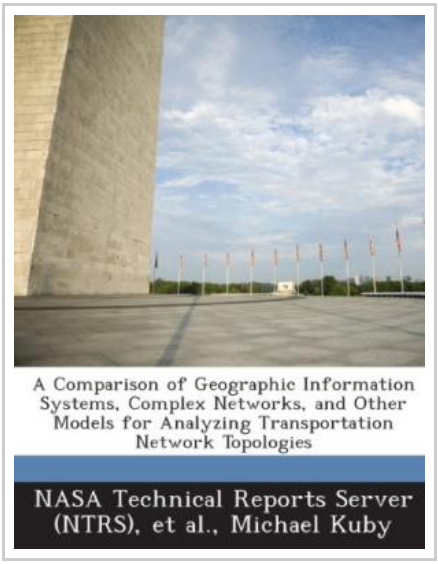

A Comparison of Geographic Information Systems, Complex Networks, and Other Models for Analyzing Transportation Network Topologies

By Michael Kuby

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.This report reviews six classes of models that are used for studying transportation network topologies. The report is motivated by two main questions. First, what can the new science of complex networks (scale-free, small-world networks) contribute to our understanding of transport network structure, compared to more traditional methods? Second, how can geographic information systems (GIS) contribute to studying transport networks? The report defines terms that can be used to classify different kinds of models by their function, composition, mechanism, spatial and temporal dimensions, certainty, linearity, and resolution. Six broad classes of models for analyzing transport network topologies are then explored: GIS; static graph theory; complex networks; mathematical programming; simulation; and agent-based modeling. Each class of models is defined and classified according to the attributes introduced earlier. The paper identifies some typical types of research questions about network structure that have been addressed by each class of model in the literature.

Reviews

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