

WORLD METEOROLOGICAL ORGANIZATION

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MEETING OF EXPERT TEAM ON INTEGRATED  
DATA MANAGEMENT

ITEM: 1.2

GENEVA, 17-20 SEPTEMBER 2001

ENGLISH ONLY

### **Proposal for a Discovery-level WMO Metadata Standard**

Submitted by the Secretariat

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#### **Summary and Purpose of Document**

The following straw-man proposal, based on the Global Change Master Directory DIF (Directory Interchange Format), the WMO BUFR code tables and the emerging ISO metadata standard defines basic descriptive or directory-level metadata that should be made available and searchable.

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#### **ACTION PROPOSED**

The meeting is requested to consider the proposal and provide suggestions for further development and follow-up actions.

## Discussion

The wide range of data and products that could be of potential use to the various WMO programmes creates a need for extensive metadata to describe them. Furthermore, to facilitate identification and location of this information across a number of programmes, basic descriptive or directory-level metadata should be made available and searchable according to an agreed standard. It is important that the extent of this directory-level information be detailed enough to provide critical information but simple enough to be easily collected and maintained. The following proposal, based on the Global Change Master Directory DIF (Directory Interchange Format), the WMO BUFR code tables, and the draft ISO metadata standard attempts to provide the appropriate balance.

All of the fields below would be required. The proposed standard would provide a definition for directory searches and would not specify how the information should be archived or presented to users.

Field	Field contents	Field definition
Abstract	Character string	Brief narrative summary of the contents of the dataset
MD_Keywords	Character string	Keywords, their type and reference source (WMO)
Language	Code, ISO 639	Language of the description
StartDate	Date, ISO 19108	Beginning or actual date of the data
StartTime	Time, UTC	Beginning time of the data (UTC)
StopDate	Date, ISO 19108	Ending date of the data (blank if not applicable)
StopTime	Time, UTC	Ending time of the data (blank if not applicable)
ReferenceDate	Date, ISO 19108	Reference date of the dataset (blank if not applicable)
ReferenceTime	Time, UTC	Reference time of the dataset (blank if not applicable)
Geographic Box	Angle (-180 to 180) Angle Angle Angle	WestBoundLongitude EastBoundLongitude NorthBoundLatitude SouthBoundLatitude
Geographic Description:	CharacterString	Geographic Identifiers (ISO 19112)
MD_Category	Code	Numeric code for the discipline covered by this dataset See ISO standard below
Theme	Code	The theme or subject of the dataset would be specified from a list of standard themes defined for each category. A very rough first draft is given below.

**MD Category**

<b>Name</b>	<b>Code</b>	<b>Definition</b>
Agriculture / Farming	001	Agriculture, herding, irrigation, plantations
Climatology / Meteorology / Atmosphere	005	Processes and phenomena of the atmosphere (cloud cover, precipitation, temperature); changes in climate
Elevation and derived products	008	Altitude (elevation, height above or below sea level)
Geoscientific information	010	geography (topography, toponomy); geomorphology; general geology; economic geology; geophysics; soils; geochemistry; permafrost; geological processes; palaeontology; risks of earthquakes, volcanoes, sinkholes, landslides, avalanches
Imagery / Base maps / Earth cover	012	remotely sensed information such as ground cover e.g. scans of the earth by satellite, aerial photographs and imagery; topographic maps, aeronautical, topocadastral maps, hydrographic charts; land use (land cover, public lands, land tenure, urban and regional land use plans)
Inland waters	014	rivers, lakes, glaciers, continental ice sheets, snow; ground water; water utilisation plans; movement of water in relation to land; floods; dams; pans; vleis; swamps; reservoirs; marshes; drainage regions; swimming pools
Oceans	017	Salt water bodies and their features; bathymetry, tides, currents, waves, nautical aides

**Dataset Themes (Subsets of Categories)**

**Agriculture (001)**

Agricultural sciences  
Agricultural chemistry  
Crop yield/forecasts  
Forestry  
Soils

