Command Reference: WriteReclamationHDB()

Write a time series to a Reclamation HDB database

Version 10.20.00, 2013-04-21

The WriteReclamationHDB () command writes time series to a Reclamation HDB database:

- a single time series (which can be part of an ensemble), indicated by the individual time series identifier:
 - o a "real" time series (observations)
 - o a "model" time series (output from a model)
- all time series in an ensemble, indicated by the ensemble identifier:
 - ensemble trace time series are stored as "model" time series (individual ensemble trace time series can then be read as single time series by specifying the appropriate "hydrologic indicator", which is set to the ensemble time series sequence number from TSTool time series)

See the ReadReclamationHDB() command documentation for information about reading the time series that are written by this command. See the **Reclamation HDB Data Store Appendix** for more information about the database features and limitations. Command functionality includes:

• Time series metadata/new time series:

- The command will not define a new time series (site and model data). It is expected that time series previously have been defined in the database. This ensures that TSTool can perform error handling and users do not accidentally load new time series.
- The exception is that new ensembles and corresponding trace time series can be defined by specifying ensemble name, trace number, and model run date.

• Date/time handling:

- TSTool uniformly uses the time at the end of the recorded interval for data values (instantaneous time or end of interval for mean and accumulated values), whereas HDB uses the time at the beginning of the recorded interval for hourly data. See the **ReclamationHDB Datastore** appendix for more information.
- Writing NNour data uses WRITE_TO_HDB procedure where the SAMPLE_END_DATETIME is set to the TSTool date/time and SAMPLE_DATE_TIME is set the TSTool date/time minus NHour.
- O Writing other than NHour data uses the WRITE_TO_HDB procedure with SAMPLE DATE TIME passed as the same value as the TSTool date/time.

• Updating time series records:

o Time series data records for an existing time series will be updated if previously written.

• Missing data:

 Missing data currently are not written. By convention missing values in HDB are simply not included in the database. Currently the command will not delete previous records if the new value at a date/time is missing.

• Data units:

O Data units in the time series are not checked against data units in the database because the units in TSTool data may originally have come from various sources that do not use the same units abbreviations as HDB. It is the user's responsibility to ensure that time series that are being written have units that are compatible with HDB.

Data flags:

O Data flags from the time series are not written to the database. The ValidationFlag, OverwriteFlag, and DataFlags parameters are provided to specify HDB flags. Additional capability may be added in the future.

Time zone:

Time zone can be indicated in TSTool time series by including in the start and end date/time information; however, time zones are difficult to standardize when data comes from different sources. The default time zone for HDB is configured for the Reclamation office that uses the database. If the time series time zone is different from the default (displayed in the note for the TimeZone command parameter in the command editor), it can be specified as a command parameter. It is the user's responsibility to verify that the correct time zone is being used.

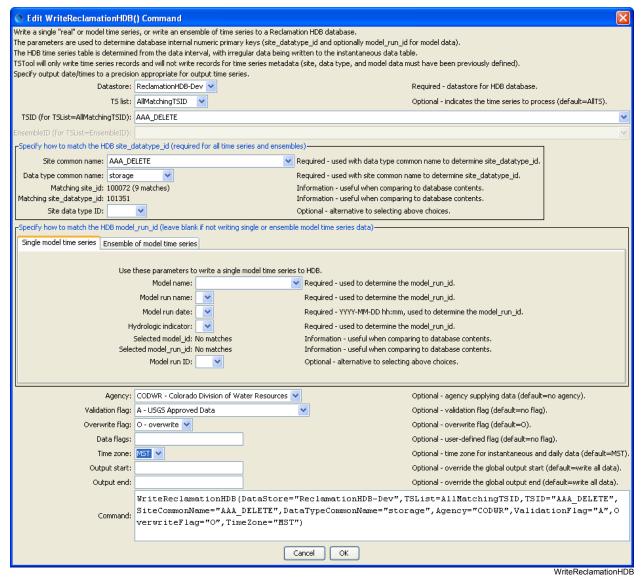
• HDB data table:

- The time series interval is used to determine the HDB time series table to write, with irregular data being written as instantaneous data with date/time precision to minute.
- o Irregular data also can be written to a specific output table by using the IntervalOverride parameter, for example in cases where a time series was read as irregular but should be treated as hourly in HDB.
- TSTool treats year-interval data generically and does not manage water year (or other types of years) in special fashion, other than when processing data into year interval time series. Water year data can be saved in year interval data but currently there is no way to write to the water-year tables in HDB.

