

Going to focus on these!



ISTP Metadata Guidelines & Tools

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SKTEditor / ISTP Metadata Editor

Important note

The tools shown on the following slides are for laying out ISTP compliant CDF, netCDF, and SKT files, and validating ISTP compliance

Current SKTEditor

- Requires:
 - Java
 - Security settings updated (first run)
 - CDF library installed locally (for full functionality)

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

The screenshot shows the SKTEditor application window titled "SKTEditor: ac_h0_mfi_20150103_v06.cdf". The interface is divided into several sections for configuring dataset metadata:

- Required:**
 - Project: ACE>Advanced Composition Explorer
 - Source / Spacecraft Name: AC>Advanced Composition Explorer
 - Descriptor / Instrument Name: MAG>ACE Magnetic Field Instrument
 - Data Type: H0>16-Sec Level 2 Data
 - File Naming Convention: source_datatype_desc... yyyyM...
 - PI Name: N. Ness; PI Affiliation: Bartol Research Institute
 - Discipline: Space Physics>Interplanetary Studies
 - Mission Group: ACE; Instrument Types: Magnetic Fields (space)
 - Data Version: 06
 - Logical Source / Short Dataset Description: H0 - ACE Magnetic Field 16-Second Level 2 Data
 - Extended Dataset Descriptive Text: 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.
- Recommended:**
 - Acknowledgement: Please acknowledge the Principal
 - Rules of Use: See the rules of use available from the ACE
 - SPASE ID: [empty]; Time Resolution: 16 second
 - Generated by: ACE Science Center; Generation Date: 20150413
 - Link Text (describing on-line data): Release notes and other info available at [empty]
 - Link Title: the ACE Science Center Level 2 Data website
 - HTTP Link: http://www.srl.caltech.edu/ACE/ASC/level2/index.html
 - Modification History: Initial Release 9/7/01; 12/04/02: Fixed description of Epoch time variable.

The status bar at the bottom shows "Ready" and a "Show Messages" button.

