

[ACDD 1.3 Change Summary and Record](#) [1]



Submitted by Graybeal on Fri, 2014-12-19 18:45 Friday, December 19, 2014 - 18:00

Event: [Telecon Minutes](#) [2]

Session Type: [Other](#) [3]

Expertise Level: [Beginner](#) [4]

Collaboration Area: [Documentation](#) [5]

Abstract/Agenda:

1. Summary of Changes from ACDD 1.1
2. Index of Discussions and Resources
3. Appendix: Table of Attribute Changes

Notes:

ACDD 1.3 Roundup

Summary of Changes from ACDD 1.1

Note: This document is not normative. Only the http://wiki.esipfed.org/index.php/Attribute_Convention_for_Data_Discover... [6] document has normative information.

Document Context, Overview, and Structure

The web site was reorganized so that:

- There is an [[Attribute Conventions Data Discovery]http://wiki.esipfed.org/index.php/Category:Attribute_Conventions_Dataset... [7] subcategory and a set of pages within it
- The subcategory page summarizes the convention and points to its revisions.
- The persistent URL and corresponding page http://wiki.esipfed.org/index.php/Attribute_Convention_for_Data_Discovery [8] was created; this page should always forward to the most recent version. This is therefore the best URL to use for the "current ACDD."
- The persistent URL and corresponding page http://wiki.esipfed.org/index.php/Category:Attribute_Convention_for_Data... [9] was created; this page should always forward to any working documents or activities for ACDD.

The chapters were reorganized to:

- Make the first section Context, organizing all the contextual material
 - add the new subsection Document, describing this convention
 - update the Version and Status section to describe the layout/context of ACDD materials

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- Put all the attributes into Global Attributes and Variable Attributes sections
- Add a Deprecated Attribute section
- Add an Index by Attribute Name section
- Move all the additional materials into separate documents, as part of an Additional Materials section

Layout

The layout for attribute tables changed from attributes, definitions, and mappings, to just attributes and definitions. Mappings were moved to a separate document, and have not been updated.

The attributes were organized functionally within their recommendation level, so as to be near others of similar function. An alphabetical index was added near the end of the document.

Overview Material Added

Material was added covering (or adding detail about) Alignment with NetCDF and CF Conventions, Attribute Crosswalks, the `metadata_link` attribute, 'Definitions: Data and Metadata', Maintenance of Metadata, and Attribute Content Guidance.

The Attribute Content Guidance section covers details that apply to multiple attributes, which were therefore consolidated in this one place.

General Changes of Note

Data and time formats are now ISO 8601, and particularly a recommended format of ISO 8601.

Attribute Changes

Most attributes were described in considerably more detail in ACDD 1.3, including some recommendations and/or examples about their format and use. As a general rule, original meanings or phrasings were preserved, even if that meant preserving ambiguity in the meaning of the term.

Often the allowable meaning of attributes was extended, as for example with `publisher*` and `creator*` attributes, which can now specify entities other than people.

The following attributes were added to ACDD 1.3:

- (Highly Recommended) Conventions
- (Recommended) `source`, `geospatial_bounds_crs`, `geospatial_bounds_vertical_crs`;
- (Suggested) `platform`, `platform_vocabulary`, `instrument`, `instrument_vocabulary`, `metadata_link`, `references`, `creator_type`, `creator_institution`, `program`, `publisher_type`, `publisher_institution`, `product_version`, `date_metadata_modified`

All attributes that are defined in either the CF conventions or NetCDF User's Guide are so documented.

The following attributes were promoted to Recommended in ACDD 1.3:

- `publisher_name`, `publisher_email`, `publisher_url`, `geospatial_vertical_positive`

The following attributes were demoted to Suggested in ACDD 1.3:

- `keywords_vocabulary`, `cdm_data_type`.

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in the case of `cdm_data_type`, specific guidance and references (which had become outdated) were deleted, and lacking definitive new references, the attribute is no longer expected to be used if a `CF` `featureType` is appropriate.

