

Constructing Probable Wind and Water Damage Sequences from Timelines – the Technical Perspective

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Settlement of legal claims related to wind and water damage in hurricanes requires the assessment of probable extents of wind and water damage to structures. The separation of damages is particularly complicated when structures have been completely destroyed and/or when engineers are retained long after critical damage indicators have been removed from the site. Even in cases where the storm surge eventually destroyed structures, it is critical to the settlement of insurance claims to ascertain the probable extent of wind damage occurring before destruction by storm surge. The construction of timelines of wind and water damage therefore plays a critical role in determining what damage most likely occurred – and when.

Several months after a hurricane, critical damage evidence has typically been removed from a damage scene. In the interim, however, additional post-storm analyses of region-wide windspeed records, storm-surge records, and related physical evidence result in a better understanding of the overall wind fields and surge action throughout an affected region. At this point, engineers have new tools available to help determine causation of damage, in addition to documentation of critical evidence soon after the hurricane.

This paper recounts our experiences in determining probable wind and water damage to structures in Mississippi following Hurricane Katrina using timelines of wind and water levels constructed from available measurements and models to reconstruct probable damage sequences, aided with the review of available evidence, review of remaining damaged structures, review of nearby-structure performance, and the use of engineering calculations based on specific construction types.