Welcome to CLAWRIM Wiki

The Computational Lab for Advanced Water Resources Informatics and Modeling (CLAWRIM) is Dr. Huidae Cho's research group in the Department of Civil Engineering at New Mexico State University (NMSU). Their research focuses on the broad applications of Geographic Information Systems (GIS) and computational methods to water resources informatics and modeling. They use this wiki site to share project information and document their research for internal collaboration. Check his website.

- Q&As

Lab members

- Abdullah Azzam
- Ujjwal Marasini
- S.M. Asaduzzaman Reshad
- Mahesh Maddineni
- Nelson Kandel
- Hari Shreesh

Current projects

* *USDA AFRI RAWCS* * *NMWRRI NM groundwater recharge forecasting* * *NMWRRI NM snow water equivalent forecasting* * *NMWRRI Global curve number dataset* * *NMED PWRC Permian Basin fate and transport modeling* * *CONUS-scale longest flow path algorithm* * *nsf_pose_grass_gis* * *NSF DISES Northern NM water availability* * *NMDOT CAMP* * *USGS WRRA 104b NM drought vulnerability* ===== Past projects ===== * *Rincon Arroyo HEC-RAS 2D modeling* with *Emaz Arshad* * *DOE Sotaog PARETO* * *Efficient delineation of a large number of subwatersheds* * *DOE KeyLogic PARETO* * *Fast flow accumulation* * *Traffic simulation* * *Water balance analysis for Seoul* * *Google Summer of Code 2021 Parallelization of existing modules for GRASS GIS* * Funded by *Google* * *ProjPicker*: Spatial query of coordinate reference systems * Funded by *IESA* * *Efficient longest flow path algorithm* * *GFC Canopy assessment* * Funded by *the Georgia Forestry Commission* * *Phase 1* with *Owen Smith* and *Jennifer McCollum* * *Phase 1.5* with *Owen Smith* * *Phase 2* with *Owen Smith* * *Open source canopy classification* with *Owen Smith* * A special topic in GIS for spring 2020 * Idea proposed and implemented by *Owen Smith* /* ===== Projects cancelled ===== * *Traffic simulation* * *Streamflow data model* * *Stream health assessment tool* * Impacts of deforestation on water resources in the Lake Lanier watershed * *UNG stormwater modeling* with *Christopher Pugel* * Idea proposed by *Huidae Cho* * *Topographic index enhanced with soil moisture* * A special topic in GIS for spring 2020 * Idea proposed by *Huidae Cho* and partially implemented with *Tyler Henderson* */ ===== Software ===== * *Memory-Efficient I/O-Improved Drainage Analysis System (MIDAS)* * *Memory-Efficient Watershed Delineation (MESHED)* * *r.flowaccumulation*: MEFA addon for *GRASS GIS* * *Memory-Efficient Flow Accumulation (MEFA)* * *GetOSM*: OpenStreetMap tile downloader * *ProjPicker*: Spatial query of coordinate reference systems * *r.accumulate*: An efficient flow accumulation addon for *GRASS GIS* * *Coronavirus Disease 2019 (COVID-19 or 2019-nCoV) Cases* * *CanoClass*: An open-source Python module for canopy classification using *scikit-learn* * *CanoPy*: A Python module for canopy classification using *Feature Analyst* * *Digip*: A digital image processing Python module * *The Automated Floodway Optimizer for HEC-RAS (AFORAS)* * *Isolated-Speciation-based Particle Swarm Optimization (ISPSO)* *