A table of attribute changes is given as an Appendix on this page.

Index of Discussions and Resources

List of Meetings Held

ACDD discussions were held as part of Documentation Cluster telecons, and 4 breakout discussions were also held.

All the ACDD discussions, including the breakouts, can be found at the ACDD keyword (<http://commons.esipfed.org/taxonomy/term/983> [10]). The list as of December 2014 included:

- ACDD 1.3 Change Summary and Record
- ACDD 1.3 Revisions/Adjudication - Mtg #4 12/11
- December 2014 Documentation Cluster
- November Documentation 2014 Telecon
- ACDD 1.3 Revisions/Adjudication - Mtg #3 10/14
- ACDD 1.3 Revisions/Adjudication - Mtg #2 10/9
- ACDD 1.3 Revisions/Adjudication Mtg #1 10/02
- October 2014 Documentation Telecom
- September 2014 Documentation Cluster Telecon
- August Documentation Telecon 2014
- April 2014 Documentation Cluster Telecon
- Documentation - March 2014 Telecon
- July 2013 Documentation Telecon
- ACDD - Documentation and Discovery

To get a list of the ACDD breakout discussions, use the 'ACDD breakout' keyword (<http://commons.esipfed.org/taxonomy/term/1758> [11]).

List of Reference Documents

When the discussion was particularly complex, a set of Google documents was created to manage the changes. The content included:

- [Active Issues](#) [12]: A document organized by topic, summing up the email discussion to that point. (PDF copy attached to this page.)
- [Version Changes](#) [13]: A working document similar to the one copied above, with more detail. (PDF copy attached to this page.)
- [Datestamps](#) [14]: A summary of the various proposals for different types of date/time stamp attributes. (PDF copy attached to this page.)
- [Name Change Approach](#) [15]: A summary of the preferences on how to handle the name changes that had been proposed for 1.3.
- [Final Accounting](#) [16]: Used to create the table above. (PDF copy attached to this page.)

The change history of these documents, particularly the Version Changes document, is useful in understanding the history of the discussion and changes.

Talk section of wiki

For a period of time, the '1.2' version of the document was the one under discussion. The creation of

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this document required extensive email exchanges, and these were summarized and further refined in the [Talk page for that document](#) [17] on the wiki. In case the original page goes away, it has been archived as a PDF here.

Doodle polls

A few Doodle (or similar) polls were taken to establish the level of consensus. These were summarized in other documents listed here (email or the Google docs Name Change Approach).

Email List Archives

The documentation cluster email list was dominated by ACDD discussions in 2014, particularly from September through December.

You can visit the [email list archives](#) [18] directly.

Appendix: Table of Attribute Changes

The following table organizes the attributes into thematic groups, and shows the changes to each. (A cleanly formatted, but slightly outdated PDF copy is also attached to this page.) Please note, this table may be incomplete or inaccurate, so is not authoritative.

Version Changes					
	Version 1.1 Attributes	Version 1.1 Defintions	Version 1.3 Attributes	Version 1.3 Definitions	Priority
SUMMARY ATTRIBUTES					
	title	A short description of the dataset.	title	A short phrase or sentence describing the dataset. In many discovery systems, the title will be displayed in the results list from a search, and therefore should be human readable and reasonable to display in a list of such names. This attribute is recommended by the NetCDF Users Guide (NUG) and the CF conventions.	HIGHLY RECOMMENDED
	summary	A paragraph describing the dataset.	summary	A paragraph describing the dataset,	HIGHLY RECOMMENDED

