Command Reference: WriteReclamationHDB()

Write a time series to a Reclamation HDB database

Version 10.20.00, 2013-04-07

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:
  - a "real" time series (observations)
  - 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)

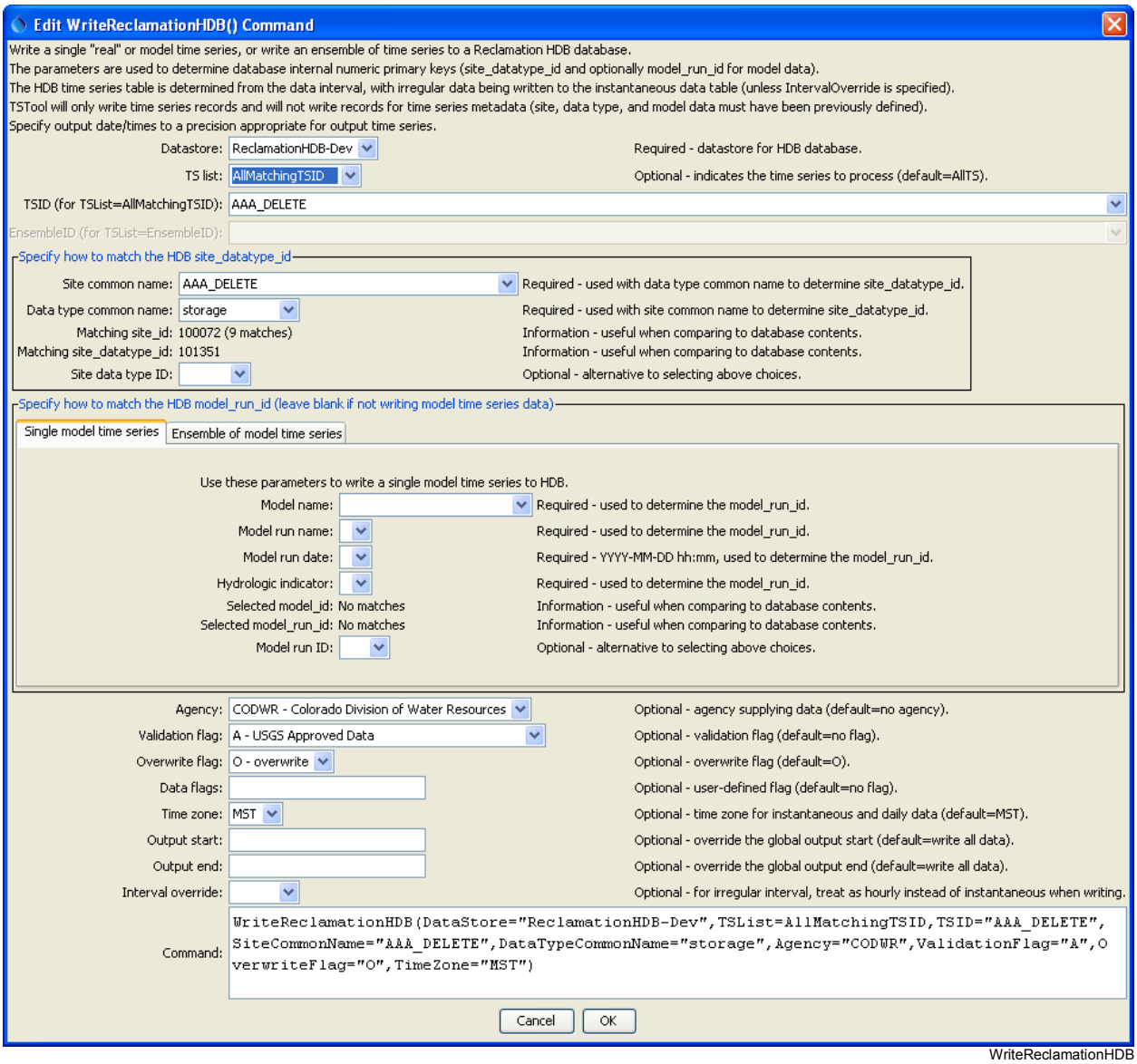
See the `ReadReclamationHDB()` command documentation for information about reading the time series that are written by this command. See the **Reclamation HDB Data Store Appendix** for more information about the database features and limitations. Command functionality includes:

- **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**:
  - Hourly data in TSTool are shifted earlier one hour prior to writing, due to HDB data management conventions. TSTool uses the time at the end of the recorded interval whereas HDB uses the time at the beginning of the recorded interval.
- **Updating time series records:**
  - 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**:
  - 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**:
  - 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.
  - 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.
  - 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).

