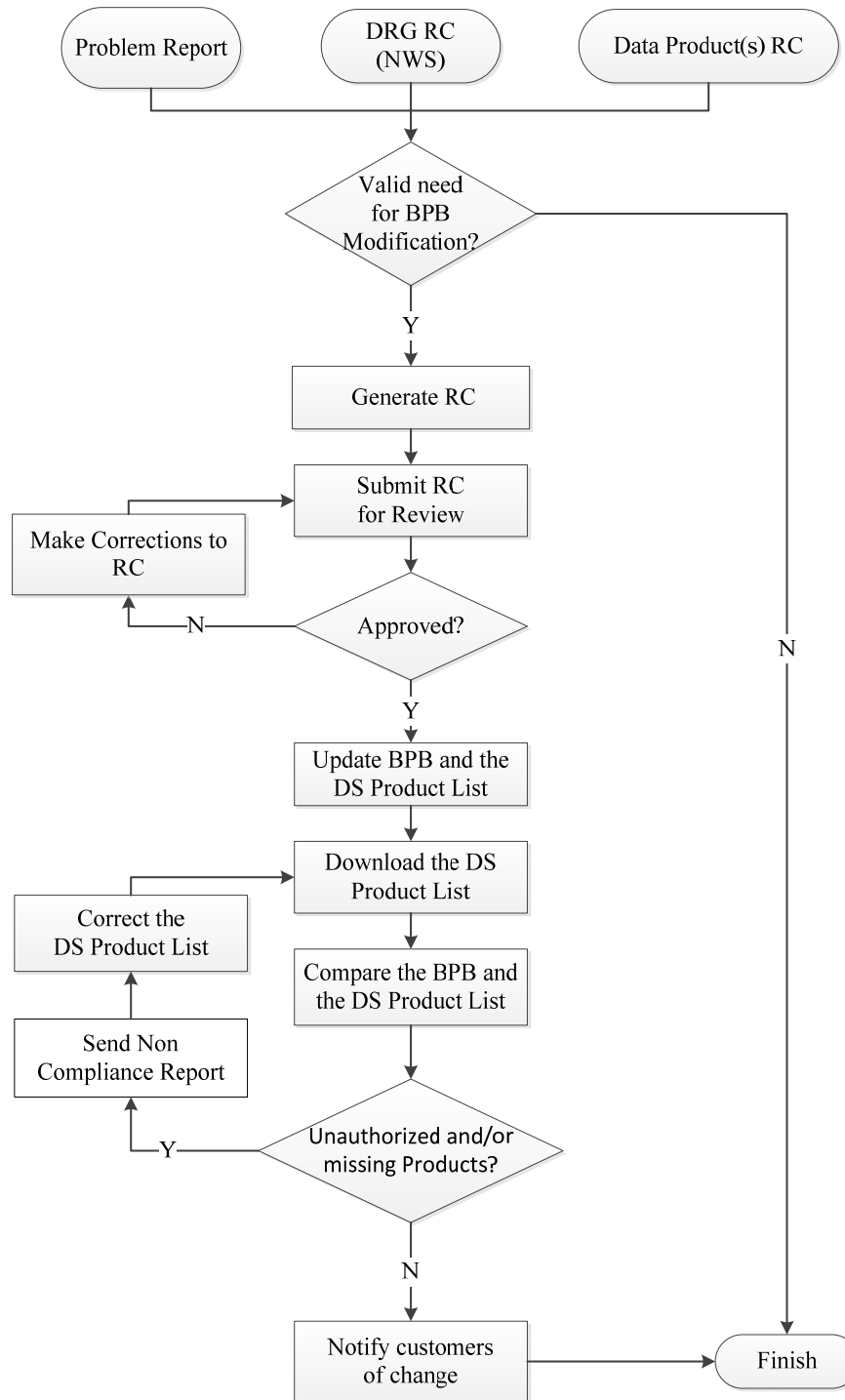
Appendix I: Audits

Each Dissemination Service has a product list, which is used to determine which broadcast products are disseminated. Periodically, the Dissemination Service product list should be audited to verify compliance with the Broadcast Product Baseline (BPB). Auditing assures that authorized broadcast products have not been removed and that unauthorized broadcast products have not been added to the service.

The process for conducting audits shall be as follows:

1.0 **Download the Dissemination Service Product List**
2.0 **Compare the Dissemination Service Product List with the BPB**
    2.1   Unauthorized products are those that are in the Dissemination Service product list but not in the BPB.
    2.2   Missing products are those that are in the BPB, but not in the Dissemination Service product list.
3.0 **Send Non Compliance Report** if there are any unauthorized or missing products.
    3.1   The BPB Project Authority and Dissemination Service Administrator should be notified that the Dissemination Service product list is not in compliance with the BPB.
4.0 **Correct the Dissemination Service Product List**
    4.1   Remove unauthorized products from the Dissemination Service.
    4.2   Restore missing products to the Dissemination Service.
5.0 Repeat steps 1.0 through 4.0 as needed until the Dissemination Service Product List is in compliance with the BPB.
6.0 **Send Compliance Report**
    6.1   The BPB Project Authority should be notified that the Dissemination Service product list is in compliance with the BPB.

(Flowchart provided on next page)

Audit Dissemination Service (DS) for
Broadcast Product Baseline (BPB) Compliance

```
                          ┌──────────────┐
                          │    Start     │
                          └──────┬───────┘
                                 │
                                 ▼
                        ┌──────────────────┐         ┌──────────────────┐
                        │  Download the    │◄────────│  Correct the DS  │
                        │  DS Product List │         │  Product List    │
                        └────────┬─────────┘         └────────▲─────────┘
                                 │                            │
                                 ▼                            │
                        ┌──────────────────┐         ┌────────┴─────────┐
                        │    Compare       │         │  Send Non        │
                        │ DS Product List  │         │ Compliance Report│
                        │  with the BPB    │         └────────▲─────────┘
                        └────────┬─────────┘                  │
                                 │                            │
                                 ▼                            │
                          ◇──────────────◇                    │
                         ╱ Unauthorized   ╲──────Y────────────┘
                         ╲ and/or          ╱
                          ╲missing Products?╱
                          ◇──────┬───────◇
                                 │
                                 N
                                 │
                                 ▼
                        ┌──────────────────┐
                        │ Send Compliance  │
                        │     Report       │
                        └────────┬─────────┘
                                 │
                                 ▼
                          ┌──────────────┐
                          │    Finish    │
                          └──────────────┘
```