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				analogous to an abstract for a paper.	
	keywords	A comma separated list of key words and phrases.	keywords	A comma-separated list of key words and/or phrases. Keywords may be common words or phrases, terms from a controlled vocabulary (GCMD is often used), or URIs for terms from a controlled vocabulary (see also "keywords_vocabulary" attribute).	HIGHLY RECOMMENDED
	keywords_vocabulary	If you are following a guideline for the words/phrases in your "keywords" attribute, put the name of that guideline here.	keywords_vocabulary	If you are using a controlled vocabulary for the words/phrases in your "keywords" attribute, this is the unique name or identifier of the vocabulary from which keywords are taken. If more than one keyword vocabulary is used, each may be presented with a prefix (e.g., "CF:NetCDF COARDS Climate and Forecast Standard Names") and a following comma, so that keywords may optionally be prefixed with the controlled vocabulary key.	SUGGESTED (was RECOMMENDED)
	(new to ACDD in 1.3)		Conventions	A comma-separated list of the conventions that are followed by	HIGHLY RECOMMENDED

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				the dataset. For files that follow this version of ACDD, include the string 'ACDD-1.3'. (This attribute is defined in NUG 1.7.)	
	id	The combination of the "naming authority" and the "id" should be a globally unique identifier for the dataset.	id	An identifier for the data set, provided by and unique within its naming authority. The combination of the "naming authority" and the "id" should be globally unique, but the id can be globally unique by itself also. IDs can be URLs, URNs, DOIs, meaningful text strings, a local key, or any other unique string of characters. The id should not include white space characters.	RECOMMENDED
	naming_authority	The combination of the "naming authority" and the "id" should be a globally unique identifier for the dataset.	naming_authority	The organization that provides the initial id (see above) for the dataset. The naming authority should be uniquely specified by this attribute. We recommend using reverse-DNS naming for the naming authority; URIs are also acceptable. Example: 'edu.ucar.unidata'.	RECOMMENDED
	cdm_data_type	The THREDDS data type appropriate for	cdm_data_type	The data type, as derived from Unidata's	SUGGESTED (was RECOMMENDED)

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		this dataset.		Common Data Model Scientific Data types and understood by THREDDS. (This is a THREDDS "dataType", and is different from the CF NetCDF attribute 'featureType', which indicates a Discrete Sampling Geometry file in CF.)	
	history	Provides an audit trail for modifications to the original data.	history	Provides an audit trail for modifications to the original data. This attribute is also in the NetCDF Users Guide: 'This is a character array with a line for each invocation of a program that has modified the dataset. Well-behaved generic netCDF applications should append a line containing: date, time of day, user name, program name and command arguments.' To include a more complete description you can append a reference to an ISO Lineage entity; see NOAA EDM ISO Lineage guidance.	RECOMMENDED
	(new in 1.3)		source	The method of production of the original data. If it was model-generated, source should name the model	RECOMMENDED

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				and its version. If it is observational, source should characterize it. This attribute is defined in the CF Conventions. Examples: 'temperature from CTD #1234'; 'world model v.0.1'.	
	(new in 1.3)		platform	Name of the platform(s) that supported the sensor data used to create this data set or product. Platforms can be of any type, including satellite, ship, station, aircraft or other. Indicate controlled vocabulary used in platform_vocabulary.	SUGGESTED
	(new in 1.3)		platform_vocabulary	Controlled vocabulary for the names used in the "platform" attribute.	SUGGESTED
	(new in 1.3)		instrument	Name of the contributing instrument(s) or sensor(s) used to create this data set or product. Indicate controlled vocabulary used in instrument_vocabulary.	SUGGESTED
	(new in 1.3)		instrument_vocabulary	Controlled vocabulary for the names used in the "instrument" attribute.	SUGGESTED
	processing_level	A textual description of the processing (or quality control) level of	processing_level	A textual description of the processing (or quality control) level of	RECOMMENDED