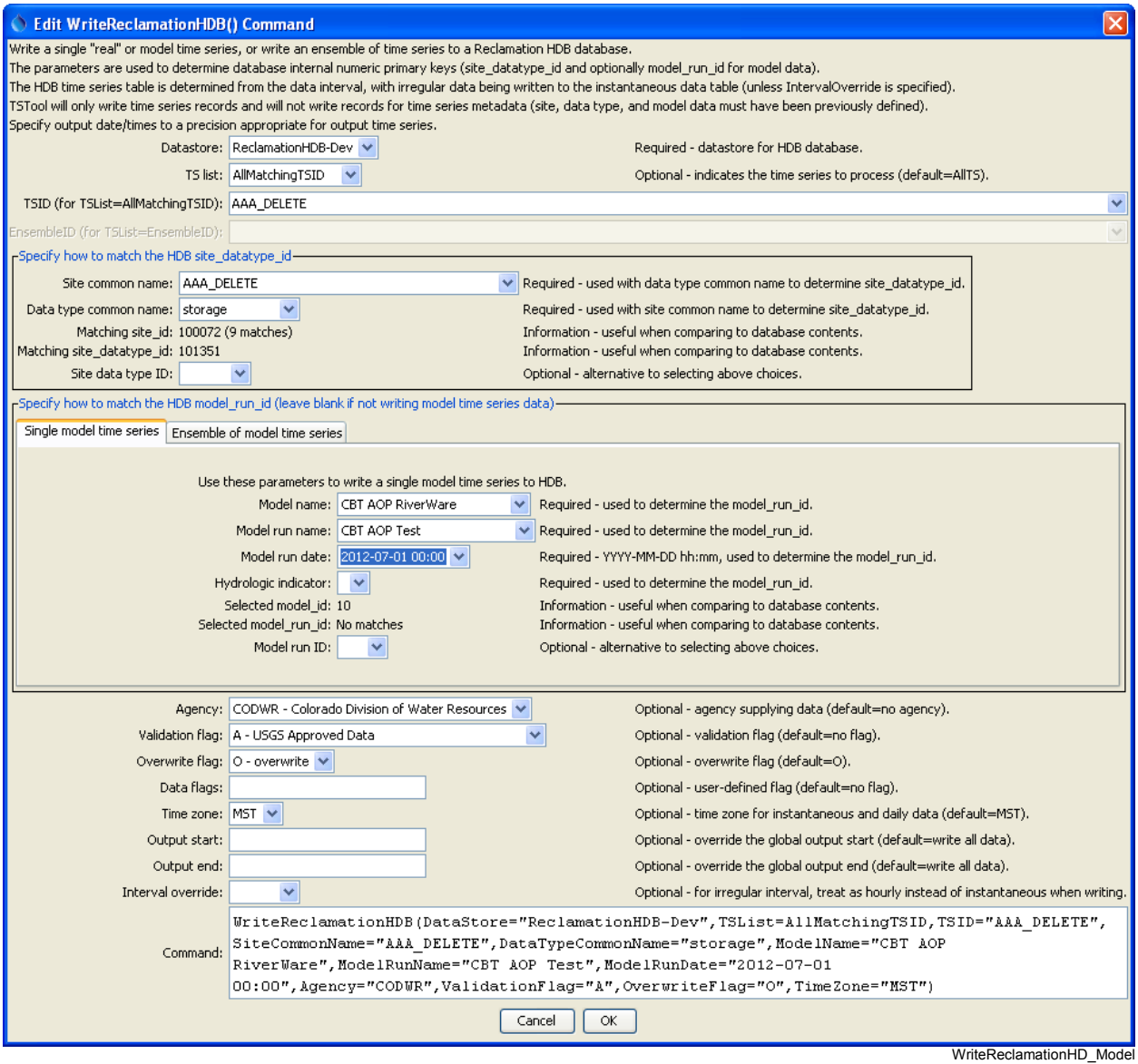
The following dialog is used to edit the command and illustrates the syntax of the command when writing "real" data, in which case model information is not specified.



