
Appendix: StateDMI Release Notes

Version 3.12.02, 2013-04-17

This appendix provides information about changes that have occurred in StateDMI versions.

StateDMI Version History

The following table summarizes the StateDMI release history. See the following section for more detailed information about each version. Recent release note items are categorized as follows:

Bug Fix – A bug has been fixed. Users should evaluate whether their work is impacted.

Known Limitation – A known limitation has been documented and may impact the user. The limitation will be addressed in a future release.

Change – An existing feature has been changed.

Remove – A feature has been removed.

New Feature – A new feature has been added, with functionality that was not previously available.

StateDMI Version History Summary (most current at top)

StateDMI Version	Version Information	Release Date
3.12.02	Maintenance release.	2013-04-17
3.12.00 – 3.12.01	Add operational right and plan station commands, other cleanup, consistent with StateMod GUI updates. Fix network printing.	2011-07-07
3.11.00 – 3.11.01	Minor maintenance releases. Windows 7 installer.	2010-08-11
3.10.00	Add StateCU Penman-Monteith crop coefficients commands. Include training materials with software.	2010-05-11
3.09.00 – 3.09.02	Update to use Java 1.6 release 18 to increase performance. Increase performance on slow commands. Update all documentation. Several bug fixes.	2010-02-18
3.04.00 – 3.08.02	Several changes have been made based on feedback for the 3.03.00+ releases, and enhancements related to South Platte processing. All StateCU and StateMod components now have check commands. Version 3.08.00 is meant to be evaluated by modelers in production work.	2009-09-29

StateDMI Version	Version Information	Release Date
3.03.00	All commands have been updated to the new error handling design, similar to TSTool. During this effort, all commands were cleaned up, including updating command editors to indicate required and optional commands. Many commands were updated to impose consistent behavior throughout commands. Additional warnings may now be generated to force users to be more explicit in handling issues in processing. In particular, identifiers must be specified (no * default) and <code>IfNotFound=Add</code> is required to add new data in set commands. Note: only the release notes in the documentation have been updated – a complete documentation update will be included in an upcoming release.	2009-02-16
2.18.00	Improve irrigation practice (IPY) file processing to remove additional NaN and missing values in results.	2007-10-18
2.17.00	Crop pattern time series acreage values are now explicitly written and the total/fraction information is for information only. This is compatible with changes in StateCU 12.19.	2007-10-17
2.16.00	Major changes in processing the irrigation practice (IPY) file. In particular, each command results in a full estimate of all acreage values.	2007-09-09
2.14.00	Implemented many changes to implement new well data processing. Refer to the documentation for well stations and rights, crop pattern time series, and irrigation practice time series for more information.	2007-07-11
2.02.00 – 2.13.00	Versions released leading up to 2.14, which has features for data processing approach for well data.	
2.01.00	Update crop names to 30-characters in StateCU files, update IPY file format to StateCU version 12, implement initial CIU filling features for diversions.	2007-03-02
2.00.00	First version using new installer.	2006-11-03
1.22.00	Update handling of well rights identifiers.	2006-10-24
1.21.00	Read well rights from net amounts table, add APEX to decree for wells.	2006-10-09
1.20.05	Add additional sort commands to menus; remove code that resets groundwater to sprinkler if groundwater is less.	2006-07-07
1.20.04	Add list output files to viewing choices in main window.	2006-06-13
1.20.03	Add <code>read*FromList()</code> commands to more menus.	2006-06-12
1.20.02	Add translate commands for crop characteristics and Blaney-Criddle files, improve well processing.	2006-04-30
1.20.01	Continue to improve well processing.	2006-04-24
1.20.00	Improve well processing.	2006-04-10
1.18.10	Update to allow wells and D&Ws to be ignored when processing well demand time series list.	2006-01-30
1.18.09	Implemented several fixes in network editor.	2005-12-23
1.18.08	Add commands to fill diversion, instream flow, reservoir, and well stations from the network.	2005-12-06

StateDMI Version	Version Information	Release Date
1.18.07	Update filling crop patterns with AgStats to better handle case where location does not grow all crops to be filled.	2005-11-22
1.18.06	Maintenance update.	2005-11-21
1.18.05	Add more complete headers to crop pattern and irrigation practice time series, fill CU locations with AWC and elevation.	2005-11-02
1.18.04	Change so that when processing well demands and efficiencies, only process stations where <code>idvcomw=1</code> .	2005-10-18
1.18.03	Maintenance update.	2005-10-13
1.18.02	Use NA as default diversion station ID for well stations.	2005-10-12
1.18.01	Change command dialogs to use scrollable area and allow double click on command to start an edit.	2005-10-10
1.18.00	Add commands for well pumping time series.	2005-10-03
1.17.21	Add list output files to results file list.	2005-09-27
1.17.20	Fix several bugs in processing crop commands.	2005-08-18
1.17.19	Fix two bugs handling diversion time series for aggregates.	2005-08-11
1.17.18	Enhance crop pattern and irrigation practice acreage synchronization.	2005-07-27
1.17.17	Updates to help with comparison of old data sets.	2005-07-13
1.17.16	Fix a bug in processing crop pattern time series.	2005-07-08
1.17.15	Add option to control processing well rights.	2005-06-28
1.17.14	Add features to facilitate comparing StateCU data sets.	2005-06-03
1.17.13	Enable new messaging and log file viewer and commands to write list files.	2005-04-05
1.17.12	Add warnings for obsolete commands.	2005-03-25
1.17.11	StateCU IPY features are enabled. New log file viewer is enabled. Enable StateCU and StateMod results viewers regardless of menus that are active.	2005-03-24
1.17.10	Enable right switch as appropriation date year and resolve related issues in aggregate rights, limiting to rights.	2005-03-14
1.17.09	When reading stream gage stations from the network, make the default output order the network order.	2005-02-14
1.17.08	Handle the water rights switch when limiting diversion and demand time series to rights.	2005-02-10
1.17.07	Add command to limit diversion demands to rights.	2005-02-09
1.17.06	Additional fixes for processing diversion historical and demand time series.	2005-02-07
1.17.05	Fix problem limiting diversion time series to rights. Expand fill capabilities for aggregate/system diversion time series. Several other small fixes.	2005-02-03
1.17.04	Reservoir accounts are no longer automatically adjusted if dead storage is specified, setting station ID using "ID" in rights now works.	2005-02-01
1.17.03	Fix problem where creating instream flow demand average monthly time series needed the output year type.	2005-01-31
1.17.02	Fix problem where diversion historical time series without monthly data in HydroBase were causing a premature end to filling with historical average.	2005-01-27