• HDB database procedure:

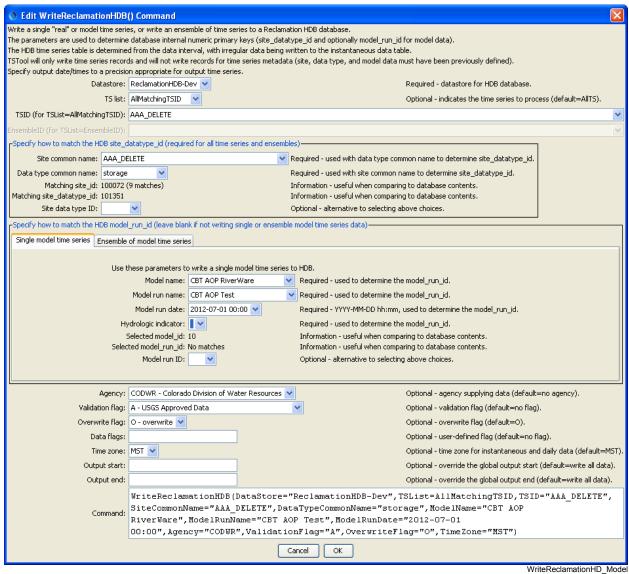
- The HDB WRITE_TO_HDB stored procedure is used to write individual time series data records:
 - The time series is written to a model time series table if model parameters are specified.
 - The model run date, for single time series and ensembles, is truncated to minutes in time series identifiers and for query purposes.
- O When writing ensembles, the HDB procedure ENSEMBLE.GET_TSTOOL_ENSEMBLE_MRI is used to determine the model run identifier corresponding to model time series and then the WRITE_TO_HDB procedure (above) is used to write data records:
 - The ensemble name is determined from the EnsembleName parameter existing names can be selected or a new name can be specified
 - The trace number is determined from the EnsembleTraceID command parameter, and will result in the trace being taken from specific time series properties.
 - The model name is determined from the EnsembleModelName parameter.
 Model names consistent with non-ensemble model time series are used.
 - The model run date is determined from the EnsembleModelRunDate parameter (if specified then the P_IS_RUNDATE_KEY procedure parameter is set to Y, if not specified N).

The following dialog is used to edit the command and illustrates the syntax of the command when writing "real" data, in which case model information is not specified.



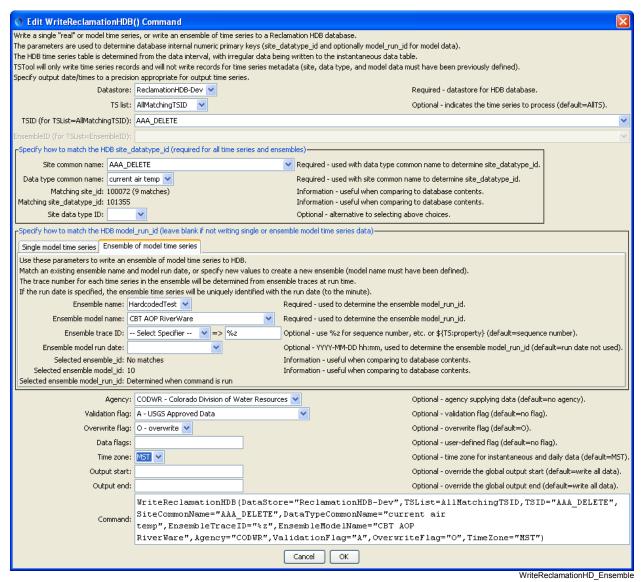
WriteReclamationHDB() Command Editor for "Real" Time Series

The following figure illustrates the syntax of the command when writing "model" data for a single time series, in which case the model parameters are specified via the **Single model time series** tab.



WriteReclamationHDB() Command Editor for Single Model Time Series

The following figure illustrates the syntax of the command when writing an ensemble of "model" time series, in which case ensemble and related model parameters are specified via the **Ensemble of model** time series tab. The TSTool ensemble is specified with the TSList=EnsembleID and EnsembleID parameters.



WriteReclamationHDB() Command Editor for Ensemble of Model Time Series

The command syntax is as follows:

WriteReclamationHDB (Parameter=Value, ...)

