



# ODM Tools Python:

## Data Management Software for Hydrologic Time Series

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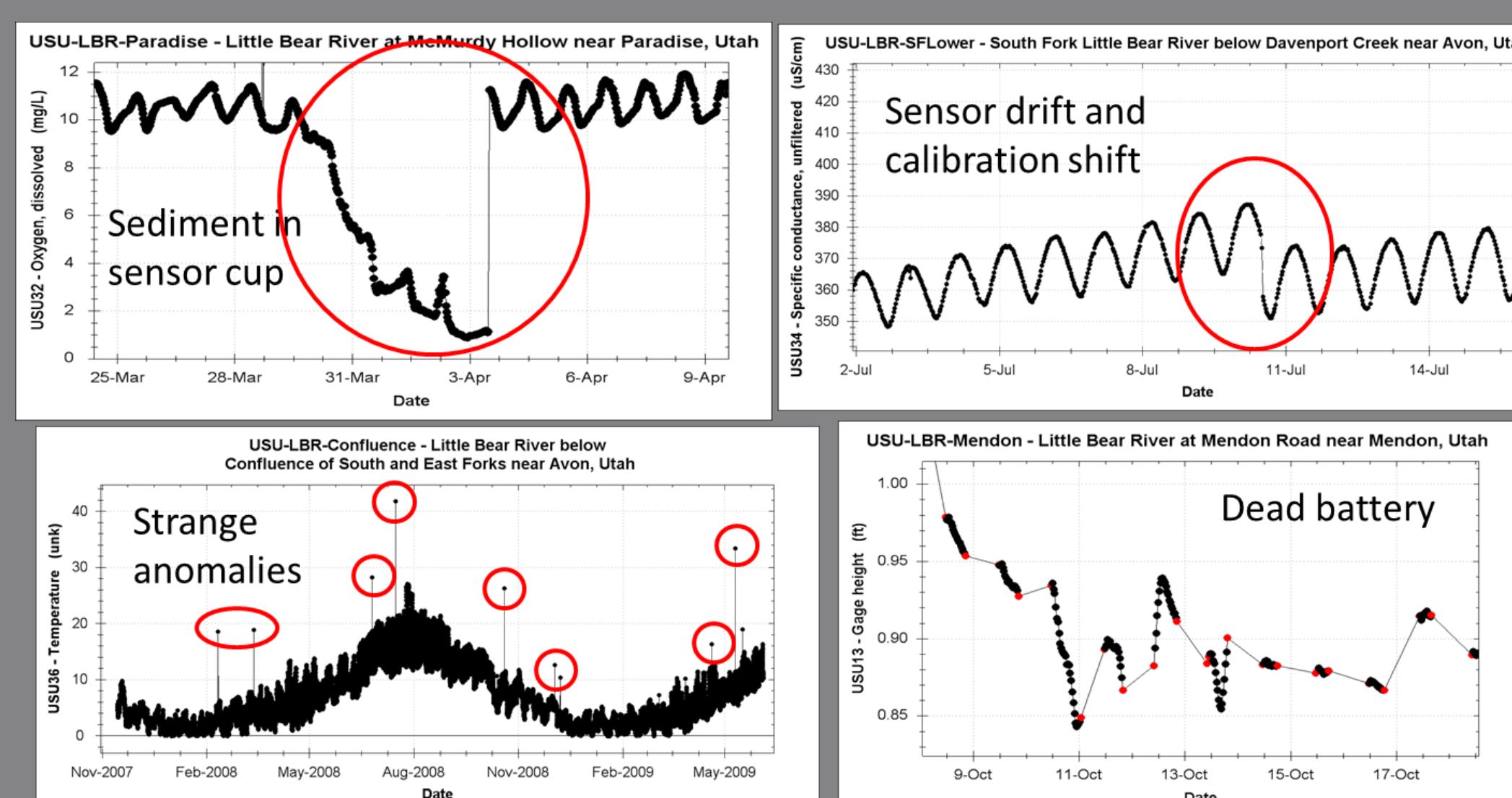