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		the data.		the data.	
	comment	Miscellaneous information about the data.	comment	Miscellaneous information about the data, not captured elsewhere. This attribute is defined in the CF Conventions.	RECOMMENDED
	standard_name_vocabulary	The name of the controlled vocabulary from which variable standard names are taken.	standard_name_vocabulary	The name and version of the controlled vocabulary from which variable standard names are taken. (Values for any standard_name attribute must come from the CF Standard Names vocabulary for the data file or product to comply with CF.) Example: 'CF Standard Name Table v27'.	RECOMMENDED
	acknowledgement	A place to acknowledge various type of support for the project that produced this data.	acknowledgement	A place to acknowledge various types of support for the project that produced this data.	RECOMMENDED
	license	Describe the restrictions to data access and distribution.	license	Provide the URL to a standard or specific license, enter "Freely Distributed" or "None", or describe any restrictions to data access and distribution in free text.	RECOMMENDED
	new in 1.3; was in text only as 'Metadata_Link'		metadata_link	A URL that gives the location of more complete metadata. A persistent URL is recommended for this attribute.	SUGGESTED
	new in 1.3		product_version	Version identifier of the data file or product as	SUGGESTED

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				assigned by the data creator. For example, a new algorithm or methodology could result in a new product version.	
	(new to ACDD in 1.3)		references	Published or web-based references that describe the data or methods used to produce it. Recommend URIs (such as a URL or DOI) for papers or other references. This attribute is defined in the CF conventions.	SUGGESTED
CREATOR, PUBLISHER, CONTRIBUTOR, INSTITUTION, PROJECT					
	creator_name	The data creator's name, URL, and email. The "institution" attribute will be used if the "creator_name" attribute does not exist.	creator_name	The name of the person (or other creator type specified by the creator_type attribute) principally responsible for creating this data.	RECOMMENDED
	creator_email	The data creator's name, URL, and email. The "institution" attribute will be used if the "creator_name" attribute does not exist.	creator_email	The email address of the person (or other creator type specified by the creator_type attribute) principally responsible for creating this data.	RECOMMENDED
	creator_url	The data creator's name, URL, and email. The "institution" attribute will be used if the "creator_name" attribute does not exist.	creator_url	The URL of the of the person (or other creator type specified by the creator_type attribute) principally responsible for creating this data.	RECOMMENDED

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	(new in 1.3.1)		creator_type	Specifies type of creator with one of the following: 'person', 'group', 'institution', or 'position'. If this attribute is not specified, the creator is assumed to be a person.	SUGGESTED
	(new in 1.3)		creator_institution	The institution of the creator; should uniquely identify the creator's institution. This attribute's value should be specified even if it matches the value of publisher_institution, or if creator_type is institution.	SUGGESTED
	institution	The data creator's name, URL, and email. The "institution" attribute will be used if the "creator_name" attribute does not exist.	institution	The name of the institution principally responsible for originating this data. This attribute is recommended by the CF convention.	RECOMMENDED
	project	The scientific project that produced the data	project	The name of the project(s) principally responsible for originating this data. Multiple projects can be separated by commas, as described under Attribute Content Guidelines. Examples: 'PATMOS-X', 'Extended Continental Shelf Project'.	RECOMMENDED
	(new in 1.3)		program	The overarching program(s) of which the dataset is a part. A program consists of a set	SUGGESTED

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				(or portfolio) of related and possibly interdependent projects that meet an overarching objective. Examples: 'GHR SST', 'NOAA CDR', 'NASA EOS', 'JPSS', 'GOES-R'.	
	contributor_name	The name and role of any individuals or institutions that contributed to the creation of this data.	contributor_name	The name of any individuals, projects, or institutions that contributed to the creation of this data. May be presented as free text, or in a structured format compatible with conversion to ncML (e.g., insensitive to changes in whitespace, including end-of-line characters).	SUGGESTED
	contributor_role	The role of any individuals or institutions that contributed to the creation of this data.	contributor_role	The role of any individuals, projects, or institutions that contributed to the creation of this data. May be presented as free text, or in a structured format compatible with conversion to ncML (e.g., insensitive to changes in whitespace, including end-of-line characters). Multiple roles should be presented in the same order and number as the names in contrib	SUGGESTED

