

Use of Remote Sensing Data to Enhance NWS Storm Damage Toolkit

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In the wake of a natural disaster such as a tornado, the National Weather Service (NWS) is required to provide a very detailed and timely storm damage assessment to local, state and federal homeland security officials. The Post-Storm Data Acquisition (PSDA) procedure involves the acquisition and assembly of highly perishable data necessary for accurate post-event analysis and potential integration into a geographic information system (GIS) available to its end users and associated decision makers. Information gained from the process also enables the NWS to increase its knowledge of extreme events, learn how to better use existing equipment, improve NWS warning programs, and provide accurate storm intensity and damage information to the news media and academia. To help collect and manage all of this information, forecasters in NWS Southern Region are currently developing a Storm Damage Assessment Toolkit (SDAT), which incorporates GIS-capable phones and laptops into the PSDA process by tagging damage photography, location, and storm damage details with GPS coordinates for aggregation within the GIS database. However, this tool alone does not fully integrate radar and ground based storm damage reports nor does it help to identify undetected storm damage regions. In many cases, information on storm damage location (beginning and ending points, swath width, etc.) from ground surveys is incomplete or difficult to obtain. Geographic factors (terrain and limited roads in rural areas), manpower limitations, and other logistical constraints often prevent the gathering of a comprehensive picture of tornado or hail damage, and may allow damage regions to go undetected. Molthan et al. (2011) have shown that high resolution satellite data can provide additional valuable information on storm damage tracks to augment this database. This paper presents initial development to integrate satellite-derived damage track information into the SDAT for near real-time use by forecasters and decision makers.