



World Meteorological Organization

Weather • Climate • Water

Metadata and Data Models in the WMO Information System

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Chief Data Representation, Metadata and Monitoring

Contents

- WMO Information System
- WIS Discovery Metadata
- WMO data representations





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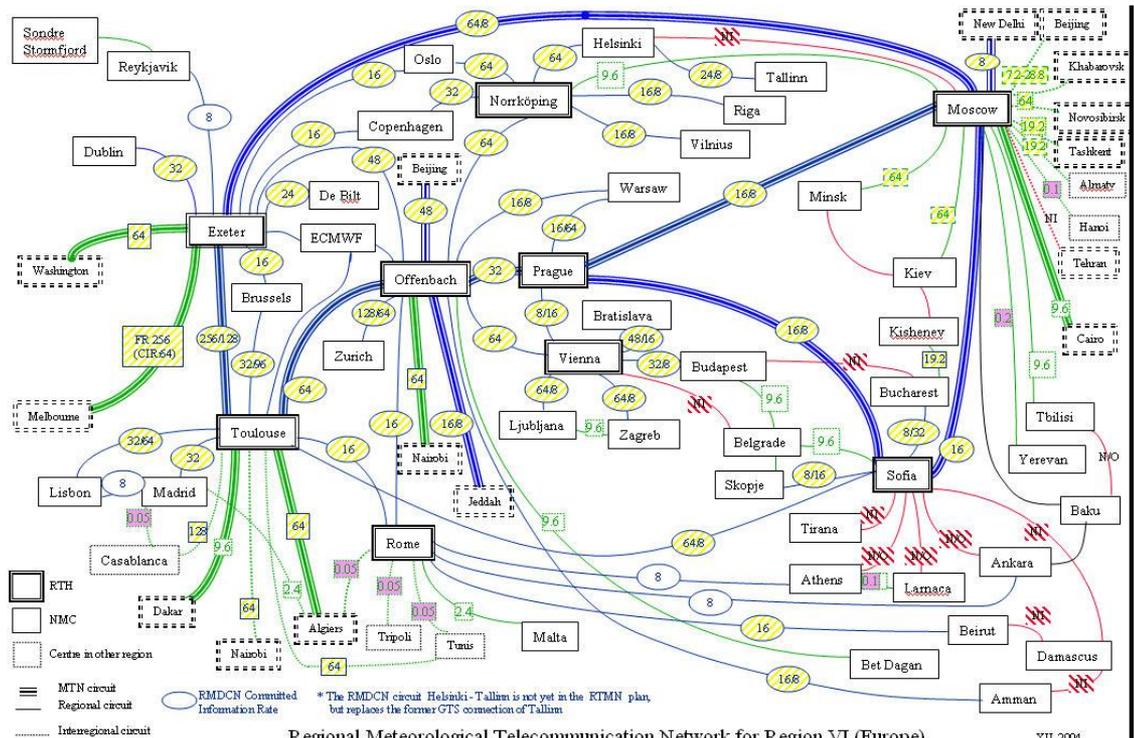
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WMO Information System

