

Report

ENHANS Symposium “Natural Extreme Events: Modeling, Prediction and Mitigation” and related events

13-15 December 2010, San Francisco, USA

The symposium was a part of the activity in the framework of the ICSU project “Extreme Natural Hazards and Societal Implications – ENHANS” (<http://www.enhans.org>) led by IUGG and supported by several ICSU Scientific Unions (namely, IGU, ISPRS, IUGS, IUTAM), American Geophysical Union, International Program Office of the Integrated Research on Disaster Risk (IRDR), and the UNESCO-IOC Global Oceanic Observing System (GOOS). The symposium consisted of three scientific sessions.

The first session of the symposium was a Union session (by invitation only) and attracted attention of more than 300 experts in various fields of extreme natural hazards. The session was focused mainly on North America and Europe. On behalf of Prof. *Surjalal Sharma* (University of Maryland, College Park, USA) and Prof. *Ilya Zaliapin* (University of Nevada, Reno, USA), co-organizers of the symposium, Prof. *Alik Ismail-Zadeh* (Karlsruhe Institute of Technology, Germany; Institut de Physique du Globe de Paris, France; and Russian Academy of Sciences, Moscow, Russia) welcomed the participants of the symposium and presented the ENHANS project as a trans-disciplinary and international cooperation between natural and social scientists, engineers, industry, and policy makers.

Prof. *Daniel Baker* (Director of the Laboratory for Atmospheric and Space Physics, Colorado University at Boulder) spoke on predictability and mitigating impacts of extreme space weather events. A storm surge, as a globally distributed risk, was a topic of the talk by Prof. Dr. *Hans von Storch* (Director of Institute for Coastal Research of the GKSS Research Centre in Geesthacht, Professor at the Meteorological Institute, University of Hamburg, Germany). Prof. *Upmanu Lall* (Director, Columbia Water Center, and Alan & Carol Silberstein Professor of Engineering of the Columbia University) explained why flooding was severe in 2010. He considered several case studies and discussed whether this is a coincidence or a predictable climate phenomenon and how to respond on this extremes. Prof. *Thomas Jordan* (Director of the Southern California Earthquake Center and the W. M. Keck Professor of Earth Sciences at the University of Southern California) spoke on new large-scale numerical simulations to forecast extreme earthquake ground motions, whereas Prof. *Steven Sparks* (Director of the Bristol Environmental Risk Research Centre, University of Bristol, UK) gave a talk on extreme volcanic eruptions and discussed their return period, impact and implications. Mr. *Rowan Douglas* (Chairman of the Willis Research Network, London, UK) spoke on how re/insurance and public science interact to manage risk of extreme events for societal benefit.

The next session of the Symposium was based on three invited talks and selected contributed presentations. The 2010 AGU Natural Hazards Focus Group Graduate Research Awardee Dr. *Ning Lin* (Massachusetts Institute of Technology, Cambridge) spoke on a hurricane risk assessment related to wind damage and storm surge. Ms. *Kelly Klima* (Graduate Student, Carnegie Mellon University, Pittsburgh) spoke on tropical cyclones and presented her approach to a decision-analytic assessment of cyclone hazards. Extreme precipitation events in the

European Alpine region was the topic of the talk by Dr. *Nauman Awan* (University of Graz, Austria). Prof. *John Rundle* (University of California, Davis) spoke on precursory activation and quiescence prior to major earthquakes. Prof. *Fausto Guzzetti* (University of Perugia, Italy) discussed landslide hazard, vulnerability and risk assessment and emphasized importance of methodology for risk assessment, its limits and challenges. Prof. *Kenji Satake* (University of Tokyo, Japan) spoke on tsunami modeling, forecast and warning. Dr. *Adam Smith* (National Oceanographic Atmospheric Administration, Asheville, USA) examined insurance loss return periods with extreme event intensity thresholds across the United States.

The poster session (20 papers) presented a variety of topics related to natural hazards, extreme events, theory, modeling, prediction and mitigation. The culminating event of the symposium was a keynote lecture on “Society's Growing Vulnerability to Natural Hazards and Implications for Geophysics Research” by Prof. *Julia Slingo* (Chief Scientist, MetOffice, U.K.)

Mr. *Rowan Douglas* (Managing Director of Willis Analytics for Willis Re, the world's third largest insurance and re-insurance broker) delivered an invited talk “Natural Hazards Reshape Landscapes in Finance, Public Science & Policy” at the Reception of the AGU Natural Hazards Focus Group on Tuesday, 14 December. According to Douglas natural hazard modeling, married to risk, financial and economic modeling, created a new scientific and social organism – a rich and diverse community representing how nature, property and populations perform at the extremes. An urgent need and a common medium are uniting academic disciplines, industries, public/private sectors, and technology in a shared journey. This drives a powerful intellectual fusion, creativity and impact: the shock waves are breaking down the walls.

Dr. *Jane Rovins* (Executive Director of the International Program Office for Integrated Research on Disaster Risk, IRDR) attended the Executive Committee meeting of the AGU Natural Hazards Focus Group on 15 December and presented the IRDR Program to the Focus Group leadership. She explained the mission and vision of the program, its major activities, and welcomed active participation of the AGU scientists in the program.

Alik Ismail-Zadeh
Leader, ENHANS Project

20 December 2010