National Imagery Transmission Format (NITF) Reader/Writer

Format Note: This format is not supported by FME Base Edition.

The NITF Reader/Writer module provides the Feature Manipulation Engine (FME) with access to data in the National Imagery Transmission Format (NITF) standard.

Overview

The National Imagery Transmission Format (NITF) standard is composed of an image accompanied by subimages, symbols, labels, text, and other information that relates to the image. One of the main features of the NITF is that it allows several items of each data type to be included in one file, yet any data types may be omitted.

The NITF Reader supports reading of several subtypes of NITF image files, including NITF 1.1, NITF 2.0 and NITF 2.1/NSIF 1.0 files with uncompressed or VQ compressed images.

Color tables for pseudocolored images are read. In some cases, `nodata` values may be identified. Lat/Long extents are read from the IGEOLO information in the image header if available. Other coordinates systems (such as MGRS) are ignored at this time.

The NITF Writer supports writing files georeferenced and non georeferenced files with classified or continuous data. Files are always written in the uncompressed NITF 2.1 format.

GCPs (ground control points) present along with a projection in an NITF file being read can either be applied to the data as an affine transformation, or stored as properties on the raster geometry. GCPs cannot be written to NITF.

NITF Quick Facts

About Quick Facts Tables

Format Type Identifier	NITF
Reader/Writer	Both
Licensing Level	Professional
Dependencies	None
Dataset Type	File
Feature Type	NITF, <source_dataset_file-name>, <subdataset_name>, or <source_dataset_filename_subdataset_name>
Typical File Extensions	.ntf, .nsf
Automated Translation Support	Yes
User-Defined Attributes	Reader natively, or both reader

	and writer through TAB files
Coordinate System Support	Yes
Generic Color Support	No
Spatial Index	No
Schema Required	Yes
Transaction Support	No
Encoding Support	No
Geometry Type	nitf_type

Geometry Support				
Geometry	**Supported?**		**Geometry**	**Supported?**
aggregate	no		point	no
circles	no		polygon	no
circular arc	no		raster	yes
donut polygon	no		solid	no
elliptical arc	no		surface	no
ellipses	no		text	no
line	no		z values	no
none	no			

Band Interpretations	Red8, Red16, Green8, Green16, Blue8, Blue16, Gray8, Gray16, UInt8, Int16, UInt16, Int32, UInt32, Real32, Real64
Palette Key Interpretations	UInt8
Palette Value Interpretations	RGB24
Nodata Value	Not available for continuous rasters. Any value for paletted rasters.
Cell Origin (x, y)	0.5, 0.5
Rotation Support	Yes
GCP Support	Reading: Yes Writing: Through TAB files
World File Support	Yes
TAB File Support	Yes

Reader Overview

FME considers a single NITF file to be a dataset. The NITF file contains pixel data. Each pixel in the file is a point in a single FME raster feature.

Reader Directives

The directives that are processed by the NITF reader are listed below. The suffixes shown are prefixed by the current `<ReaderKeyword>` in a mapping file. By default, the `<ReaderKeyword>` for the NITF reader is `NITF.`

DATASET

The value for this keyword is the name of a single NITF file. Typical file extensions include .ntf and .nsf.

Required/Optional

Required

Mapping File Syntax

    NITF_DATASET "C:\DATA\NITF\i_3114e.ntf"

❄ Workbench Parameter

Source NITF (NationalImagery TransmissionFormat) File(s)

GROUP_BY_DATASET

GROUP_BY_SUBDATASET

Required/Optional: *Required*

The value for these directives is either Yes or No. The default value for this directive is No. The two values of the two directives together provides four different options for the feature type names:

GROUP_BY_ DATASET	GROUP_BY_ SUBDATASET	Feature Type Name	Example
No	No	<reader_type_name>	NITF
No	Yes	<subdataset_name>	SUBDATASET_ IMAGE_1
Yes	No	<filename>	A0132
Yes	Yes	<filename_sub-dataset_name>	A0132_ SUBDATASET_ IMAGE_1

An example of the `GROUP_BY_DATASET` and the `GROUP_BY_SUBDATASET` keywords in use is:

```
GROUP_BY_DATASET "Yes"
GROUP_BY_SUBDATASET "Yes"
```

APPLY_GCPS

The value for this keyword is either Yes or No.