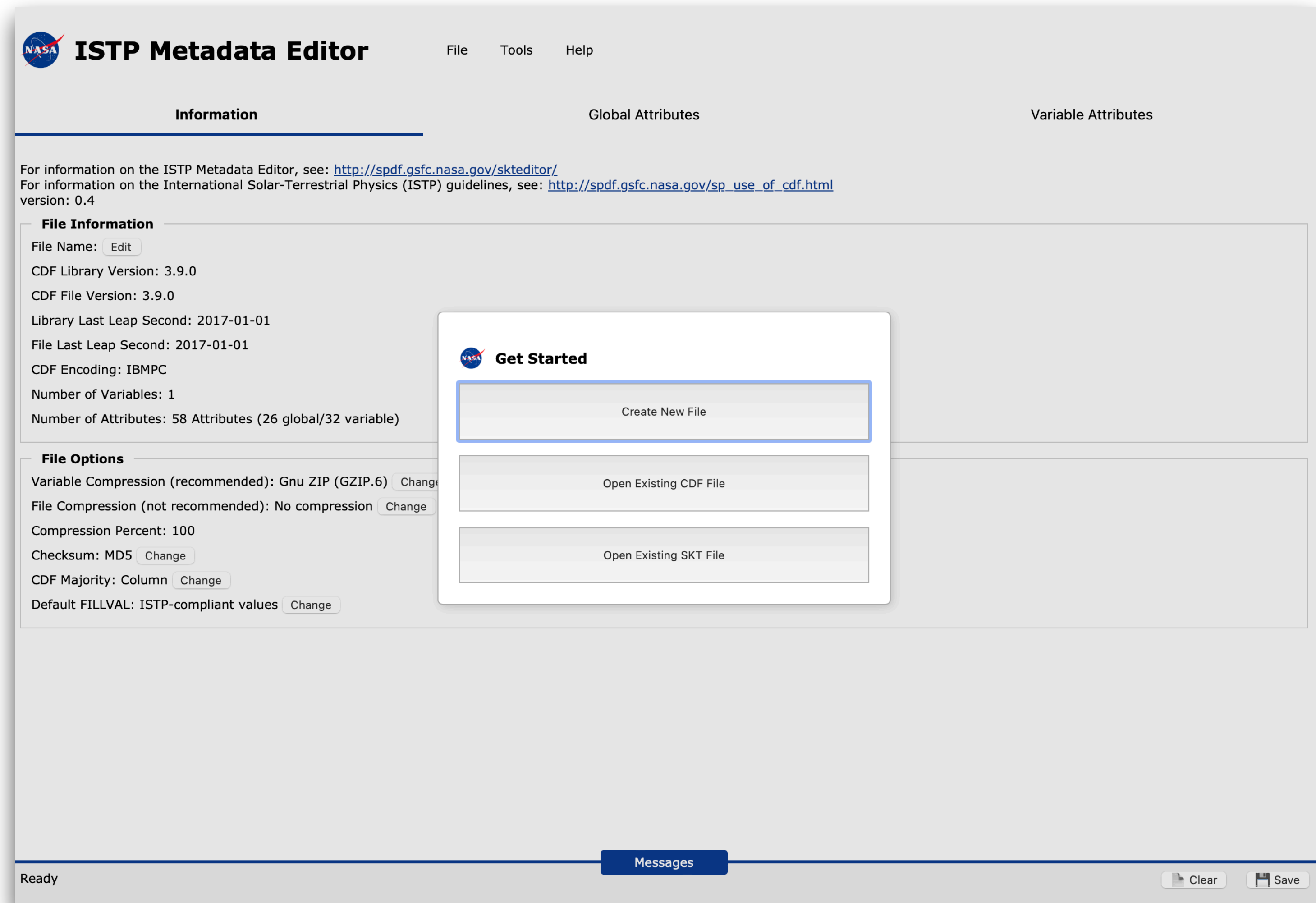
Current SKTEditor

- Supports command-line access to the ISTP validation tools
- See the following for installation instructions:
 - <https://spdf.gsfc.nasa.gov/skteditor/CommandLineCdfCheckers.html>
- Once the SKTEditor and CDF libraries are installed, you can run the validation check with:

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

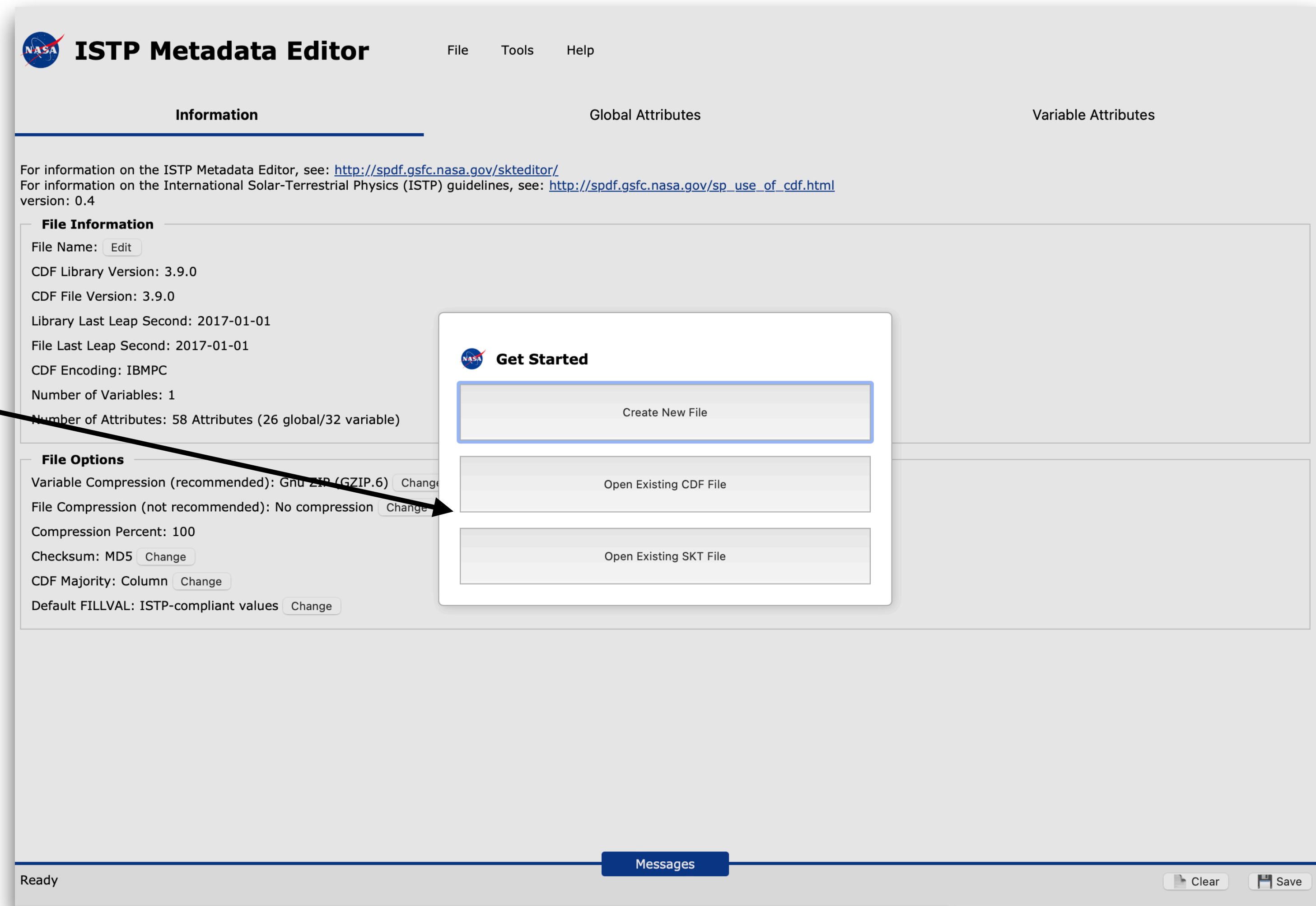
New ISTP Metadata Editor

- Renamed to “ISTP Metadata Editor” for clarity
- Web-based
- No installations required, simply visit the web app and jump in
- Powered by our command-line tools
- Not released publicly yet (still working out some bugs and doing QA)