StateDMI Version	Version Information	Release Date
1.17.01	Fix problem with historical diversion time series being missing when not found in HydroBase.	2005-01-26
1.17.00	Several enhancements and fixes for processing diversion station historical time series (monthly). First release with tabular output displays.	2005-01-26
1.16.03	Fix output year type bug. Change default when writing files to overwrite.	2005-01-13
1.16.02	Fix so that conversion of makenet network retains label positions. Other minor updates.	2005-01-12
1.16.01	Fix case where station IDs that look like WDID but are not were causing HydroBase query errors. Other minor updates.	2005-12-17
1.16.00	Fix a number of errors in the <code>setReservoirStation()</code> command dialog.	2004-11-11
1.15.02	Official release for all StateCU and StateDMI features, with complete documentation.	2004-10-01
1.15.01	Includes StateMod well files, lacking some documentation.	2004-09-30
1.15.00	Includes all StateMod files except wells.	2004-09-16
1.14.00	Additional changes to all features except wells.	2004-08-22
1.13.00	Finalize features for network files, delay tables, instream flow, reservoirs, and diversions.	2004-07-12
1.12.00	Implement menus for all StateMod data components and implement station data features.	2004-06-01
1.11.00	Add <code>fillCULocationClimateStationWeights()</code> and update <code>translateCropPatternTS()</code> to take a list file.	2004-05-08
1.10.00	Minor changes to StateCU features based on user feedback. Begin implementing StateMod file features.	2004-04-10
1.09.00	Includes StateCU data file features.	2004-04-08
1.05.00b – 1.08.00b	Beta version for discussions with the State. Many changes in response to StateCU changes.	2004-01-13 – 2004-04-01
1.01.00 – 1.04.00	Internal versions for development.	
1.00.00	Initial version with framework.	2002-09-10

Known Limitations

- **Known Limitation** Network editor **Tools** menu tools do not allow undo/redo – this will be enabled in a future release.
- **Known Limitation** When grouping nodes and moving the group in the network editor, the positions shift unexpectedly. A workaround is to move the individual nodes and then tidy up the positions using the editing tools.
- **Known Limitation** Printing the network results in slightly different output than on the screen. This discrepancy is due to printing and screen units slightly different units of measure. The discrepancy will be resolved in a future release and will be coordinate with network configuration changes. The work-around is to select smaller node and print sizes from the editor and save a layout for printing.

Changes in Versions 3.12.02

- **Change** [3.12.02] Release software with component versions consistent with other CDSS software tools that are being released at the same time, essentially a maintenance release.

Changes in Versions 3.12.00 – 3.12.01

- **Bug Fix** [03.12.00] The `ReadNetworkFromStateMod()` command, followed by `WriteNetworkToStateMod()` command would change the network plotting limits to alternate coordinates (e.g., UTM X, Y) – this has been fixed and generally only impacted automated testing.
- **Change** [3.12.00] Add `FillFlag` parameter to the `FillCropPatternTSRepeat()` and `FillIrrigationPracticeTSRepeat()` commands.
- **Change** [3.12.00] Add the `IgnoreWhitespace` parameter to the `CompareFiles()` command to facilitate automated software testing.
- **Change** [3.12.00] Add the measurement height data values to StateCU climate stations and update the read/write/fill/set commands and displays.
- **Change** [3.12.00] Return flow assignments now have an optional comment field on the right, as per conventions in data sets (in particular for new reservoir and plan returns).
- **New Feature** [03.12.01] The network editor now has a menu bar and several tools have been added to facilitate editing the network, for example to align a sequence of nodes. Links can now be configured to display as an arrow.
- **New Feature** [03.12.01] StateDMI can be run in batch mode similar to TSTool using:
`StateDMI -commands CommandFilename`
- **New Feature** [03.12.01] Add the `PrintNetwork()` command to automate printing and for testing. Printing the full sized network has been re-enabled in the network editor, as well as saving images of the visible network.
- **New Feature** [03.12.01] Training materials are now accessible from the **Help** menu.
- **New Feature** [03.12.00] Add the following commands for StateMod operational rights:
`ReadOperationalRightsFromStateMod()`, `SetOperationalRight()`, `WriteOperationalRightsToStateMod()`. Also add a display for results.
- **New Feature** [03.12.00] Add the following commands for StateMod plan stations:
`ReadPlanStationsFromStateMod()`, `SetPlanStation()`, `WritePlanStationsToStateMod()`. Also add a display for results.
- **New Feature** [03.12.00] Add the following commands for StateMod plan return flow data:
`ReadPlanReturnFromStateMod()`, `WritePlanReturnToStateMod()`. Also add a display for results.
- **New Feature** [03.12.00] Add the following commands for StateMod reservoir return flow data:
`ReadReservoirReturnFromStateMod()`, `WriteReservoirReturnToStateMod()`. Also add a display for results.
- **New Feature** [03.12.00] Add the following commands for StateMod response file data:
`ReadResponseFromStateMod()`, `WriteResponseToStateMod()`.
- **New Feature** [03.12.00] Add the following commands for StateMod control file data:
`ReadControlFromStateMod()`, `WriteControlToStateMod()`.

- **New Feature** [03.12.00] Add the `AppendNetwork()` command to merge networks, for example to combine West Slope basin data set networks.
- **New Feature** [03.12.00] If the `system/CDSS.cfg` file does not exist, StateDMI will not attempt to make a HydroBase connection – this streamlines using StateDMI in systems where HydroBase is not available.

