

**spatial@ucsb.local2018**  
**IMPROVING INFORMATION ACCURACY  
FOR EXTREME EVENTS**



**Featured Speakers**



**Chris S. Renschler, Ph.D.**  
Associate Professor  
Dept. of Geography, University at Buffalo (SUNY)  
Guest Professor  
Dept. of Biological and Environmental Engineering  
University of Tokyo

***Integrated Extreme Events Management:  
Communicating Processes and Options for Stakeholders***

**Abstract:**

Over the past two decades, interdisciplinary approaches in Systems Analysis, Environmental Modeling and Geographic Information Science have attempted to integrate monitoring, modeling and managing complex interactions of hydrologic, Earth surface and subsurface as well as other environmental system processes in coupled natural and human systems. The hazard and risk assessment of climate and land use/land cover change and the impact of extreme events on the structure and functionalities of physical and human systems illustrates that environmental and human systems are interconnected and interdependent. The creation of the "PEOPLES Resilience Framework" to communicate extreme events presented in this lecture enables stakeholders in communities around the world to better understand spatial and temporal dynamics of the functionality of systems and to develop steps toward a truly integrated hazard and risk assessment strategy for extreme events management. Examples of research projects with focus on managing not only soil and water conservation, forest fires, debris flows, and floods, but also nutrient management, radioactive tracers, environmental pollution, and sustainable

development, illustrate the enhancement of stakeholders in their understanding and communication as well as the creation of successful collaborations and integrated assessment techniques among scientists, practitioners and decision-makers.

**Bio:**

**Chris S. Renschler** is Associate Professor of Geography, Director of the Geographic Information and Analysis Lab (GIAL) and Director of the Landscape-based Environmental System Analysis & Modeling (LESAM) Laboratory of the Department of Geography, University at Buffalo—The State University of New York. He is internationally recognized as an expert and scholar in integrated natural resources and hazards management utilizing geographic information science, remote sensing, and environmental modeling. His research projects include the development, validation and application of integrated hydrology and sediment modeling techniques and tools for effective decision- and policy-making by scientists, engineers and practitioners all over the world. After Superstorm Sandy in 2012, Renschler was appointed by New York State Governor Andrew Cuomo to serve on the RESPOND Commission to find ways to ensure readiness to respond to future weather-related disasters. He currently serves as an invited expert for the Joint Food and Agriculture Organization (FAO)/International Atomic Energy Agency (IAEA) and is currently working with colleagues and stakeholders on assessing the sediment redistribution in the radioactive contaminated landscape impacted by the Fukushima-Daiichi Nuclear Power Plant Disaster in Japan.



**Jessica White**  
Direct Relief International  
Research Analyst

***Communications for Humanitarian Crisis Response:  
Using Data to Help Those Who Need It Most***

**Abstract:**

Effective communication during times of humanitarian crisis aims to frame the needs and issues of the people impacted, report on situational changes, and promote transparency in the delivery of humanitarian aid and assistance. While each crisis has specific characteristics that are dependent upon local facts and circumstances, all emergencies require effective communications and a quick response. Therefore, it is crucial to access real-time data and convey the information to those affected in a coherent and concise manner. Interactive maps and story maps are becoming critical to humanitarian communication by accelerating spatial data access, promoting compelling narrative frameworks for multiple audiences, and integrating media to convey crisis dynamics. The use of interactive data products as an analytic and communications approach for Direct Relief's responses to recent humanitarian crises will be explored.

**Bio:**

**Jessica White** is a research analyst with Direct Relief, an international humanitarian aid and disaster response nonprofit organization that delivers critical medicines and medical supplies to healthcare organizations in all 50 U.S. states and in over 90 countries. In her role with the organization, White works extensively with ESRI's ArcGIS platform to highlight Direct Relief's impact through interactive story maps and data visualizations.

Prior to joining Direct Relief in 2015, White worked for Stanford University where she employed spatial analysis, data management, cartography, and CAD integrations to support various projects for the University's Lands, Buildings, and Real Estate division. She has also worked for the City of San Jose to create and analyze geospatial datasets for the Department of Transportation. After graduating with a Bachelor's degree in Biology from the University of California, Santa Cruz, White earned a Master's degree from San Jose State University in GIS and Cartography.



**Moderator:**

**Werner Kuhn**

Center for Spatial Studies, Department of Geography  
University of California, Santa Barbara

**Bio:**

**Werner Kuhn** holds the Jack and Laura Dangermond Endowed Chair in Geography at the University of California, Santa Barbara, where he is professor of Geographic Information Science. He is also the director of the Center for Spatial Studies at UCSB. His main research and teaching goal is to make spatial information and computing accessible across domains and disciplines. Before joining UCSB in late 2013, Kuhn was a professor of Geoinformatics at the University of Munster, Germany, where he led MUSIL, an interdisciplinary semantic interoperability research lab. Kuhn is described as a leading expert in the area of geospatial semantics and especially known for his work on Semantic Reference Systems as well as his work on interaction metaphors for Geographic Information Systems. Recent research projects include the Linked Open Data University of Muenster (together with the university library), and a series of EU projects on geospatial services in the semantic web.

