CUAHSI Services for the Water-Education Community

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NAGT – CUAHSI Webinar Series

CUAHSI

UNIVERSITIES ALLIED FOR WATER RESEARCH

"[The discipline of hydrology] is now called upon to integrate across an enlarged inter-disciplinary water science with fields such as geography, social sciences, public health, engineering, and advanced monitoring technologies to solve an increasing number of water sustainability problems." **Montanari et al., 2015** ***in***

Fifty years of Water Resources Research:
Legacy and Perspectives for the Science of Hydrology

What is CUAHSI? (kuh – WAH – see)

- CUAHSI is a non-profit consortium of about 130 U.S. academic institutions, non-profits, and international universities.
- Mission is to advance water science by:
  - Strengthening interdisciplinary collaboration in water-sciences
  - Providing critical community infrastructure
  - Promoting education in the water sciences at all levels
- Activities
  - Community Services, such as workshops, community meetings, training, etc.
  - Data and Model Services to support FAIR data principals.

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CUAHSI is committed to growing diversity and equity in our community.

https://www.cuahsi.org/library/diversity-equity-and-inclusion/

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CUAHSI Offers Funding Opportunities for Students:

Grants

Workshop and Travel Support

Competitions

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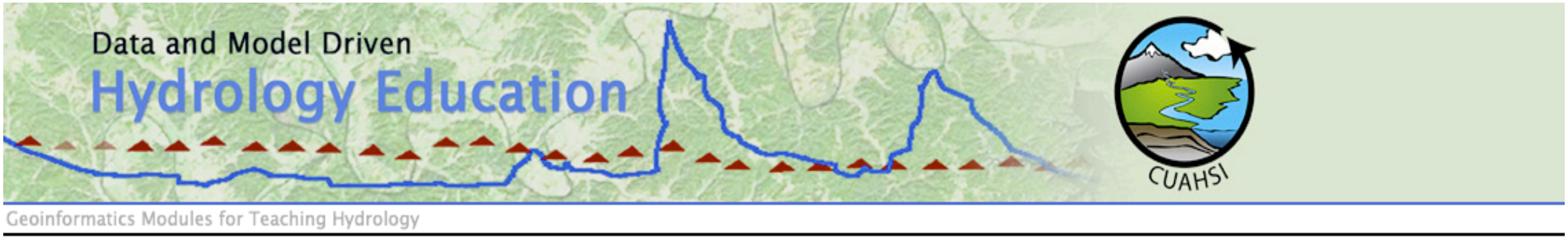
CUAHSI's Summer Institute: A 7 – Week Residential Program at the National Water Center in partnership with National Weather Service.

CUAHSI Provides Online Education Resources

https://www.cuahsi.org/education/hydrology-guest-lectures/

CUAHSI Supports Data-Driven Education



Data and Model Driven Hydrology Education

- List of Units
- List of Steps
- About this Project
- Contribute

Data and Model Driven Hydrology Education

https://serc.carleton.edu/hydromodules/index.html

HYDROLEARN

Data Science in Earth and Environmental Sciences

SyracuseUniversity EAR601

This course is designed to teach students how to apply emerging data mining tools in resolving Earth and Environmental Sciences problems.

https://www.hydrolearn.org/

Effort: 30:00 hours

CUAHSI Provides a Gateway to Online Computing

Community examples using the Python programming language. This includes both Python scripts as well as Python Jupyter notebooks.

Python Gallery

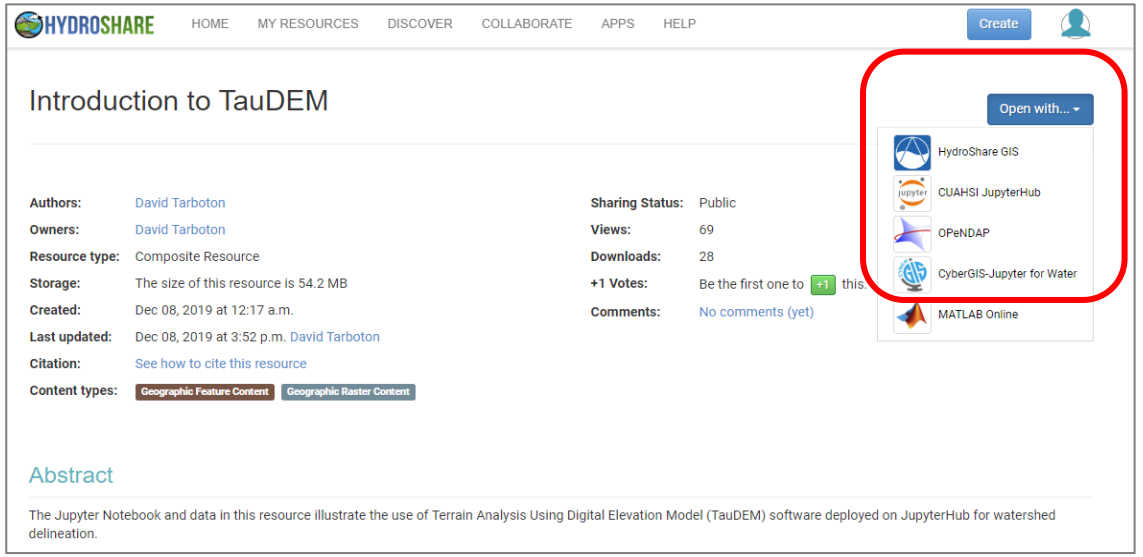
Community examples using the MATLAB programming language. This includes MATLAB *.m scripts as well as MATLAB Live scripts.

