Welcome to HydroCS Wiki

Hydrologic Computational Science (HydroCS) Lab 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
- Madan Pokhrel
- Jason Pena
- Dinesh Joshi

Current projects

- USDA AFRI RAWCS
- NMWRRI TAAP
- NMED PWRC Permian Basin fate and transport modeling
- NSF POSE GRASS
- NSF DISES Northern NM water availability

Past projects

- NMWRRI NM groundwater recharge forecasting
- NMWRRI NM snow water equivalent forecasting
- NMWRRI Global curve number dataset
- CONUS-scale longest flow path algorithm
- NMDOT CAMP
- USGS WRRA 104b NM drought vulnerability
- KICT levee displacement detection
- 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

Software

- Global Curve Number 10m (GCN10)
- Memory-Efficient Upstream Flow Length (MEUFL)
- Memory-Efficient Longest Flow Path (MELFP)
- Memory-Efficient I/O-Improved Drainage Analysis System (MIDAS)
- Memory-Efficient Watershed Delineation (MESHED)
- r.flowaccumulation: MEFA addon for GRASS
- 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
- 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 for MS Windows
    - Latest daily build for advanced users
    - Latest daily build for beginners

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

- File naming conventions
- Data sources
- Open science
- Conferences
- Journals
- Scientific writing
- Scholarships
- Literature
- Links

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