



xpswmm/xpstorm

Version Changes

MODEL WITH CONFIDENCE

One of the many advantages of using XP Solutions products is the knowledge that we are continually improving the software, adding new features that keep our customers equipped with the latest modeling technology. The following is a list of the changes available in our latest version.

VERSION 2017.1 (2017 Official Release 17 January 2017)

Sewer Modeling

- xpswmm can now be **configured for only 1D sanitary sewer modeling** by selecting that menu item in the Configuration menu. This disables certain functions and layers in the layer control panel that do not pertain to that type of model such as 2D modeling.
- The Layer Control Panel has all 2D Layers removed from view when the Sanitary Sewer "skin" is applied. This is invoked in Configuration->Sanitary Sewer Enhancements->Wastewater/Sanitary.
- The configuration parameters PUMP3_MAXQ or MAXQ_PUMP3 are now on by default. They allow the pump to **choose the flow with the lowest head** on the pump if the pump is found to be off the pump curve such as flowing downhill. Previous versions could not pump downhill without the parameter since no negative head values are on the pump curve and hence no corresponding flows for those pump situations.

2D Modeling

- xp2D now uses the most recent **Tuflow release 2106.03-AC** release.
- The simulation of 2D models directly in US Customary Units is now possible. In the 2D Job Control select Use Project Units and the internal calculations will be US unit based. Previously US unit models were pre and post processed to metric.
- Adaptive time stepping is possible for GPU model runs. It is accessible in the 2D Job Control 2D Only Mode section.
- Within the Grid Extent Properties dialog, you can now set the precision of the Cell Center Elevation from 0 to 10. Typically, this will be 2 for US Customary projects and 3 for metric models. This is now extended to the 2D Map results. For example, when showing the Max Depth Result for every cell the number can be set to show 2 decimal places to represent one hundredth of a foot or every cm for a metric model.
- GPU solves do not force Double Precision engines when there is a rain on Grid simulation.

Model Building & Setup

- A new feature is added to the Tools->Modify Elevations to **Match the crowns or Match the inverts** of a set of selected links and nodes.
- When resolving a model if there are opened result windows the user is now prompted to close all Tabs with one click.
- When assigning catchments to nodes, those nodes that are on the perimeter or very close can be included in the selection of node as a possible target.
- When a new Global Database record is added it is automatically selected so that clicking the Edit button will allow the new record to be edited without clicking on the item in the list.

- The contents of the Global Storms dialog can be completed with a copy and paste from another list such as Excel.
- The library for loading and reading CAD files allows the latest versions of CAD files.
- Max **water surface elevations for bridge links** are automatically set to 10m or 30ft depending on units above the high cord value. This ensures that the weirs used for the overtopping remain weirs and do not become orifices or the SWMM default at the weir surcharge elevation.
- A mix-up between the dialogs and `xptables` for the Inlet Capacity choice between HEC22 and Rated by Approach depth is resolved. Editing the choice in either location is now consistent.

Results

- The **Profile Plot** Feature now allows **multiple network segments** to be placed on the same page. This allows main line and branches to be plotted and exported as a group to AutoCAD DXF.
- The latest version of Notepad++ is included as the programs default editor. The Compare plugin has also been preloaded so that text files can be compared. In addition, the setting to remember previously opened files and reload them is turned off.
- Review Results time series such as Runoff hydrographs at nodes and stage graphs in Hydraulics now includes in all cases a first time step value at time equals zero and a final time step in the displayed and graphed series.
- In the Profile Plot tool, the user can now display the surface detail from the DTM as opposed to a straight line connection between node ground elevations.

System

- Scenarios and Global Storms are allowed for the **Solve Manager**. The caveat is that the .dat files must be generated.
- The 64-bit engine is now the default. The 32bit engine is deprecated as of 2017.1 version. A 32-bit engine could be built and shipped upon special request and consideration.
- The full build number is now being presented in the License Details.
- The installer is upgraded and will no longer allow the XCF file to be moved on to itself by selecting the file from the same place as the target during installation which caused issues in the past.
- **New artwork** is included for many common dialogs. This is introduced to increase understanding of the data requested.
- In an effort to streamline multiple language version of `xpswmm/xpstorm` we now use a single `xps res` project for all resources dlls.

