

# Replicable Spatial Data Analysis with Workflow Technology

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Traditionally, programming skills were necessary for unconventional data analysis methods, such as spatial data analysis, big data analysis, and real-time data analysis. Workflow technology means this is no longer the case, this new technology provides an efficient approach for replicable and expandable data analysis. This presentation will introduce how to build reproducible, replicable, and expandable workflows for geospatial data analysis and visualization by applying KNIME technology and Geospatial Analytics Extension for KNIME. KNIME is a free, open-source tool for workflow-based analysis, allowing users to execute and build visual workflows (see Figure 1 for an example). For spatial analysis, KNIME can be particularly useful for deploying exploratory spatial data analysis, spatial statistics and modelling, GEOAI models and remote sensing. A wide range of users can conduct advanced and efficient spatial and big data analysis by integrating new methodologies into workflow platforms, allowing domain experts to execute multiple tasks efficiently and create meaningful insights from data under different scenarios. An exciting advantage of KNIME is the ability to repeat an analysis with new data in a replicable and open-source manor. Anyone can create, use and share a workflow. The talk will also present exciting KNIME case studies in the spatial fields of population and environmental change, as well as future directions in the development and applications of workflow-based technology.

Figure 1: Visual workflow for geospatial data analysis built with KNIME

## Replicable, Reproducible and Expandable Data Analysis

