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SDHDF: Formal Definition

Formal definition for Single Dish Hierarchical Data Format – a file format for spectral line and continuum data from single dish radio telescopes

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V2.3 (October 27th 2021)

Table of Contents

Overview

Single Dish Hierarchical Data Format (SDHDF) is a new file format for radio astronomy data built on the HDF5 framework. This document details the formal definition, and outlines changes made during previous versions of the code and definition in the Appendix.

SDHDF is configurable for any radio telescope, and is currently the primary format for spectral line and continuum data products from the Parkes radio telescope.

The SDHDF Definition

SDHDF Definition Overview	-	-
SDHDF Definition Version	2.3	-
Author	Lawrence Toomey	-
Copyright	CSIRO 2021	-
SDHDF File Overview	-	-
HDF_Object_Name	*HDF_Object_Type*	*Value*
sdhdf_template.hdf	File	SDHDF format file
SDHDF Structure Overview	-	-
HDF_Object_Name	*HDF_Object_Type*	*Value*
/beam_N	Group	-
DESCRIPTION	Attribute	SDHDF group containing data products specific to the antenna beam
NAME	Attribute	beam_N
SDHDF_CLASS	Attribute	sdhdf_beam
/beam_N/band_SBN	Group	-
DESCRIPTION	Attribute	SDHDF group containing data products specific to the frequency band
NAME	Attribute	band_SBN
SDHDF_CLASS	Attribute	sdhdf_band
/beam_N/band_SBN/astronomy_data	Group	-
DESCRIPTION	Attribute	SDHDF group containing observation data
NAME	Attribute	data
SDHDF_CLASS	Attribute	sdhdf_data
/beam_N/band_SBN/astronomy_data/data	Dataset	-

DATA_TYPE	Attribute	float32
DESCRIPTION	Attribute	SDHDF astronomy data
DIMENSION_LABELS	Attribute	time, polarization, frequency, bin
NAME	Attribute	data
NORMALISATION_FACTOR	Attribute	The factor by which the number of samples integrated into each output sample are normalised (float64)
SDHDF_CLASS	Attribute	sdhdf_waterfall
UNIT	Attribute	counts
/beam_N/band_SBN/astronomy_data/data_flags	Dataset	-
DATA_TYPE	Attribute	uint8
DESCRIPTION	Attribute	Flag applied to a frequency channel
DIMENSION_LABELS	Attribute	time, frequency
NAME	Attribute	data_flags
SDHDF_CLASS	Attribute	sdhdf_flags
/beam_N/band_SBN/astronomy_data/data_weights	Dataset	-
DATA_TYPE	Attribute	float32
DESCRIPTION	Attribute	Product of the channel bandwidth (Hz) and integration time (s)
DIMENSION_LABELS	Attribute	time, frequency
NAME	Attribute	data_weights
SDHDF_CLASS	Attribute	sdhdf_weights
UNIT	Attribute	dimensionless
/beam_N/band_SBN/astronomy_data/frequency	Dataset	-
CLASS	Attribute	DIMENSION_SCALE
DATA_TYPE	Attribute	float32
DESCRIPTION	Attribute	Weighted mean of channel centre frequencies
FRAME	Attribute	topocentric
NAME	Attribute	frequency
SDHDF_CLASS	Attribute	sdhdf_frequency
UNIT	Attribute	MHz
/beam_N/band_SBN/calibrator_data	Group	-
DESCRIPTION	Attribute	SDHDF group containing observation data
NAME	Attribute	data