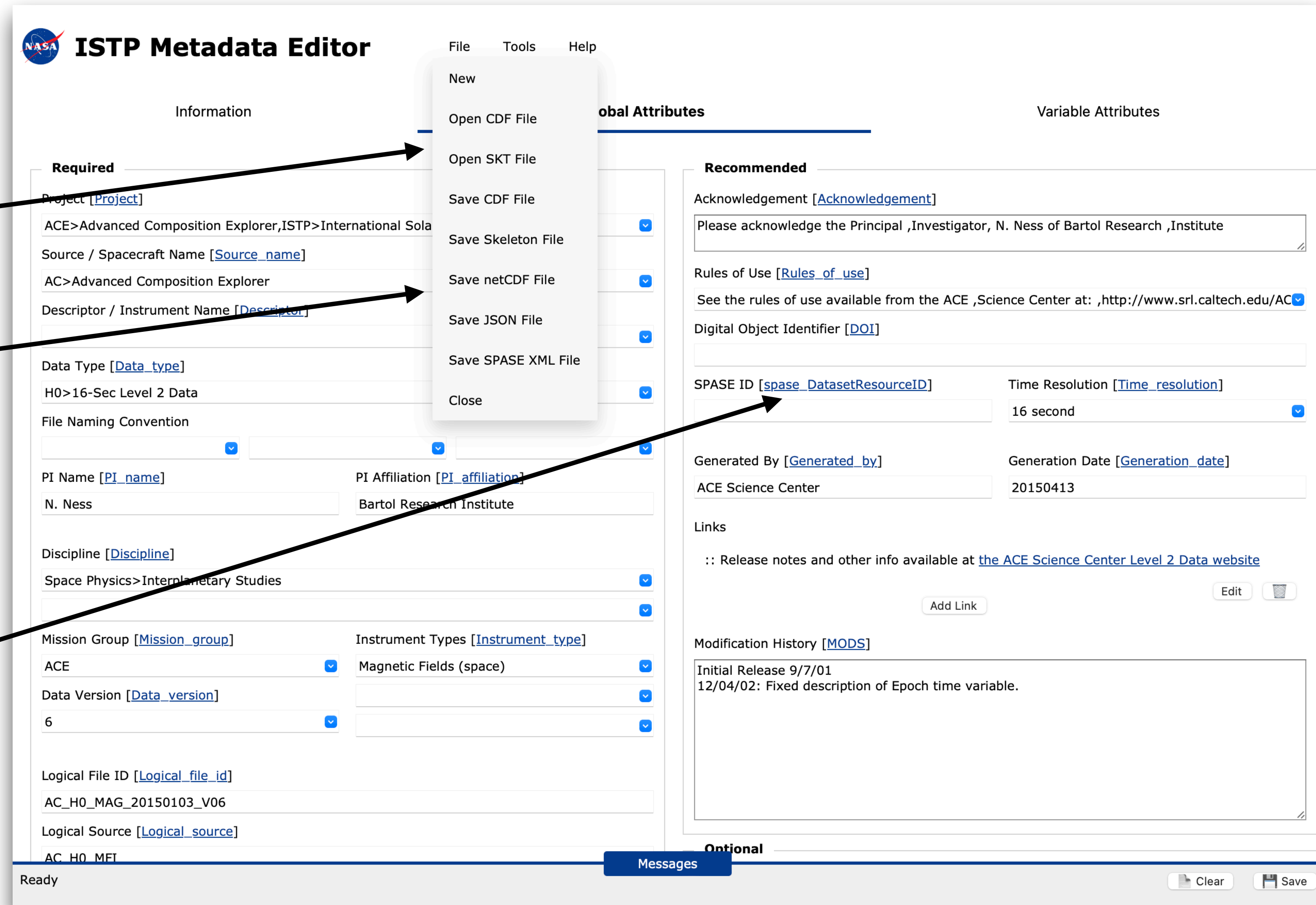
New ISTP Metadata Editor

- The “Welcome” page is shown here
- To open a file, you no longer have to create a file, then open it (as was the case with the old SKTEditor); you can simply open it from the “Welcome” screen
- This is (hopefully) a common theme in the following slides: we’re improving the UX where we can



