

Computing, Data and Volcanic Hazard Risk Analysis

Abstract: We present in this talk approaches to integrating modeling and simulation of complex physics at scale, use of large data based inference and novel uncertainty quantification methods applied to the problem of volcanic hazard analysis -- an exemplar designed to tax all of these methods. Such an integration of disciplines is also at the core of our new Computational and Data Enabled Science and Engineering. We will briefly review the vision that has gone into the design of this program.

Bio: Abani K. Patra obtained a Ph.D. in Computational and Applied Mathematics from the University of Texas-Austin in 1995. After a short post-doctoral stint he joined the University at Buffalo, Mechanical and Aerospace department in 1996 and was promoted to full professor in 2004. He has been actively engaged in computational science research and was among the founding members of the Centers for Computational Research and the Center for Geohazards at Buffalo. He has published numerous articles on topics ranging from adaptive meshing and error analysis of finite elements, HPC and more recently large scale data driven methodologies. The TITAN2D toolkit, developed by Patra and co-workers, is used by over 200 groups worldwide for mass flow hazard analysis. He spent three years at the National Science Foundation as a program director in the Office of Cyberinfrastructure from 2007-10. Most recently Patra has led the development of a new PhD program in Computational Data Enabled Science and Engineering at Buffalo.