SDHDF_CLASS	Attribute	sdhdf_data
/beam_N/band_SBN/calibrator_data/cal32_data	Dataset	-
DATA_TYPE	Attribute	float32
DESCRIPTION	Attribute	SDHDF calibration dataset
DIMENSION_LABELS	Attribute	time, polarization, frequency, bin
NAME	Attribute	cal_data
NORMALISATION_FACTOR	Attribute	The factor by which the number of samples integrated into each output bin are normalised (float64)
SDHDF_CLASS	Attribute	sdhdf_waterfall
UNIT	Attribute	counts
/beam_N/band_SBN/calibrator_data/cal_data_flags	Dataset	-
DATA_TYPE	Attribute	uint8
DESCRIPTION	Attribute	Flag applied to a frequency channel
DIMENSION_LABELS	Attribute	time, frequency
NAME	Attribute	cal_data_flags
SDHDF_CLASS	Attribute	sdhdf_flags
/beam_N/band_SBN/calibrator_data/cal_data_off	Dataset	-
DATA_TYPE	Attribute	float32
DESCRIPTION	Attribute	SDHDF calibration dataset
DIMENSION_LABELS	Attribute	time, polarization, frequency, bin
NAME	Attribute	cal_data
NORMALISATION_FACTOR	Attribute	The factor by which the number of samples integrated into each output bin are normalised (float64)
SDHDF_CLASS	Attribute	sdhdf_waterfall
UNIT	Attribute	counts
/beam_N/band_SBN/calibrator_data/cal_data_on	Dataset	-
DATA_TYPE	Attribute	float32
DESCRIPTION	Attribute	SDHDF calibration dataset
DIMENSION_LABELS	Attribute	time, polarization, frequency, bin
NAME	Attribute	cal_data
NORMALISATION_FACTOR	Attribute	The factor by which the number of samples integrated into each output bin are normalised (float64)
SDHDF_CLASS	Attribute	sdhdf_waterfall

UNIT	Attribute	counts
/beam_N/band_SBN/calibrator_data/cal_data_weights	Dataset	-
DATA_TYPE	Attribute	float32
DESCRIPTION	Attribute	Product of the channel bandwidth (Hz) and integration time (s)
DIMENSION_LABELS	Attribute	time, frequency
NAME	Attribute	cal_data_weights
SDHDF_CLASS	Attribute	sdhdf_weights
UNIT	Attribute	dimensionless
/beam_N/band_SBN/calibrator_data/cal_frequency	Dataset	-
CLASS	Attribute	DIMENSION_SCALE
DATA_TYPE	Attribute	float32
DESCRIPTION	Attribute	Weighted mean of channel centre frequencies
FRAME	Attribute	topocentric
NAME	Attribute	cal_frequency
SDHDF_CLASS	Attribute	sdhdf_frequency
UNIT	Attribute	MHz
/beam_N/band_SBN/metadata	Group	-
DESCRIPTION	Attribute	SDHDF group containing observation metadata
NAME	Attribute	metadata
SDHDF_CLASS	Attribute	sdhdf_meta
/beam_N/band_SBN/metadata/cal_obs_params	Dataset	-
AZ	Attribute	Antenna azimuth angle (float64)
AZ_DRIVE_RATE	Attribute	Azimuth drive rate (float64)
AZ_DRIVE_RATE_UNIT	Attribute	degrees/min
AZ_OFFSET	Attribute	J2000 Ax (Cross-El) offset (float64)
AZ_OFFSET_UNIT	Attribute	arc-sec
AZ_UNIT	Attribute	degrees
DEC_DEG	Attribute	J2000 declination (float64)
DEC_DEG_UNIT	Attribute	degrees
DEC_OFFSET	Attribute	J2000 DEC offset (float64)
DEC_OFFSET_UNIT	Attribute	arc-sec

DEC_STR	Attribute	J2000 declination (string)
DEC_STR_UNIT	Attribute	DD:MM:SS.s
DESCRIPTION	Attribute	Metadata specific to the integrations of the observation
DUMP_TIME	Attribute	Actual integration dump time (float64)
DUMP_TIME_UNIT	Attribute	s
EL	Attribute	Antenna elevation angle (float64)
ELAPSED_TIME	Attribute	Elapsed time at integration centre (float64)
ELAPSED_TIME_UNIT	Attribute	s
EL_OFFSET	Attribute	J2000 El offset (float64)
EL_OFFSET_UNIT	Attribute	arc-sec
EL_UNIT	Attribute	degrees
GB	Attribute	Galactic latitude (float64)
GB_UNIT	Attribute	degrees
GL	Attribute	Galactic longitude (float64)
GL_UNIT	Attribute	degrees
HOUR_ANGLE	Attribute	Hour angle (float64)
HOUR_ANGLE_UNIT	Attribute	degrees
LOCAL_TIME	Attribute	Local time at the observatory (string)
LOCAL_TIME_UNIT	Attribute	HH:MM:SS.s
MJD	Attribute	Timestamp at integration centre (MJD) (float64)
MJD_UNIT	Attribute	days
NAME	Attribute	cal_obs_params
PARA_ANGLE	Attribute	Parallactic angle (float64)
PARA_ANGLE_UNIT	Attribute	degrees
PRESSURE	Attribute	Atmospheric pressure (float64)
PRESSURE_MSL	Attribute	Atmospheric pressure at mean sea level (float64)
PRESSURE_MSL_UNIT	Attribute	hPa
PRESSURE_UNIT	Attribute	hPa
RA_DEG	Attribute	J2000 right ascension (float64)
RA_DEG_UNIT	Attribute	degrees

