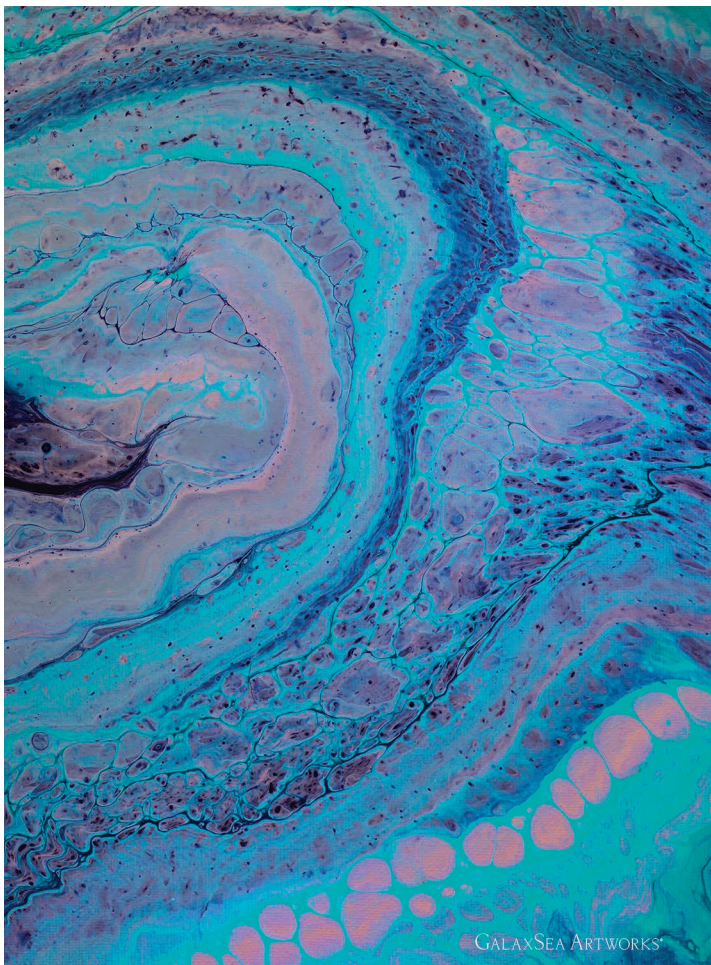


Geographic Data Science

15 Guest Editors' Introduction

Gennady Andrienko, Natalia Andrienko, and Robert Weibel

Data science methods and approaches address all stages of the transition from data to knowledge and action. Visualization of this data is essential for human understanding of the subject under study, analytical reasoning about it, and generating new knowledge. Geographic data science deals with data that incorporates spatial and, often, temporal elements. The articles selected for this special issue represent a mix of theoretical approaches and novel applications of geographic data science.



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18 Typology of Uncertainty in Static Geolocated Graphs for Visualization

Tatiana von Landesberger, Sebastian Bremm, and Marcel Wunderlich

Static geolocated graphs have nodes connected by edges that can have geographic location and associated attributes. This article proposes a typology of uncertainty in static geolocated graphs, which can affect the existence, location, attributes, or grouping of nodes and edges. The authors also summarize available techniques for visualizing such uncertainty.

28 ANALYTIC: An Active Learning System for Trajectory Classification

Amílcar Soares Júnior, Chiara Renso, and Stan Matwin

Machine-learning algorithms can help to infer semantic annotations from trajectory data by learning from sets of labeled data. Specifically, active learning approaches can minimize the set of trajectories to be annotated while preserving good performance measures. The ANALYTIC web-based interactive tool visually guides users through this annotation process.

40 Impact of Spatial Scales on the Intercomparison of Climate Scenarios

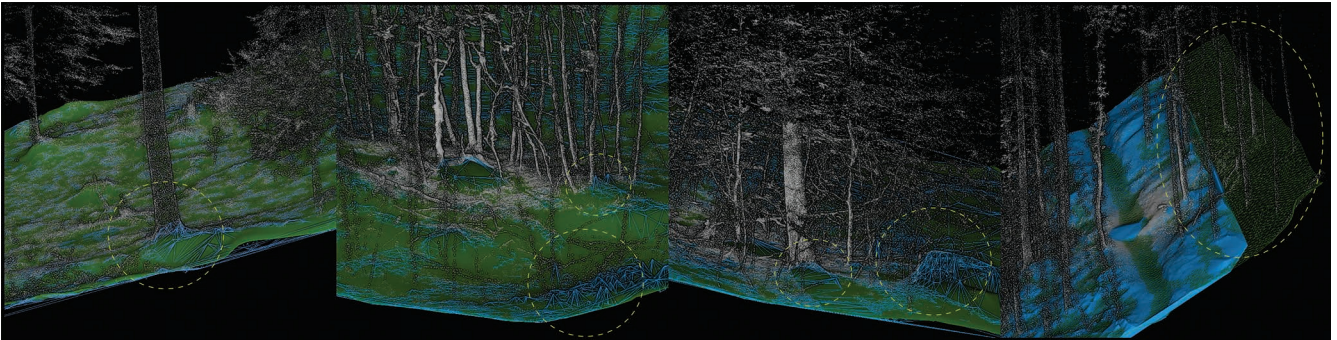
Wei Luo, Michael Steptoe, Zheng Chang, Robert Link, Leon Clarke, and Ross Maciejewski

Intercomparison and similarity analysis of different climate scenarios based on multiple simulation runs remain challenging. The proposed visual analytics system lets users perform similarity analysis of climate scenarios from the Global Change Assessment Model at world, continental, and country scales over time.

50 Urban Space Explorer: A Visual Analytics System for Urban Planning

Alireza Karduni, Isaac Cho, Ginette Wessel, William Ribarsky, Eric Sauda, and Wenwen Dou

The study of human activity in cities is integral to urban planning, design, and transit management. The Urban Space Explorer visual analytics system uses mobile social media that combines geolocation with temporal and semantic data to enable interactive exploration of public-space-related activity.



61 Name Profiler Toolkit

Feng Wang, Brett Hansen, Ryan Simmons, and Ross Maciejewski

The Name Profiler Toolkit is a visual analytics system designed to enable the interactive exploration and analysis of forename and surname geographical distributions across the United States. Using demographic data from the US Census Bureau and Zillow, the toolkit lets users interactively compare distributions of names and name attributes.

Feature Article

72 Terrain Model Reconstruction from Terrestrial LiDAR Data Using Radial Basis Functions

Jules Morel, Alexandra Bac, and Cédric Véga

The presence of vegetation and the terrain topography generate strong occlusions that cause large gaps in terrestrial laser scanning (TLS) data at the ground level. This article introduces a surface-approximation algorithm that can reconstruct detailed digital terrain models (DTMs) from TLS data under forest canopies.

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