Changes in Versions 3.11.00 – 3.11.01

- **Bug Fix** [03.11.00] Fix bug where the `ReadWellRightsFromHydroBase(DefineRightHow)` parameter was generating an error if left blank (work-around is to explicitly specify the parameter).
- **Change** [3.11.01] Update installer to support Vista and Windows 7 installations.
- **New Feature** [03.11.00] Include **CDSS Overview** presentation with software under *doc* folder.

Changes in Version 3.10.00

- **Bug Fix** [03.10.00] Fix bug where **Paste** menus were not enabled on first copy/cut action.
- **New Feature** [03.10.00] Support has been added for StateCU Penman-Monteith crop coefficient processing, similar to Blaney-Criddle commands.
- **New Feature** [03.10.00] Training materials are now included with the installation in the `doc\Training` folder. Several slideshows are included, with supporting examples.

Changes in Versions 3.09.00 – 03.09.02

- **Bug Fix** [03.09.02] Commands read from a command file that have invalid parameters were not always generating a visible warning for the user – this has been fixed.
- **Bug Fix** [03.09.02] The `SetCropPatternTSFromList(...ProcessWhen=Now..)` command, when used with a file that had multiple crops for a location, would only set the acreage for the last crop listed (all others were set to zero in a year). The command has been updated to properly handle multiple crops at a location.
- **Bug Fix** [3.09.01] The `SortWellRights()` command editor was not correctly displaying the `Order2` parameter upon re-edit – this has been fixed.
- **Bug Fix** [3.09.01] Fix bug where the `SetIrrigationPracticeTSFromList()` command was swapping the columns for surface water acres flood and groundwater acres flood. This command has also been updated to compute the groundwater total and surface water total values. The totals are provided for information only (not used by StateCU).
- **Bug Fix** [3.09.01] StateMod time series files could not be read if they did not have at least one comment at the top – this has been fixed.
- **Bug Fix** [3.09.00] The `Set*AggregateFromList()` and `Set*SystemFromList()` commands now will set the station name if the `NameCol` is specified when `PartsListedHow=InColumn`. The set will only occur if the original value is blank and the first non-blank value in the list file will be used. Previously the name could only be set if the parts were provided in a single row.

- **Bug Fix** [3.09.00] The `MergeWellRights()` command would result in no rights if all the original rights were explicit (not determined from parcel matching). This is an extreme case that normally would not be encountered.
- **Bug Fix** [3.09.00] The `ReadWellFromHydroBase()` command was always setting the date for well permits to the default date – this has been fixed. The bug was introduced in version 3.04.00.
- **Change** [3.09.01] All documentation has been updated to current software features.
- **Change** [3.09.00] The `ReadIrrigationPracticeTSFromHydroBase()` command has been updated to include the `Optimization` parameter, with the default now being to use more memory to increase performance.
- **Change** [3.09.01] Writing StateMod time series files will now write the total as the sum of the monthly or daily values as printed in the file (previously was computed as the in-memory total, which results in a different value). The total will also now be shown as a missing value more often due to more checks on the other values (previously may have been shown as zero). Output from commands that write time series may be slightly different; however, this column is not used by models and therefore results will not change.
- **Change** [3.09.00] The Java Runtime Environment (JRE) version 1.6 was updated to release 18, providing increased performance.
- **Change** [3.09.00] The `ReadWellRightsFromHydroBase()` command has been updated to include the `Optimization` parameter, with the default now being to use more memory to increase performance.
- **Change** [3.09.00] The `SetDiversionAggregateFromList()` and `SetDiversionSystemFromList()` commands now CANNOT be used to specify collection information for StateMod well stations. Instead, use the `SetWellAggregateFromList()` and `SetWellSystemFromList()` commands. This change allows error handling to be more robust and focuses well processing on well data.
- **New Feature** [3.09.00] Add the Administration Number Calculator tool to help users convert between appropriation dates and administration numbers.

Changes in Versions 3.04.00 – 3.08.02

- **Bug Fix** [3.08.02] The `CalculateStreamEstimateCoefficients()` command was ignoring information from the `SetStreamEstimateCoefficientsPFGage()` commands – this bug was introduced in the 3.+ version and has been fixed.
- **Bug Fix** [3.08.02] The `SetStreamGageStation()` command was generating an error about the ID not being matched even when it was – this has been fixed.
- **Bug Fix** [3.08.02] Commands that set aggregate/system information from a list file were trying to match an empty ID from a blank line in the list file – this generated warnings and has been fixed.
- **Bug Fix** [3.08.00] The `FillWellStationsFromDiversionStations()` command was using the wrong station to fill data – this would be evident from incorrect well station names.
- **Bug Fix** [3.08.00] The `ReadWellHistoricalPumpingTSFromStateCU()` and `ReadWellHistoricalPumpingTSFromStateMod()` commands were not accessing the list of well rights for checks for whether a station is a diversion or well – some time series were not being read.