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	publisher_name	The data publisher's name, URL, and email. The publisher may be an individual or an institution.	publisher_name	The name of the person (or other entity specified by the publisher_type attribute) responsible for publishing the data file or product to users, with its current metadata and format.	RECOMMENDED (was SUGGESTED)
	publisher_email	The data publisher's name, URL, and email. The publisher may be an individual or an institution.	publisher_email	The email address of the person (or other entity specified by the publisher_type attribute) responsible for publishing the data file or product to users, with its current metadata and format.	RECOMMENDED (was SUGGESTED)
	publisher_url	The data publisher's name, URL, and email. The publisher may be an individual or an institution.	publisher_url	The URL of the person (or other entity specified by the publisher_type attribute) responsible for publishing the data file or product to users, with its current metadata and format.	RECOMMENDED (was SUGGESTED)
	(new in 1.3.1)		publisher_type	Specifies type of publisher with one of the following: 'person', 'group', 'institution', or 'position'. If this attribute is not specified, the publisher is assumed to be a person.	SUGGESTED
	(new in 1.3)		publisher_institution	The institution that presented the data file or	SUGGESTED

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				equivalent product to users; should uniquely identify the institution. If publisher_type is institution, this should have the same value as publisher_name.	
GEOSPATIAL BOUNDS					
	geospatial_bounds	Describes geospatial extent using any of the geometric objects (2D or 3D) supported by the Well-Known Text (WKT) format.	geospatial_bounds	Describes the data's 2D or 3D geospatial extent in OGC's Well-Known Text (WKT) Geometry format (reference the OGC Simple Feature Access (SFA) specification). The meaning and order of values for each point's coordinates depends on the coordinate reference system (CRS). The ACDD default is 2D geometry in the EPSG:4326 coordinate reference system. The default may be overridden with geospatial_bounds_crs and geospatial_bounds_vertical_crs (see those attributes). EPSG:4326 coordinate values are latitude (decimal degrees_north) and longitude (decimal degrees_east), in that order. Longitude values in the	RECOMMENDED

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				default case are limited to the [-180, 180) range. Example: "POLYGON ((40.26 -111.29, 41.26 -111.29, 41.26 -110.29, 40.26 -110.29, 40.26 -111.29))".	
	(new in 1.3)		geospatial_boun ds_crs	The coordinate reference system (CRS) of the point coordinates in the geospatial_b ounds attribute. This CRS may be 2-dimensional or 3-dimensional, but together with geospatial_ bounds_vertical_ crs, if that attribute is supplied, must match the dimensionality, order, and meaning of point coordinate values in the ge ospatial_b ounds attribute. If geos patial_b ounds_v ertical_ crs is also present then this attribute must only specify a 2D CRS. EPSG CRSs are strongly recommended. If this attribute is not specified, the CRS is assumed to be EPSG:4326. Examples: "EPSG:4979" (the 3D WGS84 CRS), "EPSG:4047".	RECOMMENDED
	(new in 1.3)		geospatial_boun ds_vertical_crs	The vertical coordinate reference system (CRS) for	RECOMMENDED

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				<p>the Z axis of the point coordinates in the geospatial_bounds attribute. This attribute cannot be used if the CRS in geospatial_bounds_crs is 3-dimensional; to use this attribute, geospatial_bounds_crs must exist and specify a 2D CRS. EPSG CRSs are strongly recommended. There is no default for this attribute when not specified. Examples: "EPSG:5829" (instantaneous height above sea level), "EPSG:5831" (instantaneous depth below sea level), or "EPSG:5703" (NAVD88 height).</p>	
	geospatial_lat_min	<p>Describes a simple latitude/longitude bounding box. geospatial_lat_min specifies the southernmost latitude; geospatial_lat_max specifies the northernmost latitude; geospatial_lon_min specifies the westernmost longitude; geospatial_lon_max specifies the easternmost longitude of the bounding box. The values of geospatial_lon_min and geospatial_l</p>	geospatial_lat_min	<p>Describes a simple lower latitude limit; may be part of a 2- or 3-dimensional bounding region. Geospatial_lat_min specifies the southernmost latitude covered by the dataset.</p>	RECOMMENDED

