



Human Mobility, Hazard Perceptions, and Individualized, Context-Aware Severe Weather Warning Systems

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When people receive a hazard warning and decide to take protective action, such as sheltering in place, avoiding flooded roads, or protecting property, that decision is not made all at once. Theoretical and empirical research has demonstrated that individuals go through a process that involves receiving the warning, understanding the warning, personalizing the risk, and then taking protective action. Personalizing the risk, the expectation of personal impacts to self, family, property and daily activities, is a critical component of the protective action decision-making process. While hazards research focuses on the cognitive and emotional dimensions of personalization, there is also an important spatial and temporal component. Home, work, and areas of daily activity are physical locations that can be mapped over time to create individual mobility patterns, or footprints. Research in mobility patterns shows that people are creatures of habit and their mobility patterns are largely predictable. If we can predict people's location and activities at different times of the day, why not use that information for weather alerts and warnings?

This talk will present exploratory research on the potential benefits of incorporating individual footprints into the severe weather warning systems for tornados, flash floods and severe thunderstorms. Our exploratory research examines the potential of warning people based on their individual perceptions and contexts, and how the complexity of human perception and response can be incorporated *operationally* into warning system technology. Advances in high resolution weather sensing, the Internet of Things (IoT), mobility-enabled Information and Communications Technology (ICT), and high levels of mobile phone usage makes these individualized warnings possible.

This research uses an innovative, multidisciplinary living lab infrastructure located in the Dallas Fort Worth Metroplex in north Texas to explore individualized warning. The CASA Dallas Fort Worth Living Lab for Severe Weather is a sensors-to-human warning system infrastructure where research can be conducted during live severe weather events with stakeholders and the general public. As part of this research platform, we have created a mobile phone app called CASA Alerts that delivers real-time, user-driven weather alerts to the public. The app also functions as a tool for conducting cross-sectional and longitudinal research on human behavior, perception and response.

This seminar will be webcast live at:
<http://www.fin.ucar.edu/it/mms/fl-live.htm>
Recorded seminar link can be viewed here:
<https://www.mmm.ucar.edu/events/seminars>

SPECIAL DATE, TIME, AND LOCATION

Tuesday, June 12, 2:00 PM

Refreshments 1:45 PM

NCAR-Foothills Laboratory

3450 Mitchell Lane

Bldg. 2, Small Seminar Room 1001