- **Bug Fix** [3.07.00] The `FillCropPatternTSConstant()` command would only allow integer constants – this has been fixed to also allow floating point values.
- **Bug Fix** [3.06.00] The network editor annotation dialog would indicate an invalid Y coordinate for networks that were very wide compared to the height – this has been fixed.
- **Bug Fix** [3.04.00] The `SetRiverNetworkNode()` and `FillRiverNetworkNode()` commands were not functioning properly, resulting in values not getting set – this has been fixed.
- **Bug Fix** [3.04.00] The `Read*FromNetwork()` commands were not properly handling the case where no network file was specified – this has been fixed.
- **Bug Fix** [3.04.00] The `ReadWellRightsFromHydroBase()` command was ignoring the `Year` parameter and was trying to read all years in `HydroBase` – this has been fixed.
- **Change** [3.08.02] The `CompareFiles()` command `WarnIfDifferent` parameter has been changed to `IfDifferent`, to allow for more parameter values and be similar to other commands. The `WarnIfSame` parameter has similarly been changed to `IfSame`. Old commands are automatically updated.
- **Change** [3.08.00] The `Set*TSConstant()` commands have been updated to by default reset the original data limits, based on typical use of the command. The `RecalcLimits` parameter can be used to skip this computation. This change may have some impact on data that is filled with the `Fill*HistMonthAverage()` commands.
- **Change** [3.07.00] The Java Runtime Environment (JRE) was updated from version 1.4.2 to version 1.6, providing increased performance and allowing upgrades in other areas. In particular, a new SQL Server database driver is now being used to allow an update to SQL Server 2008 for `HydroBase`.
- **Change** [3.06.00] The `MergeWellRights()` command has been updated to include the `SumDecreases` parameter to merge multiple rights that are otherwise the same.
- **Change** [3.06.00] Some previous output check features have been disabled in preparation of finalizing the new check design (see `CheckWellRights()`). Check commands have been added for all `StateCU` components.
- **Change** [3.05.00] The `MergeWellRights()` command now explicitly passes through well rights that have no parcel year, in order to retain rights from explicit well (or well collections) that do not utilize parcel relationships.
- **Change** [3.04.00] The `Set*AggregateFromList()`, `Set*SystemFromList()` and `SetDiversionMultiStructFromList()` commands now warn about missing files when the commands are loaded.
- **Change** [3.04.00] Fill and set commands for `StateMod` diversion stations, instream flow stations, river network nodes, reservoir stations, stream gage and estimate stations, well stations, and water rights have been updated to trim whitespace from parameters because extra whitespace included in quoted values was causing identifiers to not be matched properly and values to be formatted incorrectly.
- **Remove** [3.06.00] The `StateCU` commands related to delay tables have been removed since these files are no longer used with `StateCU`.
- **New Feature** [3.08.00] Add check commands for all `StateMod` components. Check commands are now in place for all components produced by `StateDMI`. Future releases may add additional specific checks to these commands.

- **New Feature** [3.08.00] Add the `ReadInstreamFlowDemandTSAverageMonthly()` command.
- **New Feature** [3.07.00] Add the `SortCropPatternTS()` command.
- **New Feature** [3.04.00] The progress indicator for commands is now active and has been enabled for the `ReadWellRightsFromHydroBase()` command. Additional commands will be updated in future releases to show progress within the command, in particular for longer-running commands.
- **New Feature** [3.04.00] The **Problems** tab has been added in the results area to summarize the warning/failure messages from all commands. The `WriteCheckFile()` command also has been added to format the messages to a file. The `CheckWellRights()` command has been added to check well rights and generate warning/failure messages. Additional check commands will be implemented in upcoming releases using this design.

Changes in Versions 3.00.00 to 3.03.00

- **Bug Fix** [3.08.00] The `ReadIrrigationPracticeTSFromHydroBase()` and `ReadWellRightsFromHydroBase()` commands were allowing WDIDs to be provided that were not associated with the water division provided by the `Div` parameter – a warning has now been added and offending locations will not be processed to ensure that only locations in the specified division are processed by the command. Some data sets may need to be updated to ensure that separate commands are used to process data in different divisions.
- **Bug Fix** [3.03.00] The `ReadRiverNetworkFromStateMod()` command was not reading the comment and groundwater maximum recharge correctly – this has been fixed.
- **Bug Fix** [3.03.00] The `Set*TSConstant()` commands were not recognizing the set period when adding a new time series (the output period was always used for the set) – this has been fixed.
- **Bug Fix** [3.03.00] Well historical pumping time series (monthly) commands were included under diversion data rather than well data.
- **Bug Fix** [3.02.00] Fix the `ReadWellStationsFromStateMod()` command – variable efficiencies were being read such that the first month was used for all months.
- **Bug Fix** [3.02.00] Fix the `WriteDelayTables*ToStateMod()` command – the table identifier and number of values in the table were not being written correctly. Also add the `Precision` parameter to allow more flexibility and simplify software testing.
- **Bug Fix** [3.02.00] Fix the `SetWellStation()` and `SetDiversionStation()` commands – previously using “ID” in the river node field would not automatically use the station identifier.
- **Bug Fix** [3.02.00] The `Fill/Set ReservoirStation()` command was setting the on/off switch instead of the one fill rule value when new stations were added. – this has been fixed. Setting values in existing reservoirs did not have the problem.
- **Change** [3.03.00] The `Set*TSConstant()` commands now set the original data limits to that of the set data when new time series are added (averages are computed by including values ≤ 0) – this allows filling with average or pattern with a later command.
- **Change** [3.03.00] The `FillNetworkFromHydroBase()` command has been updated to automatically project geographic coordinates to UTM if only geographic are available in the database.
- **Change** [3.02.00] The `ReadDelayTablesFromStateMod()` command has been renamed `ReadDelayTablesMonthlyFromStateMod()` and

`ReadDelayTablesDailyFromStateMod()` in order to minimize confusion about command functionality related to various data components.

- **Change** [3.02.00] The `SetInstreamFlowDemandTSAverageMonthlyConstant()` and `SetInstreamFlowDemandTSAverageMonthlyFromRights()` commands will now by default warn if the requested time series is not found. Specify the `IfNotFound=Add` parameter to request that the time series be added in this situation. This allows for increased error handling and quality control.
- **Change** [3.02.00] The `WriteDelayTablesToStateMod()` command has been renamed `WriteDelayTablesMonthlyToStateMod()` and `WriteDelayTablesDailyToStateMod()` in order to minimize confusion about command functionality related to various data components.
- **Change** [3.02.00] Change the `FillStreamEstimateStationsFromHydroBase()` command to optionally check for structure information in `HydroBase` – previously only station information could be filled.
- **Change** [3.02.00] Commands that generate list files now include header comments with a short description of the file. The command file and other information are also now included in comments.
- **Change** [3.02.00] Most set and fill commands now use the `IfNotFound` parameter, to give more control of error handling. The `Ignore` value for the parameter has been added to allow warnings to be ignored, if such a case is expected as possible. Some commands may generate warnings – set the parameter appropriately to remove the warning.
- **Change** [3.02.00] The main interface has been simplified to be more similar to `TSTool`. Features to manage full datasets have been disabled but may be enabled in the future.
- **Change** [3.02.00] Where appropriate, menu items have been prefixed with “1: “, “2: “, etc. to indicate that related commands are generally used in a sequence. For example, it may be necessary to read a water rights file in order to set time series using the rights.
- **Remove** [3.03.00] The `FillWellStationsFromHydroBase()` command has been removed – its capabilities are included in other fill commands, and the change removes redundant processing and allows for better error handling.
- **New Feature** [3.03.00] Enable the `LimitWellDemandTSMonthlyToRights()` command.
- **New Feature** [3.03.00] Add the `SortDiversionDemandTSMonthly()` command.
- **New Feature** [3.03.00] Add the `SortWellDemandTSMonthly()` command.
- **New Feature** [3.03.00] Add the `FillRiverNetworkNode()` command.
- **New Feature** [3.03.00] Add the `SetWellDemandTSMonthlyConstant()` command.
- **New Feature** [3.02.00] Commands have been updated to use new command status error handling, similar to the `TSTool` software. Problems (if any are detected) and corresponding recommendations are noted for each command.