Operational information exchange

Needs

- Reliable
- Efficient
- Defined data
- Predictable

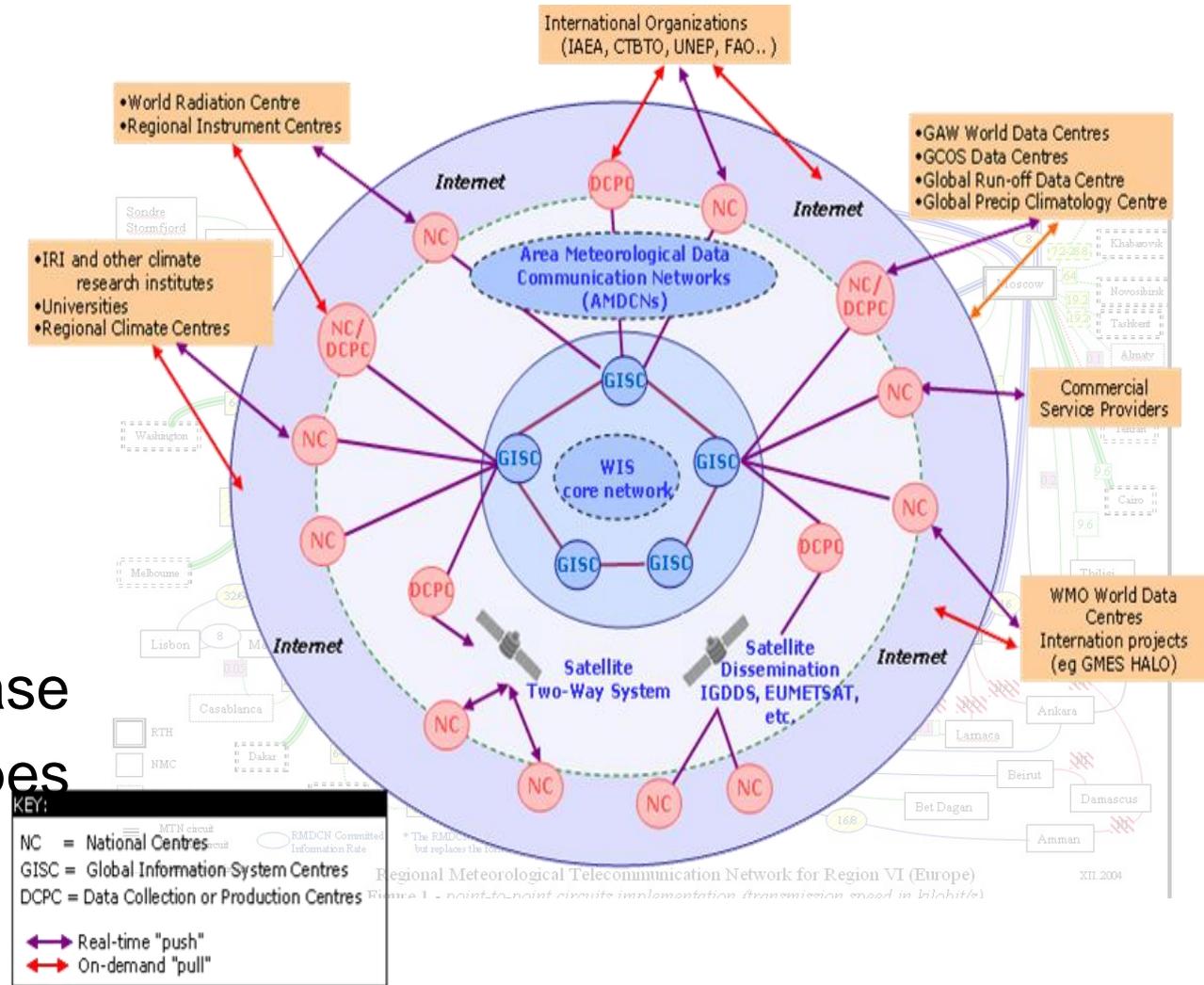


Operational information exchange

Needs

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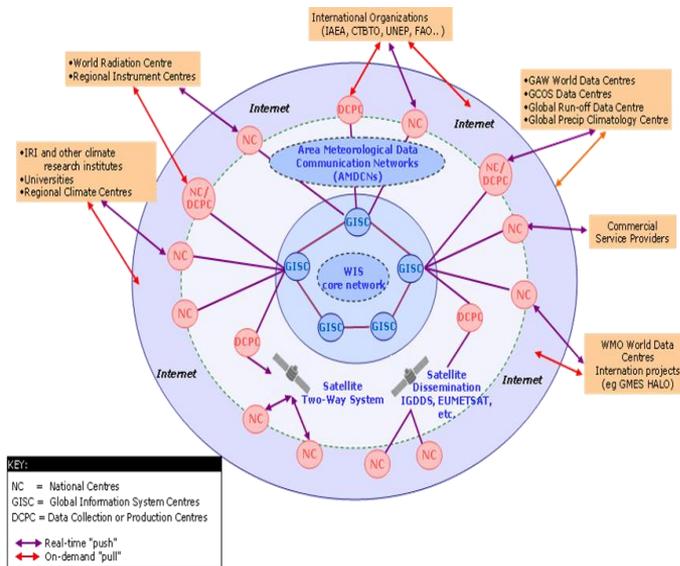
- Broad user base
- Many data types
- Responsive