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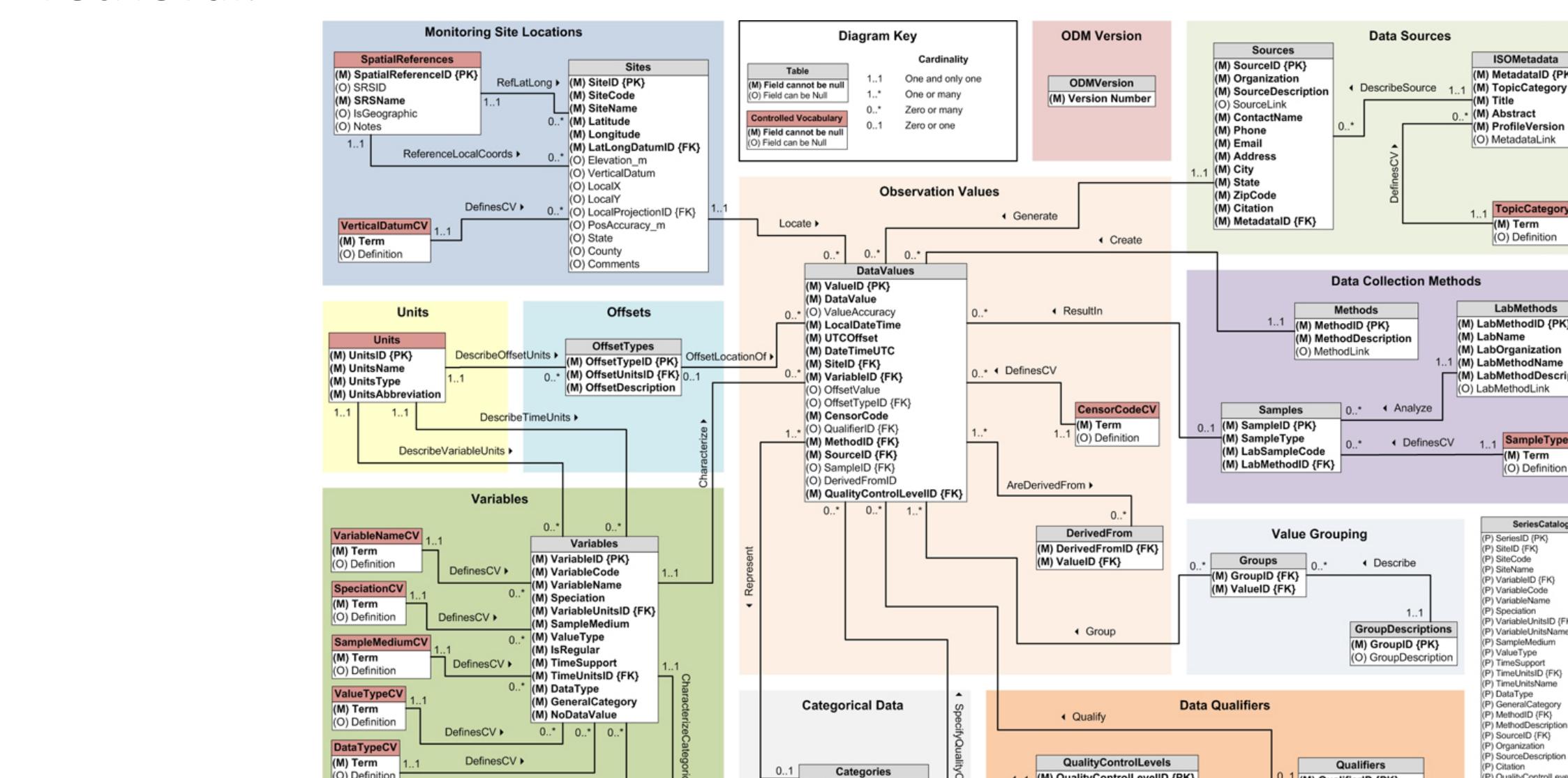
**MOTIVATION:** Hydrologic researchers are collecting data using *in situ* sensors at high frequencies, for extended durations, and with spatial distributions that require infrastructure for data storage and management.