If set to Yes, then GCP information, including a GCP projection, will be read from the file and applied to the raster data as an affine transformation. If set to No, the GCP information is preserved as properties on the raster geometry. The default value for this directive is No.

Required/Optional

Required

Mapping File Syntax

```
APPLY_GCPS "YES"
```

✳ Workbench Parameter

Apply GCPs

GCP_INTERPOLATION_METHOD

Required/Optional: *Required*

The value for this keyword is one of NearestNeighbor, Bilinear or Bicubic.The default value for this directive is NearestNeighbor.

If `APPLY_GCPS` is set to Yes, this directive must be specified.

Example:

```
GCP_INTERPOLATION_METHOD "Bilinear"
```

Workbench Parameter: *GCP Interpolation Method*

GEOREFERENCING_SOURCE

Some NITF datasets may store georeferencing information in multiple locations. This option specifies which of these locations is the preferred source for the raster geo-referencing.

The IGEOLO record is part of the standard NITF file structure.

The MAPLO and GEOLO TREs are optional extensions to NITF which may not be present in a dataset. When present, these TREs store georeferencing with greater precision than IGEOLO.

The default precedence for georeferencing information is MAPLO > GEOLO > IGEOLO.

Values

MAPLO (default) | GEOLO | IGEOLO

Mapping File Syntax

GEOREFERENCING_SOURCE "IGEOLO"

✳ *Workbench Parameter*

Georeferencing Source

SEARCH_ENVELOPE

This directive specifies a bounding box used to filter the input features. Only features that interact with the bounding box are returned. If this directive is not specified, then all features are returned.This directive is only honoured by the MITAB-based MapInfo reader in FME. This is the only MapInfo reader available on the UNIX platforms supported by FME, and can optionally be enabled on Windows platforms by renaming the `mitab.dll` in the FME home directory to `mapinfo.dll`.

Mapping File Syntax

`<ReaderKeyword>_SEARCH_ENVELOPE <minX> <minY> <maxX> <maxY>`

Note: If all four coordinates of the search envelope are specified as zero, the search envelope will be disabled.

Required/Optional

Optional

✳ *Workbench Parameter*

Minimum X, Minimum Y, Maximum X, Maximum Y

SEARCH_ENVELOPE_COORDINATE_SYSTEM

This directive specifies the coordinate system of the search envelope if it is different than the coordinate system of the data.

The `COORDINATE_SYSTEM` directive, which specifies the coordinate system associated with the data to be read, must always be set if the `SEARCH_ENVELOPE_COORDINATE_SYSTEM` directive is set.

If this directive is set, the minimum and maximum points of the search envelope are reprojected from the `SEARCH_ENVELOPE_COORDINATE_SYSTEM` to the reader `COORDINATE_SYSTEM` prior to applying the envelope.

Required/Optional

Optional

Mapping File Syntax

`<ReaderKeyword>_SEARCH_ENVELOPE_COORDINATE_SYSTEM <coordinate system>`

✳ *Workbench Parameter*

Search Envelope Coordinate System

CLIP_TO_ENVELOPE

This directive specifies whether or not FME should clip features to the envelope specified in the SEARCH_ENVELOPE directive.

Values

YES | NO (default)

Mapping File Syntax

```
<ReaderKeyword>_CLIP_TO_ENVELOPE [yes | no]
```

❋ *Workbench Parameter*

Clip To Envelope

EXPOSED_ATTRS

This directive allows the selection of format attributes to be explicitly added to the reader feature type.

This is similar to exposing format attributes on a reader feature type once it has been generated; however, it is even more powerful because it enables schema-driven applications other than Workbench to access and leverage these attributes as if they were explicitly on the schema as user attributes.

The result of picking a list of attributes is a comma-separated list of attribute names and types that will be added to the schema features. Currently all reader feature types will receive the same set of additional schema attributes for a given instance of the reader.

Required/Optional

Optional

Mapping File Syntax

Not applicable. While it is possible for FME Objects applications to invoke this directive, the required format is not documented. This directive is intended for use in our GUI applications (for example, Workbench) only.

