

# Real time 3D scanning of storm damage benefits coastal monitoring

—by Jennifer Bumford

Weather Channel's Jim Cantore uses Leica ScanStation images to show immediate effects of storm damage; highlights data benefits for better coastal modeling

In just hours of Tropical Storm Noel blowing over Florida's southern Atlantic coast on November 1st, 2007, GlobalMind, a land survey and mapping provider, used Leica Geosystems' ScanStation high-definition 3D laser scanner to detail some of the immediate storm damage.

The 3D images revealed severe beach erosion undermining some high-end beach front properties. These images were so compelling that the Weather Channel's meteorologist Jim Cantore featured the ScanStation 3D imagery the same evening on his nationally televised, real-time coverage of the hurricane, citing the benefits of this advanced technology to improve coastal modeling.

Tropical Storm Noel, the fifth hurricane of the Atlantic tropical season, was one of the worst and deadliest hurricanes on record for the year 2007. It led to 143 lives lost, substantial mud slides, and flash flooding across the Dominican Republic and Haiti.

The tropical storm also created heavy beach erosion as it moved along the east coast of Florida. An undeniable example of this significant erosion showed at Riviera Beach in Singer Island, a suburb of West Palm Beach.

GlobalMind's on-site crews set the ScanStation's sites on two adjacent beachfront condominiums and in 40 minutes collected over 997,000 data points, revealing a nearly 20-foot vertical drop from the level of one of the buildings to the beach below.

With this first test of Leica's ScanStation for mapping storm damage behind them, GlobalMind's president Steve Gordon said the high precision of the HDS laser scanner not only proved its value as a highly efficient data source for detailing and revealing hurricane destruction, it clearly showed its viability as a land subsidence monitoring tool for coastal infrastructure.

"Structures built on sand that are vulnerable to erosion need to be routinely monitored in



great detail to ensure their stability," said Gordon. "I think Leica's 3D laser scanning technology is the best tool you can use to pinpoint ground shifts in underlying geology that could topple buildings."

The Weather Channel's Jim Cantore also saw the potential of laser scanning for this application. Using GlobalMind's ScanStation image of severe beach erosion, Cantore was able to show clearly specific coastal erosion during his televised report, and demonstrate how advanced technology such as this could greatly improve coastal monitoring.

Michael Harvey, Leica Geosystems' Product Marketing Manager for scanning said the Leica ScanStation—specifically the ScanStation2 with its increased scanning speed—is particularly suitable for mapping incidents such as those caused by Noel.

"This positioning technology enables users to collect very dense data sets very quickly—millions of survey grade points per hour—while ensuring field teams' safety. Some scene areas may still be unsafe, so the remote data collection abilities of the laser scanner allow users to document critical sections of areas from a safe distance."



Dark clouds caused by the outer bands of Noel near Knotts Island, NC.