Changes in Version 2.18.00

- Additional changes in IPY processing to correct for some NaN and -999 values that were being generated. Additional care has been taken to set values to zero in some cases, resulting in more complete computation of other acreage terms.

Changes in Version 2.17.00

- There is a major change in this release in how the crop pattern time series acreages are written to the CDS file. Previously, the acreage was written as a total and a fraction by crop. When the file was read (e.g., when processing the irrigation practice [IPY] file), this resulted in only three significant digits of precision and the resulting acreage by crop would not match that of the raw values in HydroBase, the GIS layers, the total in the CDS file, or the total computed in the IPY file (based on supply source). The legacy approach was maintained for a long time to allow comparison of model results but it became increasingly difficult to perform quality control on data as it moved through the system. The new approach writes the actual acreage for each crop. The fraction is still displayed but is for information only and is not used in computations. StateCU version 12.19 or later can be used to read the acreage column (prior versions used the total and fraction). It is important that the CDS and IPY files are generated with the same version of StateDMI (2.17.00 or later for both, or versions earlier than 2.17.00 for both).
- The IPY acreage values are now written by default to a precision of .1 and can be controlled with the `PrecisionForArea` parameter. This is necessary to minimize errors in round-off and warnings about acreage totals, in particular because acreage are categorized by supply type (surface and ground water) and irrigation method (flood and sprinkler) and fractions when rounded to integers were difficult to automatically prorate, especially with the processing described in version 2.16.00 notes below.
- The `setIrrigationPracticeFromList()` command can be used instead of the `readIrrigationPracticeFromList()` command. This sets the IPY values at the time the command is executed, instead of providing parcels that are later read when processing HydroBase parcels. For example, using the read command on an aggregate provides aggregate part data to be considered when reading data from HydroBase (which may supply data for other parts of the aggregate). Using the set command will set the values as the command is processed.

Changes in Version 2.16.00

- The incremental releases leading up to and culminating with this release have implemented major changes in the processing of the irrigation practice (IPY) file. In particular, dependencies between commands that process IPY acreage have been removed. For each command, the acreage numbers are computed using the currently available information, with general order and importance of data being total acreage, then groundwater acreage (when groundwater data are available), then surface water acreage. This recognizes that the total acreage from the CDS file should control and that groundwater acreage estimates (e.g., from center pivot irrigation and field data) are the most reliable. Each command initiates a cascade of computations in order to compute IPY acreages as completely as possible. For example, setting groundwater acreage does not try to adjust the total but will try to compute the remaining surface water acres (total – groundwater), and then if possible the acreage by irrigation method (flood or sprinkler). Consequently, as commands are executed to process the data, values will be converted from missing (-999) to specified or computed values. In troubleshooting data processing, commands can be incrementally uncommented to evaluate the results of each step. Log messages may indicate that some computation could not be done (e.g., groundwater total acres are set but split between flood and sprinkler cannot be done).
- The `writeIrrigationPracticeToStateCU()` command has been updated to include a `OneLocationPerFile` parameter. This is useful during troubleshooting because by default the IPY file is printed in blocks of years. By printing one location per file, the full period for a structure can be reviewed. This option is particularly useful if write commands are used after each major step of processing, in order to see the impacts of a command on results.

Changes in Version 2.14.00

- Review all current procedures for the well rights, crop pattern time series, and irrigation practice time series, update all command reference documentation, and make minor software changes based on review.
- Fix bug in `readWellRightsFromHydroBase()` command – the `DefineRightHow` parameter was always being set to `EarliestDate`. The impacts of this bug should be minor, based on a previous review of different parameter combinations.
- Change so that when specifying aggregate/systems using a list file, if the list file specifies a location that is not found in the data set, the user will be warned.
- Add ability to read the associated diversion ID when reading a well station list file – this allows well right aggregation to properly handle different location types.
- The `fillWellStationsFromHydroBase()` command is being phased out. Instead, use `fillWellStationsFromDiversionStations()`, `setWellStationAreaFromCropPatternTS()`, and `setWellStationCapacityFromWellRights()` commands.
- Update the **Command** menu to have three levels, to improve usability and allow further consolidation of StateCU and StateMod commands.

Changes in Version 2.02.00 – 2.13.00

- These versions were made with features to explore implementing a new modeling approach and were finalized in version 2.14 – see the notes for that version.

Changes in Version 2.01.00

- Add `setRiverNetworkNode()` command to set river node network information, mainly to change the node name.
- Update the CCH, CDS, and KBC files to default to new 30-character crop names. The previous file versions can still be read using a `Version=10` parameter.
- Update the IPY file format to by default use the new format with more columns for acreage. The processing logic to fill the values is not yet in place. Therefore, the `Version=10` parameter should be used when writing the IPY file, until the next release.
- Add preliminary features to fill diversion records with “currently in use” (CIU) information when using the `readDiversionHistoricalTSMonthlyFromHydroBase()` command – features will be finalized after further testing.
- Implement improvements in the installer to better handle configuration of the HydroBase settings.

Changes in Version 2.00.00

- First version using the new installer, to facilitate distribution and installation of the software.
- Remove need for well water rights to be sorted in a particular order to be processed for the StateCU IPY file. The max pumping values in the IPY file will generally have a higher maximum.

Changes in Version 1.22.00

- Change `readWellRightsFromHydroBase()` IDFormat parameter dialog note and fix to make sure that identifiers are still being formatted properly for the previous release.