WIS

Centres

- GISC



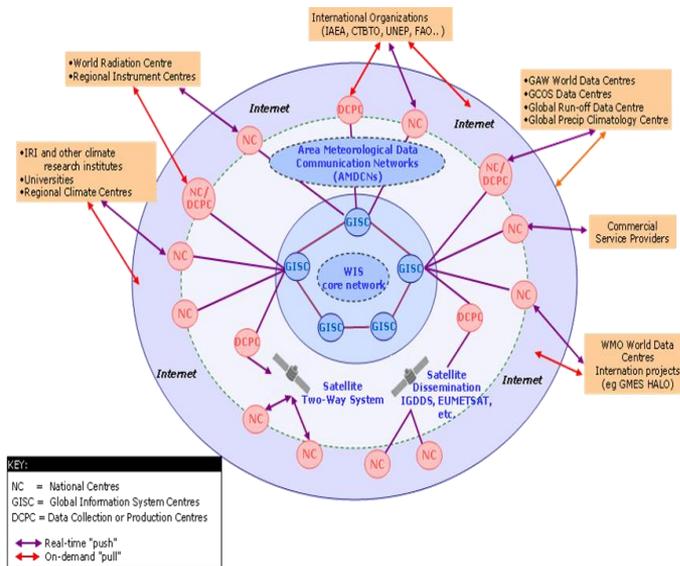
Global Information System Centre

- Global exchange
- Global supply
- Metadata catalogue
- Training



Centres

- GISC
- DCPC



Data Collection or Production Centre

- International role
 - Communications
 - Computation
 - Products
 - Data collection



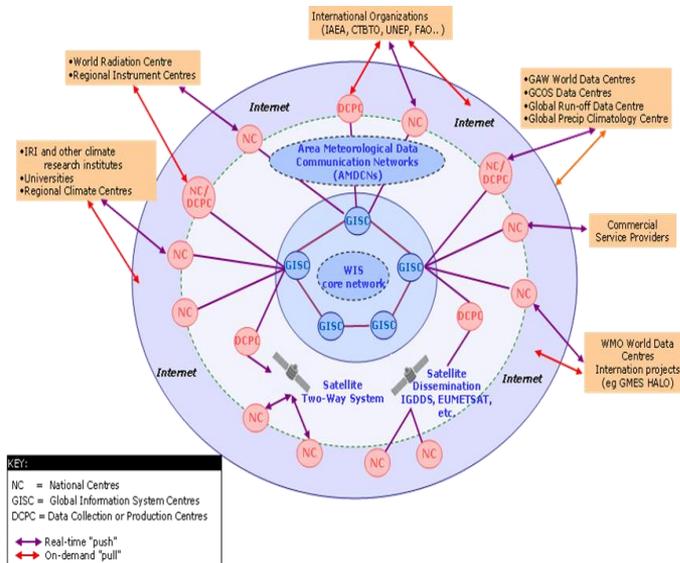
WIS

Centres

- GISC
- DCPC
- NC

National Centre

- National role
 - Collect data
 - products
- Distribute WIS products
- Could be many NCs





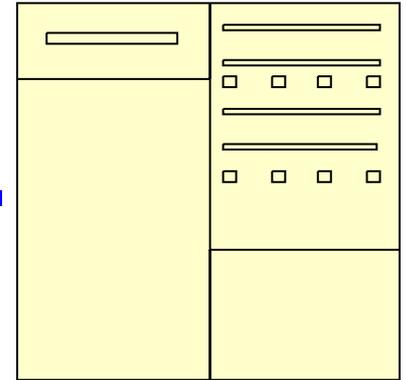
Search Request

marine warnings in area bounded by 40W to 10W and 45N to 70N

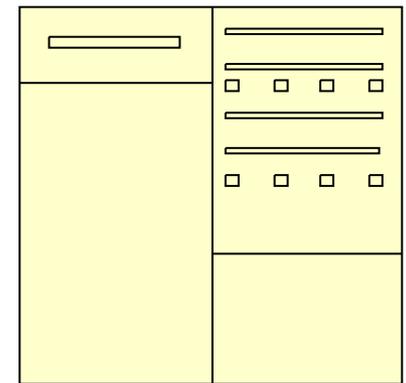
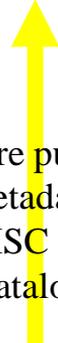


