

Conformance_Test_Results

Data standards become increasingly important as more users access remote data to integrate into analyzes or combine with their own data. Knowing the standards supported by a particular dataset and keeping track of compliance tests is an important role for metadata. There are at least two use cases for this information:

1. Data providers have, potentially ongoing, datasets (or services) that they would like to be compliant with various standards. The data providers would like to use well known and publicly available compliance tests in order to ensure that their data are, and remain, compliant. It is the results of these tests that are made available as part of the metadata for those datasets.
1. A user (or application) looking for datasets for a particular parameter that are compliant with a particular standard. They search for that standard as part of a metadata search and they get datasets that are known to have last passed a well-known compliance test.

The information required to support these use cases is documentation of 1) the conformance test and 2) the procedure for applying it.

Examples

Many data providers are storing data in netCDF files with the Climate-Forecast (CF) Conventions. A tool for checking compliance with these conventions is available from the British Natural Environment Research Council (NERC) National Centre for Atmospheric Science (NCAS) Computational Modelling Services ([\[NCAS-CMS\]](#)).

ISO 19115

Example: Conformance test results are reported in the Data Quality section of ISO Metadata. Two parts of this section might be relevant to these use cases: the scope and the report. The scope describes the subset of the dataset that the quality report applies to. In this case it is the entire dataset.

The report has three sections:

- The *measure* used to test the quality is described with a name, a code, and a description. In this case this is a python script called "cfchecks.py".
- The *procedure* for applying the measure is described with a type, a citation, and a description. In this case, this is a web service that takes a netCDF file and tests it with "cfchecks.py".
- The *report*. In this case, this is a DQ_ConformanceResult report that lists the specification being tested, an explanation of the result of the test and a boolean that indicates whether the test was passed.

```
<?xml version="1.0" encoding="UTF-8"?>
<gmd:DQ_DataQuality>
  <gmd:scope>
    <gmd:DQ_Scope>
      <gmd:level>
        <gmd:MD_ScopeCode codeList="http://www.isotc211.org/2005/resources/Codelist/gmxCoo
      </gmd:level>
    </gmd:DQ_Scope>
  </gmd:scope>
  <gmd:report>
    <gmd:DQ_FormatConsistency>
      <gmd:nameOfMeasure>
        <gco:CharacterString>cfchecks.py</gco:CharacterString>
      </gmd:nameOfMeasure>
      <gmd:measureIdentification>
        <gmd:MD_Identifier>
          <gmd:authority>
```

Conformance_Test_Results

```
<gmd:CI_Citation>
    <!-- This is an optional citation to the authority for the code in thi
    <gmd:title>
        <gco:CharacterString>cfchecks.py</gco:CharacterString>
    </gmd:title>
    <gmd:date>
        <gmd:CI_Date>
            <gmd:date>
                <gco:Date>20090113</gco:Date>
            </gmd:date>
            <gmd:dateType>
                <gmd:CI_DateTypeCode codeList="http://www.isotc211.org/200
                    >publication</gmd:CI_DateTypeCode>
            </gmd:dateType>
        </gmd:CI_Date>
    </gmd:date>
    <!-- May not need a date here -->
</gmd:CI_Citation>
</gmd:authority>
<gmd:code>
    <gco:CharacterString>cfchecks.py Version 1.4</gco:CharacterString>
</gmd:code>
</gmd:MD_Identifier>
</gmd:measureIdentification>
<gmd:measureDescription>
    <gco:CharacterString>This test uses the 'cfchecks.py' script to check that the con
        CF-checker was developed at the Hadley Centre for Climate Prediction and Resear
        Integrated Earth System Modelling). Development and maintenance for the CF-che
        have suggestions for improvement then please e-mail Rosalyn Hatcher at NCAS-CM
</gmd:measureDescription>
<gmd:evaluationMethodType gco:nilReason="inapplicable"/>
<gmd:evaluationMethodDescription>
    <gco:CharacterString>This test is provided as a web service that accepts a candida
</gmd:evaluationMethodDescription>
<gmd:evaluationProcedure>
    <gmd:CI_Citation>
        <!-- Citation to the page that describes the procedure used to execute the te
        <gmd:title>
            <gco:CharacterString>CF-Convention compliance checker for NetCDF format</c
        </gmd:title>
        <gmd:date>
            <gmd:CI_Date>
                <gmd:date>
                    <gco:Date>20090113</gco:Date>
                </gmd:date>
                <gmd:dateType>
                    <gmd:CI_DateTypeCode codeList="http://www.isotc211.org/2005/resour
                        >publication</gmd:CI_DateTypeCode>
                </gmd:dateType>
            </gmd:CI_Date>
        </gmd:date>
    </gmd:citedResponsibleParty>
        <gmd:CI_ResponsibleParty>
            <gmd:individualName>
                <gco:CharacterString>Rosalyn Hatcher</gco:CharacterString>
            </gmd:individualName>
            <gmd:organisationName>
                <gco:CharacterString>NCAS Computational Modelling Services (NCAS-C
            </gmd:organisationName>
            <gmd:contactInfo>
                <gmd:CI_Contact>
                    <gmd:address>
                        <gmd:CI_Address>
                            <gmd:electronicMailAddress>
```