Changes in Version 1.21.00

- Adjust reading well rights to reread from the database rather than relying on the “wells” table. This results in slower run times and potentially more water rights in output files. The South Platte and Rio Grande modeling approaches are different and use different command parameters when reading well rights.
- Add APEX amounts to the net amount decrees. This results in larger decrees in model files.

Changes in Version 1.20.05

- Fixed problem where some sort commands were not available from menus.
- In `synchronizeIrrigationPracticeAndCropPatternTS()`, remove code that resets groundwater acreage to sprinkler acreage if groundwater is less – it is unneeded based on modeling conventions.

Changes in Version 1.20.04

- When writing list files, add the files to the list of output files available in the GUI.

Changes in Version 1.20.03

- Add `read*FromList()` commands to all menus that through oversight did not have them added previously.
- Fix problem with “see check file” dialog being shown before editing commands.

Changes in Version 1.20.02

- Continue to improve well processing.
- Always create the check file for well stations and rights.
- Add the `translateBlaneyCriddle()` and `translateCropCharacteristics()` commands to change crop name to facilitate modeling.

Changes in Version 1.20.01

- Continue to improve well processing.

Changes in Version 1.20.00

- Improve well processing based on user feedback.

Changes in Version 1.18.10

- Update the `readWellDemandTSMonthlyFromStateMod()` command to allow ignoring wells or D&Ws, to facilitate processing subsets of the data set.

Changes in Version 1.18.09

- Implemented several fixes in the network editor.

Changes in Version 1.18.08

- To allow filling station names from the network file, add the following commands:
`fillDiversionStationsFromNetwork()`,
`fillInstreamFlowStationsFromNetwork()`,
`fillReservoirStationsFromNetwork()`, `fillWellStationsFromNetwork()`.
- Add elevation to the `readCULocationsFromList()` command.

Changes in Version 1.18.07

- Add AWC to the `readCULocationsFromList()` command.
- Fix the `fillCropPatternTSProrateAgStats()` command so that all county crops are used even if a location does not have a crop type.

Changes in Version 1.18.06

- Add the `readDiversionDemandTSMonthlyFromStateMod()` command.
- Improve packaging of image files with Jar files to resolve issues with icons not displaying in the network editor.

Changes in Version 1.18.05

- Add the `setDiversionStationsFromList()` and `setWellStationsFromList()` commands.
- Update `fillCULocation()` and `setCULocation()` to include elevation and AWC.
- Update the StateCU CDS and IPY file headers to include more complete headers, as expected by StateMod.
- Add the `mergeListFileColumns()` command.

Changes in Version 1.18.04

- Implement minor changes to well processing based on user feedback.
- When processing well demand time series to calculate average efficiencies or to estimate demands using average efficiencies, only process well stations where `idvcomw=1`.

Changes in Version 1.18.03

- Implement changes to better support product-oriented file management.

Changes in Version 1.18.02

- For well stations, default the associated well to NA rather than N/A.

Changes in Version 1.18.01

- Change command dialogs to use scrollable text areas instead of text fields of a fixed size. This allows longer commands to be fully viewed.
- Double-clicking on a command now displays the editor for the command.

Changes in Version 1.18.00

- Add commands for well pumping time series (historical monthly).
- Reverse the **Run All Commands** and **Run Selected Commands** buttons to agree with the TSTool order.
- Add graphical buttons at the top of the main window to facilitate opening and saving commands files.
- Add a complete menu for well historical time series monthly (previously only a subset of commands was included).

Changes in Version 1.17.21

- Update to include `write*ToList()` output files in the results file list.
- Add the efficiency report that is created when processing demands to the output results file list.

Changes in Version 1.17.20

- For well-only aggregates, do not put a W in the water right ID. D&W nodes still have the W, as per the Watright software.
- Fix a bug where the last year filling crop pattern time series was not getting normalized to basin statistics.
- Fix a bug in the `setCropPatternTS()` command overriding an existing pattern causes erroneous output.
- When using a time series that is read from an external file, reset the period to the output period so that the time series can be filled.
- Fix a bug where when filling time series with a constant, the start and end dates were not being handled properly.
- When filling diversion time series with diversion comments, read the comments after setting the period of record.
- Add the `setDiversionDemandTSMonthlyConstant()` command.

Changes in Version 1.17.19

- Fix bug where missing file with the `readAgStatsTSFromDateValue()` command was not being handled gracefully.
- Add `IgnoreUseType` parameter to the `readDiversionRightsFromHydroBase()` command, to address double counting of some rights in HydroBase.
- Change so that if an aggregate/system diversion part has missing capacity, the total capacity is not incremented for the part (which has a large default value).
- Fix so that an aggregate/system historical diversion is handled properly, even if the first part has no data in the database.

Changes in Version 1.17.18

- Fix a bug in the `writeCropPatternTSToStateCU()` command where the `WriteCropArea` parameter was not defaulting properly.
- Implement new parameters in the `synchronizeIrrigationPracticeAndCropPatternTS()` command to allow more options in synchronizing acreage.
- Update the `setIrrigationPracticeTSMaxPumpingToRights()` command to have the `NumberOfDaysInMonth` parameter, to be consistent with StateCU conventions.

- Update the `fillCropPatternTSProrateAgStats()` command to include the `NormalizeTotals` parameter, to allow acreage to be prorated to the totals for a group of crop types.

Changes in Version 1.17.17

- Update the `readCropPatternTSFromHydroBase()` command to truncate parcel acreage to .2 to compare to work done by Leonard Rice. This feature is available only in test mode.
- Update the `setIrrigationPracticeTSFromList()` command so that data other than efficiencies can be set.

Changes in Version 1.17.16

- Fix bug where the `setCropPatternTS()` command results were not getting refreshed after the initial processing, resulting in zeros in the output for totals.
- Add a tool to print surface-only diversions to the log file. This is useful for finding diversion stations that are not D&W model nodes.

Changes in Version 1.17.15

- Add `DefineRightHow=LatestDate` when processing well rights.