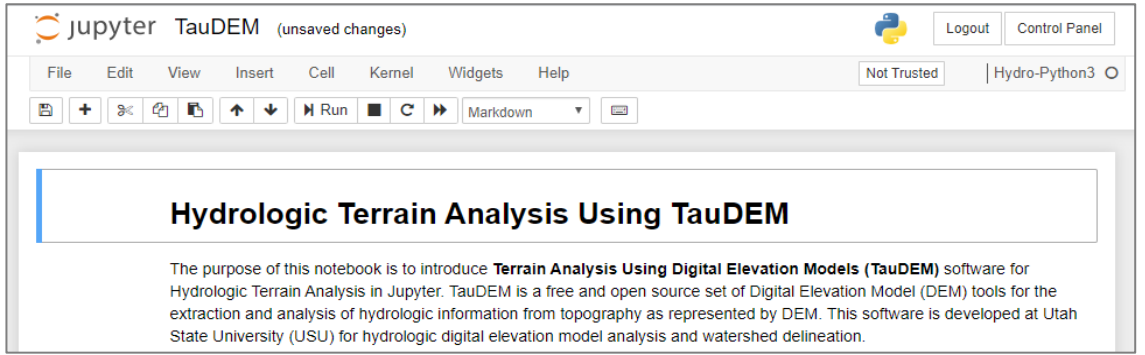
MATLAB Gallery

Community examples using the R programming language. This includes R Jupyter notebooks, R scripts, as well as R Shiny web applications.

R Gallery

Browse examples by sub-category for the chosen programming language.





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CUAHSI Supports FAIR Data

- **Findable**: Data have sufficient metadata and a unique, persistent identifier to make data discoverable on the Web
- **Accessible**: Metadata and data are understandable to humans and machines and are available via a trusted repository
- **Interoperable**: Metadata use formal community standards
- **Reusable**: Data have clear metadata, usage license, and information about provenance

The extent to which data are FAIR affects their **value and extent of reuse**.

Wilkinson, M. D. et al. (2016). The FAIR Guiding Principles for scientific data management and stewardship. Scientific Data, 3:160018, https://doi.org/10.1038/sdata.2016.18.

CUAHSI Supports FAIR Data

Catalog Statistics

Number of Data Sources	Properties Measured	Number of Time Series	Number of Locations	Number of Observations
94	479	2,885,271	1,122,037	148,454,349,348

HYDROSHARE

MY RESOURCES DISCOVER COLLABORATE APPS HELP ABOUT

How it works

1 **Create data**

Collect your data using the same methods you use now. HydroShare supports a broad set of hydrologic data types.

2 **Upload to HydroShare**

Upload your data files to HydroShare through the web user interface. HydroShare will automatically extract as much metadata as it can from the files you upload.

3 **Describe with metadata**

Use HydroShare's simple metadata entry forms to finish describing your data so that your colleagues can find, access, and interpret it.

4 **Share with colleagues**

You choose who has access to the data and models you have uploaded to HydroShare. You can share with individual users or publish your resources for everyone to access.

SEARCH

Select Dates

- All Dates
- Date Range

Data Service(s)

- All

Keyword(s)

- All

Advanced Search

- All

Search Now

Time Series Found

3,613,410

Filter Results

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http://data.cuahsi.org/ and https://www.hydroshare.org/

Some Key CUAHSI Educational Resources

- **Discover and download time-series data, Hydrologic Information System: http://data.cuahsi.org/**
- **Discover, download, publish, and share all types of water data, models, and workflows, HydroShare: https://www.hydroshare.org/home/**
- **Summary of online education resources (https://www.cuahsi.org/education/resources-for-online-education/) including**
  - **Cyber seminar archive: https://www.cuahsi.org/education/resources-for-online-education/**
  - **Science Education Resources Center Hydrology Collection: https://serc.carleton.edu/hydromodules/units.html**
  - **HydroLearn: https://www.hydrolearn.org/**
  - **2017 Atlantic tropical cylone flood archive: https://www.cuahsi.org/projects/hurricanes-2017-data-archive**
  - **Archived lectures, blogs, and other resources.**
  - **Guest lecture database: https://www.cuahsi.org/education/hydrology-guest-lectures/**
- **Curated online education resources: https://www.hydroshare.org/resource/148b1ce4e308427ebf58379d48a17b91/**
- **Quick Start guide for adding new online education resources to HydroShare: https://www.hydroshare.org/resource/966be547450544d1bc253d770406a6c6/**
- **CUAHSI Virtual University: https://www.cuahsi.org/education/cuahsi-virtual-university/**
- **CUAHSI report archive: https://www.cuahsi.org/library/library-archive/**
- **CUAHSI Grants: https://www.cuahsi.org/funding-opportunities and https://www.cuahsi.org/education**

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Thank you

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