❋ *Workbench Parameter*

Additional Attributes to Expose

Writer Overview

FME considers a dataset to be a folder name. The names of the NITF output files written to the output dataset directory are determined from the fme_raster_filename attribute or from the FME Feature Type. The destination directory does not have to exist before the translation occurs. Any existing files in the directory which have the same name are overwritten with the new feature data. The NITF writer distinguishes

duplicate output files by appending numbers to the filenames. Please see *About FME Rasters* for details.

At this time, writing georeferenced NITF files can be done only using Latitude/Longitude and Universal Transverse Mercator (UTM) projections with the WGS-1984 datum. If the source data does not contain information satisfying these criteria, FME will automatically try to reproject the data before writing the file. If this reprojection fails or if the source data is not georeferenced, the destination file will not be georeferenced.

Writer Directives

The directives that are processed by the NITF writer are listed below. The suffixes shown are prefixed by the current <WriterKeyword>_ in a mapping file. By default, the <WriterKeyword> for the NITF writer is NITF.

DATASET

Required/Optional: *Required*

The value for this keyword is the path of the output directory where the data will be written.

An example of the DATASET keyword in use is:

```
NITF_DATASET "C:\DATA\NITF\OUTPUT"
```

Workbench Parameter: *Destination NITF (NationalImagery TransmissionFormat) Directory*

VERSION

Required/Optional: Optional

Specifies the version of the NITF file to be written.

Values: "NITF 2.0" | "NITF 2.1" (default)

An example of the VERSION keyword in use is:

NITF_VERSION "NITF 2.1"

Workbench Parameter: Version

VERSION

Required/Optional

Optional

Specifies the version of the NITF file to be written.

Values

"NITF 2.0" | "NITF 2.1" (default)

An example of the VERSION keyword in use is:

NITF_VERSION "NITF 2.1"

❋ *Workbench Parameter*

Version

FME Raster Features

FME raster features represent raster data and use several concepts that are unlike those used in the handling of vector data. See *About FME Rasters*.

NITF supports rasters with up to nine bands, provided all bands are the same data type. When this data type is UInt8, any number of bands may have a palette.

Feature Representation

In addition to the generic FME feature attributes that FME Workbench adds to all features (see *About Feature Attributes*), this format adds the format-specific attributes described in this section.

NITF features specify a matrix of x, y coordinates and 3-byte RGB pixels.

Attribute Name	Contents
nitf_type	This will always be nitf_raster.
nitf_fhdr	Represents the file profile name. This is a reader attribute.
nitf_clevel	Represents the complexity level. This is a reader attribute.
nitf_stype	Represents the standard type. This is a reader attribute.
nitf_ostaid	Represents the originating station ID. This is a reader attribute.
nitf_fdt	Represents the file date and time. When writing an NITF file, this will be set to the current date and time in Coordinated Universal Time.
nitf_ftitle	Represents the file title. This is a reader attribute.
nitf_fsclas	Represents the file security classification. This is a reader attribute.
nitf_fsclsy	Represents the file classification security system. This is a reader attribute.
nitf_fscode	Represents the file codewords. This is a reader attribute.

Attribute Name	Contents
nitf_fsctlh	Represents the file control and handling. This is a reader attribute.
nitf_fsrel	Represents the file releasing instructions. This is a reader attribute.
nitf_fsdctp	Represents the file releasing instructions. This is a reader attribute.
nitf_fsdctp	Represents the file declassification type. This is a reader attribute.
nitf_fsdcdt	Represents the file declassification date. This is a reader attribute.
nitf_fsdcxm	Represents the file declassification exemption. This is a reader attribute.
nitf_fsdg	Represents the file downgrade. This is a reader attribute.
nitf_fsdgdt	Represents the file downgrade date. This is a reader attribute.
nitf_fscltx	Represents the file classification text. This is a reader attribute.
nitf_fscatp	Represents the file classification authority type. This is a reader attribute.
nitf_fscaut	Represents the file classification authority. This is a reader attribute.
nitf_fscrsn	Represents the file classification reason. This is a reader attribute.
nitf_fssrdt	Represents the file security source date. This is a reader attribute.
nitf_fsctln	Represents the file security control number. This is a reader attribute.
nitf_fscop	Represents the 5-digit file copy number. This is a reader attribute.
nitf_fscpys	This represent the file number of copies. This is a reader attribute