*The Web-based Hydrologic Modeling System (WHydroMod) v0.1 for Texas * Let-It-Rain: A Poisson Cluster Stochastic Rainfall Generator * GRASS GIS for MS Windows * Latest daily build for advanced users * Latest daily build for beginners /* ===== Manuscripts in preparation ===== ===== Manuscripts in revision ===== ===== Manuscripts under review ===== */ /* * Saman Mostafazadeh Fard, Zohrab Samani, Huidae Cho, Salim Bawazir.* Design of Stepped Flow Measuring Flumes for Head Loss Reduction Using FLOW-3D Simulation Modeling. *Journal of Hydrodynamics. SCIE, 2021 Impact Factor 2.983. * Aboalhasan Fathabadi, Huidae Cho, Seyed Morteza Seyedian, Bahram Choubin.* Comparison of Bayesian Model Averaging and GLUE Weighting Methods for Uncertainty Estimation in Hydrologic Modeling. *Hydrological Sciences Journal. SCIE, 2021 Impact Factor 3.942. */ /* ===== Recent publications ===== * Huidae Cho, September 2023.* Memory-Efficient Flow Accumulation Using a Look-Around Approach and Its OpenMP Parallelization. *Environmental Modelling & Software. doi:10.1016/j.envsoft.2023.105771. SCIE, 2022 Impact Factor 4.9. * Yongchan Kim, Eun-Sung Chung, Huidae Cho, Kyuhyun Byun, Dongkyun Kim, January 2023.* The Future Water Vulnerability Assessment of the Seoul Metropolitan Area Using a Hybrid Framework Composed of Physically-Based and Deep-Learning-Based Hydrologic Models. *Stochastic Environmental Research and Risk Assessment. doi:10.1007/s00477-022-02366-0. SCIE. 2021 Impact Factor 3.821. * Huidae Cho, December 2021.* Data-Driven Streamflow Forecasting Using Machine Learning. *Proceedings of the US-Korea Conference (UKC) 2021, 314. Korean-American Scientists and Engineers Association (KSEA). Los Angeles, CA. * Huidae Cho, Lorena Liuzzo, December 2021.* Editorial for Special Issue: "Multi-Source Data Assimilation for the Improvement of Hydrological Modeling Predictions." *Hydrology 9 (1), 4. doi:10.3390/hydrology9010004. ESCI. * Owen Smith, Huidae Cho*, August 2021.* An Open-Source Canopy Classification System Using Machine-Learning Techniques Within a Python Framework. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLVI-4/W2-2021, 175-182. doi:10.5194/isprs-archives-XLVI-4-W2-2021-175-2021. ===== Recent presentations ===== * Huidae Cho, February 6, 2022.* Spatial Query of Coordinate Reference Systems and Its Integration with GRASS GIS. *Free and Open Source Software Developers' European Meeting (FOSDEM) 2022. Brussels, Belgium (online). * Huidae Cho, December 16, 2021. Invited Talk:* Data-Driven Streamflow Forecasting Using Machine Learning. *US-Korea Conference (UKC) 2021—Pursuing Global Health and Sustainability. Korean-American Scientists and Engineers Association (KSEA). Los Angeles, CA. * Owen Smith, Huidae Cho, September 30, 2021.* CanoClass: Creation of an Open Framework for Tree Canopy Monitoring. *Free and Open Source Software for Geospatial (FOSS4G) 2021 Conference. The Open Source Geospatial Foundation (OSGeo). Online. * Vaclav Petras, Veronica Andreo, Martin Landa, Anna Petrasova, Guido Riembauer, Maris Nartiss, Moritz Lennert, Markus Metz, Stefan Blumentrath, Huidae Cho, Markus Neteler, September 29, 2021.* State of GRASS GIS: The Dawn of a New Era. *Free and Open Source Software for Geospatial (FOSS4G) 2021 Conference. The Open Source Geospatial Foundation (OSGeo). Online. * Huidae Cho, Aboalhasan Fathabadi, Seyed Morteza Seyedian, Bahram Choubin, March 22–23, 2021.* Uncertainty Estimation in Hydrologic Modeling Using Bayesian Model Averaging Within the GLUE Framework. *2021 Georgia Water Resources Conference (GWRC). Online. * Huidae Cho, February 7, 2021.* r.accumulate: Efficient Computation of Hydrologic Parameters in GRASS—Improving the Performance of Geospatial Computation for Web-based Hydrologic Modeling. *Free and Open Source Software Developers' European Meeting (FOSDEM) 2021. Online. ===== Recent workshops ===== * Huidae Cho, September 28, 2021.* Physically-Based Hydrologic Modeling Using GRASS GIS r.topmodel. *Free and Open Source Software for Geospatial (FOSS4G) 2021 Conference. The Open Source Geospatial Foundation (OSGeo). Online. */ ===== HOWTOs =====

- How to compile GRASS on Slackware
- How to compile MODFLOW 6 on Slackware
- How to compile PeakFQ on Linux
- How to compile QGIS on Slackware
- How to convert LaTeX to QMD

- How to count non-null records in a column in a CSV file
- How to create an R package
- How to download features using the ArcGIS REST API
- How to find the order of a column in a CSV file
- How to install Clink on Windows
- How to install HEC-RAS on Linux
- How to install micromamba
- How to install Miniconda on Linux
- How to install TeX Live on Linux
- How to install the Intel Fortran Compiler on Linux
- How to merge CSV files in the current directory
- How to use shell scripting on Windows

===== Other resources ===== * Data sources * Open science * Conferences * Journals * Scientific writing * Scholarships * Literature
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