

ISTP Metadata Tools

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ISTP Metadata Tools

Recent Updates

- Renamed the new ISTP metadata editor to... “ISTP Metadata Editor”
- Moved the backend of the metadata editor to the cloud (including the validation tools!)
- Now supports reading CDF and SKT files, and saving to CDF, netCDF, SKT, JSON and SPASE XML files
- Many improvements to the user interface and functionality
- Validation tools available now, public beta (or alpha) release of the full tool coming soon!



ISTP Metadata Tools

Command-line validation

- Install the Java SKTEditor; see the following for installation instructions:

<https://spdf.gsfc.nasa.gov/skteditor/CmdLineCdfCheckers.html>

- Once the SKTEditor and CDF libraries are installed, you can run the validation check with:

```
java -cp pdfjavaClasses.jar:$CDF_LIB/cdfjava.jar \  
gsfc.spdf.istp.tools.CDFCheck filename.cdf
```

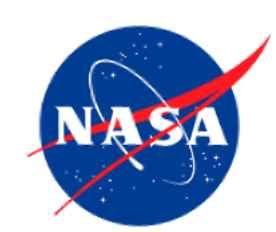


ISTP Metadata Tools

Command-line validation

- You can also run the validation without installing the CDF tools, e.g., with curl:

```
curl -X POST -F "file=@mms1_fgm_srvy_l2_00000000_v01.cdf" \  
-k https://skteditor.heliophysics.net/cgi-bin/checkcdf.cgi
```

ISTP Metadata Tools

Command-line validation

```
bash-3.2$ curl -X POST -F "file=@mms1_fgm_srvy_l2_00000000_v01.cdf" \  
> -k https://skteditor.heliophysics.net/cgi-bin/checkcdf.cgi  
Check for mms1_fgm_srvy_l2_00000000_v01.cdf  
Checking 1 file(s).  
Checking mms1_fgm_srvy_l2_00000000_v01.cdf...0 0  
CDF File Version: 3.8.0  
File Last Leap Second: 2015-07-01  
Majority: Column  
mms1_fgm_srvy_l2_00000000_v01.cdf: Global attribute issues:  
    Logical_file_id should be 'mms1_fgm_srvy_l2_00000000_v '. It is ' '.  
    TEXT has no entries.  
    Logical_file_id has no entries.  
mms1_fgm_srvy_l2_00000000_v01.cdf: FAILED variable checks. Errors:  
Variable mms1_fgm_b_gse_srvy_l2_clean:  
    DEPEND_1 attribute is missing.  
    unrecognized virtual variable FUNCTION 'apply_esa_qflag'  
  
FAILED variable checks. Errors:  
Variable mms1_fgm_b_gse_srvy_l2:  
    DEPEND_1 attribute is missing.  
  
FAILED variable checks. Errors:  
Variable mms1_fgm_b_gsm_srvy_l2_clean:  
    DEPEND_1 attribute is missing.  
    unrecognized virtual variable FUNCTION 'apply_esa_qflag'  
  
FAILED variable checks. Errors:  
Variable mms1_fgm_b_gsm_srvy_l2:  
    DEPEND_1 attribute is missing.  
  
FAILED variable checks. Errors:  
Variable mms1_fgm_b_dmpa_srvy_l2_clean:  
    DEPEND_1 attribute is missing.  
    unrecognized virtual variable FUNCTION 'apply_esa_qflag'
```

ISTP Metadata Tools

Command-line validation

- You can also run the validation without installing the CDF tools, e.g., in Python:

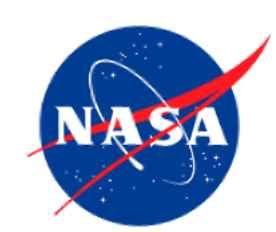
```
import requests
```

```
file = "mms1_fgm_srvy_l2_00000000_v01.cdf"
```

```
with open(file, 'rb') as cdf_to_upload:
```

```
    response = requests.post("https://skteditor.heliophysics.net/cgi-bin/checkcdf.cgi", files={"file": (file, cdf_to_upload)})
```

```
print(response.content.decode('utf-8'))
```