Kuhn holds a doctorate from ETH Zurich (1989) and was a post-doctoral researcher with the National Center for Geographic Information and Analysis (1989–1991) as well as with the Vienna University of Technology (1991–1996). He is a co-founder of the COSIT Conference Series (since 1993) and of the Vespucci Initiative for Advancing Science through Geographic Information. He has been a visiting scientist at UCSD's Meaning and Computation Lab (2002/03), the UK eScience Center at Edinburgh (2007), and the Brazilian Institute for Space Research, INPE (2011). His publications range from GIScience and usability engineering through cognitive science to formal ontology.



## CIRGIS PRESENTERS



**Zacharias Hunt**

GIS Manager

Z-WORLD GIS

CIRGIS Past-President and Board Member

### ***Montecito Mudslides—Road to Recovery with GIS***

**Abstract:**

On January 9, just one month after the Thomas Fire began and subsequently burned much of the area above Montecito and Carpinteria, the Santa Barbara South Coast's first major winter storm triggered widespread mudslides and debris flows, destroying dozens of homes and leading to multiple fatalities. ZWORLD GIS quickly deployed emergency GIS support for the agencies immediately impacted and in need of spatial intelligence to aid in the analysis of loss/damage, help provide operational direction/priority, and assist in the process of recovery. ZWORLD GIS shares insight into the strategy that assisted with the assessment, response, and recovery of this extraordinary event using GIS.

**Bio:**

**Zacharias Hunt** has been working in the Geospatial Technology industry for 18 years. He received his Bachelor Degree in Geography from the University of California, Santa Barbara and a Master's Degree in Public Administration from California State University of Northridge. He also has certification in the use of Global Positioning Systems (GPS) from Ventura College, California.

Hunt is currently a GIS Manager for ZWORLD GIS, a geospatial consulting business. He provides a wide array of Geospatial Information System services and solutions, assisting agencies through every aspect of a GIS system. He has helped the company expand with his unique experience in GIS data development, mapping, GIS data maintenance, and larger enterprise GIS program needs such as strategic planning, enterprise implementation, and project/program management.

Formerly, Hunt worked as the Geographic Information Officer (GIO) for Santa Barbara County. There he managed all aspects of a County Enterprise GIS program, including development and implementation of a County GIS Strategic Plan; management of GIS web-based applications for both internal County staff as well as the public; implementation of GIS policy and standards; participation in annual budgeting and procurement process for GIS; development of sustainable GIS revenue opportunities; recruitment and training of GIS staff; management of the County GIS Internship program; and coordination of GIS-based systems for the County Office of Emergency Management (OEM).

Hunt also participates in the Channel Island Regional GIS (CIRGIS) Collaborative serving as President from 2010–2015. With a background in both private and public sector geospatial projects and government contracts, he has been integral in the development of fiscal strategy and planning for regional collaborative geospatial projects.

Hunt lives in Santa Barbara, along the Central Coast of California. He is an avid outdoorsman, sports enthusiast, and loves to participate in the local art community.



**Hassan Kasraie**  
Kasraie Consulting  
CIRGIS Past-President and Board Member

### ***Post-Thomas Fire Hydrology and Flood Hazard Mapping***

#### **Abstract:**

In the aftermath of the recent Thomas Fires in December 2017, local municipalities were faced with the danger of potential mudflows, mudslides, and flooding during the rainy season. Two municipalities in particular used the latest high-resolution Lidar data and created 3-dimensional watershed models of their cities. By defining the stream network, and applying rainfall over the entire watershed, they were able to create hydraulic flood hazard models and maps that showed the extent of potential flooding and mudflows for several storm events. They simply refer to this as a “watershed model.” Additionally, this new technique allowed them to prepare flood hazard prediction model and flood depth, velocity, risk and vulnerability maps based on the latest precipitation forecast 5 days in advance of the impending storms.

Unlike earthquakes, we have several days warning ahead of impending storms and potential flooding. Therefore, communities, if equipped with proper tools, can manage resources, plan voluntary or mandatory evacuations, clear catch basins, culverts, and streams of debris, sediment, and boulders; plan for traffic control, shelter, and other emergency responses.

What has always been missing until now has been the ability to create flood hazard maps of the entire watershed or community prepared for forecasted precipitation events. This idea has the potential to revolutionize the way they do flood forecasting, master planning for storm-water infrastructure improvements & CIP, land development review, flood insurance rate map updates, climate change evaluations and many other uses.

#### **Bio:**

**Hassan Kasraie** is a Water Resources professional and the Principal of Kasraie Consulting. He has more

than 33 years of professional civil engineering and mapping experience in Southern California. He is a licensed hydrologist, certified floodplain manager, and he was on the CIRGIS Board of Directors for three years through 2016.

Kasraie Consulting is a local Ventura County-based civil engineering/hydrology consulting firm. It has been in business for more than 15 years, providing conceptual drainage design, hydrology, hydraulics, floodplain management, engineering plan checking, analysis, GIS mapping, and LiDAR topography services to local municipalities, public agencies, private development and the engineering community.