Maintenance

- `xpdiagnostic.exe` is updated for the current version.
- The old CHM files are no longer included in the `xpswmm/xpstorm` installers. The program help is all online except for the Japanese version at help.xpsolutions.com.
- The 2017.1 version is a major release and requires updated license files. License files from earlier versions will not allow 2017.1 and later versions to execute.
- The current `xpswmm/xpstorm` installers no longer have a direct download for `xpdrainage` but rather some links to learn more and request an evaluation copy.
- Starting with version 2017.1 the software will not open models made in a newer version but will generate an error message. The user should upgrade to the latest version in order to open models saved in a newer version. Previously a warning was generated to note that database inconsistencies could occur.
- Laurenson method is modified to take into account values of n other than the default of -0.285 as expected.

- Special Characters are prevented from being used in Global Storm and Scenario names. The operating system reserved characters, such as /, |, :, *, ?, ", <, >, and | as well as a comma are prevented from being used as Global Storm and Scenario names. The DTM color graduation legend now will graduate or have sharp color transitions to follow the plan view display. The numerical values also better align.
- The UK hydrology data can now be copied and pasted from one node to other nodes.
- The smoothing at the edge of 2D Maps is now consistent across the depth and elevation maps.
- A display issue where when zooming and panning with filled 2D arrows is resolved.
- Both polylines and polygons in Dynamic Elevation Shapes and Elevation Shapes can now be deleted by right-click and choosing Delete Selected Polygon/Polyline.
- The Hydraulics mode pump dialog is updated to specifically label depth and elevation fields and hide fields if the pump type did not require the data.
- A special case of restricting the display with a value starting with a zero such as 0.50 was causing an issue. This is fixed and 0.05 and .05 etc. are valid inputs.
- The Horton infiltration is added for 2D overland flow. Together with the existing Green Ampt and the Initial and Continuing Losses there are now 3 options to infiltrate water in to the 2D cells from water flowing on the cells and as rainfall hits the cells.
- Hydraulics Node User Inflow dialog is updated to a grid when pollutants are added so that it facilitates and easy copy and paste from other applications like Excel for the hydrograph and pollutograph.
- The max velocity which is not computed for a weir is now suppressed as a subtitle in the Review Results graphs for weirs.
- The dialog text for DTM is updated to be less confusing when introducing DTM, XPTIN and Grid files.
- The Snap feature is now on by default when creating a new model.
- The 2D Land Use Dialog redesigned to require less height and be useful at low resolution 768 vertical.
- Node and Link labels are no longer selectable when visibility is off in the layer control panel.
- U/S and D/S inverts of rectangular culverts can now be specified different from the node inverts in bridge links just as they are able to be specified with circular culverts.
- The grid for the network view is improved to allow line thickness and automatic square grid option. The dialog has an improved user experience.
- When exporting the model to XPX, a rainfall referenced file had additional backslashes. This is fixed and no longer happens.
- The 2D Job Control->Advanced Settings dialog is updated so that the ESC key closes the entire dialog set rather than just the Table if the Table was being edited. This is consistent now with other dialogs in the ESC key, Cancel button and the dialog X all close the dialog without saving changes.
- An issue that prevented some 2D model results display for Global Storms with spaces in the name is resolved. Model runs with spaces in the name are no longer an issue.
- Some bridge geometry was missing the low cord in the wetted perimeter calculation. This is fixed for 2017.1.
- When creating flow constrictions and changing between various definitions for the data in the table the data was being falsely reset to zero. This is no longer happens.
- An issue where deleting text in the model deleted the incorrect text is resolved.
- A very limited number of DXF files exported from XP such as the plan view layout could not be opened in XP or in AutoCAD and yielded some errors. Updates were made with the CAD Connect components and the error is no longer present.
- Step 5 in the Import/Export Wizard correctly suppresses Optional data for Node and Link but exposes the option when needed i.e., Multilink.
- A small cosmetic change is made to the Depth Varying Roughness button height in the Natural Channel dialog.
- Depth Varying Roughness is no longer allowed to be left active and blank as this previously created a run failure.