ISTP Metadata Tools

Command-line validation

```
>>> import requests
>>> file = "mms1_fgm_srvy_l2_00000000_v01.cdf"
>>> with open(file, 'rb') as cdf_to_upload:
...     response = requests.post("https://skteditor.heliophysics.net/cgi-bin/checkcdf.cgi", files={"file": (file, cdf_to_upload)})
...
>>> print(response.content.decode('utf-8'))
Check for mms1_fgm_srvy_l2_00000000_v01.cdf
Checking 1 file(s).
Checking mms1_fgm_srvy_l2_00000000_v01.cdf...0 0
CDF File Version: 3.8.0
File Last Leap Second: 2015-07-01
Majority: Column
mms1_fgm_srvy_l2_00000000_v01.cdf: Global attribute issues:
    Logical_file_id should be 'mms1_fgm_srvy_l2_00000000_v '. It is ' '.
    TEXT has no entries.
    Logical_file_id has no entries.
mms1_fgm_srvy_l2_00000000_v01.cdf: FAILED variable checks. Errors:
Variable mms1_fgm_b_gse_srvy_l2_clean:
    DEPEND_1 attribute is missing.
    unrecognized virtual variable FUNCTION 'apply_esa_qflag'

    FAILED variable checks. Errors:
Variable mms1_fgm_b_gse_srvy_l2:
    DEPEND_1 attribute is missing.

    FAILED variable checks. Errors:
Variable mms1_fgm_b_gsm_srvy_l2_clean:
    DEPEND_1 attribute is missing.
    unrecognized virtual variable FUNCTION 'apply_esa_qflag'

    FAILED variable checks. Errors:
Variable mms1_fgm_b_gsm_srvy_l2:
    DEPEND_1 attribute is missing.

    FAILED variable checks. Errors:
Variable mms1_fgm_b_dmpa_srvy_l2_clean:
    DEPEND_1 attribute is missing.
    unrecognized virtual variable FUNCTION 'apply_esa_qflag'
```


ISTP Metadata Tools

Web-based GUI

- Supports opening CDF, SKT files (opening netCDF still under development)
- Supports saving CDF, SKT, netCDF, JSON and SPASE XML files
- Includes numerous UI improvements over the previous SKTEditor, e.g., we have the actual attribute names next to the attribute, with links to our documentation

ISTP Metadata Editor

File Tools Help

New

Open CDF File

Open SKT File

Save CDF File

Save Skeleton File

Save netCDF File

Save JSON File

Save SPASE XML File

Close

Information

Required

Project [[Project](#)]
ACE>Advanced Composition Explorer,ISTP>International Sola

Source / Spacecraft Name [[Source_name](#)]
AC>Advanced Composition Explorer

Descriptor / Instrument Name [[Descriptor](#)]

Data Type [[Data_type](#)]
H0>16-Sec Level 2 Data

File Naming Convention

PI Name [[PI_name](#)]
N. Ness

PI Affiliation [[PI_affiliation](#)]
Bartol Research Institute

Discipline [[Discipline](#)]
Space Physics>Interplanetary Studies

Mission Group [[Mission_group](#)]
ACE

Instrument Types [[Instrument_type](#)]
Magnetic Fields (space)

Data Version [[Data_version](#)]
6

Logical File ID [[Logical_file_id](#)]
AC_H0_MAG_20150103_V06

Logical Source [[Logical_source](#)]
AC_H0_MFI

Global Attributes

Recommended

Acknowledgement [[Acknowledgement](#)]
Please acknowledge the Principal ,Investigator, N. Ness of Bartol Research ,Institute

Rules of Use [[Rules_of_use](#)]
See the rules of use available from the ACE ,Science Center at: ,http://www.srl.caltech.edu/AC

Digital Object Identifier [[DOI](#)]

SPASE ID [[spase_DatasetResourceID](#)]

Time Resolution [[Time_resolution](#)]
16 second

Generated By [[Generated_by](#)]
ACE Science Center

Generation Date [[Generation_date](#)]
20150413

Links
:: Release notes and other info available at [the ACE Science Center Level 2 Data website](#)

Modification History [[MODS](#)]
Initial Release 9/7/01
12/04/02: Fixed description of Epoch time variable.

Optional

Ready

Messages

Clear Save

ISTP Metadata Tools

Web-based GUI

- Supports running the ISTP compliance check on the full file via the Tools menu
- Compliance output is sent to the (resizable) messages window at the bottom of the screen

The screenshot displays the ISTP Metadata Editor web-based GUI. The interface is organized into several sections:

- Required:** Fields for Project, Source / Spacecraft Name, Descriptor / Instrument Name, Data Type, File Naming Convention, PI Name, PI Affiliation, Discipline, Mission Group, Instrument Types, Data Version, Logical File ID, and Logical Source.
- Recommended:** Fields for Acknowledgement, Rules of Use, Digital Object Identifier, SPASE ID, Time Resolution, Generated By, Generation Date, Links, and Modification History.
- Optional:** A section for optional metadata.