WriteReclamationHDB

WriteReclamationHDB() Command Editor for "Real" Time Series

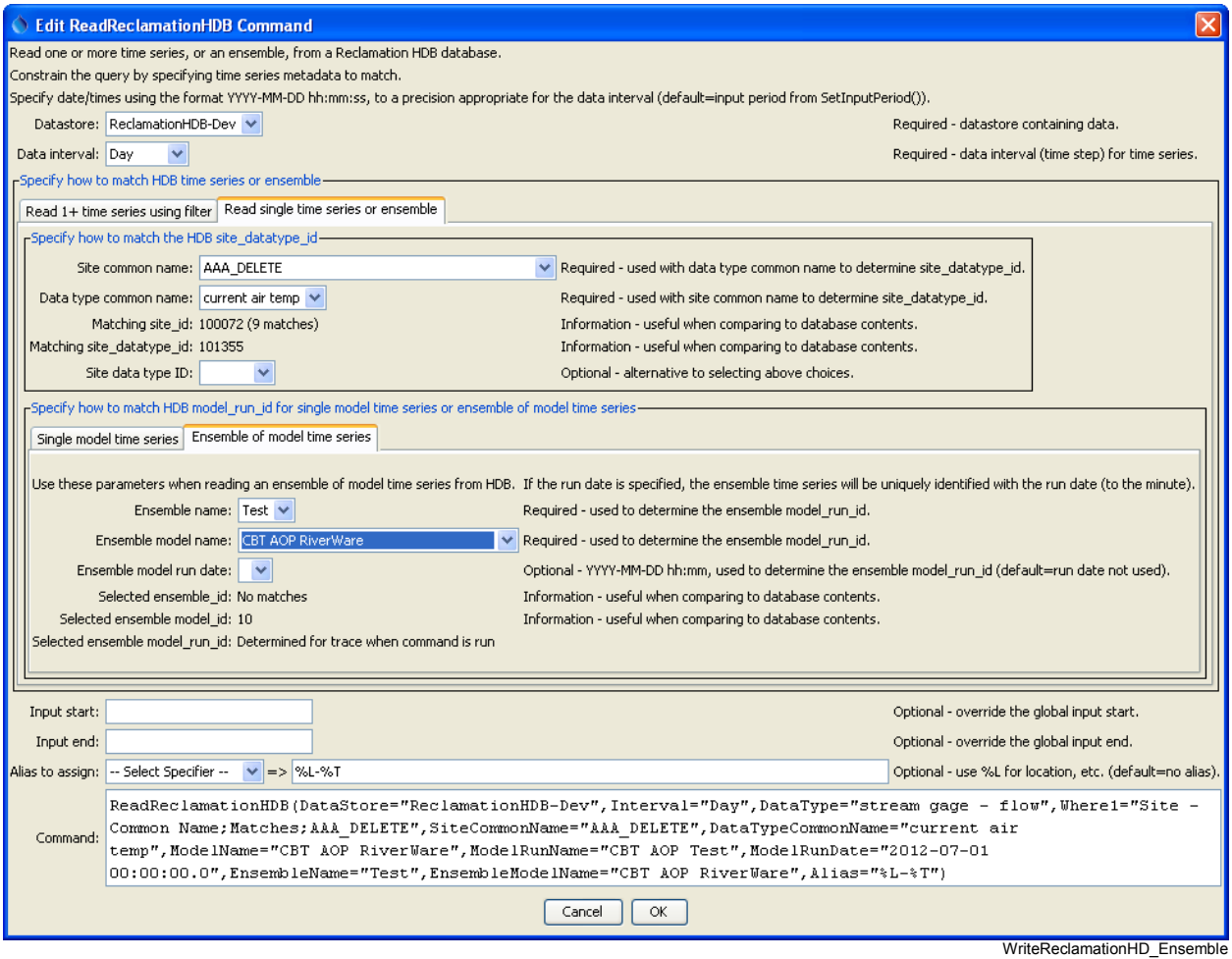
The following figure illustrates the syntax of the command when writing "model" data for a single time series, in which case the model parameters are specified via the ***Individual model time series*** tab.