With widespread sensor data collection, free and open source tools are needed for data management, visualization, and editing. Sensor data streams typically include some values that are not representative of environmental conditions and need editing due to fouling, drift, or unknown causes. **Standard tools for performing data QAQC enhance the ability to track data provenance and repeat edits to increase data transparency and reusability.**



**UNDERLYING FRAMEWORK:** The Observations Data Model (ODM) is part of the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) Hydrologic Information System (HIS) and was developed as a standard framework in which to organize, store, and describe point observations and sufficient metadata for observations to be unambiguously interpreted by multiple users. ODM is implemented in a relational database software to permit flexibility in querying and data retrieval.



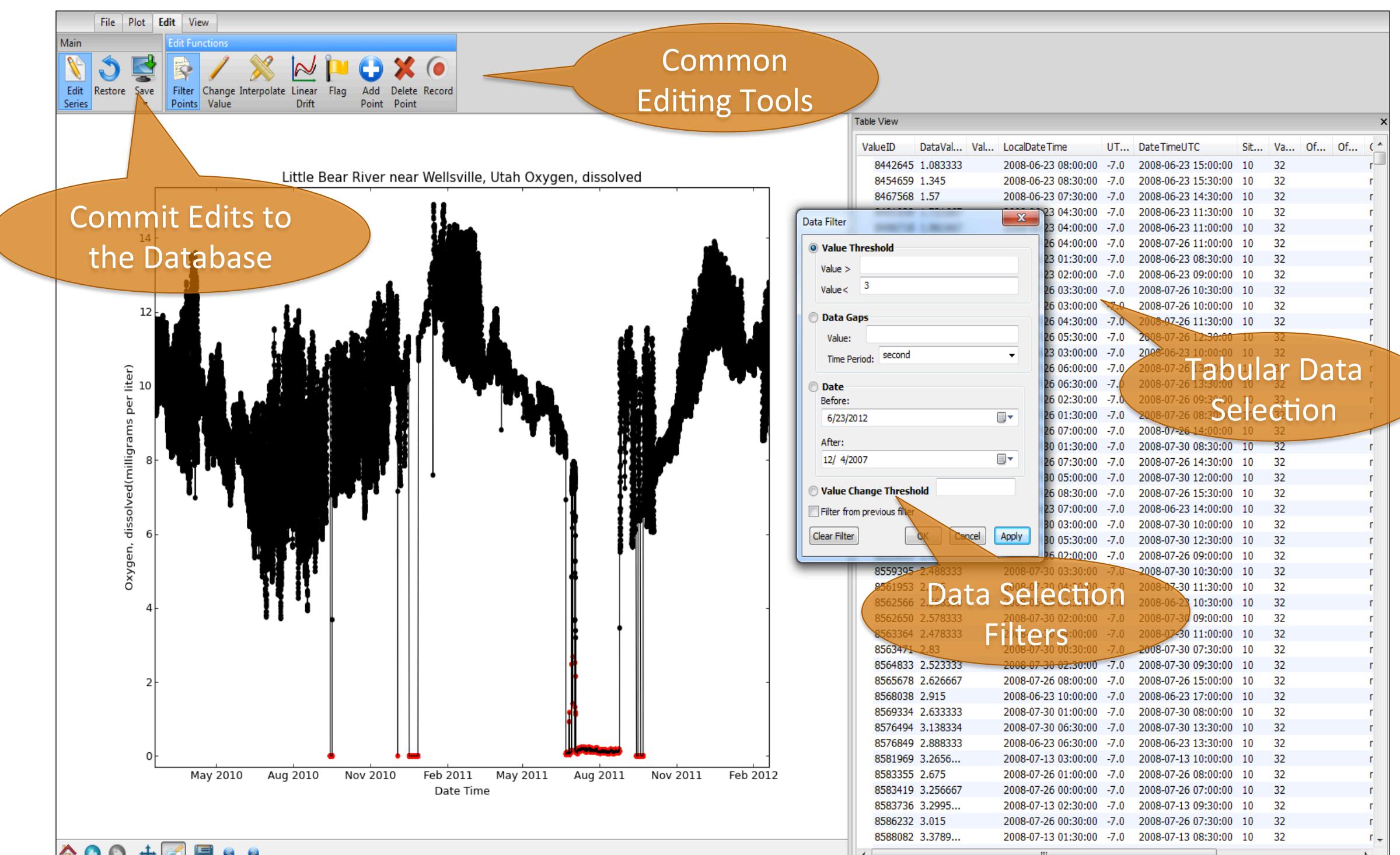
ODM Tools was originally designed as part of the CUAHSI HIS suite of tools funded by CUAHSI and NSF. The new Python version expands on the capabilities of the original ODM Tools.



