

The fusion of informatics technologies with geoscience-based data and tools signals a necessary change in the way we manage the future of our science. It has become abundantly clear that for data to be useful, it must exist without borders and allow scientists, educators, and decision makers to use it freely and easily. Although the goal appears to be simple, it is very complex in detail, and this volume is dedicated to the broader community who wish to participate in translating data into knowledge. This transformation will enable all of us who are interested in geoscience-based solutions to address significant challenges facing society, such as sustainability of resources, urbanization, and climate change. In a recent report by the *The Wall Street Journal* (January 8–9, 2011), the CEO of General Motors, Dan Akerson, was quoted as saying, “GM has to start acting like a consumer-driven, not engineering-driven company.” Geoscience is no different; we have to make our science societally relevant and user friendly, and not be driven solely by technology. Therefore, geoinformatics can be considered as an agent for making our data and products useful to the public at large. Contributors to this volume are recognized authorities in facilitating informatics-based solutions to global challenges, and are committed to expanding the role of geosciences by translating data into knowledge. The chapters in this volume cover a broad spectrum of research themes (presented alphabetically by primary author’s last name), and provide the latest thinking that will influence ongoing and future research in the emerging science of geoinformatics. Fourteen research papers, co-authored by thirty-eight researchers from both geoscience and computer sciences, cover a spectrum of topics, which range from integrating sensor and satellite data to the need for interoperability through test beds and semantics. Other research topics addressed include strategic sustainability, international standards and collaborations, metadata, provenance, query optimization, and a discussion of the event bush method. This vast array of topics has one common theme—facilitating the use of data and tools for the geoinformatics community to act as first responders to societal challenges. This book follows an earlier publication *Geoinformatics: Data to Knowledge* (Special Paper 397) by the Geological Society of America in 2006, and is a testimony to GSA for its leadership role in supporting geoinformatics