Attribute Name	Contents
nitf_encryp	Represents the encryption. This is a reader attribute.
nitf_fbkgc	Represents the file background color. This is a reader attribute.
nitf_oname	Represents the originator's name. This is a reader attribute.
nitf_ophone	Represents the originator's phone number. This is a reader attribute.
nitf_iid1	Represents the image identifier 1. This is a reader attribute.
nitf_idatim	Represents the image date and time. When writing an NITF file, this will be set to the current date and time in Coordinated Universal Time.
nitf_tgtid	Represents target identifier. This is a reader attribute.
nitf_iid2	Represents the image identifier 2. This is a reader attribute.
nitf_isclas	Represents the image security classification. This is a reader attribute.
nitf_isclsy	Represents the image classification security system. This is a reader attribute.
nitf_iscode	Represents the image codewords. This is a reader attribute.
nitf_isctlh	Represents the image control and handling. This is a reader attribute.
nitf_isrel	Represents the image releasing instructions. This is a reader attribute.
nitf_isdctp	Represents the image declassification type. This is a reader attribute.
nitf_isdcdt	Represents the image declassification date. This is a reader attribute.
nitf_isdcxm	Represents the image declassification exemption. This is a reader attribute.

Attribute Name	Contents
nitf_isdg	Represents the image downgrade. This is a reader attribute.
nitf_isdgdt	Represents the image downgrade date. This is a reader attribute.
nitf_iscltx	Represents the image classification text. This is a reader attribute.
nitf_iscatp	Represents the image classification authority type. This is a reader attribute.
nitf_iscaut	Represents the image classification authority type. This is a reader attribute.
nitf_iscrsn	Represents the image classification reason. This is a reader attribute.
nitf_issrdt	Represents the image security source date. This is a reader attribute.
nitf_isctln	Represents the image security control number. This is a reader attribute.
nitf_isorce	Represents the image source. This is a reader attribute.
nitf_pvtype	Represents the pixel value type. This is a reader attribute.
nitf_irep	Represents the image representation. This is a reader attribute.
nitf_icat	Represents the image category. This is a reader attribute.
nitf_abpp	Specifies the actual bits-per-pixel per band.
nitf_pjust	Represents the pixel justification. This is a reader attribute.
nitf_ic	Represents the image compression. This is a reader attribute.
nitf_imode	Represents the image mode. This is a reader attribute.
nitf_graphic_segment_	The number of graphic segments in the file. This is a

Attribute Name	Contents
count	reader attribute.
nitf_graphic_segment {}.ccs_col	The column of the graphic location offset in the common coordinate system (CCS). This is a reader attribute.
nitf_graphic_segment {}.ccs_row	The row of the graphic location offset in the common coordinate system (CCS). This is a reader attribute.
nitf_graphic_segment {}.data	A blob containing the raw graphic data. This is a reader attribute.
nitf_graphic_segment {}.dlut{}	Symbol lookup table data. This is a reader attribute.
nitf_graphic_segment {}.nbpp	The number of storage bits used for the value of each pixel in the symbol. Only present when nitf_graphic_segment{}.stype = B. This is a reader attribute.
nitf_graphic_segment {}.nelut	The number of entries in the look-up table associated with the symbol. Only present when nitf_graphic_segment{}.stype = B. This is a reader attribute.
nitf_graphic_segment {}.nlips	The number of rows (lines) in the symbol image. Only present when nitf_graphic_segment{}.stype = B or O. This is a reader attribute.
nitf_graphic_segment {}.npixpl	The number of pixels in each row (line) of the symbol (equals the number of image columns in the symbol viewed as an image). Only present when nitf_graphic_segment{}.stype = B or O. This is a reader attribute.
nitf_graphic_segment {}.nwdth	The line width for the object symbol in pixels. Only present when nitf_graphic_segment{}.stype = O. This is a reader attribute.
nitf_graphic_segment {}.salvl	Indicates the attachment level of the graphic. This is a reader attribute.
nitf_graphic_segment{}.s-color	A single character code indicating how the bit-mapped symbol shall be color-mapped. Only present when nitf_graphic_segment{}.stype = B. This is a reader attribute.
nitf_graphic_segment {}.sdlvl	Indicates the graphic display level of the graphic relative to other displayed file components in a composite display. This is a reader attribute.
nitf_graphic_segment {}.sloc_col	The column of the graphic location offset. This is a reader attribute.
nitf_graphic_segment	The row of the graphic location offset. This is a reader

