Common Metadata

Science Product Core Keywords

The keywords listed below are required or recommended in all FITS files (and in some cases, all FITS extensions) of any type that contain images, spectra, light curves, and other similar science products. Recommended keywords, if absent, will be derived and inserted prior to ingest.

HLSP Metadata Color Codes	
The following table(s) of HLSP metadata, to be included in science products, are color-coded:	

	Required
	Recommended
	Suggested

The extension column refers to the primary (P) header or, for multi-extension (MEF) files, one or more extensions (E). Depending upon the organization of the data (e.g., if image data arrays appear in an extension), any given Primary keyword may instead belong in an Extension.

	Keyword	HDU	Notes
	`DATE-BEG`	P or E	ISO-8601 formatted DateTime string for start of an observation (or, the start of the first observation of a combined product), in the time system specified by `TIMESYS`. May use `MJD-BEG` in addition or instead. For catalogs, this time should reflect the time of the earliest observation of the entries.
	`DATE-END`	P or E	ISO-8601 formatted DateTime for end of an observation (or, the end of the last observation of a combined product), in the time system specified by `TIMESYS`. May use `MJD-END` in addition or instead. For catalogs, this time should reflect the time of the latest observation of the entries.
	`DOI`	P	Digital Object Identifier for the HLSP data collection
	`EQUINOX`	E	Equinox of the celestial coordinate system. This keyword must not be used if RADESYS = 'ICRS'
	`HLSPID`	P	The identifier (acronym) for this HLSP collection
	`HLSPLEAD`	P	Full name of HLSP project lead
	`HLSPNAME`	P	Title for HLSP project, long form
	`HLSPTARG`	P	Designation of the target(s) or field(s) for this HLSP
	`HLSPVER`	P	Version identifier for this HLSP product
	`INSTRUME`	P	Designation of instrument used for this observation
	`LICENSE`	P	License for use of these data, with the value `'CC BY 4.0'`
	`LICENURL`	P	Data license URL, with the value 'https://creativecommons.org/licenses/by/4.0/'
	`MJD-BEG`	P or E	Start time of observation (or, the start of the first observation of a combined product), expressed as MJD. May use `DATE-BEG` in addition or instead. For catalogs, this time should reflect the time of the earliest observation of the entries.
	`MJD-END`	P or E	End time of exposure (or, the end of the last observation of a combined product), expressed as MJD, in the time system specified by `TIMESYS`. May use `DATE-END` in addition or instead. For catalogs, this time should reflect the time of the earliest observation of the entries.
	`MJD-MID`	P or E	Mid-time of exposure (or, the mid-point of a series of observations), expressed as MJD, in the time system specified by `TIMESYS`. May use `DATE-AVG` in addition or instead. For catalogs, this time should reflect the time of the earliest observation of the entries.
	`OBSERVAT`	P	Observatory used to obtain this observation.
	`PROPOSID`	P	Observatory program/proposal identifier, if applicable
	`REFERENC`	P	Bibliographic identifier (ADS bibcode) for reference where these data were published
	`TELAPSE`	P or E	Time elapsed between start- and end-time of observation
	`TELESCOP`	P	Designation of telescope used for this observation

	TIMESYS	P or E	Character string code (see FITS Standard) for time scale of time-related keywords. Ex: `'UTC'`
	XPOSURE	P or E	Duration of exposure, exclusive of dead time

Data Simulations

Generally, data simulations should include the same metadata that apply to the data product that is being simulated. However, it is essential that users of the simulations (including software applications) be able to distinguish between simulated and observed data. Therefore all simulated data must include the following keyword in the primary header (PHDU) in FITS files:

- `SIMULATD= T`

Special Considerations for FITS Keywords

- Note that the lists in this chapter do not include the basic structural FITS keywords (`SIMPLE`, `NAXIS`, etc.) that are required for valid FITS HDUs. Most FITS writing applications already know how to insert structural keywords into FITS headers.
- Keyword records listed in this chapter are arranged alphabetically by name for ease of reference; contributor teams may choose the order of most keywords.
- Deprecated FITS keywords (such as `EPOCH`) **must not** be used.
- The FITS Standard allows for continued-string (or long-string) keyword records. These are string-valued keywords, with values that are too long to be defined within the character limitation of a single keyword record. This feature must not be used with any of the keywords designated as mandatory or reserved in the FITS Standard, but otherwise may be used without restriction in HLSP science files.

For Further Reading...

- Image metadata
- Spectral metadata
- Catalog metadata
- Light-curve metadata
- Provenance metadata
- FITS Standard