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DHS Science and Technology Directorate

Improving Model Capabilities – Understanding the Urban Canyon’s Impact on Radiological Releases

Using R&D Funding to fill gaps in the Interagency Rad/Nuc Response and Recovery Architecture

The urban landscape, including the size and shape of buildings, can play a role in the dispersal of radioactive material. First responders must know what the radioactive dispersal will look like in specific urban environments to prepare for initial response operations including securing the perimeter, search and rescue, and evacuations. This project will leverage existing modeling capabilities to provide first responders with a better understanding of the containment dispersion from a radiological release.

Partnering with LLNL and NARAC for enhanced modeling

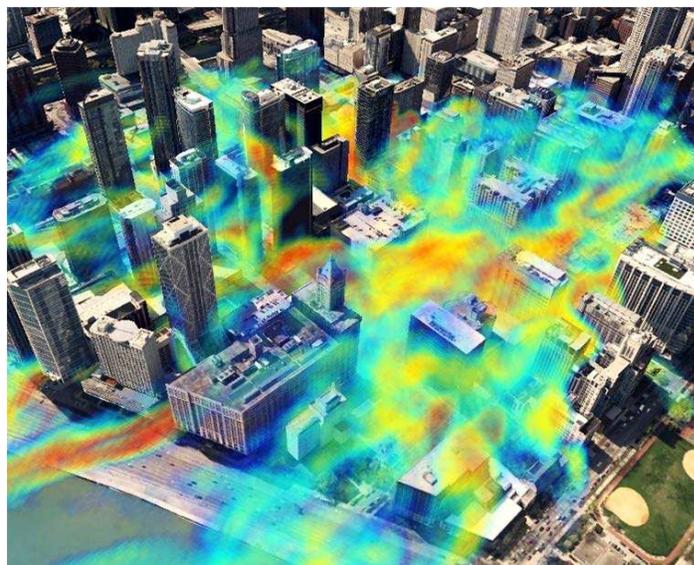
Lawrence Livermore National Laboratory (LLNL) and the National Atmospheric Release Advisory Center (NARAC) have developed extensive modeling to understand the dispersal of hazardous materials in different environments. Missing from this capability is the ability to provide realistic simulations of radiological releases in urban areas. This project will add key radiological processes and source terms to an existing model that is capable of running initial maps and plume models in minutes for urban centers.

Preparing Cities to Understand Consequences

Incorporating existing building data collected by the United States Geological Survey (USGS) in over a hundred US cities, this Project will give first responders improved capabilities in preparedness, response and recovery from a radiological release. With an in-depth understanding of the urban landscape of these specific cities, improved modeling capabilities can be provided that detail the specific impacts of building heights and density and their impact on how radioactive material is dispersed.

Anticipated Results of this Project

Through this project, DHS S&T will provide an improved modeling capability to support local and state response agencies in understanding the impact of radiological releases in urban environments during actual incidents as well during training and exercises. This capability will be accessed through DHS’s Interagency Modeling and Atmospheric Assessment Center (IMAAC) process with support from NARAC operational analysts in running the model.



Google Earth with Aeolus / Lawrence Livermore National Laboratories

Building Critical Relationships and Partnerships to support Rad/Nuc Preparedness

As with all projects in DHS S&T’s Rad/Nuc Response and Recovery R&D portfolio, this work relies heavily on first responders and interagency workgroups to assist in the scoping and prioritizing of initiatives. The research and development associated with this project is being conducted with the following DHS S&T partners:

- Lawrence Livermore National Laboratory
- National Nuclear Security Administration
- Federal Emergency Management Agency



Homeland Security

Science and Technology

To learn more about DHS S&T’s Radiological/Nuclear Response and Recovery R&D Portfolio please contact Ben Stevenson, NUSTL Program Manager, at benjamin.stevenson@hq.dhs.gov.