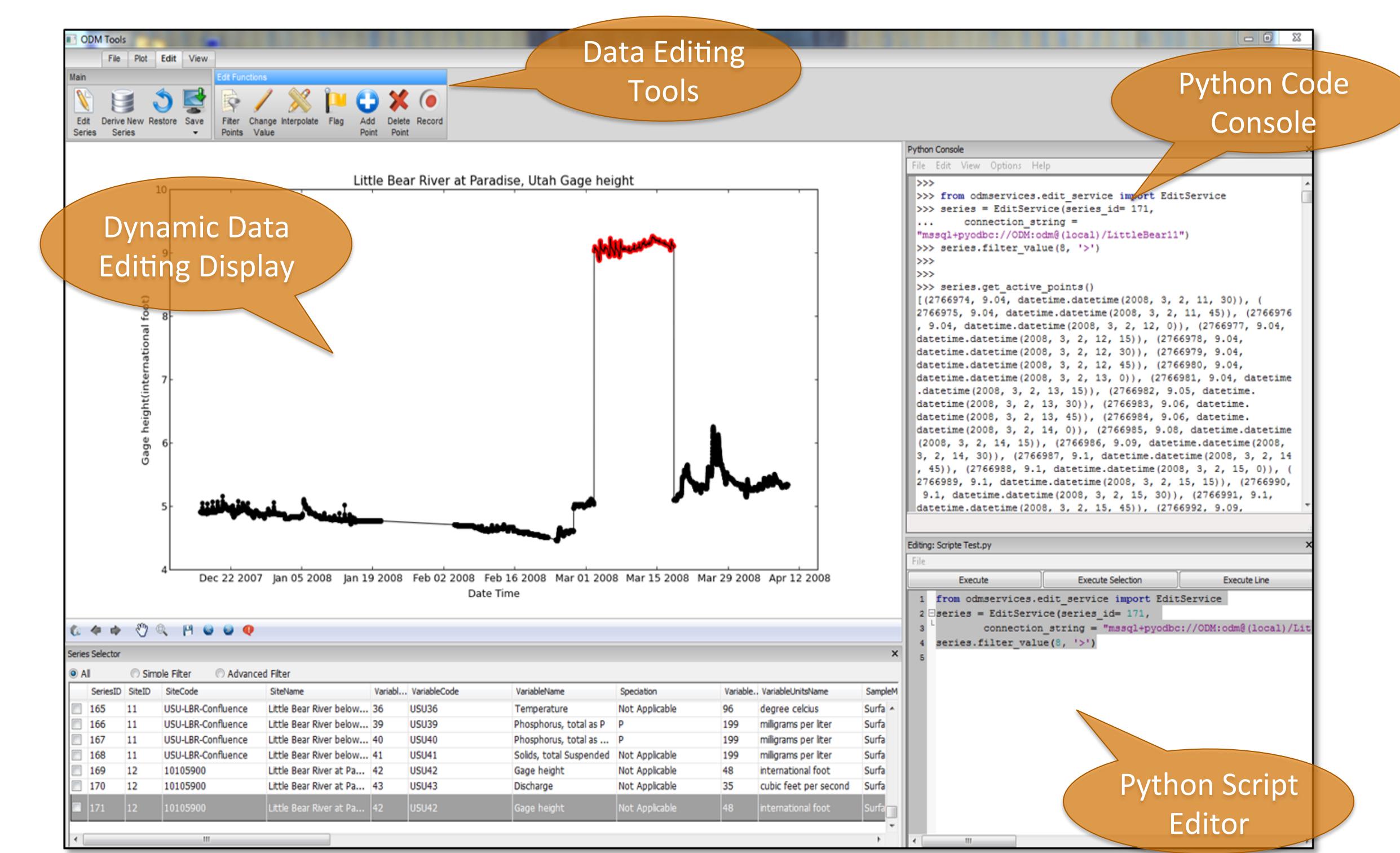
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**ODM Tools Python** is an open source software application that allows ODM users to query and export, visualize, and edit data stored in an ODM database. We are working in Python to redesign ODM Tools with a modernized graphical user interface, automated scripting of edits, support for multiple databases, and eventual cross-platform compatibility.