RA_OFFSET	Attribute	J2000 RA offset (float64)
RA_OFFSET_UNIT	Attribute	s
RA_STR	Attribute	J2000 right ascension (string)
RA_STR_UNIT	Attribute	HH:MM:SS.s
REL_HUMIDITY	Attribute	Outside relative humidity (float64)
REL_HUMIDITY_UNIT	Attribute	%
SDHDF_CLASS	Attribute	sdhdf_table
TEMPERATURE	Attribute	Outside temperature (float64)
TEMPERATURE_UNIT	Attribute	degrees C
TIME_DB	Attribute	Database Universal Coordinated Time (string)
TIME_DB_UNIT	Attribute	HH:MM:SS.s
UTC	Attribute	Timestamp at integration centre (UTC) (string)
UTC_UNIT	Attribute	hours
UT_DATE	Attribute	Date at integration centre (UTC YYYY-MM-DD-hh:mm:ss) (string)
WIND_DIR	Attribute	Wind direction (float64)
WIND_DIR_UNIT	Attribute	degrees
WIND_SPD	Attribute	Wind speed (float64)
WIND_SPD_UNIT	Attribute	km/hr
ZE	Attribute	Antenna zenith angle (float64)
ZE_DRIVE_RATE	Attribute	Zenith drive rate (float64)
ZE_DRIVE_RATE_UNIT	Attribute	degrees/min
ZE_UNIT	Attribute	degrees
/beam_N/band_SBN/metadata/obs_params	Dataset	-
AZ	Attribute	Antenna azimuth angle (float64)
AZ_DRIVE_RATE	Attribute	Azimuth drive rate (float64)
AZ_DRIVE_RATE_UNIT	Attribute	degrees/min
AZ_OFFSET	Attribute	J2000 Ax (Cross-El) offset (float64)
AZ_OFFSET_UNIT	Attribute	arc-sec
AZ_UNIT	Attribute	degrees
DEC_DEG	Attribute	J2000 declination (float64)
DEC_DEG_UNIT	Attribute	degrees

DEC_OFFSET	Attribute	J2000 DEC offset (float64)
DEC_OFFSET_UNIT	Attribute	arc-sec
DEC_STR	Attribute	J2000 declination (string)
DEC_STR_UNIT	Attribute	DD:MM:SS.s
DESCRIPTION	Attribute	Metadata specific to the integrations of the observation
DUMP_TIME	Attribute	Actual integration dump time (float64)
DUMP_TIME_UNIT	Attribute	s
EL	Attribute	Antenna elevation angle (float64)
ELAPSED_TIME	Attribute	Elapsed time at integration centre (float64)
ELAPSED_TIME_UNIT	Attribute	s
EL_OFFSET	Attribute	J2000 El offset (float64)
EL_OFFSET_UNIT	Attribute	arc-sec
EL_UNIT	Attribute	degrees
GB	Attribute	Galactic latitude (float64)
GB_UNIT	Attribute	degrees
GL	Attribute	Galactic longitude (float64)
GL_UNIT	Attribute	degrees
HOUR_ANGLE	Attribute	Hour angle (float64)
HOUR_ANGLE_UNIT	Attribute	degrees
LOCAL_TIME	Attribute	Local time at the observatory (string)
LOCAL_TIME_UNIT	Attribute	HH:MM:SS.s
MJD	Attribute	Timestamp at integration centre (MJD) (float64)
MJD_UNIT	Attribute	days
NAME	Attribute	obs_params
PARA_ANGLE	Attribute	Parallactic angle (float64)
PARA_ANGLE_UNIT	Attribute	degrees
PRESSURE	Attribute	Atmospheric pressure (float64)
PRESSURE_MSL	Attribute	Atmospheric pressure at mean sea level (float64)
PRESSURE_MSL_UNIT	Attribute	hPa
PRESSURE_UNIT	Attribute	hPa