Search Results

User searches for metadata then retrieves information from data custodian



Centre publishes metadata to GISC DAR catalogue



GISC – DAR service



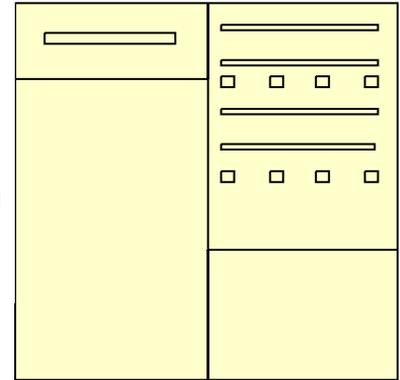
NC/DCPC information

access service



Search Request

marine warnings in area bounded by 40W to 10W and 45N to 70N



Search Results

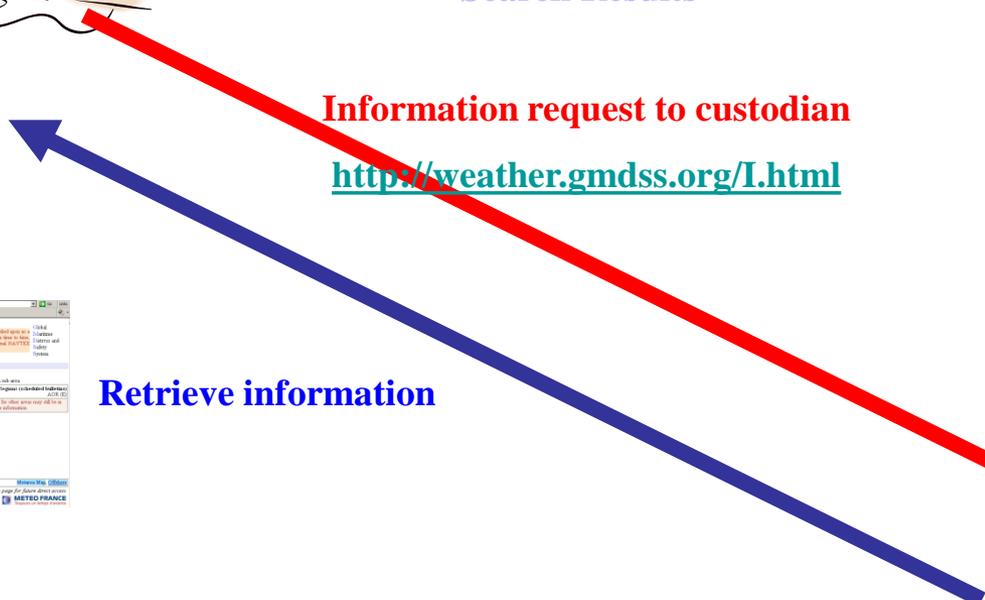


User searches for metadata then retrieves information from data custodian

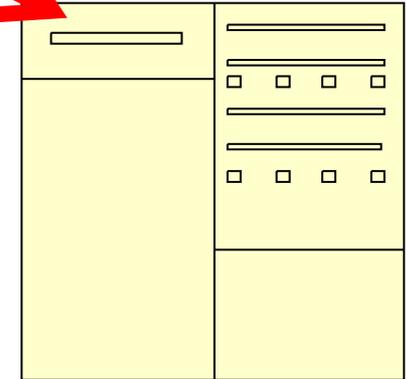
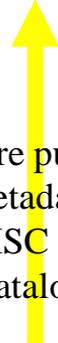
Information request to custodian

<http://weather.gmdss.org/I.html>

Retrieve information



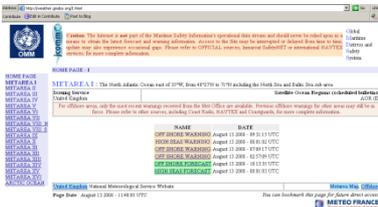
Centre publishes metadata to GISC DAR catalogue



NC/DCPC information

access service

GISC – DAR service

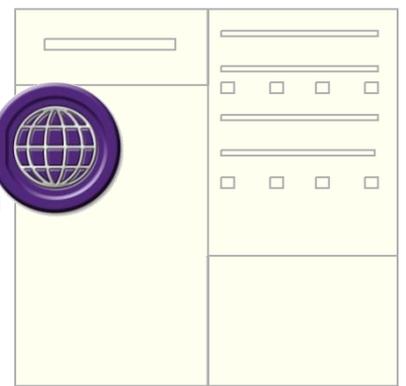


NAME	DATE
OFF SHORE WARNING	August 13 2004 08:30:11 UTC
OFF SHORE WARNING	August 13 2004 08:30:11 UTC
OFF SHORE WARNING	August 13 2004 07:30:11 UTC
OFF SHORE WARNING	August 13 2004 06:30:11 UTC
OFF SHORE WARNING	August 13 2004 05:30:11 UTC
OFF SHORE WARNING	August 13 2004 04:30:11 UTC