Changes in Version 1.17.14

- Change `writeCropPatternTSToStateCU()` command to optionally write only the total acreage by location, to facilitate comparison with previous data sets, and to use the output period, if specified.
- Add the file version to the `readCropPatternTSFromStateCU()` and `readIrrigationPracticeTSFromStateCU()` commands, to facilitate comparison with previous data sets.
- Add the `openHydroBase()` command.
- Add the `ReadStart` and `ReadEnd` parameters to the `readDiversionHistoricalTS*FromHydroBase()` commands.
- Fix bug where reading historical diversion time series was initializing the first part in an aggregate and then adding the part again.
- Enable flags for filling diversions with historical average, pattern, constant, and limiting to rights.

Changes in Version 1.17.13

- Change the log file warning level to 3 to reflect application warnings being level 1, command warnings being level 2, and important low-level warnings being level 3.
- Finalize results displays for reservoirs, wells, instream flow and network data.
- Begin phasing in stored procedures to production version.
- Add `write*ToList()` commands.
- Add the `readReservoirRightsFromStateMod()`, `readWellRightsFromStateMod()` commands.
- Add the `readStreamEstimateCoefficientsFromStateMod()` command.
- Add the `readDelayTablesFromStateCU()` and `readCULocationDelayTableAssignmentsFromStateCU()` commands.

- Add `sortBlaneyCriddle()` command and add precision to `writeBlaneyCriddleToStateCU()` to facilitate comparison with previous data sets.
- Add version to `writeCULocationsToStateCU()` to facilitate comparison with previous data sets.
- Convert commands to messaging that is integrated with the log file viewer.
- Update the `setIrrigationPracticeTSSprinklerAreaFromList()` command to allow using the area in the list file, to facilitate comparison with previous data sets.
- Fix bug where `sortReservoirStations()` was not being recognized.
- Add ability to open new model networks.
- Add the `startLog()` command.
- Fix a bug where the dialog for the commands file was not being initialized to a recently accessed directory.

Changes in Version 1.17.12

- Add warnings for obsolete commands.
- Change message levels to minimize console output.

Changes in Version 1.17.11

- The StateCU IPY file can now be processed. See specific changes below.
- Irrigation practice time series groundwater and sprinkler acreage can now be read from HydroBase using the `setIrrigationPracticeTSFromHydroBase()` command.
- The `setIrrigationPracticeTSMaxPumpingToRights()` command will now use water rights from the `setIrrigationPracticeTSFromHydroBase()` command, or read a StateMod well rights file.
- The `setIrrigationPracticeTSSprinklerAreaFromList()` command has been enabled to process snapshots of sprinkler parcels from a list file and HydroBase.
- A new log file viewer has been enabled. The old Notepad default viewer is still available but the new viewer provides a summary of level 1 and 2 warning messages and allows navigation in the large log file. Additional enhancements will be enabled in future releases in order to simplify the interpretation of messages. In particular, additional attention is focusing on the classification of warnings and errors.
- The results of a commands run were previously tied to whether StateCU or StateMod menus were activated. Output components for both models are now listed to simplify access to results. The prototype displays are being finalized.

Changes in Version 1.17.10

- Add the `synchronizeIrrigationPracticeAndCropPatternTS()` command for processing the irrigation practice time series.
- Add `writeCropPatternTSToStateCU()` to the irrigation practice time series commands to update the file after synchronization.
- The irrigation practice commands to assign the maximum pumping, groundwater acreage, and sprinkler acreage are not yet functional.
- Add the `sortCULocations()` command to sort the data before writing.
- Add the `sortDiversionRights()`, `sortReservoirRights()`, `sortInstreamFlowRights()`, and `sortWellRights()` commands to sort right data before writing.

- Update the `readWellRightsFromHydroBase()` command to have the `DefineRightHow` and `DefaultAppropriationDate` parameters to control how StateMod rights are created from well rights and permits.
- Update the `readDiversionRightsFromHydroBase()`, `readReservoirRightsFromHydroBase()`, `readInstreamFlowRightsFromHydroBase()`, and `readWellRightsFromHydroBase()` commands to include the `OnOffDefault` parameter to allow the right switch to be set to the appropriation date year.
- Update the above commands that aggregate rights to set aggregate rights to the integer value for the decree-weighted appropriation date. Previously the fractional remainder was not cleared and the resulting administration numbers could give erroneous appropriation dates (e.g., when used with the `limitDiversionHistoricalTSMonthlyToRights()` or similar commands).
- Update the `limitDiversionHistoricalTSMonthlyToRights()` and `limitDiversionDemandTSMonthlyToRights()` commands to have the `UseOnOffDate` parameter, allowing the appropriation date to be determined from the administration number or the `OnOff` switch (when a year).
- When processing diversion and well rights, ignore water rights that have units other than C or CFS. Previously only C was checked but there is apparently a change in HydroBase.
- Implement initial enhancements to the log file viewer, which provides a summary of warning messages and provides navigation tools for the log file.

Changes in Version 1.17.09

- When reading stream gage stations from the network, make the default output order the network order, which is expected by StateMod. Previously, stream gages were listed first and then other baseflow nodes.
- Rearrange the order of the diversion demand time series (monthly) menus to reflect typical use.

Changes in Version 1.17.08

- Handle the water rights switch in the StateMod diversion rights file when using the `limitDiversionHistoricalTSMonthlyToRights()` and `limitDiversionDemandTSMonthlyToRights()` commands.

Changes in Version 1.17.07

- Add `limitDiversionDemandTSMonthlyToRights()`.

Changes in Version 1.17.06

- The first time series part in an aggregate/system was not being filled in the `readDiversionHistoricalTSMonthlyFromHydroBase()` command. This has been fixed.
- The efficiency report from the `calculateDiversionStationEfficiencies()` command is now listed in the output files and can be displayed.
- The list of stations to ignore in the `limitDiversionHistoricalTSMonthlyToRights()` command was not being processed correctly, resulting in an error. This has been fixed.