Attribute Name	Contents
{}.sloc_row	attribute.
nitf_graphic_segment {}.snum	The unique numeric identifier (values 1-18) of the object. Only present when nitf_graphic_segment {}.stype = O.
nitf_graphic_segment {}.srot	The rotation angle of the symbol in integer degrees about its rotation point in the counterclockwise direction with respect to the nominal orientation. Only present when nitf_graphic_segment{}.stype = O. This is a reader attribute.
nitf_graphic_segment {}.stype	The representation type of the symbol. Valid values are B, C, and O. B means bit-mapped. C means Computer Graphics Metafile. O means object. This is a reader attribute.
nitf_file_header_tre{}.tag	A list containing all TREs (Tagged Record Extensions) in the file header. This attribute stores the tag for each TRE. This is a reader attribute.
nitf_file_header_tre{}.data	A list containing all TREs (Tagged Record Extensions) in the file header. This attribute stores the data for each TRE. This is a reader attribute.
nitf_histoa_event{}.asym_flag	Asymmetric Correction This is a reader attribute.
nitf_histoa_event{}.d-evlut_flag	Device LUT This is a reader attribute.
nitf_histoa_event{}.disp_flag	Display-Ready Flag This is a reader attribute.
nitf_histoa_event{}.dra_flag	Dynamic Range Adjustment (DRA) This is a reader attribute.
nitf_histoa_event{}.dra_mult	DRA Multiplier This is a reader attribute.
nitf_histoa_event{}.dra_sub	DRA Subtractor This is a reader attribute.
nitf_histoa_event{}.ibpp	Input Bit Depth (actual) This is a reader attribute.
nitf_histoa_event{}.inbwc	Input Bandwidth Compression This is a reader attribute.
nitf_histoa_event{}.ipcom {}	List of Image Processing Comments This is a reader attribute.
nitf_histoa_event	Input Pixel Value Type This is a reader attribute.

Attribute Name	Contents
{}.ipvtype	
nitf_histoa_event{}.mag_flag	Symmetrical Magnification This is a reader attribute.
nitf_histoa_event{}.mag_level	Level of Relative Magnification. This is a reader attribute.
nitf_histoa_event{}.n-ipcom	Number of Image Processing Comments. This is a reader attribute.
nitf_histoa_event{}.obpp	Output Bit Depth (actual. This is a reader attribute.
nitf_histoa_event{}.opvtype	Output Pixel Value Type. This is a reader attribute.
nitf_histoa_event{}.outbwc	Output Bandwidth Compression. This is a reader attribute.
nitf_histoa_event{}.pas	Softcopy Processing Application. This is a reader attribute.
nitf_histoa_event{}.pdate	Processing Date and Time. This is a reader attribute.
nitf_histoa_event{}.proj_flag	Image Projection. This is a reader attribute.
nitf_histoa_event{}.psite	Processing Site. This is a reader attribute.
nitf_histoa_event{}.rot_angle	Angle of Rotation. This is a reader attribute.
nitf_histoa_event{}.rot_flag	Image Rotation. This is a reader attribute.
nitf_histoa_event{}.sharp_flag	Sharpening. This is a reader attribute.
nitf_histoa_event{}.sharpfam	Sharpening Family Number This is a reader attribute.
nitf_histoa_event{}.sharpmem	Sharpening Member Number. This is a reader attribute.
nitf_histoa_event{}.ttc_flag	Tonal Transfer Curve (TTC). This is a reader attribute.
nitf_histoa_event{}.ttcfam	TTC Family Number. This is a reader attribute.
nitf_histoa_event{}.ttcmem	TTC Member Number. This is a reader attribute.
nitf_histoa_event	Mag in Element (column) Direction. This is a reader