WriteReclamationHD_Model

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.



WriteReclamationHD_Ensemble

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 for the database.	None – must be specified.
TSList	Indicates the list of time series to be processed, one of: • 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.	AllTS
TSID	The time series identifier or alias for the time series to be processed, using the * wildcard character to match multiple time series.	Required if TSList=*TSID.
EnsembleID	The identifier for the TSTool ensemble to be processed, if processing an ensemble, not to be confused with the Ensemble* parameters below that match HDB data.	Required if TSList=EnsembleID.
Site CommonName	The site common name for the time series location; used with the data type common name to determine the site_datatype_id in the database.	None – must be specified unless SiteDataTypeID is specified.
DataType CommonName	The data type common name for the time series; used with the site common name to determine the site_datatype_id in the database.	None – must be specified unless SiteDataTypeID is specified.
SiteDataTypeID	The site_datatype_id value to match the time series. If 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 run name, hydrologic indicator(s), and model run date to determine the model_run_id in the database.	None – must be specified unless ModelRunID is specified.
ModelRunName	The model run name for the time series; used with the model name, hydrologic indicator(s), and model run date to determine the model_run_id in the database.	None – must be specified unless ModelRunID is 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 hydrologic indicator(s) to determine the model_run_id in the database. The run date should be specified using the format `YYYY-MM-DD hh:mm` (zero-padded with hour 0-23, minute 0-59, seconds and hundredths of seconds will default to 0)	specified unless `ModelRunID` is specified.
`Hydrologic Indicator`	The hydrologic indicator(s) to use for the time series; used with the model name, model run name, and model run date to determine the model_run_id in the database.	None – must be specified unless `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.	
`EnsembleName`	The name of the ensemble to write. The `TSList=EnsembleID` and `EnsembleID` parameters also should be specified.	Must be specified if writing an ensemble.
`EnsembleTraceID`	Indicate how to identify time series trace identifiers: • `%X` – use standard time series properties to format the ensemble trace ID (see command editor for format characters) • `${TS:property}` – format the trace identifier from time series properties (e.g., properties read from original ensemble data) TSTool and the HDB `GET_TSTOOL_ENSEMBLE_MRI` procedure currently require the identifier to be an integer – additional options for identifying traces may be added in the future.	The time series sequence number (equivalent to the `%z` formatting string)
`EnsembleModelName`	The model name corresponding to the ensemble.	Must be specified if writing an ensemble.
`EnsembleModel RunDate`	When writing an ensemble, the model run date for the ensemble, specified using format: • `YYYY-MM-DD hh:mm` (zero-padded with hour 0-23) • `${ts:property}` – use a run date from a time series property, truncated to minute	If not specified, the ensemble identifier in HDB will not include the model run date.
	The following parameters are always appropriate.	
`Agency`	The agency abbreviation (e.g., `USBR`) for data records written to the database.	No agency is indicated in database.
`Validation Flag`	HDB validation flag. Only uppercase characters are supported.	No flag is used.
`OverwriteFlag`	HDB overwrite flag.	Overwrite (enforced by HDB stored procedure)..
`DataFlags`	User-defined flags, up to 20 characters.	No flags are used.

Parameter	Description	Default
`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.
`IntervalOverride`	The hourly interval to use for irregular data, which will force writing the data to the hourly HDB table instead of the instantaneous table. The handling of the data is as follows. If this logic is not suitable, use `ChangeInterval()` or other commands to adjust data before writing. 1. It is assumed that the time of the time series matches the specific time of measurement for instantaneous data or end of the measurement interval for mean and accumulated data, consistent with TSTool conventions. 2. Truncate the irregular time series date/time so that the precision is to the hour. It is assumed that the minute can be ignored. 3. If the hour can be divided evenly by the specified `IntervalOverride`, write the value; if not evenly divisible, generate a warning and do not write the specific value. (Is this the correct thing to do?). 4. HDB hourly time series data are stored with start and end time. Consequently, the hour from above is used for the HDB end time, and the start time is set to the end time minus the IntervalOverride. Is this correct? Please clarify what START_DATE_TIME and END_DATE_TIME should be in this case for a 3Hour override.	Irregular data are written to the HDB instantaneous data.

This page is intentionally blank.