

3rd International Conference on Earth Science & Climate Change

July 28-30, 2014 DoubleTree by Hilton Hotel San Francisco Airport, USA

Social vulnerability highlighted as the main driver of heat stress risk through comparative local-scale regional impact analysis

Christoph Aubrecht^{1,2} and Dilek Ozceylan Aubrecht³

¹AIT Austrian Institute of Technology, Austria

²Urban and Disaster Risk Management, USA

³Sakarya University, Turkey

The observed changing in the nature of climate-related events and the increase in number and severity of extreme weather events has changed exposure and risk patterns across the globe. In recent years, extreme heat events caused excess mortality and public concerns in many regions of the world (2003/2006 European heat waves, 2007/2010 Asian heat waves, 2006 and most recent 2010-2012 North American heat waves). In the United States, extreme heat events have been consistently reported as the leading cause of weather-related mortality and have attracted widespread attention regarding the critical importance of risk assessment and decoding its components for risk reduction. In order to understand impact potentials both the spatially and temporally varying patterns of heat stress and the multidimensional characteristics of vulnerability have to be considered. A newly developed composite vulnerability index at very high spatial level of detail is matched with a novel heat stress hazard assessment approach for the US National Capital Region. Illustrating actual impact patterns from the 2010 US east coast heat wave the study reveals vulnerability as main driver, generally showing a clear difference between high-risk urban areas and wide areas of low risk in the sub-urban and rural environments. The high spatial granularity of the presented assessment highlights the additional value gained by sub-county analysis as impact root causes are obscured by coarse-level data availability. The study sets a framework for local-level heat stress risk assessment aiming at supporting risk reduction and optimization of resource distribution as well as long-term climate adaptation planning.

Biography

Christoph Aubrecht has a PhD in integrated GI Science and remote sensing from Vienna University of Technology and is affiliated as senior scientific consultant with the AIT Austrian Institute of Technology as well as the World Bank's Urban & DRM team. He previously provided consultancy to GFDRR and held various visiting scientist positions at NOAA-NGDC, Columbia University's CIESIN and the University of Southern California. He is on the editorial board of various international scientific journals and his publications include more than 30 refereed articles in journals and books. Research interests focus on multi-dimensional spatio-temporal modeling as well as disaster risk management, exposure and vulnerability.

christoph.aubrecht@ait.ac.at, caubrecht@worldbank.org