PROGRAM FOR THE STUDY OF DEVELOPED SHORELINES

Western Carolina UNIVERSITY

Preliminary Assessment of Structural Damage at Mexico Beach, Florida

Hurricane Michael, October 10, 2018

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Hurricane Michael made landfall at 1:30 p.m. on Wednesday, October 10, 2018 near Mexico Beach, Florida, as a powerful Category 4 storm. The storm surge recorded by the tide gage at Apalachicola, FL (30 miles east) was over 9 feet, and it is likely that the surge at Mexico Beach will be found to be higher. The internal barometric pressure at landfall was 919 millibars, the third lowest pressure ever recorded for a U.S. hurricane (surpassed only by the Labor Day Storm of 1935, and Camille in 1969). Top sustained winds at landfall were measured at 155 mph.

The day after landfall, dramatic aerial footage was posted on Facebook by WXChasing depicting the extent of damage to Mexico Beach. We used that footage and ArcGIS to approximate the damage to free-standing structures in the portion of town between the beach, US. Highway 98, the Mexico City Canal, and the Driftwood Inn. While the devastation was obviously much more widespread, this provided a rapid assessment in a well-defined area.

Prior to landfall, there were 279 free-standing structures in the area analyzed (see map), many of which appeared to be multi-family homes. After the storm, 173 buildings were completely gone (62%), 21 buildings remained in place with substantial damage (8%), and 67 remained in place with minor damage (24%). The fate of 18 buildings that were not filmed (7%) is unknown, but due to their location substantial damage or total loss is highly likely.

The complete destruction of so many structures down to the concrete slabs they were situated on can be directly attributed to storm surge. In some cases, entire houses were laterally displaced hundreds of feet, and a wrack line of piled debris from the destroyed homes can be seen clearly at several points in the video. Michael's 155 mph winds were intense and damaging, but much of the work was also done by surging water, suggesting that a simple categorization by wind speed alone (the Saffir Simpson Scale) is not sufficient for predicting and describing the actual devastation of hurricanes.