New ISTP Metadata Editor

- 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



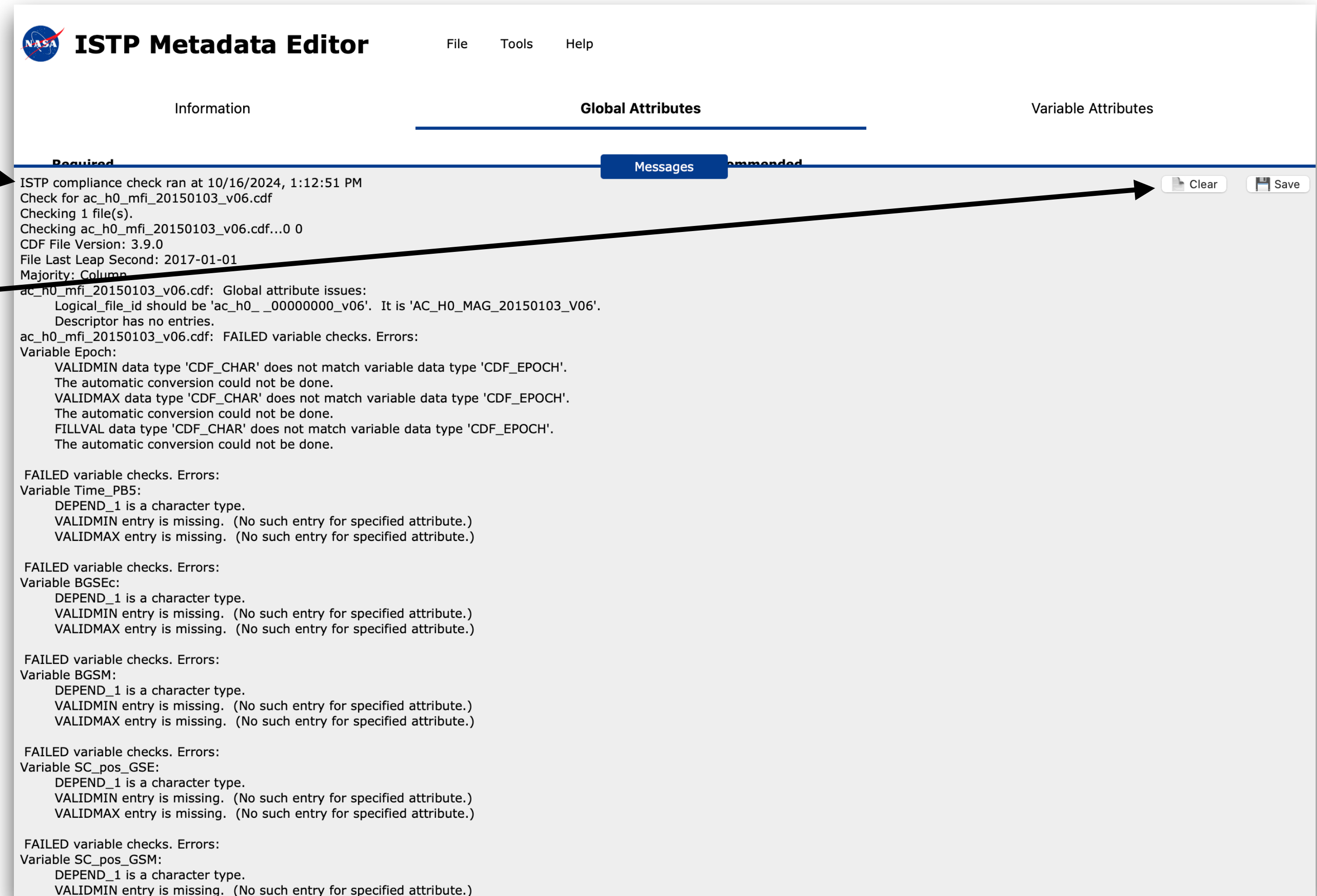
New ISTP Metadata Editor

- 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 interface. The 'Tools' menu is open, highlighting the 'ISTP Compliance Check' option. The interface is organized into sections: 'Required' (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, Logical Source), 'Recommended' (Acknowledgement, Rules of Use, Digital Object Identifier, SPASE ID, Time Resolution, Generated By, Generation Date, Links, Modification History), and 'Optional'. A 'Messages' window is visible at the bottom right. The status bar at the bottom shows 'Ready' and 'Clear'/'Save' buttons.

New ISTP Metadata Editor

- Includes the date/time the compliance check was ran, as well as functionality to clear and save the output



New ISTP Metadata Editor

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

The screenshot shows the ISTP Metadata Editor interface. The top navigation bar includes the NASA logo, the title "ISTP Metadata Editor", and menu items "File", "Tools", and "Help". The main content area is divided into three tabs: "Information", "Global Attributes", and "Variable Attributes". The "Global Attributes" tab is active, showing a form with various fields. The "Required" section includes 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. The "Recommended" section includes Acknowledgement, Rules of Use, Digital Object Identifier, SPASE ID, Time Resolution, Generated By, Generation Date, Links, and Modification History. The "Optional" section is partially visible at the bottom. A red outline highlights the Logical File ID field, which contains the value "AC_H0_MAG_20150103_V06". A message box at the bottom indicates a compliance check was run at 10/16/2024, 1:12:51 PM, for the file "ac_h0_mfi_20150103_v06.cdf".