- Optimization of loading XMDF results has reduced the load time of results in some cases a 5 fold increase in speed is obtained.
- An issue that prevented Multilink conduits to plot and printout tabular hydrographs is fixed.
- When creating a new fill area, the default value is now 9999 for both metric and US Customary units.
- The help was updated to explain that the depth varying roughness is a step function and not a linear interpolation like the graph might suggest. See the help for a more complete explanation.
- FLT files are now supported in addition to ASC Grid files. All the locations where ASC files could be referenced or imported now allow FLT or their binary equivalent to be used.
- It was possible when creating Global Database records like Rainfall to make them longer than 20 characters when they are created from the Select dialog. This could cause an issue since the maximum record length is 20. This has now been prevented in a similar way that it is prevented in the Global Database dialog.
- The program now allows for up to 20 pollutants to be simulated for user inflow hydrographs in the hydraulics node. The pollutants can also be graphed showing concentration vs. time all the way to the 20th pollutant.
- The persistence of CAD layer visibility is implemented. This means that the layers made visible and invisible in XP for the attached CAD files are now saved and recalled when a file is opened.
- An issue when displaying Velocity angle for Head/Velocity points being multiplied by the US/Metric conversion is fixed.
- The Snyder Time to Peak Calculator is updated so that it returns the correct Time to Peak to the Unit Hydrograph dialog in both the US and Metric Units.
- The pointer is updated to a better symbol when adjusting the pane sizes in the Dynamic Section views.
- An issue where the precision was lost with very large Save Results values for the review Results is fixed
- The Calculate Node Catchment Areas dialog is made wider to reduce the requirement to make it wider to see the new and old areas.
- An issue when exporting profile plots to DXF files is fixed. In some previous versions the software failed due to an out of bounds array.
- An abrupt step behavior is observed in some Green Ampt models when the rainfall rate was very close to the Hydraulic Conductivity. We have rework the routine so that this does not occur and the cumulative Infiltration is not falsely reset. Similar issues were reported in SWMM5.
- A recently introduced issue in 2016 and 2016.1 involving the reading of interface files produced by `xprafits` is resolved. This means that version prior and after 2016 versions can successfully read interface files from `xprafits`.
- Issues with Arial font have been fixed for the Korean version.
- When using Project Units in 2D to allow native calculations in US Customary units the software was previously converting the value of wet/dry depth and not directly assuming the input was in feet. This is now corrected and the value is no longer converted and the input is ft. or m depending on the unit choice and the Use Project Units check box.
- An issue when merging models with Natural Channels is fixed in that it no longer falsely removes some cross sections.
- A drawing issue is resolved for Bridge Cross Sections in the Dynamic Section Views. Previously these items would automatically fill to zero before they started to fill hydraulically.
- A issue in that a newly loaded image was not allowed to have new coordinates is fixed. In 2016.1 the image must first be loaded before updating the coordinates, but now new coordinates can be entered when the file is opened.
- An issue in 2016 version would drop the destination node or link name in the Runoff Node->Sub-Catchment dialog. This is now fixed and new and older models now show the target node or link for the groundwater outflows.
- Fixed an issue regarding strings in File->Properties that could crash the application.