RA_DEG	Attribute	J2000 right ascension (float64)
RA_DEG_UNIT	Attribute	degrees
RA_OFFSET	Attribute	J2000 RA offset (float64)
RA_OFFSET_UNIT	Attribute	s
RA_STR	Attribute	J2000 right ascension (string)
RA_STR_UNIT	Attribute	HH:MM:SS.s
REL_HUMIDITY	Attribute	Outside relative humidity (float64)
REL_HUMIDITY_UNIT	Attribute	%
SDHDF_CLASS	Attribute	sdhdf_table
TEMPERATURE	Attribute	Outside temperature (float64)
TEMPERATURE_UNIT	Attribute	degrees C
TIME_DB	Attribute	Database Universal Coordinated Time (string)
TIME_DB_UNIT	Attribute	HH:MM:SS.s
UTC	Attribute	Timestamp at integration centre (UTC) (string)
UTC_UNIT	Attribute	hours
UT_DATE	Attribute	Date at integration centre (UTC YYYY-MM-DD-hh:mm:ss) (string)
WIND_DIR	Attribute	Wind direction (float64)
WIND_DIR_UNIT	Attribute	degrees
WIND_SPD	Attribute	Wind speed (float64)
WIND_SPD_UNIT	Attribute	km/hr
ZE	Attribute	Antenna zenith angle (float64)
ZE_DRIVE_RATE	Attribute	Zenith drive rate (float64)
ZE_DRIVE_RATE_UNIT	Attribute	degrees/min
ZE_UNIT	Attribute	degrees
/beam_N/metadata	Group	-
DESCRIPTION	Attribute	SDHDF group containing observation metadata
NAME	Attribute	metadata
SDHDF_CLASS	Attribute	sdhdf_meta
/beam_N/metadata/band_params	Dataset	-
CENTRE_FREQ	Attribute	Band centre frequency (float64)
CENTRE_FREQ_UNIT	Attribute	MHz

DESCRIPTION	Attribute	Metadata specific to the frequency bands of the antenna beam
DUMP_TIME	Attribute	Requested integration dump time (float64)
DUMP_TIME_UNIT	Attribute	s
HIGH_FREQ	Attribute	Band range high frequency (float64)
HIGH_FREQ_UNIT	Attribute	MHz
LABEL	Attribute	Band label (string)
LOW_FREQ	Attribute	Band range low frequency (float64)
LOW_FREQ_UNIT	Attribute	MHz
NAME	Attribute	band_params
N_CHANS	Attribute	Number of channels in band (int64)
N_DUMPS	Attribute	Number of spectral data dumps in band (int64)
N_POLS	Attribute	Number of polarisations (1, 2, 4) (int64)
PARTIAL_N_DUMPS	Attribute	Number of partial spectral data dumps in band (int64)
POL_TYPE	Attribute	Polarisation type (AABBCRCI for 4 pol coherence data where AA and BB are the direct products of the two input channels A and B and CR and CI are the real and imaginary parts of the cross product A* B; AA+BB for 1 pol data with summed orthogonal products; AABB for 2 pol data) (string)
SDHDF_CLASS	Attribute	sdhdf_table
/beam_N/metadata/cal_band_params	Dataset	-
CENTRE_FREQ	Attribute	Band centre frequency (float64)
CENTRE_FREQ_UNIT	Attribute	MHz
DESCRIPTION	Attribute	Metadata specific to the frequency bands of the antenna beam (calibration)
DUMP_TIME	Attribute	Requested integration dump time (float64)
DUMP_TIME_UNIT	Attribute	s
HIGH_FREQ	Attribute	Band range high frequency (float64)
HIGH_FREQ_UNIT	Attribute	MHz
LABEL	Attribute	Band label (string)
LOW_FREQ	Attribute	Band range low frequency (float64)
LOW_FREQ_UNIT	Attribute	MHz

NAME	Attribute	cal_band_params
N_CHANS	Attribute	Number of channels in band (int64)
N_DUMPS	Attribute	Number of spectral data dumps in band (int64)
N_POLS	Attribute	Number of polarisations (1, 2, 4) (int64)
PARTIAL_N_DUMPS	Attribute	Number of partial spectral data dumps in band (int64)
POL_TYPE	Attribute	Polarisation type (AABBCRCI for 4 pol coherence data where AA and BB are the direct products of the two input channels A and B and CR and CI are the real and imaginary parts of the cross product A* B; AA+BB for 1 pol data with summed orthogonal products; AABB for 2 pol data) (string)
SDHDF_CLASS	Attribute	sdhdf_table
/config	Group	-
DESCRIPTION	Attribute	SDHDF group containing configuration parameters as defined at the time of the observation
NAME	Attribute	config
SDHDF_CLASS	Attribute	sdhdf_config
/config/backend_config	Dataset	-
DESCRIPTION	Attribute	Astronomy backend configuration
NAME	Attribute	backend_config
SDHDF_CLASS	Attribute	sdhdf_table
/config/cal_backend_config	Dataset	-
DESCRIPTION	Attribute	Astronomy backend configuration (calibration)
NAME	Attribute	cal_backend_config
SDHDF_CLASS	Attribute	sdhdf_table
/metadata	Group	-
DESCRIPTION	Attribute	SDHDF group containing observation metadata
NAME	Attribute	metadata
SDHDF_CLASS	Attribute	sdhdf_meta
/metadata/beam_params	Dataset	-
DESCRIPTION	Attribute	Metadata specific to the antenna beam
LABEL	Attribute	Beam label (string)

