## IMPROVING WEATHER-RELATED EMERGENCY MANAGEMENT: MORE THAN FORECAST ACCURACY

## An integrated model approach and comparative research to incorporate lessons learned in the National Weather Services of Mexico and the USA from previous disasters.

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Although extreme weather forecasting skills have improved significantly in recent decades, uncertainty on the formation, track, its intensity and potential damage remain a challenge. Even nowadays, hurricane warnings in the United States have a 48 hour average track forecast error of 269 kms and about three-quarters of an average hurricane warning area does not experience hurricane conditions (AMS, 2007). Such risk of over warning, added to the degree of accuracy and reliability of the information that is being communicated, and the ability to extract the appropriate response from the public, play a crucial role in saving lives and reducing damages. As a result, there is a progressive building literature claiming that decision-makers ability to use this information effectively can no longer depend solely on meteorologists improving forecast accuracy, but it shall be integrated on a broader framework that links the entire process and builds the capacity to communicate risks.

The present study follows up on this rationale by exploring the value of a warning system model composed by five elements: infrastructure and technology, organisational development and management science, stakeholders and media training, professionalisation and interdisciplinary research, and the public sector information choosing and exploitation.

This dissertation reports on three weather-related emergencies through a comparative case study of two major disasters, Hurricane Wilma and Hurricane Katrina of 2005, and one moderate-size disaster, the Piedras Negras-Eagle Pass tornado of 2007.

The aim of this research was to compare and assess the performance of the National Weather Services (NWSs) of the United States and Mexico in three similar yet particular weather events and to identify the extent to which the elements of the model are present and paramount for improved emergency management. The research was based on multiple sources of information including the responses from interviews with key stakeholders, and secondary data analysis. The results of the comparison denote that in major disasters there were more reliable and leadtime warnings, but emergency management had contradictory performance between the two countries. In the minor disaster, warnings were almost abscent and as a result loss of life was proportionally larger. Also, the levels of self awareness and utilisation of the five elements of the model by the two NWSs differed substantially, which are dependent upon the socioeconomic, cultural and political context. Findings also suggest that storm impacts in communities, may be reduced by considering and strengthening the possible success factors of the proposed model. There are promising issues about what both the Mexican and the US NWSs and related emergency agencies can learn from each other, however, the how still is an unexplored research opportunity.