Conformance_Test_Results

```
          <gco:CharacterString>r.s.hatcher@reading.ac.uk</gco:CharacterString>
          </gmd:electronicMailAddress>
          </gmd:CI_Address>
        </gmd:address>
        <gmd:onlineResource>
          <gmd:CI_OnlineResource>
            <gmd:linkage>
              <gmd:URL>http://puma.nerc.ac.uk/cgi-bin/cf-checker</gmd:URL>
            </gmd:linkage>
          </gmd:CI_OnlineResource>
        </gmd:onlineResource>
      </gmd:CI_Contact>
    </gmd:contactInfo>
    <gmd:role>
      <gmd:CI_RoleCode codeList="http://www.isotc211.org/2005/resources/roleList">
        <gco:CI_RoleCode>pointOfContact</gco:CI_RoleCode>
      </gmd:role>
    </gmd:CI_ResponsibleParty>
  </gmd:citedResponsibleParty>
</gmd:CI_Citation>
</gmd:evaluationProcedure>
<gmd:dateTime>
  <!-- This is when the test was done -->
  <gco:DateTime>2006-05-04T18:13:51.0Z</gco:DateTime>
</gmd:dateTime>
<gmd:result>
  <gmd:DQ_ConformanceResult>
    <gmd:specification>
      <gmd:CI_Citation>
        <!-- This is the citation for the standard being tested -->
        <gmd:title>
          <gco:CharacterString>CF Version 1.0</gco:CharacterString>
        </gmd:title>
        <gmd:date>
          <gmd:CI_Date>
            <gmd:date gco:nilReason="unknown"/>
            <!-- The publication date for the specification -->
            <gmd:dateTime>
              <gmd:CI_DateTypeCode codeList="http://www.isotc211.org/2005/resources/datetimeList">
                <gco:CI_DateTypeCode>publication</gco:CI_DateTypeCode>
              </gmd:dateTime>
            </gmd:CI_Date>
          </gmd:date>
        <gmd:citedResponsibleParty>
          <gmd:CI_ResponsibleParty>
            <gmd:organisationName>
              <gco:CharacterString>British Atmospheric Data Centre (BADC)</gco:CharacterString>
            </gmd:organisationName>
            <gmd:contactInfo>
              <gmd:CI_Contact>
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                  <gmd:CI_OnlineResource>
                    <gmd:linkage>
                      <gmd:URL>http://badc.nerc.ac.uk/help/formats</gmd:URL>
                    </gmd:linkage>
                  </gmd:CI_OnlineResource>
                </gmd:onlineResource>
              </gmd:CI_Contact>
            </gmd:contactInfo>
            <gmd:role/>
          </gmd:CI_ResponsibleParty>
        </gmd:citedResponsibleParty>
      </gmd:CI_Citation>
    </gmd:specification>
```

Conformance_Test_Results

```
<gmd:explanation>
  <gco:CharacterString>CHECKING NetCDF FILE: /tmp/14882.nc =====
  (2009-07-06T12:05:02Z) ----- Checking variable: isobaric
  WARNING (2.5.1): Use of 'missing_value' attribute is deprecated -----
  variable: Polar_Stereographic_projection_Grid -----
  variable: y ----- -----
  ----- ERROR (3.1): Invalid units: gpm WARNING (2.5.1): Us
  ----- -----
</gco:CharacterString>
</gmd:explanation>
<gmd:pass>
  <gco:Boolean>false</gco:Boolean>
</gmd:pass>
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_FormatConsistency>
</gmd:report>
</gmd:DQ_DataQuality>
```