NAME	Attribute	beam_params
N_BANDS	Attribute	Number of frequency bands (int64)
SDHDF_CLASS	Attribute	sdhdf_table
SOURCE	Attribute	Source name (string)
/metadata/history	Dataset	-
DATE	Attribute	Date (UTC YYYY-MM-DD-hh:mm:ss) (string)
DESCRIPTION	Attribute	Metadata specific to the processing history of the file
NAME	Attribute	history
PROC	Attribute	Process name (string)
PROC_ARGS	Attribute	Process command arguments (string)
PROC_DESCR	Attribute	Process description (string)
PROC_HOST	Attribute	Host machine running the process (string)
PROC_LOG	Attribute	Logged output from the process (string)
SDHDF_CLASS	Attribute	sdhdf_table
/metadata/primary_header	Dataset	-
CAL_MODE	Attribute	Calibration mode (ON | OFF) (string)
DATE	Attribute	File creation date (UTC YYYY-MM-DD-hh:mm:ss) (string)
DESCRIPTION	Attribute	General observation metadata
FILE_FORMAT	Attribute	File format (string)
FILE_FORMAT_VERSION	Attribute	File format version (string)
HDR_DEFN	Attribute	File format definition (string)
HDR_DEFN_VERSION	Attribute	File format definition version (string)
INSTRUMENT	Attribute	Backend instrument name (string)
NAME	Attribute	primary_header
N_BEAMS	Attribute	Number of beams (int64)
OBSERVER	Attribute	Observer name (string)
OBS_TYPE	Attribute	Observation type (TRACK | SCAN) (string)
PID	Attribute	Project ID (string)
RECEIVER	Attribute	Receiver name (string)

SCHED_BLOCK_ID	Attribute	Schedule block ID (int64)
SDHDF_CLASS	Attribute	sdhdf_table
TELESCOPE	Attribute	Telescope name (string)
UTC_START	Attribute	Observation start (UTC YYYY-MM-DD-hh:mm:ss) (string)
/metadata/schedule	Dataset	-
DATE	Attribute	Date (UTC YYYY-MM-DD-hh:mm:ss) (string)
DESCRIPTION	Attribute	Metadata specific to the scheduling of the observation
NAME	Attribute	schedule
SCHED_BLOCK	Attribute	Schedule block contents (string)
SCHED_HOST	Attribute	Schedule host machine (string)
SCHED_VERSION	Attribute	Schedule template version (string)
SDHDF_CLASS	Attribute	sdhdf_table
/metadata/software_versions	Dataset	-
DESCRIPTION	Attribute	Metadata specific to software packages used for creating or processing the file
NAME	Attribute	software_versions
PROC	Attribute	Process name (string)
SDHDF_CLASS	Attribute	sdhdf_table
SOFTWARE	Attribute	Software package (string)
SOFTWARE_DESCR	Attribute	Software package description (string)
SOFTWARE_VERSION	Attribute	Software package version (string)

Appendix: SDHDF Version History

SDHDF Versions

SDHDF v2.3 (Latest: October 27th 2021)

- Fix npol bug in calibration data - CONTINUUM_OUTSTOKES is incorrectly set in cal data file to 1 when NPOL=4
- Fix empty metadata query logging and append to history dataset
- Fix integration time out by half a dump

SDHDF v2.2

- Major updates to parsing of integration timestamps for the interpolation routine
- Add missing dimension labels
- Add data types as strings to attributes
- Replace Parkes specific timezone with LOCAL_TIME
- Add extra decimal places to RA_DEG and DEC_DEG output
- Add pressure, pressureMSL, relative humidity and temperature to definition and obs_params datasets
- Add PROC_LOG to history dataset
- Add OSS license
- Update logging; Minor bug fixes and updates

