

# Preface

We present here the book titled ‘*Earth Science Satellite Applications: Current and Future Prospects.*’ When talking about prospects of satellite applications, it is important to talk about capacity, or capacity building for handling satellite (or Earth Observation) systems. Capacity building using Earth Observing (EO) systems and data (i.e., from orbital and non-orbital platforms) to enable societal applications may be defined as the network of soft and hard components comprising human, non-human, technical, non-technical, hardware, and software dimensions necessary to successfully cross the gap between science and research and societal application taken from “Hossain et al. (2016)”.

In today’s world, it has become quite clear that the capacity building community of scientists and stakeholders need to be better prepared to take advantage of the rapidly emerging, abundant scientific output and remote sensing data from satellite missions by converting them into decision-making products for end users.

An organization is said to have resilient capacity when it can retain and continue to build capacity in the face of unexpected shocks or stresses. Shocks may also include extreme events such as disasters and losing key staff with technical and institutional knowledge. *So how do we change this course and take full advantage of satellite Earth observational capability towards a more sustainable, safer future in the coming decades?*

To address this key question and strengthen the global societal applications and capacity building community’s voice, a 3-day workshop was held in Tacoma (Washington) during June 23–25, 2015, in anticipation of the 2017–2027 NRC Decadal Survey. This edited book is a result of this workshop. The workshop was sponsored by the NASA Applied Sciences Program as an E2 Topical Workshop, Symposium, and Conference (TWSC) event. It brought together experts from the applied sciences community already engaged in capacity building across various themes for the stakeholder community; NASA Applied Sciences and Capacity Building programmatic personnel; and several international stakeholder agencies with a history of using and a need for EO systems and data. The workshop aimed to debate issues to formulate a vision and a path forward for the NASA Applied Sciences and Capacity Building community.

First, we provide in this book international perspectives from around the world on the value of EO/satellite systems for societal systems and the hurdles to achieving full potential of earth observations. Such perspectives have been gathered from various corners of the world such as Asia, Africa, and Americas. The book also provides a thematic breakdown of societal applications such as disasters, water resources, health, and ecosystems. A program to engage the application community early in the process for making planned satellite missions for societally relevant is also discussed. Finally, the book provides a real-world and optimistic scenario of how one stakeholder agency was able to benefit from the engagement with scientific community and take advantage of satellite system for flood management.

This book would not have been possible without the active support of Dr. Nancy Searby, Program Manager of NASA Capacity Building Program, Lawrence Friedl, Dan Irwin (SERVIR), Ashutosh Limaye (SERVIR), International Center of Integrated Mountain Development (ICIMOD), Asian Disaster Preparedness Center (ADPC), Regional Center for Mapping of Resources (RCMRD), and Greg Miller (University of Washington). In addition, we also acknowledge the role of numerous participants of the workshop (many of them now authors of various chapters) who provided valuable input to the discussion.

We hope that readers benefit from this book and ponder with scientists and stakeholders alike how best to move forward with building durable capacity of satellite EO systems in the future.

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On behalf of the Capacity Building and Satellite Application Community

## Reference

- Hossain, F., Serrat-Capdevila, A., Granger, S., Thomas, A., Saah, D., Ganz, D., et al. (2016, In press). A global capacity building vision for societal applications of Earth observing systems and data: Key questions and recommendations. *Bulletin of the American Meteorological Society*. doi:10.1175/BAMS-D-15-00198.1, <http://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-15-00198.1>.

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