Attribute Name	Contents
{}.zoomcol	attribute.
nitf_histoa_event {}.zoomrow	Mag in Line (row) Direction. This is a reader attribute.
nitf_histoa_lutid	This field shall contain the DMID (Data Mapping ID). This is a reader attribute.
nitf_histoa_nevents	This field shall contain the number of processing events associated with the image. This is a reader attribute.
nitf_histoa_pc	This field shall contain an alphanumeric string that indicates if bandwidth compression/expansion was applied to the image prior to NITF image creation. This is a reader attribute.
nitf_histoa_pe	This field shall contain an alphanumeric string that indicates if any enhancements were applied to the image prior to NITF image creation. This is a reader attribute.
nitf_histoa_remap_flag	This field shall indicate whether or not a system specific remap has been applied to the image. This is a reader attribute.
nitf_histoa_systype	This field shall contain the name of the sensor from which the original image was collected. This is a reader attribute.
nitf_image_segment_tre {}.tag	A list containing all TREs (Tagged Record Extensions) in the image segment. This attribute stores the tag for each TRE. This is a reader attribute.
nitf_image_segment_tre {}.data	A list containing all TREs (Tagged Record Extensions) in the image segment. This attribute stores the data for each TRE. This is a reader attribute.
nitf_iomapa_band_number	Band Identifier. This is a reader attribute.
nitf_iomapa_map_select	Mapping Method to Apply. This is a reader attribute.
nitf_iomapa_no_of_segments	Number of Segments. This is a reader attribute.
nitf_iomapa_ouput_map_value{}	List of Mapping Values for Output Amplitude Mapping Method 1. This is a reader attribute.
nitf_iomapa_out_b0_1	B0 Coefficient of 1st Segment. This is a reader attribute.
nitf_iomapa_out_b0_2	B0 Coefficient of 2nd Segment. This is a reader attribute.

Attribute Name	Contents
nitf_iomapa_out_b0_3	B0 Coefficient of 3rd Segment. This is a reader attribute.
nitf_iomapa_out_b1_1	B1 Coefficient of 1st Segment. This is a reader attribute.
nitf_iomapa_out_b1_2	B1 Coefficient of 2nd Segment. This is a reader attribute.
nitf_iomapa_out_b1_3	B1 Coefficient of 3rd Segment. This is a reader attribute.
nitf_iomapa_out_b2_1	B2 Coefficient of 1st Segment. This is a reader attribute.
nitf_iomapa_out_b2_2	B2 Coefficient of 2nd Segment. This is a reader attribute.
nitf_iomapa_out_b2_3	B2 Coefficient of 3rd Segment. This is a reader attribute.
nitf_iomapa_out_b3_1	B3 Coefficient of 1st Segment. This is a reader attribute.
nitf_iomapa_out_b3_2	B3 Coefficient of 2nd Segment. This is a reader attribute.
nitf_iomapa_out_b3_3	B3 Coefficient of 3rd Segment. This is a reader attribute.
nitf_iomapa_out_b4_1	B4 Coefficient of 1st Segment. This is a reader attribute.
nitf_iomapa_out_b4_2	B4 Coefficient of 2nd Segment. This is a reader attribute.
nitf_iomapa_out_b4_3	B4 Coefficient of 3rd Segment. This is a reader attribute.
nitf_iomapa_out_b5_1	B5 Coefficient of 1st Segment. This is a reader attribute.
nitf_iomapa_out_b5_2	B5 Coefficient of 2nd Segment. This is a reader attribute.
nitf_iomapa_out_b5_3	B5 Coefficient of 3rd Segment. This is a reader attribute.
nitf_iomapa_r_fraction	R Scaling Factor - Fractional Part. This is a reader attribute.
nitf_iomapa_r_whole	R Scaling Factor - Whole Part This is a reader attribute.