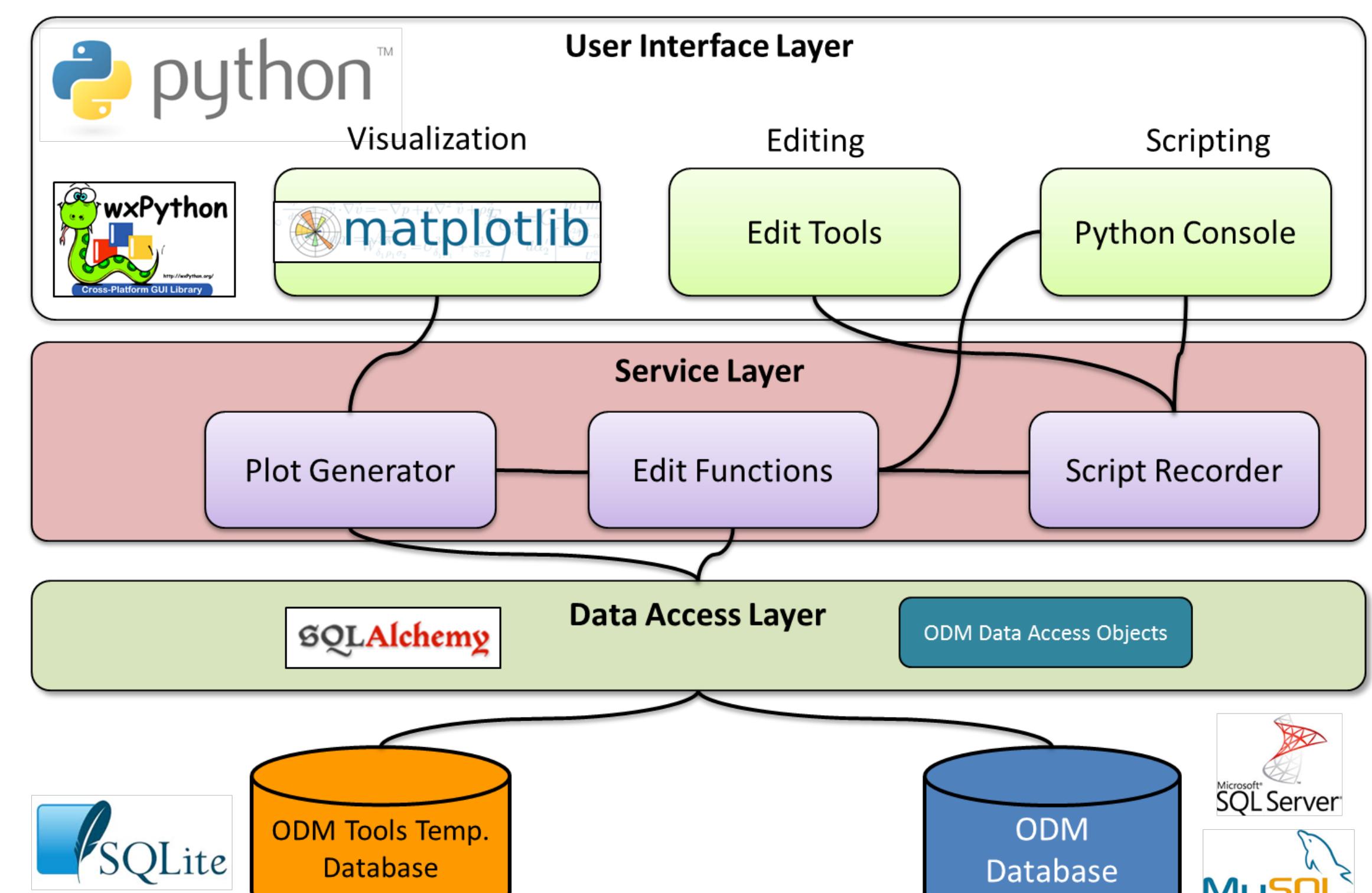
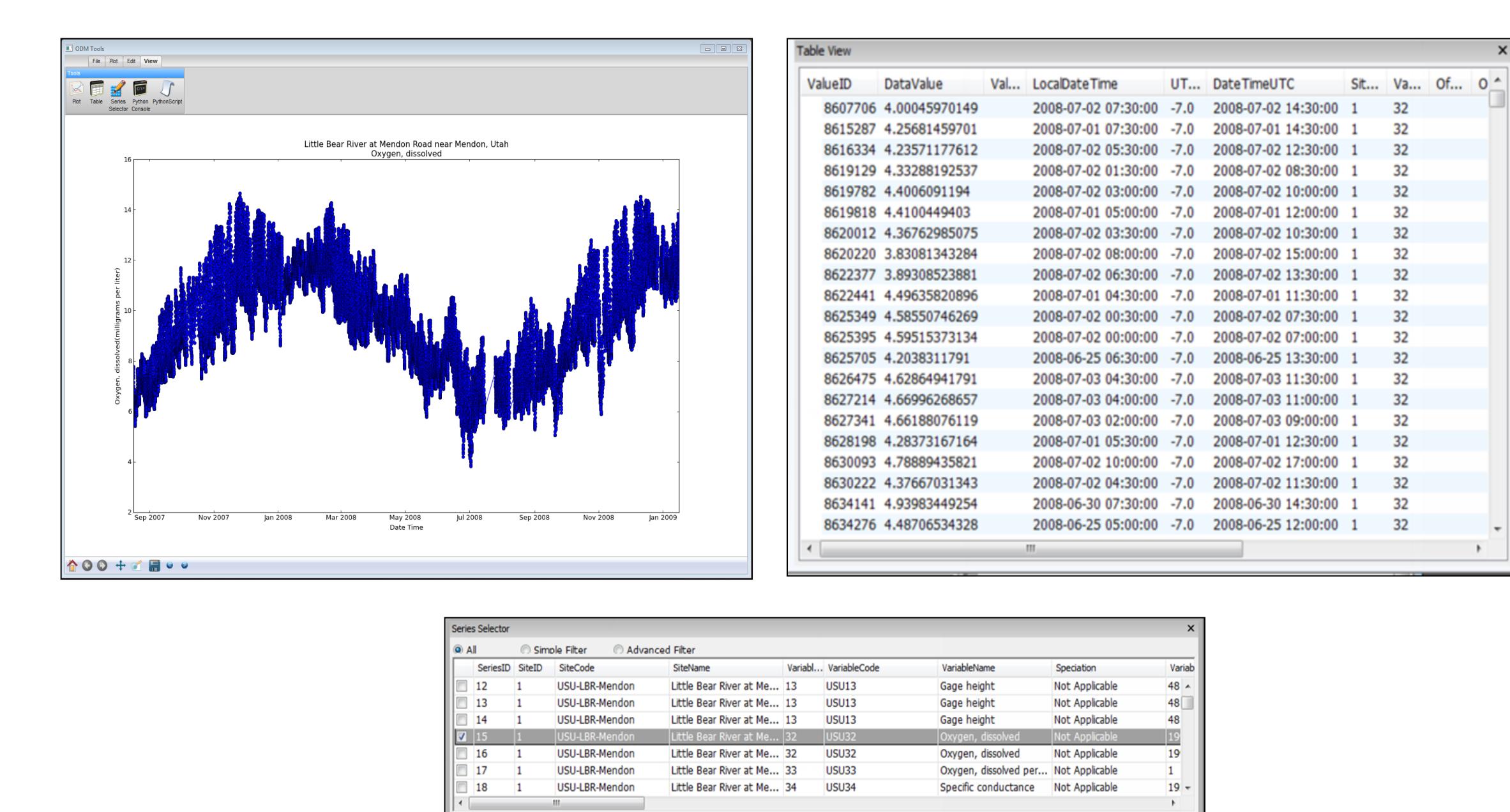
**EDIT DATA:** Built-in tools are available for common tasks. Advanced editing allows user-defined functions for data series editing and derivation.