SDHDF v2.1

- Fix frequency dataset bandwidth bug (where nchan-1 should be nchan), and define as channel centre not channel start
- Update data weights definition
- Add data flags definition for RFI flagging
- Add parsing of normalisation flags from the telescope backend
- Remove redundant beam dimension from astronomy and calibrator datasets
- Minor small fixes and attribute updates

SDHDF v2.0

- Implement configuration file for use by any telescope
- Add weights group to definition

- Enable metadata copy if existing, to prevent unnecessary database query duplication
- Metadata for wind direction and wind speed parameters are now the right way around
- Enable splitting observation by frequency band
- Fix metadata query string not making it into history table
- Replace deprecated H5py create_scale with make_scale

SDHDF v1.9.3

- Enable file splitting mode with max file size threshold of ~10GB, effective from and including UTC 2020-09-24-12-27-43
- Add new 'schedule' dataset to hold DHAGU metadata
- Update DHAGU template query for PostGres (replacing ElasticSearch)
- Minor additions/fixes to modules and metadata

SDHDF v1.9.2

- Incorporate 32-bin calibrator dataset
- Fix missing PROC_ARGS in history dataset
- Add metadata query string to history dataset
- Fix missing reference to InfluxDB in software_versions dataset
- Minor additions/fixes to modules and metadata

SDHDF v1.9.1

- Fix OBS_TYPE
- Minor additions/fixes to modules and metadata

SDHDF v1.9

- Added OBS_TYPE to primary_header dataset
- Hierarchical structure updated to allow for multiple beams
- Add position offsets to obs_params datasets
- Minor additions/fixes to modules and metadata

SDHDF v1.8

- Incorporated an interpolation routine for InfluxDB output
- Added telescope config class
- InfluxDB observation metadata (including pointing) are accurate to within +/-1 second of time
- Minor additions/fixes to modules and metadata

SDHDF v1.7

- Re-processed observations from and including UTC_START: 2018-12-19-07:40:30
- InfluxDB observation metadata (including pointing) are accurate to within +/-5 seconds of time
- Metadata comprises the SDHDF definition by default
- Added 'history', 'rfi_excision', 'software_versions', 'weights' and 'cal_weights' datasets

SDHDF v1.6

- 'time' and 'cal_time' datasets changed to 'obs_params' and 'cal_obs_params', now incorporating time and observation metadata from InfluxDB
- 'obs_params' and 'cal_obs_params' dataset values now all refer to the timestamp at the start of the integration
- Enabled data from partial integrations to be incorporated
- Minor fixes to unit datasets
- Implemented header metadata comparison with input data file contents (header does not necessarily reflect contents)
- Added 'band_header' dataset for sub-/zoom-band metadata
- Added extra parameters to 'primary_header' dataset

SDHDF v1.5

- Updated time axis method to fix intervals, add integration index and time since start columns to time datasets, and set MJD to integration mid-point
- Minor fixes to array shapes
- Updated SDHDF definition with backend header descriptions
- Fixed missing dimension scales
- Fixed incorrect cal-on cal-off bin ordering
- No InfluxDB metadata
- Processed observations from UTC_START: 2019-04-09*

SDHDF v1.4

- Implemented fix to correctly order integrations in time
- Implemented separate datasets for cal-on and cal-off
- No InfluxDB metadata
- Processed observations from and including UTC_START: 2019-04-02-01:25:28

SDHDF v1.3

- First official complete run with real data
- Medusa calibration (preproc) data included
- Implemented independent frequency datasets to allow for sub-bands with different frequency resolutions
- Primary header intact but not finalised
- No InfluxDB metadata
- Processed observations from and including UTC_START: 2018-12-19-07:40:30

SDHDF v1.2

- Data from second commissioning run (P737)
- Incorrect and/or missing header information
- Medusa calibration (preproc) data included
- No InfluxDB metadata

SDHDF v1.1

- Data from first commissioning run (BL, P737)
- Incorrect and/or missing header information
- No calibration (preproc) data
- No InfluxDB metadata

SDHDF v1.0

- Data from first commissioning run (P737)
- Incorrect and/or missing header information
- Preliminary SDHDF structure
- Draft naming scheme implemented
- No Medusa calibration (preproc) data
- No InfluxDB metadata

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