Attribute Name	Contents
nitf_iomapa_s1	Scale Factor 1. This is a reader attribute.
nitf_iomapa_s2	Scale Factor 2. This is a reader attribute.
nitf_iomapa_table_id	I/O Table Used. This is a reader attribute.
nitf_iomapa_xob_1	Segment Boundary 1. This is a reader attribute.
nitf_iomapa_xob_2	Segment Boundary 2. This is a reader attribute.
nitf_label_segment{}.ccs_col	The column of the label location offset in the common coordinate system (CCS). This is a reader attribute.
nitf_label_segment{}.ccs_row	The row of the label location offset in the common coordinate system (CCS). This is a reader attribute.
nitf_label_segment{}.data	The label data. This is a reader attribute.
nitf_label_segment{}.encryp	Whether the label is encrypted. This is a reader attribute.
nitf_label_segment{}.lalvl	Indicates the attachment level of the label. This is a reader attribute.
nitf_label_segment{}.lbc	The label background color. Represented as a comma separated list of RGB values between 0 and 255. This is a reader attribute.
nitf_label_segment{}.lch	The height in pixels of the character cell (rectangular array used to contain a single character in monospaced fonts) used by the file originator. The default value of 00 indicates the file originator has not included this information. This is a reader attribute.
nitf_label_segment{}.lcw	The width in pixels of the character cell (rectangular array used to contain a single character in monospaced fonts) used by the file originator. The default value of 00 indicates the file originator has not included this information. This is a reader attribute.
nitf_label_segment{}.ldlvl	Indicates the label display level of the label relative to other displayed file components in a composite display. This is a reader attribute.
nitf_label_segment{}.lfs	Label font style. This is a reader attribute.
nitf_label_segment{}.lloc_col	The column of the label location offset. This is a reader attribute.
nitf_label_segment{}.lloc_row	The row of the label location offset. This is a reader attribute.

Attribute Name	Contents
nitf_label_segment {}.lscaut	An identity code of the classification authority for the label. This is a reader attribute.
nitf_label_segment {}.lsclas	The classification level of the image. Valid values are: T (=Top Secret), S (=Secret), C (=Confidential), R (=Restricted), U (=Unclassified). This is a reader attribute.
nitf_label_segment {}.lscode	The security compartments associated with the label. This is a reader attribute.
nitf_label_segment{}.lsctlh	The security handling instructions associated with the label. This is a reader attribute.
nitf_label_segment{}.lsctln	The security control number associated with the label. This is a reader attribute.
nitf_label_segment {}.lsdevt	The downgrading event. This is a reader attribute.
nitf_label_segment {}.lsdwng	Label security downgrade: the time at which a declassification or downgrading action is to take place. This is a reader attribute.
nitf_label_segment{}.lsrel	A list of countries and/or groups of countries to which the label is authorized for release. This is a reader attribute.
nitf_label_segment{}.ltc	The label text color. Represented as a comma separated list of RGB values between 0 and 255. This is a reader attribute.
nitf_piaimc_camspecs	Specifies the brand name of the camera used, and the focal length of the lens. This is a reader attribute.
nitf_piaimc_cloudcvr	Indicates the percentage of the image that is obscured by cloud. A value of 999 indicates an unknown condition. This is a reader attribute.
nitf_piaimc_comgen	Counts the number of lossy compressions done by the archive. This is a reader attribute.
nitf_piaimc_esd	Indicates whether or not Exploitation Support Data is available and contained within the product data. This is a reader attribute.
nitf_piaimc_generation	Specifies the number of image generations of the product. The number (0) is reserved for the original product. This is a reader attribute.
nitf_piaimc_idatum	Identifies the mathematical representation of the earth