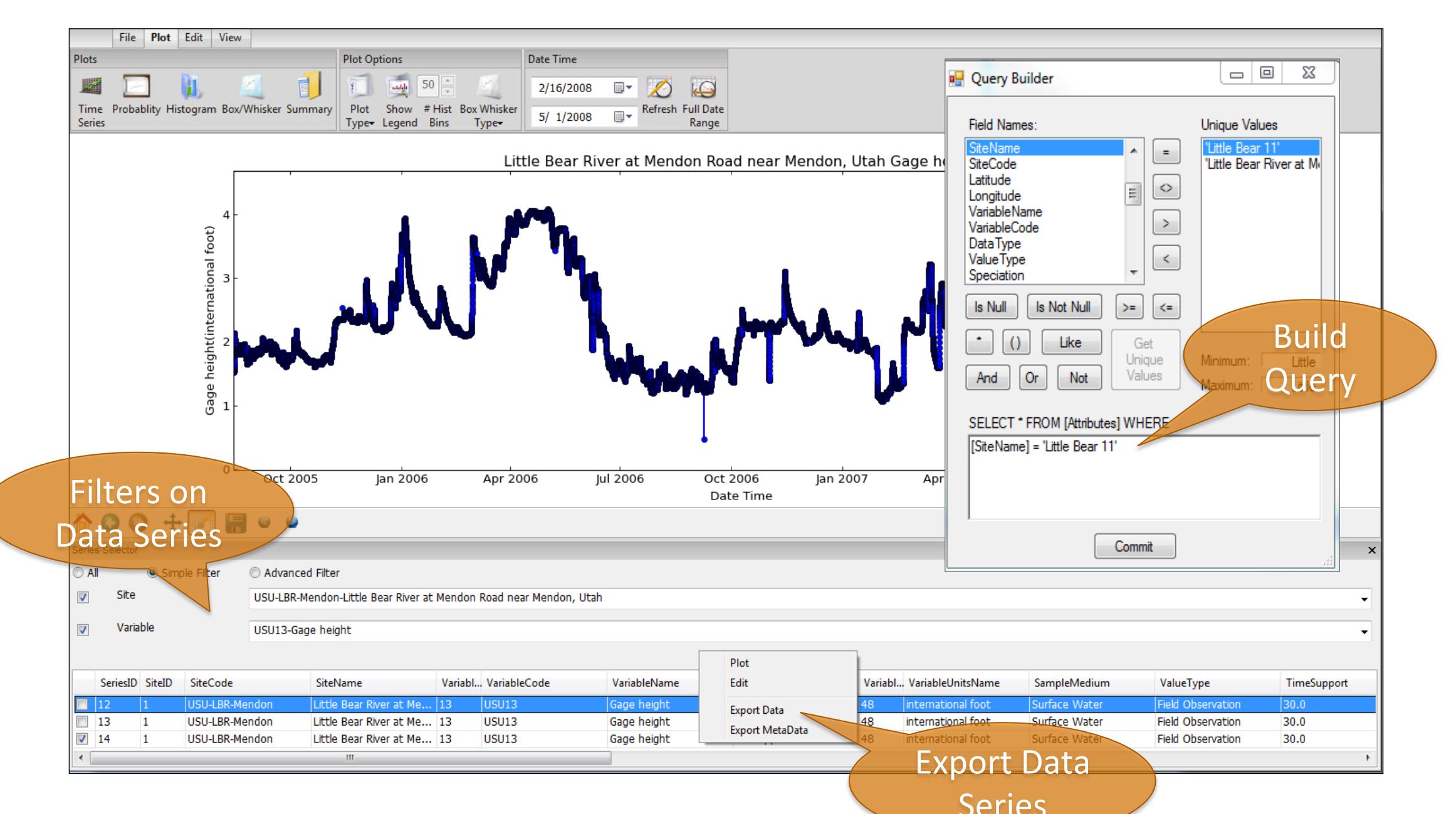
**AUTOMATED SCRIPTING OF EDITS:** Scripting records corrections and adjustments to data values ensuring that steps are traceable and reproducible.