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		<p>lon_max reflect the actual longitude data values. Cases where geospatial_lon_min is greater than geospatial_lon_max indicate the bounding box extends from geospatial_lon_max, through the longitude range discontinuity meridian (either the antimeridian or Prime Meridian), to geospatial_lon_min.</p> <p>For a more detailed geospatial coverage, see the suggested geospatial attributes.</p>			
	geospatial_lat_max	<p>Describes a simple latitude/longitude bounding box. geospatial_lat_min specifies the southernmost latitude; geospatial_lat_max specifies the northernmost latitude; geospatial_lon_min specifies the westernmost longitude; geospatial_lon_max specifies the easternmost longitude of the bounding box. The values of geospatial_lon_min and geospatial_lon_max reflect the actual longitude data values. Cases where geospatial_lon_min is greater than geospatial_lon_max indicate the bounding box extends from geospatial_lon_max, through the longitude range discontinuity meridian (either the antimeridian or Prime Meridian), to geospatial_lon_min.</p>	geospatial_lat_max	<p>Describes a simple upper latitude limit; may be part of a 2- or 3-dimensional bounding region. Geospatial_lat_max specifies the northernmost latitude covered by the dataset.</p>	RECOMMENDED

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		<p>spatial_lon_max indicate the bounding box extends from geospatial_lon_max, through the longitude range discontinuity meridian (either the antimeridian or Prime Meridian), to geospatial_lon_min.</p> <p>For a more detailed geospatial coverage, see the suggested geospatial attributes.</p>			
	geospatial_lon_min	<p>Describes a simple latitude/longitude bounding box. geospatial_lat_min specifies the southernmost latitude; geospatial_lat_max specifies the northernmost latitude; geospatial_lon_min specifies the westernmost longitude; geospatial_lon_max specifies the easternmost longitude of the bounding box. The values of geospatial_lon_min and geospatial_lon_max reflect the actual longitude data values. Cases where geospatial_lon_min is greater than geospatial_lon_max indicate the bounding box extends from geospatial_lon_max, through the longitude range</p>	geospatial_lon_min	<p>Describes a simple longitude limit; may be part of a 2- or 3-dimensional bounding region. geospatial_lon_min specifies the westernmost longitude covered by the dataset. See also geospatial_lon_max.</p>	RECOMMENDED

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		<p>discontinuity meridian (either the antimeridian or Prime Meridian), to geospatial_lon_min.</p> <p>For a more detailed geospatial coverage, see the suggested geospatial attributes.</p>			
	geospatial_lon_max	<p>Describes a simple latitude/longitude bounding box. geospatial_lat_min specifies the southernmost latitude; geospatial_lat_max specifies the northernmost latitude; geospatial_lon_min specifies the westernmost longitude; geospatial_lon_max specifies the easternmost longitude of the bounding box. The values of geospatial_lon_min and geospatial_lon_max reflect the actual longitude data values. Cases where geospatial_lon_min is greater than geospatial_lon_max indicate the bounding box extends from geospatial_lon_max, through the longitude range discontinuity meridian (either the antimeridian or Prime Meridian), to geospatial_lon_min.</p>	geospatial_lon_max	<p>Describes a simple longitude limit; may be part of a 2- or 3-dimensional bounding region. geospatial_lon_max specifies the easternmost longitude covered by the dataset. Cases where geospatial_lon_min is greater than geospatial_lon_max indicate the bounding box extends from geospatial_lon_max, through the longitude range discontinuity meridian (either the antimeridian for -180:180 values, or Prime Meridian for 0:360 values), to geospatial_lon_min; for example, geospatial_lon_min=170 and geospatial_lon_max=-175 incorporates 15 degrees of longitude (ranges 170 to 180 and -180 to -175).</p>	RECOMMENDED