Attribute Name	Contents
	used to geo-correct/or to rectify the image. This is a reader attribute.
nitf_piaimc_iellip	Identifies the mathematical representation of the earth used to geo-correct/or to rectify the image. This is a reader attribute.
nitf_piaimc_iproj	Identifies the 2D-map projection used by commercial vendors to geo-correct/or to rectify the image. This is a reader attribute.
nitf_piaimc_meangsd	The geometric mean of the across and along scan center-to-center distance between contiguous ground samples. This is a reader attribute.
nitf_piaimc_othercond	Indicates other conditions that affect the imagery over the target. This is a reader attribute.
nitf_piaimc_piamsnnum	Indicates the mission number assigned to the reconnaissance mission. This is a reader attribute.
nitf_piaimc_preproc	Identifies the level of radiometric and geometric processing applied to the product by the commercial vendor. This is a reader attribute.
nitf_piaimc_projid	Identifies collection platform project identifier code. This is a reader attribute.
nitf_piaimc_sattrack	Identifies location of an image acquired by LANDSAT or SPOT (only) along the satellite path. This is a reader attribute.
nitf_piaimc_sensmode	Identifies the sensor mode used in capturing the image. This is a reader attribute.
nitf_piaimc_sensname	Identifies the name of the sensor used in capturing the image. This is a reader attribute.
nitf_piaimc_source	Indicates where the image came from (e.g., magazine, trade show, etc.). This is a reader attribute.
nitf_piaimc_srp	Indicates whether or not standard radiometric product data is available. This is a reader attribute.
nitf_piaimc_subqual	Indicates a subjective rating of the quality of the image. This is a reader attribute.
nitf_rpc00b_height_off	Geodetic Height Offset from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_height_scale	Geodetic Height Scale from the RPC00B extension. This

Attribute Name	Contents
	is a reader attribute.
nitf_rpc00b_lat_off	Geodetic Latitude Offset from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_lat_scale	Geodetic Latitude Scale from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_line_den_coeff {}	Twenty coefficients for the rational function polynomial equations from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_line_num_ coeff{}	Twenty coefficients for the rational function polynomial equations from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_line_off	Line Offset from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_line_scale	Line Scale from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_long_off	Geodetic Longitude Offset from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_long_scale	Geodetic Longitude Scale from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_samp_den_ coeff{}	Twenty coefficients for the rational function polynomial equations from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_samp_num_ coeff{}	Twenty coefficients for the rational function polynomial equations from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_samp_off	Sample Offset from the RPC00B extension. This is a reader attribute.
nitf_rpc00b_samp_scale	Sample Scale from the RPC00B extension. This is a reader attribute.
nitf_world_file_generation	It enables or disables the generation of an Esri world file along with the output NITF image. The value can be yes or no (case-sensitive). The default value is no. This is a writer attribute.
nitf_tab_file_generation	Enables or disables the generation of a TAB file along with the output image. The value can be yes or no. The default value is yes. This is a writer attribute.

Attribute Name	Contents
nitf_compression_method	The compression method used in the file. This can be used to specify the compression method when writing. Valid values are: • jpeg • jpeg_with_block_map • jpeg2000 **Note:** *jpeg_with_block_map is a variation of jpeg compression. The only difference is that a block map is written, which allow for fast seeking to any block.*
nitf_jpeg_compression_ level	Sets the quality of the compression if nitf_compression_ method is set to jpeg or jpeg_with_block_map. Values range from 0 (best quality) to 100 (worst quality). This is a writer attribute.
nitf_jpeg2000_com-pression_level	Sets the quality of the compression if nitf_compression_ method is set to jpeg2000. Values range from 0 (best quality) to 99 (worst quality). This is a writer attribute.
nitf_jpeg2000_profile	Sets the JPEG2000 profile when nitf_compression_ method is set to jpeg2000. Particular implementations of JPEG 2000 core coding may be established as pro-files. The following are valid values for this attribute: • profile0 • profile1 • profile2 • npje • epje Profile 0, 1, and 2 are part of the JPEG 2000 standard. Profile 0 codestreams are not allowed to use some of the features of JPEG 2000, but still provide many of the features of JPEG 2000. Profile 1 codestreams are only slightly limited from JPEG 2000. Profile 2 codestreams have no constraints. Profile 0 has the greatest com-patibility. NATO and NGA (National Geospatial-Intelligence Agency) have established additional profiles for certain workflows. These include NPJE (NSIF Preferred JPEG 2000 Encoding) and EPJE (Exploitation Preferred JPEG 2000 Encoding).

Attribute Name	Contents
	This is a writer attribute.
nitf_subdataset_name	When this is present on a feature, the feature is a sub-dataset. This attribute shows the name of the sub-dataset. This is a reader attribute.
nitf_subdataset_description	When this is present on a feature, the feature is a sub-dataset. This attribute gives a description of the sub-dataset. This is a reader attribute.