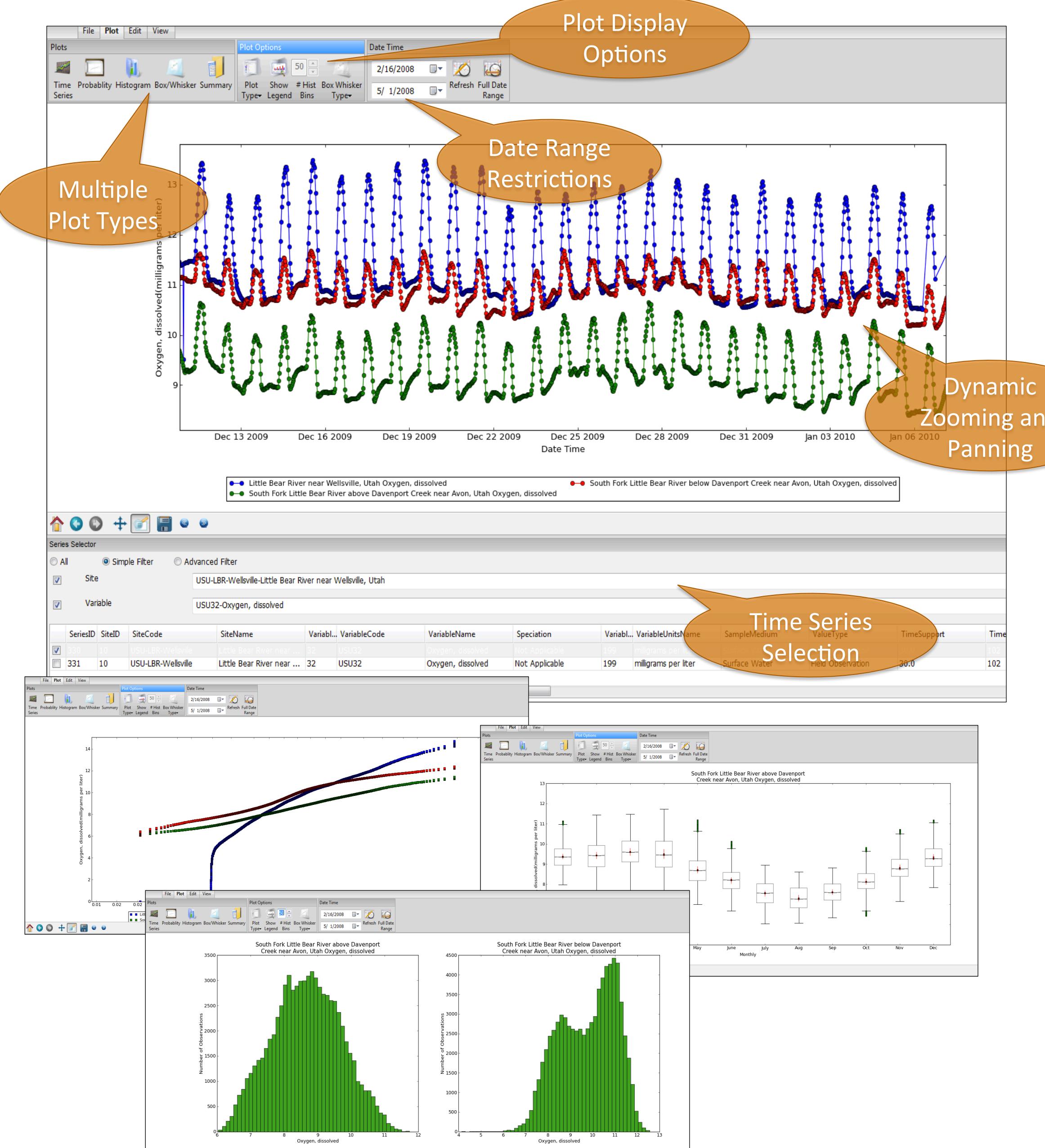
**DOCKABLE WINDOWS:** The various windows can be hid or displayed giving the user increased flexibility.



**QUERY AND EXPORT:** Simple filters or advanced queries can be used to select data series. Data and associated metadata can be exported from the database.



**VISUALIZE:** Multiple series can be plotted simultaneously using various plot types.



**OPEN SOURCE CODE REPOSITORY:**

ODM Tools Python is available in GitHub  
<https://github.com/UCHIC/ODMToolsPython>



CUAHSI  
HIS  
Sharing hydrologic data

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