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		For a more detailed geospatial coverage, see the suggested geospatial attributes.			
	geospatial_vertical_min	Describes a simple latitude/longitude bounding box. geospatial_lat_min specifies the southernmost latitude; geospatial_lat_max specifies the northernmost latitude; geospatial_lon_min specifies the westernmost longitude; geospatial_lon_max specifies the easternmost longitude of the bounding box. The values of geospatial_lon_min and geospatial_lon_max reflect the actual longitude data values. Cases where geospatial_lon_min is greater than geospatial_lon_max indicate the bounding box extends from geospatial_lon_max, through the longitude range discontinuity meridian (either the antimeridian or Prime Meridian), to geospatial_lon_min. For a more detailed geospatial coverage, see the suggested geospatial attributes.	geospatial_vertical_min	Describes the numerically smaller vertical limit; may be part of a 2- or 3-dimensional bounding region. See geospatial_vertical_positive and geospatial_vertical_units.	RECOMMENDED

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	geospatial_vertical_max	Describes a simple vertical bounding box. For a more detailed geospatial coverage, see the suggested geospatial attributes.	geospatial_vertical_max	Describes the numerically larger vertical limit; may be part of a 2- or 3-dimensional bounding region. See geospatial_vertical_positive and geospatial_vertical_units.	RECOMMENDED
	geospatial_vertical_units	Further refinement of the geospatial bounding box can be provided by using these units and resolution attributes	geospatial_vertical_units	Units for the vertical axis described in "geospatial_vertical_min" and "geospatial_vertical_max" attributes. The default is EPSG:4979 (height above the ellipsoid, in meters); other vertical coordinate reference systems may be specified. Note that the common oceanographic practice of using pressure for a vertical coordinate, while not strictly a depth, can be specified using the unit bar. Examples: 'EPSG:5829' (instantaneous height above sea level), 'EPSG:5831' (instantaneous depth below sea level).	SUGGESTED
	geospatial_vertical_positive	Further refinement of the geospatial bounding box can be provided by using these units and resolution attributes	geospatial_vertical_positive	One of 'up' or 'down'. If up, vertical values are interpreted as 'altitude', with negative values corresponding to below the reference datum	RECOMMENDED (was SUGGESTED)

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				(e.g., under water). If down, vertical values are interpreted as 'depth', positive values correspond to below the reference datum. Note that if geospatial_vertical_positive is down ('depth' orientation), the geospatial_vertical_min attribute specifies the data's vertical location furthest from the earth's center, and the geospatial_vertical_max attribute specifies the location closest to the earth's center.	
	geospatial_lat_units	Further refinement of the geospatial bounding box can be provided by using these units and resolution attributes	geospatial_lat_units	Units for the latitude axis described in "geospatial_lat_min" and "geospatial_lat_max" attributes. These are presumed to be "degree_north"; other options from udunits may be specified instead.	SUGGESTED
	geospatial_lat_resolution	Further refinement of the geospatial bounding box can be provided by using these units and resolution attributes	geospatial_lat_resolution	Information about the targeted spacing of points in latitude. Recommend describing resolution as a number value followed by the units. Examples: '100 meters', '0.1 degree'	SUGGESTED
	geospatial_lon_units	Further	geospatial_lon_units	Units for the	SUGGESTED