The **Tools** menu is open, showing the **ISTP Compliance Check** option. A **Messages** window is visible at the bottom right of the interface. The status bar at the bottom shows "Ready" and "Clear" and "Save" buttons.

ISTP Metadata Tools

Web-based GUI

- Also flags the input boxes (red outline) when there's an issue found



ISTP Metadata Tools

Web-based GUI

- Like with global attributes, ISTP issues with variable attributes are flagged with a red outline (after the compliance check is ran)

The screenshot displays the ISTP Metadata Editor interface, which is divided into three main sections: Information, Global Attributes, and Variable Attributes. The Variable Attributes section is currently active, showing a list of variables on the left and detailed configuration options for the selected variable, 'Magnitude', in the center. The 'Fill Value' field is highlighted with a red border and contains the value '-1'. The 'One-Line Description' field is also highlighted with a red border. Below the configuration fields, a 'Messages' panel displays several error messages, with the one for 'Variable Magnitude' highlighted in a red box. This message states: 'FAILED variable checks. Errors: Variable Magnitude: FILLVAL value of '-1.0' is non-standard. The recommended value is '-1.0E31'. CATDESC is missing. (No such entry for specified attribute.)'. Arrows from the text on the left point to the 'Fill Value' field, the 'One-Line Description' field, and the highlighted error message.

ISTP Metadata Editor File Tools Variables Help

Information Global Attributes Variable Attributes

Epoch
Time_PB5
Magnitude
BGSEc
label_BGSE
BGSM
label_bgsm
dBrms
Q_FLAG
SC_pos_SCE
label_pos_GSE
SC_pos_GSM
label_pos_GSM
unit_time
label_time
format_time
cartesian

CDF Specifications

Name	Data Type	Time Varying	Dimensions	Compression	Sparse Records	Pad Value	Fill Value
Magnitude	CDF_REAL4	True	0:[]	None	None		-1

Description

Expanded Label [FIELDNAM]
B-field magnitude

One-Line Description [CATDESC]
[Red outlined field]

Variable Notes [VAR_NOTES]
[Red outlined field]

Value Uncertainty

Plus [DELTA_PLUS_VAR] Minus [DELTA_MINUS_VAR]

Axis Information

Label 1 [LABLAXIS] Label 2 [LABL_PTR_2] Label 3 [LABL_PTR_3]

<|B|> [Red outlined field]

Scale Type [SCALETYP] Format [FORMAT] Units [UNITS]

[Red outlined field] F8.3 [Red outlined field] nT [Red outlined field]

Plot Information **Depends** **Valid Values** **Additional**

Variable Type [VAR_TYPE] DEPEND_0 Valid Min [VALIDMIN] SCALEMIN

FILLVAL data type 'CDF_CHAR' does not match variable data type 'CDF_EPOCH'.
The automatic conversion could not be done.

Messages Clear Save

FAILED variable checks. Errors:
Variable Time_PB5:
DEPEND_1 is a character type.
VALIDMIN entry is missing. (No such entry for specified attribute.)
VALIDMAX entry is missing. (No such entry for specified attribute.)

FAILED variable checks. Errors:
Variable Magnitude:
FILLVAL value of '-1.0' is non-standard.
The recommended value is '-1.0E31'.
CATDESC is missing. (No such entry for specified attribute.)

FAILED variable checks. Errors:
Variable BGSEc:
DEPEND_1 is a character type.
VALIDMIN entry is missing. (No such entry for specified attribute.)
VALIDMAX entry is missing. (No such entry for specified attribute.)

ISTP Metadata Tools

Web-based GUI

- To save the SPASE XML file, select the “Save SPASE XML File” item in the “File” menu
- Note:
 - Our goal here isn’t to create a full SPASE editor
 - But a lot of ISTP metadata also exists in SPASE, so we can help creating the initial file
 - This file can then be imported into the current SPASE editor:

<http://spase-editor.heliocloud.org>

The screenshot shows the 'ISTP Metadata Editor' web application. The 'File' menu is open, and 'Save SPASE XML File' is selected. The main interface displays the following sections:

- Information:** A list of variables with 'Magnitude' selected.
- CDF Specifications:** Name (Magnitude), Data Type (CDF_REAL4), and other parameters.
- Description:** Expanded Label [FIELD], One-Line Description [B-field magnitude], and Variable Notes [VAR_NOTES].
- Value Uncertainty:** Plus [DELTA_PLUS_VAR] and Minus [DELTA_MINUS_VAR] fields.
- Plot Information:** Variable Type [VAR_TYPE] (Data) and Display Type [DISPLAY_TYPE] (Time Series).
- Depends:** A list of dependencies (DEPEND_0 to DEPEND_3).
- Valid Values:** Valid Min [VALIDMIN] (0) and Valid Max [VALIDMAX] (500).
- Axis Information:** Label 1 [LABLAXIS] (<|B>), Label 2 [LABL_PTR_2], and Label 3 [LABL_PTR_3].
- Additional:** SCALEMIN (0), SCALEMAX (10), and DICT_KEY (magnetic_field>magnitude).

ISTP Metadata Tools

Web-based GUI

- Warning:
 - Not complete!
 - A lot more to do!

```

<Spase xmlns="http://www.spase-group.org/data/schema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.spase-group.org/data/schema
http://www.spase-group.org/data/schema/spase-2-5-0.xsd">
  <Version xmlns="">2.6.1</Version>
  <NumericalData xmlns="">
    <ResourceID xmlns=""/>
    <ResourceHeader xmlns="">
      <ResourceName xmlns="">H0 - ACE Magnetic Field 16-Second Level 2 Data</ResourceName>
      <AlternateName xmlns="">AC_H0_MFI</AlternateName>
      <DOI xmlns=""/>
      <Description xmlns="">MAG - ACE Magnetic Field Experiment References: http://www.srl.caltech.edu/ACE/ The quality of ACE level 2 data is such that it is suitable
      for serious scientific study. However, to avoid confusion and misunderstanding, it is recommended that users consult with the appropriate ACE team members before
      publishing work derived from the data. The ACE team has worked hard to ensure that the level 2 data are free from errors, but the team cannot accept responsibility
      for erroneous data, or for misunderstandings about how the data may be used. This is especially true if the appropriate ACE team members are not consulted before
      publication. At the very least, preprints should be forwarded to the ACE team before publication.</Description>
      <Acknowledgement xmlns="">Please acknowledge the Principal ,Investigator, N. Ness of Bartol Research ,Institute</Acknowledgement>
    </ResourceHeader>
    <Parameter xmlns="">
      <Name xmlns="">Time</Name>
      <ParameterKey xmlns="">Epoch</ParameterKey>
      <Description xmlns="">Time, beginning of interval</Description>
      <Caveats xmlns=""></Caveats>
      <Units xmlns="">ms</Units>
      <FillValue xmlns="">9999-12-31T23:59:59.999</FillValue>
      <ValidMin xmlns="">1996-01-01T00:00:00.000</ValidMin>
      <ValidMax xmlns="">2020-01-01T00:00:00.000</ValidMax>
      <RenderingHints xmlns="">
        <DisplayType xmlns=""></DisplayType>
        <AxisLabel xmlns="">Epoch</AxisLabel>
        <ValueFormat xmlns="">E14.8</ValueFormat>
        <ScaleType xmlns="">LINEAR</ScaleType>
      </RenderingHints>
    </Parameter>
    <Parameter xmlns="">
      <Name xmlns="">Time PB5</Name>
      <ParameterKey xmlns="">Time_PB5</ParameterKey>
      <Description xmlns="">Time of observation in Year, Day, & milliseconds (16 sec)</Description>
      <Caveats xmlns=""></Caveats>
      <Units xmlns=""></Units>
      <FillValue xmlns="">-2147483648</FillValue>
      <ValidMin xmlns="">1997,237,0</ValidMin>
      <ValidMax xmlns="">2020,366,0</ValidMax>
      <RenderingHints xmlns="">
        <DisplayType xmlns=""></DisplayType>
        <AxisLabel xmlns=""></AxisLabel>
        <ValueFormat xmlns=""></ValueFormat>
        <ScaleType xmlns="">LINEAR</ScaleType>
      </RenderingHints>
    </Parameter>
    <Parameter xmlns="">
      <Name xmlns="">B-field magnitude</Name>
      <ParameterKey xmlns="">Magnitude</ParameterKey>
      <Description xmlns="">B-field magnitude</Description>
      <Caveats xmlns=""></Caveats>
    </Parameter>
  </NumericalData>
</Spase>

```



Thank you!

Contact us at:

NASA-SPDF-Support@nasa.onmicrosoft.com