New ISTP Metadata Editor

- We also have many improvements to the “Variable Attributes” section, e.g.,
- Values for non-record varying variables can be set by uploading a file

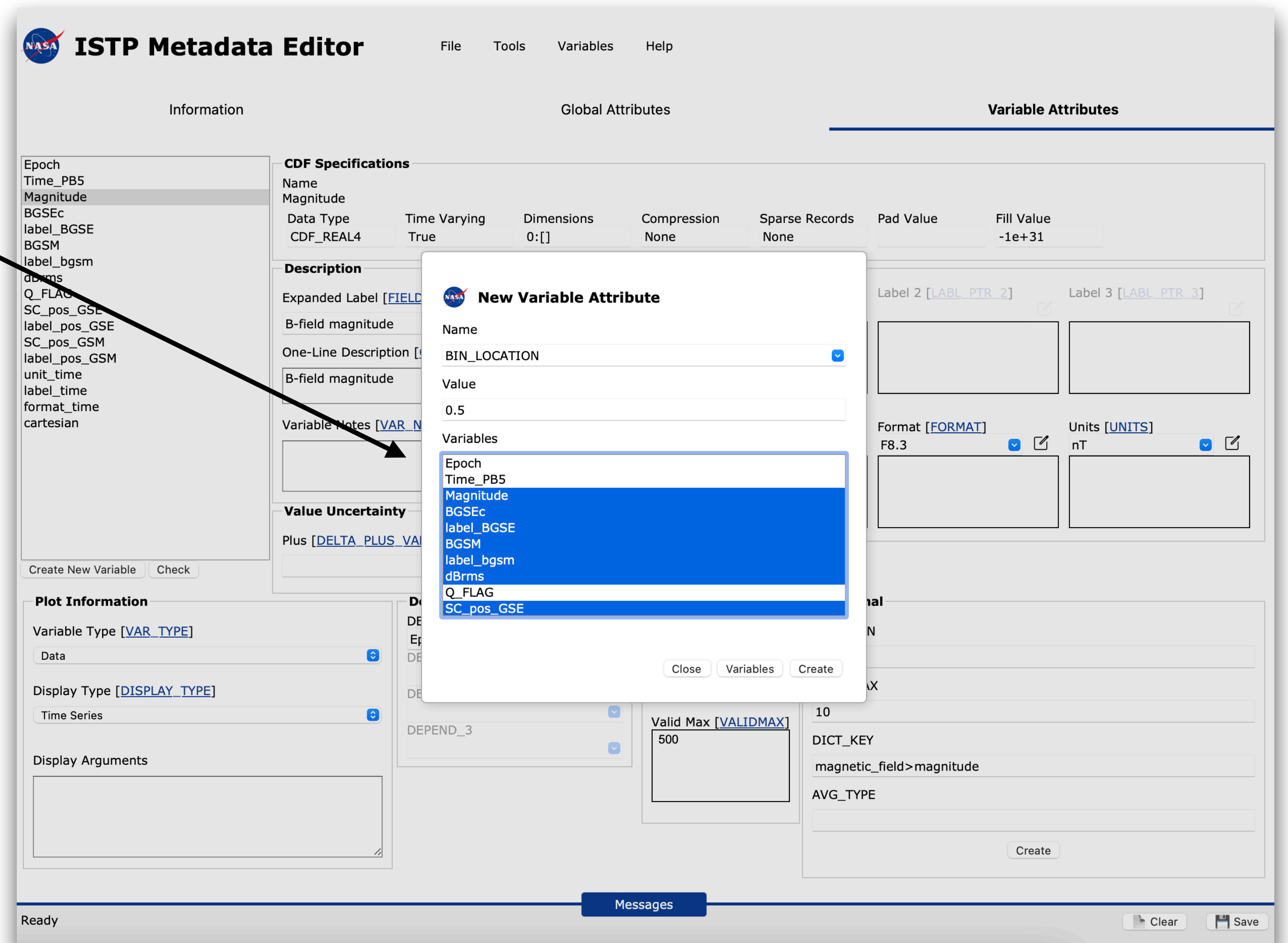
The screenshot displays the ISTP Metadata Editor interface, which is organized into several sections:

- Information:** A list of variables on the left, with 'label_time' selected.
- Global Attributes:**
 - CDF Specifications:** Fields for Name (label_time), Data Type (CDF_CHAR), Time Varying (False), Dimensions (1:[3]), Compression (None), Sparse Records (None), Pad Value, and Fill Value.
 - Description:** Fields for Expanded Label [FIELDNAM] (Label for Time_PB5), One-Line Description [CATDESC] (Label for Time_PB5), and Variable Notes [VAR_NOTES].
 - Value Uncertainty:** Fields for Plus [DELTA_PLUS_VAR] and Minus [DELTA_MINUS_VAR].
- Variable Attributes:**
 - Axis Information:** Fields for Label 1 [LABLAXIS], Label 2 [LABL_PTR_2], and Label 3 [LABL_PTR_3].
 - Scale Type [SCALETYP], Format [FORMAT] (a28), and Units [UNITS].**
 - Values:** A list of values including Year, Day of Year (Jan 1 = Day 1), and Elapsed milliseconds of day. An 'Upload from File' button is present.
 - Additional:** A field for DICT_KEY (label) and a 'Create' button.
- Plot Information:** Fields for Variable Type [VAR_TYPE] (Metadata) and Display Type [DISPLAY_TYPE].
- Depends:** A list of dependency fields (DEPEND_0 to DEPEND_3).

The interface includes a 'Messages' button at the bottom and a status bar at the very bottom indicating the last compliance check: 'ISTP compliance check ran at 10/16/2024, 1:12:51 PM'.

New ISTP Metadata Editor

- Supports specifying a new variable attribute for multiple variables at once



New ISTP Metadata Editor

- 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 organized into three main sections: Information, Global Attributes, and Variable Attributes. The Variable Attributes section is currently active, showing a table of metadata fields for a variable named 'Magnitude'. The 'Fill Value' field is highlighted with a red box and contains the value '-1'. The 'Description' section shows the 'One-Line Description' field with a red outline, indicating an error. The 'Axis Information' section shows the 'Label 1' field with a red outline. The 'Value Uncertainty' section shows the 'Plus' and 'Minus' fields. The 'Valid Values' section shows the 'Valid Min' field with a red outline. The 'Additional' section shows the 'SCALEMIN' field with a red outline. The 'Messages' section at the bottom displays several error messages, including: 'FILLVAL data type 'CDF_CHAR' does not match variable data type 'CDF_EPOCH''. The automatic conversion could not be done.', '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.)', and '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.)'. Arrows from the text on the left point to the red outlines in the interface.

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 Outline]

Variable Notes [VAR_NOTES]
[Red Outline]

Axis Information

Label 1 [LABLAXIS] <|B|> [Red Outline]
Label 2 [LABL_PTR_2]
Label 3 [LABL_PTR_3]

Scale Type [SCALETYP] [Red Outline]
Format [FORMAT] F8.3 [Red Outline]
Units [UNITS] nT [Red Outline]

Value Uncertainty

Plus [DELTA_PLUS_VAR]
Minus [DELTA_MINUS_VAR]

Valid Values

Valid Min [VALIDMIN] [Red Outline]

Additional

SCALEMIN [Red Outline]

Messages

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

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.)

New ISTP Metadata Editor

- 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 application. The 'File' menu is open, highlighting the 'Save SPASE XML File' option. An arrow points from this menu item to the 'Magnitude' variable in the left-hand list. The main interface is divided into several panels: 'Information' (with a list of variables), 'CDF Specifications' (Name, Magnitude, Data Type, CDF_REAL4), 'Description' (Expanded Label, One-Line Description, B-field magnitude), 'Axis Information' (Label 1, Label 2, Label 3, Scale Type, Format, Units), 'Value Uncertainty' (Plus, Minus), 'Plot Information' (Variable Type, Display Type, Display Arguments), 'Depends' (DEPEND_0, DEPEND_1, DEPEND_2, DEPEND_3), 'Valid Values' (Valid Min, Valid Max), and 'Additional' (SCALEMIN, SCALEMAX, DICT_KEY, AVG_TYPE). A 'Create' button is visible at the bottom right of the 'Additional' section. The status bar at the bottom shows 'Ready' and 'Messages'.

New ISTP Metadata Editor

- Warning:
 - Not complete!
 - A lot more to do!
- Our current translation strategy is to:
 - Read a CDF, check the current SPASE XML file, and improve the translation
 - Make improvements from the ADAPT code
 - Document the current translation, and get feedback from the SPDF curation scientists

```

<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