Changes in Version 1.17.05

- The `limitDiversionHistoricalTSMonthlyToRights()` command was not triggering a save of the original time series, as needed. This has been fixed. The documentation for the command was also significantly expanded.
- In `calculateDiversionDemandTSMonthly()`, change so that if the efficiency and IWR is zero, set the demand to zero. Previously it was set to missing. This will also impact well demands.
- Add the `IncludeCollections` parameter to the `fillDiversionHistoricalTSMonthlyAverage()` and `fillDiversionHistoricalTSMonthlyPattern()` commands to allow diversion aggregate and system stations to be ignored in processing (because they can also be filled during the read).
- Enhance `readDiversionHistoricalTSMonthlyFromHydroBase()` to allow filling of aggregate/system parts before aggregation.
- The fill period from command parameters was not being considered when filling time series with a pattern – this has been fixed.
- The `setDiversionHistoricalTSConstant()` and other similar commands were not using the `SetStart` when specified by the user.
- The `fillDiversionStation()`, `setDiversionStation()`, `fillWellStation()`, and `setWellStation()` commands were not properly transferring efficiencies specified in calendar year to water year data in station files.

Changes in Version 1.17.04

- Previously, if the dead storage value for a reservoir was specified, the reservoir accounts were adjusted down by this amount and the dead storage was always written as zero. This was a workaround for a limitation in StateMod. The dead storage value is now written as specified and accounts are not adjusted.
- Setting or filling rights by specifying a StationID of “ID” was not previously working. The software will now set the station ID to the first part of the right (the part before “.”).
- Added a warning when processing diversion demand time series (monthly) if no diversion stations have been read.

Changes in Version 1.17.03

- Fix bug in `setInstreamFlowDemandTSAverageMonthlyFromRights()` where the period for the time series was incorrectly being taken from the `setOutputPeriod()` command. It now uses the `setOutputYearType()` command information.
- Fix bug where the `calculateStreamEstimateCoefficients()` command was generating an error about the command not being recognized. This was a spurious message that was removed.
- Change so that reading stations from the network results in the river node identifier being set to the station identifier. Previously the river node identifier was set to missing and required an additional fill or set command to assign the value.

Changes in Version 1.17.02

- Fix bug filling `fillDiversionHistoricalTSMonthlyAverage()` where missing original data was causing the command to end. Time series with no original data are now not filled with historical averages and the processing is allowed to continue through other time series.
- Begin simplifying `readSprinklerParcelsFromList()` – additional enhancements need to be completed before the command can be used in production.

Changes in Version 1.17.01

- The `readDiversionHistoricalTSMonthlyFromHydroBase()` command was not allocating memory for blank time series – therefore subsequent filling was ignored and output was missing.

Changes in Version 1.17.00

- Introduce tabular displays for output components, available at the bottom of the main interface. These displays can be used to review data while find-tuning commands. Additional enhancements to these displays will occur – this is an initial release of these features.
- Rework the size of the display panels in the main interface to provide more display area for commands. The other panel areas are still retained but may be removed or hidden in the future.
- Add `sortDiversionHistoricalTSMonthly()` command to facilitate maintaining consistency with the diversion station file.
- Update the `setHistoricalDiversionHistoricalTSMonthly()` command to allow reading from HydroBase, for cases where a diversion's time series may actually be stored under a different identifier (e.g., a stream gage). Also save a backup copy of the time series after reading, for use with the `limitDiversionHistoricalTSMonthlyToRights()` command.
- Fix the `limitDiversionHistoricalTSMonthlyToRights()` command – previously the list of rights was accumulating as diversion stations were processed, instead of just using the rights for the specific diversion station.
- Fix an error in the `setReservoirStation()` command editor dialog – the account name was being discarded when re-editing an old command.
- Fix inconsistencies in the Select All and Deselect All commands menus – previously the behavior was not correct.

Changes in Version 1.16.03

- The default for commands that write files is now to overwrite files. The previous default of updating the file was resulting in long file headers.
- Setting the output year type with `setOutputYearType()` was not being recognized. This impacted both output of time series and processing of data like diversion station efficiencies.
- Add `setDiversionHistoricalTSMonthlyConstant()` – this eliminates the need for replacement files in some cases.

Changes in Version 1.16.02

- The `setDiversionStationDelayTablesFromRTN()` command editor dialog was changing the spelling of the command after edits – this has been corrected.
- For station collections (aggregates and systems), the station name in the list file was not being used to set data for the stations – this has been corrected.
- When reading an old Makenet network file into StateDMI, the label positions were being reversed – this has been fixed. It may be necessary to reconvert networks to retain the original label positions.

Changes in Version 1.16.01

- Diversion, reservoir, well, and instream flow station identifiers that looked like WDIDs but which were not (e.g., 990001) were resulting in HydroBase queries, which caused an error. Additional error handling has been enabled.

- The `setDiversiOnStationDelayTablesFromRTN()` command editor dialog was changing the spelling of the command after edits – this has been corrected.

Changes in Version 1.16.00

- Added to troubleshooting to explain errors caused by Ctrl-M characters in commands.
- Added a popup menu choice for commands to find a command using a line number – this facilitates debugging the commands.
- Updated the command editor dialog and documentation for the `setReservoirStation()` command to clarify the meaning of `AccountID`. The `AccountName` parameter was also mistakenly being set to the `AccountID`.
- Fix limitation where the position of the legend in the network was not being saved after the legend was interactively moved.
- Fix bug where after adding a new node in the network, the node cannot be selected for further changes.
- Display the page margins on the network diagram by default.
- Clarify the documentation for system and aggregate commands to indicate that the commands should be specified before reading data from HydroBase.

Changes in Version 1.15.02

- Completed documentation for all data files.
- Updated documentation to discuss conventions for station identifiers.
- Updated documentation to incorporate general information from old **StateMod Appendix B** procedures manual.
- Updated documentation to include well demand commands.
- Updated network data documentation to describe use of the network up front versus list files.
- Fixed several well demand command editor dialogs were not displaying correctly.
- Fixed problem where fill commands for time series were not updating the time series to the files.
- Enable viewing results in text editor.

Changes in Version 1.15.01

- Includes all well file commands.

Changes in Version 1.15.00

- All StateMod files are supported except for wells. Well features are preliminary.
- Change StateCU IPY file format to match previous version. The precision for some data that are in more than one file (e.g., area) is once again inconsistent.

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