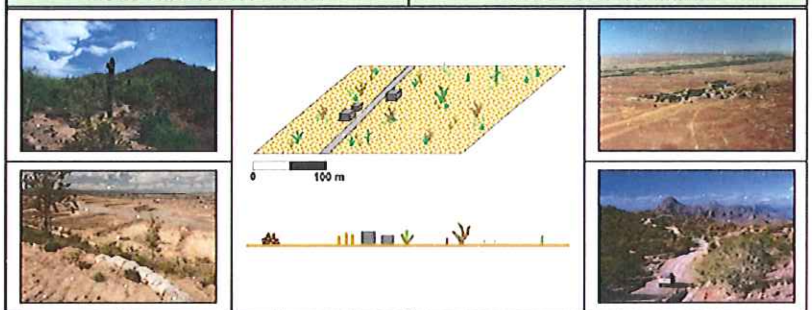
| **Zone Name:** *Hot Desert* | **Zone Series:** *Natural* |
|---|---|




| sky view factor [1] | built surface fraction [2] (%) | roughness height [3] (m) | thermal admittance [4] ($Jm^{-2}s^{1/2}K^{-1}$) | anthropogenic heat flux [5] ($W/m^2$) |
|---|---|---|---|---|
| > 0.95 | < 10 | < 1 | 600 – 800 | 0 |

**Zone Thermal Responsiveness:** *High*
**Zone Definition:** Dry, barren landscape with few low shrubs and/or woody trees. Full sky view. Soils poorly developed (gravel, sand); low thermal admittance. Surface cover mostly pervious. Few roads and small, scattered buildings. Anthropogenic heat flux nil. Light traffic density.

1. Proportion of sky hemisphere seen from ground level. Varies with height and spacing of buildings, trees.
2. Proportion of zone surface covered by impervious materials (buildings, roads, pavement).
3. Average height of main roughness elements (buildings, trees, crops).
4. Ability of zone surface to accept/release heat. Varies with surface type (natural, built) and surface wetness.
5. Mean annual heat flux from combustion processes (industry, transportation) and space heating/cooling (residential, commercial) at the local scale.

is identified by a unique set of radiative, thermal, moisture, and geometric properties. Individually, the zones are local in scale (100s of meters) and relatively homogeneous in surface character and climate. Our prototype system is simple and inclusive in design, and allows users to objectively classify or reclassify "urban" and "rural" measurement sites by standardized criteria. This new approach to site classification will lead to more accurate and consistent reporting of urban climate observations.

In developing the system further, we seek input from the international urban climate community on the general applicability of local climate zones to "urban" and "rural" measurement sites worldwide. Computer modeling is underway to assess quantitatively the thermal responsiveness of each zone to diurnal heating and cooling cycles. We expect that the model output will improve the organizational structure of the local climate zone classification system.—Iain D. Stewart (University of British Columbia), and T. Oke. *"Newly Developed 'Thermal Climate Zones' for Defining and Measuring Urban Heat Island Magnitude in the Canopy Layer," presented at the Timothy R. Oke Symposium, 11–15 January 2009, Phoenix, Arizona.*

## CHAPTER CHANNEL

### Disaster Preparation, Response, and Recovery using GPS-Enabled Cell Phones

In March, the West Central Florida chapter learned that something as simple as cell phones could be used in disaster planning. Philip Winter and Sean Barbeau from the Center for Urban Transportation Research (CUTR), located at the University of South Florida (USF), gave a presentation focused on disaster preparation, response, and recovery using GPS-enabled cell phones.

Winters and Barbeau provided an overview of their "location-aware" information system research and the numerous weather-related applications of their studies. They noted applications in disaster preparation, such as getting pertinent information—severe weather warnings and transportation concerns during evacuations, for example—out to the public. They also discussed phones as a response and recovery tool, aiding responding emergency teams in covering needed areas. The location-aware technology has been developed in collaboration with USF's Computer Science and Engineering Department and enables the software to be used with cell phones.

Barbeau began by explaining the logistics of location-aware technology. Location-aware applications read latitude and longitude, speed, and direction using GPS-embedded technology. Barbeau highlighted the application of this to a hurricane evacuation. With access to this information through cell phones, emergency managers could better respond to an evacuating population by positioning personnel and moving in resources more quickly where

## ECHOES

**"The vegetation looks as if it was burned in a fire."**
—Hannibal Barry of the United Nations Office for the Coordination of Humanitarian Affairs, on the conditions in the African country of Guinea after a severe cold spell in January that some elders in the region said was unprecedented. Crops were destroyed and livestock perished after temperatures dropped as low as 1.4°C in the West African nation. Potatoes, tomatoes, peppers, onions, and bananas were lost, and the weather was blamed for stress in goats and sheep that caused more than 1,100 spontaneous abortions—"the first time I have seen abortions caused by the cold," according to local livestock technician Souleymane Diaby Barry. January temperatures in the region normally average around 11°C. (Sources: Integrated Regional Information Networks; AllAfrica.com; Embassy of the Republic of Guinea)

they are needed. He also noted that with location-based services, photos can be taken. An AMS member noted that this could be useful for Skywarn spotters to report tornadoes since along with the photo, latitude and longitude would be readily available. This would save the NWS time in confirming reports, and thereby allowing forecasters to issue warnings earlier.

Winters then introduced the "EZ-finder," which is an application CUTR developed using GPS-enabled cell phones tied to GIS data on evacuation zones so individuals can automatically receive text messages. Winters again emphasized the hurricane application to this. The public will be able to receive crucial information, such as evacuation orders, without occupying critical emergency management center personnel and phone lines. EZ-finder can also be used to tell individuals about re-entry information. Winters pointed out that most coastal residents are unaware of the evacuation zone they are in. This technology could therefore serve as a tool informing people of their evacuation zone based on the location of their cell phone GPS.

Barbeau discussed "TRAC-IT," another feature of the system that tracks travel behavior for long periods of time. Barbeau and Winters noted that this application may help emergency managers understand when and where people are evacuating, and what routes they are using. Finally, Winters discussed wireless detection and communication technologies with a potential application for use in determining water rising in a river or from storm surge. With a network of sensors, how storm surge affects different areas could then be used for modeling.

Barbeau and Winters concluded by reemphasizing that the technology is rapidly expanding to cover a variety of different situations, from personal mobility planning to security detection network monitoring systems, to providing communications in a variety of formats to enhance public safety. Amber Alerts, major traffic concerns, and other types of warnings can be displayed and communicated in real-time. The technology applications already include simultaneously displaying user-captured images from cell phones on maps of the area, and utilizing these images and maps in many different formats for travel planning and assisting the disabled.

—Jennifer M. Collins
*West Central Florida*