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	units	refinement of the geospatial bounding box can be provided by using these units and resolution attributes	units	longitude axis described in "geospatial_lon_min" and "geospatial_lon_max" attributes. These are presumed to be "degree_east"; other options from uunits may be specified instead.	
	geospatial_lon_resolution	Further refinement of the geospatial bounding box can be provided by using these units and resolution attributes	geospatial_lon_resolution	Information about the targeted spacing of points in longitude. Recommend describing resolution as a number value followed by units. Examples: '100 meters', '0.1 degree'	SUGGESTED
	geospatial_vertical_resolution	Further refinement of the geospatial bounding box can be provided by using these units and resolution attributes	geospatial_vertical_resolution	Information about the targeted vertical spacing of points. Example: '25 meters'	SUGGESTED
TEMPORAL BOUNDS					
	time_coverage_start	Describes the temporal coverage of the data as a time range.	time_coverage_start	Describes the time of the first data point in the data set. Use the ISO 8601:2004 date format, preferably the extended format as recommended in the Attributes Content Guidance section.	RECOMMENDED
	time_coverage_end	Describes the temporal coverage of the data as a time range.	time_coverage_end	Describes the time of the last data point in the data set. Use ISO 8601:2004 date format,	RECOMMENDED

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				preferably the extended format as recommended in the Attributes Content Guidance section.	
	time_coverage_duration	Describes the temporal coverage of the data as a time range.	time_coverage_duration	Describes the duration of the data set. Use ISO 8601:2004 duration format, preferably the extended format as recommended in the Attributes Content Guidance section.	RECOMMENDED
	time_coverage_resolution	Describes the temporal coverage of the data as a time range.	time_coverage_resolution	Describes the targeted time period between each value in the data set. Use ISO 8601:2004 duration format, preferably the extended format as recommended in the Attributes Content Guidance section.	RECOMMENDED
DATE- AND TIME-STAMPS					
	date_created	The date on which the data was created.	date_created	The date on which this version of the data was created. (Modification of values implies a new version, hence this would be assigned the date of the most recent values modification.) Metadata changes are not considered when assigning the date_created. The ISO	RECOMMENDED

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				8601:2004 extended date format is recommended, as described in the Attribute Content Guidance section.	
	date_modified	The date on which this data was last modified.	date_modified	The date on which the data was last modified. Note that this applies just to the data, not the metadata. The ISO 8601:2004 extended date format is recommended, as described in the Attributes Content Guidance section.	SUGGESTED
	date_issued	The date on which this data was formally issued.	date_issued	The date on which this data (including all modifications) was formally issued (i.e., made available to a wider audience). Note that these apply just to the data, not the metadata. The ISO 8601:2004 extended date format is recommended, as described in the Attributes Content Guidance section.	SUGGESTED
	(new in 1.3)		date_metadata_modified	The date on which the metadata was last modified. The ISO 8601:2004 extended date format is recommended, as described in the Attributes	SUGGESTED

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				Content Guidance section.	
VARIABLE-LEVEL ATTRIBUTES					
	long_name	A long descriptive name for the variable (not necessarily from a controlled vocabulary).	long_name	A long descriptive name for the variable (not necessarily from a controlled vocabulary). This attribute is recommended by the NetCDF Users Guide, the COARDS convention, and the CF convention.	HIGHLY RECOMMENDED—VARIABLES
	standard_name	A long descriptive name for the variable taken from a controlled vocabulary of variable names.	standard_name	A long descriptive name for the variable taken from a controlled vocabulary of variable names. We recommend using the CF convention and the variable names from the CF standard name table. This attribute is recommended by the CF convention.	HIGHLY RECOMMENDED—VARIABLES
	units	The units of the variables data values. This attributes value should be a valid udunits string.	units	The units of the variable's data values. This attribute value should be a valid udunits string. The "units" attribute is recommended by the NetCDF Users Guide, the COARDS convention, and the CF convention.	HIGHLY RECOMMENDED—VARIABLES
	coverage_content_type	An ISO 19115-1 code to indicate the source of the data.	coverage_content_type	An ISO 19115-1 code to indicate the source of the data (image, thematicClassifi	HIGHLY RECOMMENDED—VARIABLES

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				cation, physical Measurement, auxiliary Information, quality Information, reference Information, modelResult, or coordinate).	
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[17] http://wiki.esipfed.org/index.php/Talk:Attribute_Convention_for_Data_Discovery_1-2_Working

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