TEXAS A&M Institute of Data Science

Texas A&M Institute of Data Science Tech Talk Series

Large-scale Geospatial Analysis with R

Analysis of large-scale geospatial data (regional- to global scale at high spatial and temporal resolution) can be computationally expensive and time-consuming, especially when working with multiple formats and sources of data. R provides a powerful computational alternative to popular Geographic Information System (GIS) software to organize, analyze and visualize geospatial data. R enjoys a vast collection of open-source libraries for GIS-type operations and proven statistical analysis and data visualization capabilities. Taking examples from global satellite data in gridded/ raster format, we will demonstrate several common geospatial operations like projections, resampling, spatial extraction, cropping, masking etc. using rasters, shapefiles, and spatial data frames. For a seamless analysis across different datatypes and platforms, conversion from/to different data formats like data frames, matrices, rasters, and structured data like NetCDF will be discussed. Advanced topics will include working with data cubes (raster stack/ brick), layer-wise operations on data cubes, cell-wise operations on raster time series by implementing user-defined functions with stackApply. Use of TAMU High Performance Research Computing (HPRC) for regional segmentation and parallel implementation of large-scale analysis will also be covered.

Vinit Sehgal
Ph.D. Student, Water Management and Hydrological Science Program
Texas A&M University

Date: Tuesday, November 10
Time: 1:00 – 2:00 p.m. US Central Time
Zoom Meeting ID: 935 2502 4405
Passcode: 369029
Faculty host: Jian Tao, TEES

Biography

Vinit Sehgal is a Ph.D. student at the Water Management and Hydrological Science Program at Texas A&M University. His research interests include scaling issues in hydrology, hydroclimatology, remote sensing and soil physics. In his Ph.D. research, Vinit studies the impact of scale and heterogeneity on observable hydrological processes at large spatial scales using satellite remote sensing. His research has led to the development of a global near-real time flash drought monitor based on satellite soil moisture. Vinit received his M.S. in Biological Systems Engineering from Virginia Tech in 2017, where he worked on developing a catchment-scale drought forecasting framework for Southeastern U.S. He holds a bachelor's degree in Civil Engineering from Birla Institute of Technology, India.

You can also click this link to join the seminar
https://tinyurl.com/yy8ldtfh

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For more information about TAMIDS tech talk series, please contact Ms. Jennifer South at jsouth@tamu.edu