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How can we develop better visualization tool for aquatic modelers? Lessons from developing an aquatic model viewer

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How can we develop better visualization tool for aquatic modellers? Lessons from developing an aquatic model viewer

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Abstract: Spatial visualization tool is critically useful to plot and compare the spatio-temporal simulation results from various aquatic models, however, is so far not well developed for free use. In this study, a free visualization tool named Aquatic Model Viewer (AMViewer) was developed using Python programing language for plotting and analyzing the spatio-temporal data from aquatic models. AMViewer included several useful functionalities: (a) comparing the differences of simulation results (e.g., water level) from different scenarios, (b) evaluating the model fits of scenarios with available measured data, (c) extracting time series values of cells from the spatio-temporal simulation results, and (d) viewing the spatial and dynamic changes of water velocity and direction. The applications of AMViewer in hydrodynamic modelling of Lake Poyang demonstrated its potential in investigating the spatial and dynamics changes of aquatic ecosystems. AMViewer so far support the visualization of the outputs from the aquatic model of EFDC (Environmental Fluid Dynamics Code). Ongoing efforts for improving AMViewer would enhance its ability in supporting the spatio-temporal simulation results from more aquatic models. The software can be obtained by contacting the authors.

Keywords: Python; visualization; model; EFDC