

**Project 14: Applied Decision and Risk Analysis (von Winterfeldt)**

This project applies decision analysis models and tools to support risk management of counterterrorism.

**Modeling Area:** Risk Management

**Application Areas:** Transportation Security, Border Security, Infrastructure Security, WMD

**Principal Investigator:** Detlof von Winterfeldt

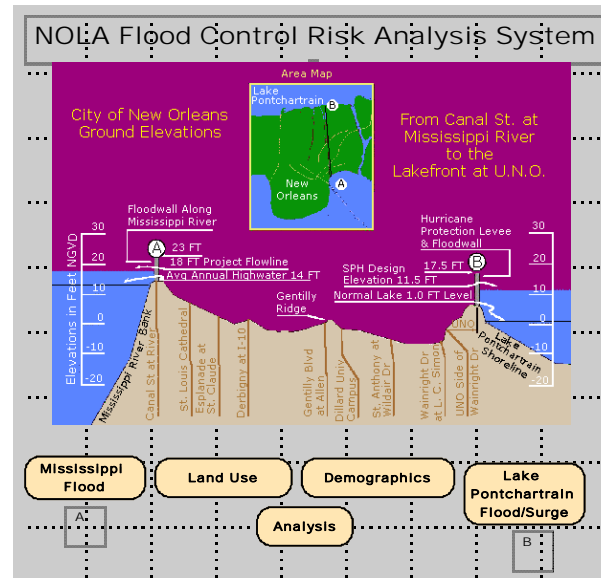
**Institution:** University of Southern California

**Other Investigators:** Don Kleinmuntz

**Student Investigators:** Heather Rosoff, Carl Southwell, Mayank Mohan, Wei Chen

**Brief Description:**

In the first year, decision analysis models and computer tools were developed to evaluate MANPADS countermeasures and to assess the risks of a dirty bomb attack on LA harbor. In the first case, a relatively traditional cost-effectiveness version of a decision tree analysis was developed. In the second case, a novel approach was developed that uses project risk analysis to reverse engineer a terrorist attack. In the third year, we split the decision and risk analysis activities into an advanced modeling component (Project 3) and an applied component (described herein as Project 14). The applied work now includes a decision analysis of options to improve the levee and floodwall system in New Orleans and improvements of border protection.



**Objectives and Technical Approach:**

This research aims to test and apply risk and decision analysis for the evaluation of policies to counter terrorism and to apply these tools in selected terrorism and counter-terrorism settings. Examples are the evaluation of MANPADS countermeasures, analyses of options to rebuild the New Orleans levee and floodwall system, prioritizing biological agents that could be used for terrorism and design and evaluation of methods for improving border security.

**Interfaces to other CREATE Projects:**

This work will maintain a close connection with the advanced decision and risk analysis project, the economics impact assessment projects, and the application areas.

**Interfaces to non-CREATE Projects:**

This work will be in collaboration with the MANPADS Countermeasure Office at the DHS, the National Biodefense Analysis and Countermeasures Center (NBACC), CBP, and ICE at the DHS.

**Major Products and Customers:**

- MANPADS: We completed the MANPADS analysis, published it, and briefed the results at various levels, including Congress.
- NBACC: We worked closely with NBACC and Battelle Memorial Institute on expert elicitation methods to assess the risk of bioterrorism attacks

- Katrina: We developed a model that serves as a prototype for evaluating alternative designs for levee and floodwall reconstruction in New Orleans

**Major Milestones and Dates:**

- MANPADS case study, models, and computer tools completed and delivered to DHS MANPADS Countermeasures Office; updates delivered in December 2005.
- Dirty bomb case study, models, and computer tools completed and presented to the DHS.
- Katrina model and analysis completed in the summer of 2006, presentation at the economics symposium in August, 2006, final version submitted in December, 2006
- Additional applied work on MANPADS countermeasures to be completed in March, 2007
- Assistance to and participation in California resource allocation project; first report in September, 2006, second round to begin in January, 2007 to be completed in March, 2007
- Assistance to the NBACC's bioterrorism risk assessment, ongoing, final report due in March, 2007.