Search Request

marine warnings in area bounded by 40W to 10W and 45N to 70N



Search Results

User searches for metadata then retrieves information from data custodian

Information request to custodian

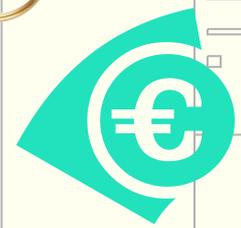
<http://weather.gmdss.org/I.html>

Retrieve information



Centre publishes metadata to GISC DAR catalogue

Security/authentication/authorization and even charging is managed by each service provider



GISC – DAR service





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WIS Discovery Metadata

WIS Discovery Metadata

- Purpose
 - Users find relevant information in WIS
 - Information needed to manage WIS information flow
- ISO 19115
 - Standard practices defined
 - Version 1.3 approved January 2013



Metadata challenges

- Level of detail
 - Enough to identify data
 - Little enough not to discourage data owners
- Language
 - Data owners responsible for metadata
 - Free text – difficult to translate
 - Keywords – limit ability to describe new data
- Not all information geo-referenced
 - Space weather





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WMO data representations

WMO Data Representations

- Origin
 - Operational weather forecasting
 - Predictable form and content
 - Small
 - Unambiguous
- Characteristics
 - Strong regulation
 - Slow to change
 - Little take-up outside World Weather Watch



Table Driven Code Forms

CLASS 01 - IDENTIFICATION

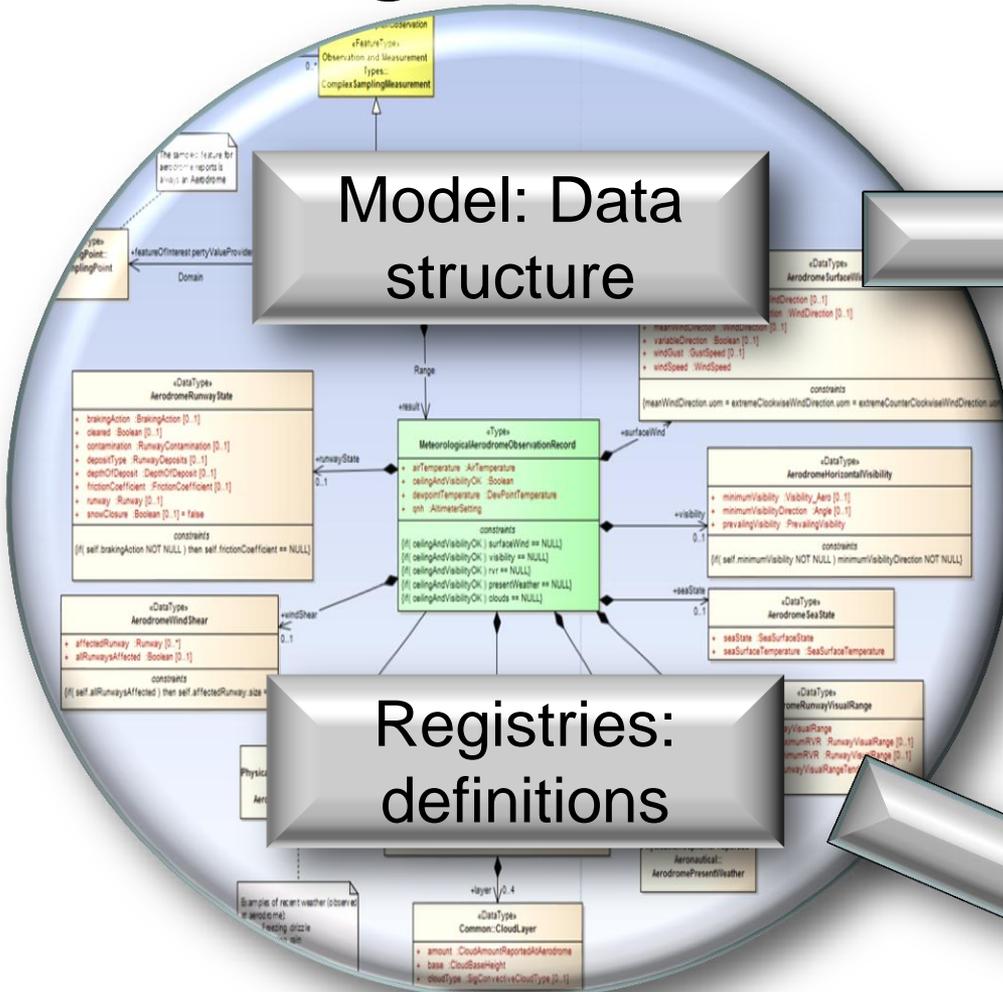
(local descriptors in italics)