**Climate / Meteorology / Atmosphere (005)**

Aerosols  
Air quality  
Altitude  
Atmospheric chemistry  
Atmospheric phenomena  
Climatology/normals  
Clouds  
Events/extremes  
Forecasts  
Model analyses  
Precipitation  
Radiance/imagery  
Radiological  
Snow cover/depth  
Surface land  
Surface marine  
Soundings/upper air  
Temperature  
Water Vapour  
Wind

**Elevation and derived products (008)**

Topography/elevation

**Geoscientific information (010)**

Ice core records  
Land records  
Ocean/lake records  
Tree ring records

**Imagery / Base maps / Earth cover (012)**

Erosion/sedimentation  
Land use/cover  
Landscape  
Soils  
Soil temperature  
Surface radiative properties

**Inland waters (014)**

Surface water  
Water quality  
Snow/ice  
Glacial depth/volume  
Sea ice  
Ground water

**Oceans (016)**

Bathymetry  
Marine geophysics  
Marine sediments  
Ocean acoustics  
Ocean chemistry  
Ocean circulation  
Ocean heat budget  
Ocean optics  
Ocean temperature  
Salinity/density  
Sea ice  
Sea surface height  
Tides

Sample Entry in a Metadata File

The sample provides an example of a dataset description conforming to the proposed guidelines. However, The ISO standard defines the content of a set of metadata elements, their definitions, data types, and inherent dependencies. The logical model of the metadata specifies the content and not the form of implementation or the form of presentation. A primary goal in the management of geographic metadata is the ability to access the metadata and the related spatial data it describes. This requires software implementations using common encoding methods to achieve operational use of the geographic metadata. Annex I to the ISO standard provides an overview of methods for the encoding of metadata element structure and content for the purposes of search and retrieval, metadata exchange, and presentation.

The example below includes item tags and indentation to aid interpretation but does not represent a recommended presentation. Instead the metadata should be presented encoded in Standard Generalised Markup Language (SGML), eXtensible Markup Language (XML) or in another agreed presentation format.

hierarchyLevel: dataset

identificationInfo

MD\_Identification

language: en

characterSet: ISO 10646-2

abstract: NCAR provides European Center for Medium Range Weather Forecasting FGGE global analysis data. This is a gridded analysis of data on a horizontal surface. Grid coverage includes the entire globe (uniform and complete latitude/longitude grid, 96x25, 3.75-degr, northern hemisphere and southern hemisphere are separate, derived from 192x49 1.875-degr).

MD\_Keywords:

keyword: grid, analysis, global, surface, 1000mb, 850mb, 700mb, 500mb, 400mb, 300mb, 200mb, 150mb, 100mb, 50mb, 30mb, 20mb, 10mb

type: 001 (vertical/spatial)

thesaurusName: WMO

keyword: {appropriate GRIB parameter codes, 001, 006, 011, 017, etc}

type: 002 (GRIB parameters)

thesaurusName: WMO

geographicBox:

westBoundLongitude: -180.0

eastBoundLongitude: 180.0

northBoundLatitude: 90.0

southBoundLatitude: -90.0

geographicDescription

SI\_LocationInstance

geographicIdentifier: Globe

EX\_TemporalExtent

startDate: 19781201

startTime: 0000

stopDate: 19791130

stopTime: 2359

MD\_Category: 005

Theme: Model analyses, Temperature, Water Vapour, Wind

CI\_Citation

title: ECMWF FGGE global analysis

date: 19970801

dateType: publication date

edition: 1

datasetPointOfContact:

CI\_ResponsibleParty

organisationName: NCAR Data Support Section

CI\_Telephone

voice: 1-(303) 497-1219

facimile: 1-303-497-1298

CI\_Address

deliveryPoint: NCAR/SCD/Data Support Section, P.O. Box 3000

city: Boulder

administrativeArea: CO

postalCode: 80307

country: USA

electronicMailAddress: datahelp@ncar.ucar.edu

CI\_OnlineResource

linkage: <http://www.scd.ucar.edu/dss/datasets/ds307.5.html>