Command Parameters

Parameter	Description	Default
DataStore	The identifier for the ReclamationHDB data store to use	None – must be
	for the database.	specified.
TSList	Indicates the list of time series to be processed, one of:	AllTS
	• AllMatchingTSID – all time series that match the	
	TSID (single TSID or TSID with wildcards) will be	
	processed.	
	• AllTS – all time series before the command.	
	• EnsembleID – all time series in the ensemble will	
	be processed.	
	• FirstMatchingTSID – the first time series that	
	matches the TSID (single TSID or TSID with	
	wildcards) will be processed.	
	• LastMatchingTSID – the last time series that	
	matches the TSID (single TSID or TSID with	
	wildcards) will be processed.	
	• SelectedTS – the time series are those selected	
	with the SelectTimeSeries () command.	
TSID	The time series identifier or alias for the time series to be	Required if
	processed, using the * wildcard character to match	TSList=*TSID.
	multiple time series.	
EnsembleID	The identifier for the TSTool ensemble to be processed, if	Required if TSList=
	processing an ensemble, not to be confused with the	EnsembleID.
	Ensemble* parameters below that match HDB data.	
Site	The site common name for the time series location; used	None – must be
CommonName	with the data type common name to determine the	specified unless
	site_datatype_id in the database.	SiteDataTypeID is
DataType	The data type common name for the time series; used	specified. None – must be
CommonName	with the site common name to determine the	specified unless
Commonivante	site_datatype_id in the database.	SiteDataTypeID is
	Site_datatype_id in the database.	specified.
SiteDataTypeID	The site datatype id value to match the time series. If	specifica.
71	specified, the value will be used instead of the	
	site datatype id determined from SiteCommonName	
	and DataTypeCommonName.	
	Use the following parameters when reading a single	
	model time series.	
ModelName	The model name for the time series; used with the model	None – must be
	run name, hydrologic indicator(s), and model run date to	specified unless
	determine the model_run_id in the database.	ModelRunID is
		specified.
ModelRunName	The model run name for the time series; used with the	None – must be
	model name, hydrologic indicator(s), and model run date	specified unless
	to determine the model_run_id in the database.	ModelRunID is
Me de l Desp D - + -	The medal and data (timester, b) to C. d. ti	specified.
ModelRunDate	The model run date (timestamp) to use for the time series;	None – must be

Parameter	Description	Default
	used with the model name, model run name, and	specified unless
	hydrologic indicator(s) to determine the model run id in	ModelRunID is
	the database. The run date should be specified using the	specified.
	format YYYY-MM-DD hh:mm (zero-padded with hour 0-	_
	23, minute 0-59, seconds and hundredths of seconds will	
	default to 0). Need to implement tests to make sure	
	this is properly handled, including formatting and	
	listing existing values.	
Hydrologic	The hydrologic indicator(s) to use for the time series;	None – must be
Indicator	used with the model name, model run name, and model	specified unless
	run date to determine the model_run_id in the database.	ModelRunID is
		specified.
ModelRunID	The model_run_id value to match the time series. If	
	specified, the value will be used instead of the	
	model_run_id determined from ModelName,	
	ModelRunName, ModelRunDate, and	
	HydrologicIndicator.	
	Use the following parameters when writing an ensemble	
	of model time series.	36 (1 'C' 1'C
EnsembleName	The name of the ensemble to write. The	Must be specified if
	TSList=EnsembleID and EnsembleID parameters	writing an ensemble.
	also should be specified.	M 41 'C 1'C
EnsembleModelName	The model name corresponding to the ensemble.	Must be specified if
EnsembleTraceID	Indicate how to identify time series trace identifiers:	writing an ensemble. The time series
Elischiotettaeetb	•	sequence number
	• %X – use standard time series properties to format the ensemble trace ID (see command editor for format	(equivalent to the %z
	characters)	formatting string)
	\${TS:property} - format the trace identifier	Tormutting string)
	from time series properties (e.g., properties read from	
	original ensemble data)	
	TSTool and the HDB GET TSTOOL ENSEMBLE MRI	
	procedure currently require the identifier to be an integer	
	- additional options for identifying traces may be added	
	in the future.	
EnsembleModel	When writing an ensemble, the model run date for the	If not specified, the
RunDate	ensemble, specified using format:	ensemble identifier in
	• YYYY-MM-DD hh:mm (zero-padded with hour 0-	HDB will not include
	23)	the model run date.
	• \${ts:property} – use a run date from a time	
	series property, truncated to minute	
	Need to implement tests to make sure this is properly	
	handled, including formatting and listing existing	
	values.	
	The following parameters are always appropriate.	
Agency	The agency abbreviation (e.g., USBR) for data records	No agency is indicated
	written to the database.	in database.
Validation	HDB validation flag. Only uppercase characters are	No flag is used.

Parameter	Description	Default
Flag	supported.	
OverwriteFlag	HDB overwrite flag.	Overwrite (enforced by HDB stored procedure)
DataFlags	User-defined flags, up to 20 characters.	No flags are used.
TimeZone	Three-letter time zone abbreviation for the data records written to the database.	Default HDB time zone is assumed.
OutputStart	The date/time for the start of the output.	Use the global output period.
OutputEnd	The date/time for the end of the output.	Use the global output period.