DESCRIPTOR	DESCRIPTION	UNIT (Code Tbl C-6)	SCALE	REF. VALUE	DATA WIDTH	MEMORIC
0-01-001	WMO block number	Numer ic	0	0	7	WMOB
0-01-002	WMO station number	Numer ic	0	0	10	WMO5
0-01-003	WMO Region number/geographical area	<i>Code table</i>	0	0	3	WMOR
0-01-004	WMO Region sub-area	Numer ic	0	0	3	WMORS
0-01-005	Buoy/platform identifier	Numer ic	0	0	17	BPID
0-01-006	Aircraft flight number	CCITT IA5	0	0	64	ACID
0-01-007	Satellite identifier	<i>Common code table C-5</i>	0	0	10	SAID
0-01-008	Aircraft registration (tail) number or other identification	CCITT IA5	0	0	64	ACRN
0-01-009	Type of commercial aircraft	CCITT IA5	0	0	64	ACTP
0-01-010	Stationary buoy platform identifier; e.g. C-MAN buoys	CCITT IA5	0	0	64	SBPI
0-01-011	Ship or mobile land station identifier	CCITT IA5	0	0	72	SMID
0-01-012	Direction of motion of moving observing platform	Degree true	0	0	9	DOMD
0-01-013	Speed of motion of moving observing platform	m s ⁻¹	0	0	10	SMMD
0-01-014	Platform drift speed (high precision)	m s ⁻¹	2	0	10	PLDS
0-01-015	Station or site name	CCITT IA5	0	0	160	STSN
0-01-018	Short station or site name	CCITT IA5	0	0	40	SSTN
0-01-019	Long station or site name	CCITT IA5	0	0	256	LSTN
0-01-020	WMO Region sub-area	Numer ic	0	0	4	WMORSA
0-01-021	Synoptic feature identifier	Numer ic	0	0	14	SFID
0-01-022	Name of feature	CCITT IA5	0	0	160	NAOF
0-01-023	Observation sequence number	Numer ic	0	0	9	OSON
0-01-024	Wind speed source	<i>Code table</i>	0	0	5	WSPDS
0-01-025	Storm identifier	CCITT IA5	0	0	24	STMI D
0-01-026	WMO storm name	CCITT IA5	0	0	64	STMNAM
0-01-027	WMO long storm name	CCITT IA5	0	0	80	STMNAL
0-01-028	Aerosol Optical Depth (AOD) source	<i>Code table</i>	0	0	5	AODS
0-01-029	SSI (Surface Solar Irradiance) source	<i>Code table</i>	0	0	5	SSIS
0-01-030	Numerical model identifier	CCITT IA5	0	0	128	NUMID
0-01-031	Identification of originating/generating center	<i>Common code table C-11</i>	0	0	16	GCLONG
0-01-032	Generating application defined by local generating center	<i>Code table defined by originating/generating center</i>	0	0	8	GNAP
0-01-033	Identification of originating/generating center	<i>Common code table C-1</i>	0	0	8	OGCE
0-01-034	Identification of originating/generating sub-center	<i>Common code table C-12</i>	0	0	8	GSES
0-01-035	Originating center	<i>Common code table C-11</i>	0	0	16	ORIGC
0-01-036	Agency in charge of operating observing platform	<i>Code table</i>	0	0	20	AOOP
0-01-037	SIGMET sequence identifier	CCITT IA5	0	0	24	SI6SI
0-01-038	Source of sea ice fraction	<i>Code table</i>	0	0	5	SIIF
0-01-039	Graphical Forecast AIRMET (GFA) sequence identifier	CCITT IA5	0	0	40	GFSI

- Define structure
- Elements defined by tables
- Can add new data
- Data compression
- Tables not sent with data
- “Local” tables



WMO Logical Data Model



Model: Data structure

Registries: definitions

Code form:
 Format rules
 XML – O&M
 TDCF
 NetCDF



WMO Logical Data Model status

Progress

- Based on Observations and Measurements
- Created aviation XML
- Compatible with Table Driven Code Forms

Aspirations

- Control data descriptions
- Meteorological formats “members of same family”
 - TDCF
 - XML
 - NetCDF





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Thank you for your attention

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