pyHMT2D: Python-based two-dimentional hydraulic modeling tools

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Summary

Flooding Two-dimensional (2D) hydraulic modeling, replacing one-dimensional (1D) modeling, has become the work horse for most engineering purposes in practice. Many agencies, such as U.S. DOT, Bureau of Reclamation (USBR), FEMA, and U.S. Army Corp of Engineers (USACE), have developed and promoted 2D hydraulic models to fulfill their respective missions. Example 2D models are SRH-2D (USBR) and HEC-RAS 2D (USACE).

SWEs are the backbone of most flood simulation models (Liu, Landry, and Garcia 2008).

Statement of need

Functionality

Basic Functionality

Advanced Functionality

Dependencies

`pyHMT2D` relies on functionality from the following Python packages: GDAL (GDAL/OGR contributors 2020), NumPy (Harris et al. 2020), Matplotlib (Hunter 2007).

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`pyHMT2D` was developed as a tool box for several past and ongoing research projects in our group. Though `pyHMT2D` did not direclty receive finacial support from these projects nor it is in the workscope, `pyHMT2D` did benefit from the knowledge on various aspects of 2D hydraulic models accumulated through these projects.

References

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