

Use of VIIRS DNB Data to Monitor Power Outages and Restoration for Significant Weather Events

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NASA's Short-term Prediction Research and Transition (SPoRT) project operates from NASA's Marshall Space Flight Center in Huntsville, Alabama. The team provides unique satellite data to the National Weather Service (NWS) and other agencies and organizations for weather analysis. While much of its work is focused on improving short-term weather forecasting, the SPoRT team supported damage assessment and response to Hurricane Superstorm Sandy by providing imagery that highlighted regions without power. The team used data from the Visible Infrared Imaging Radiometer Suite (VIIRS) on the *Suomi National Polar-orbiting Partnership (Suomi NPP)* satellite. The VIIRS low-light sensor, known as the day-night-band (DNB), can detect nighttime light from wildfires, urban and rural communities, and other human activity which emits light. It can also detect moonlight reflected from clouds and surface features. Using real time VIIRS data collected by our collaborative partner at the Space Science and Engineering Center of the University of Wisconsin, the SPoRT team created composite imagery to help detect power outages and restoration. This "blackout" imagery allowed emergency response teams from a variety of agencies to better plan and marshal resources for recovery efforts. The blackout product identified large-scale outages, offering a comprehensive perspective beyond a patchwork GIS mapping of outages that utility companies provide based on customer complaints. To support the relief efforts, the team provided its imagery to the USGS data portal, which the Federal Emergency Management Agency (FEMA) and other agencies used in their relief efforts. The team's product helped FEMA, the U.S. Army Corps of Engineers, and U.S. Army monitor regions without power as part of their disaster response activities. Disaster responders used the images to identify possible outages and effectively distribute relief resources. An enhanced product is being developed and integrated into a web mapping service (WMS) for dissemination and use by a broader end user community.