- The installer now checks for a pending reboot on the computer and will now no longer display an error code -2147023504 at the end of the install. Instead it replaces this with a screen that says that there is a pending reboot on the computer which must first be done before installing XP.
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- The binary results file has its header updated to version 27 and data file format 12.62 for 2017.1 version.
- Some help buttons were not launching to the correct help screen or were inactive is fixed including the button in the Application Settings dialog.
- The conduit profile changes for the node ground elevation and invert are now saved in the scenario manger. .
- A software crash caused by display of the Quick Data View and then navigate to another scenario (to or from the Base Scenario) is resolved.
- Updates to Recent OS have deprecated a previous C++ function for date handling which caused some Gauged Data to not display in Review results for the full time period. This is fixed for 2017.1.
- Several software issues area addressed when using low spec computers. An extensive testing program was completed using virtual low spec computers and no further issues were encountered.
- A possible crash when using Graphical Encoding on variables that have no numeric range such as the node name is fixed. A reasonable workaround was also possible to choose a parameter that has a range such as node area.
- The EPA SWMM Reader is updated to allow for Circular Filled conduits and box culverts. Some other conduit shapes not yet supported generate a warning and the conduit is imported as circular. In addition, the software continues to have a restriction that object names with an asterisk (*) will cause import issues. These must be manually altered prior to using the current importer.
- An infrequent issue where time data could not be found for the Difference XMDF is fixed.
- Some warning messages for Bridge links were upgraded to error messages as they were errors for the analysis engine.
- The HDR->Evaporation dialog now accepts decimal numbers and is no longer restricted to integers.
- Orifices and Weirs that were on the 7th row were not being viewed in Dynamic Views. This has now been fixed.
- An issue with US Customary units and 2D Flow areas not using the correct flow units is fixed. Previously these flows were being falsely interpreted as metric values.
- For backwards compatibility the 2D models automatically write Defaults==PRE2016 to the TCF file.
- The software now has a larger default for database size. It is now defaulted to 2000000 Database Cards which does use a larger memory allocation but will reduce the number of issues of the default being too small. The setting of the MaxDBCards is controlled in the SWMXP.INI file.
- Correct translation for the Japanese version is added to the 2D Results Utility and a few other dialogs.
- A few sample models would not solve due to multilinks with conduits marked for Detailed Printout. The detailed Printout issue with multilinks is overcome and the sample models all solve.
- A Windows10 issue with the tree control getting reordered for XPTABLES is fixed. The order and indentation is no longer being altered inadvertently.
- The help jump location is updated to land at the correct location for Runoff Job Control.
- While exporting multiple objects and result types from Interface Utilities some column headers may have been missing. This is fixed.
- An issue that prevented some models to not fully display in the Dynamic Plan View has now been addressed by proper initialization. Previously, the model needed saved and reopened. That is no longer required.
- The default text tool font size is set to 12 points for both Metric and US Customary units. A spelling error in the text tool tooltip was corrected.
- A few locations were updated in the program to replace Tin with the proper acronym TIN meaning triangular irregular network.
- The radio buttons in the Modify Elevations dialog have been properly aligned.

- The default year for a new model is now the current year such as 2017 when a new model is created.
- When using the SCS method, the Infiltration button is disabled as that method includes infiltration and does not require a Global Database record.
- The X and Y axis labels have been rewritten for rainfall as the units were previously shown with double parenthesis such as ((hours)) and now show (hours).
- The dialog resources for TC Calculator -> TR55 is modified for a much cleaner appearance when fonts are scaled to 125%.
- The curb (kerb) Manning's n range is updated so that warnings are generated outside of the range of 0.005 to 0.5.
- Usability changes in the Pump Dialog.
- The Automatic Backup function is renamed to Auto Save to better reflect its function which is to overwrite the .XP file at a timed interval. Backups. .BAK are only made when a file is successfully opened.
- An issue using rain interface files created using the 64 bit engine is resolved. These files can now be used correctly in a Runoff simulation.
- The Sanitary Job Control in the Korean version had bad button graphics which is fixed for the 2017.1 version and later.
- New defaults for 2D USDA Soil Types is implemented for US Customary unit models. These values are equivalent to the metric values but have been converted to inches.
- Issues involving RTC have been fixed in 2017.1. In 2016 and 2016.1 some objects were not correctly referenced since the change to 80-character object name. As such models would work correctly in 2014 and 2017 but not 2016.
- An import failed message will now be displayed when attempting to import by HECRAS a file that would create links and nodes beyond the license limit.
- Some static text for units was removed in the Modify Elevations dialog as it is redundant since this is correctly shown with the Tooltips.
- Some button alignment and text alignment is made with some dialogs in the Japanese version.
- Some buttons with text have been size adjusted to accommodate Korean text.
- An excess Cancel button was removed from the Japanese version of the Units dialog.
- An issue using RDII and 64 bit engine is resolved. 1.
- When reinstalling the software, the path of the Default Editor will be updated in an existing swmvp.ini file if the location is customized.
- The database version for xpswmm2017.1 and xpstorm2017.1 is 18.1.
- An RTC issue introduced in 2016 for pump controls is fixed in 2017.1. The pumps are now correctly referenced and controlled throughout the simulation.
- The Modify Elevations dialog now checks the contents of the active field not the contents of all fields. Only user fields corresponding to the selected row are allowing edits.