



Rapid Response Mapping for Hurricane Katrina

Fast data delivery helps speed recovery for hurricane survivors

On August 29, 2005, 145 mph winds, up to 30' ocean surges, and heavy rainfall from Hurricane Katrina razed communities for 200 miles along the US Gulf Coast. More than a thousand people died; more than a million were displaced. Geospatial products helped authorities identify catastrophic losses to speed damage inspections and thus recovery for survivors struggling to restart their lives.

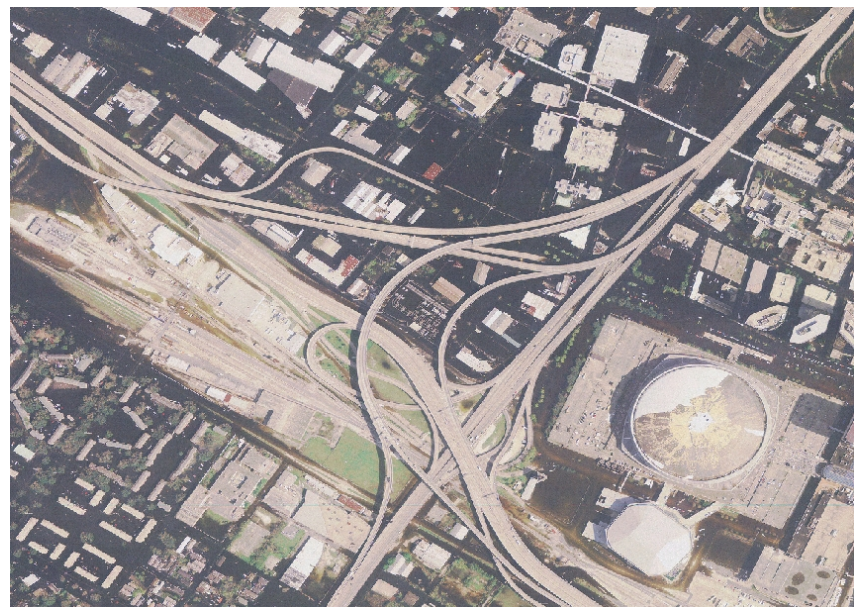
Hurricane Katrina left little untouched within approximately 90,000 sq mi surrounding the storm's path through the Bahamas, Florida, Alabama, Mississippi, and Louisiana. As part of the rapid response efforts, several organizations acquired aerial imagery to help assess the extent and severity of Katrina's destruction. On September 1, 2005, URS Corporation, working with the Federal Emergency Management Agency (FEMA) and Michael Baker Corporation, requested Fugro EarthData's assistance in orthorectifying and collecting vector data from images acquired over Katrina's path.

The orthorectified imagery served as the base to collect the vector data delineating ocean-surge debris lines, as well as coastal and riverine flood extents, to help URS engineers validate field-collected data and model results. Fugro EarthData also extracted polygons to delineate homes that were totally destroyed. Using these geospatial products to reduce the need

for field verification helped inspectors to process survivors' claims faster and helped engineers to evaluate events and make recommendations for future mitigation guidelines.

The first datasets Fugro EarthData received included more than 350 images acquired by the National Oceanic and Atmospheric Administration (NOAA) on August 30. Because navigation parameters and other data normally used in production were not readily available, Fugro EarthData responded to the urgent request by "rubbersheeting" the new

From rescue and recovery workers to damage inspectors and claims assessors, emergency responders find geospatial data crucial to helping victims survive disasters and resume their lives.



One of the few places on higher ground, the storm-damaged Superdome became a refuge and a staging area for displaced survivors of Katrina's floodwaters.



Left: Sandbags could not close the levee breach in New Orleans' Metairie Relief Outfall Canal. Flooding reached roofs, pushed buildings off foundations, and created a maze of fallen trees. Right: Bayou St. John snakes between the New Orleans Museum of Art and Saint Louis Cemetery Number 3. Flood waters engulfed the cemetery and City Park, but high ground spared the museum.

30-cm ground sample distance data to 1m DOQQ imagery available from the US Department of Agriculture's 2004 National Agriculture Imagery Program. Contract specifications sacrificed radiometric (color) balancing and finishing—processes that ensure aesthetic consistency—to save time in rushing products to data users as quickly as possible. Deliverables included 30 cm mosaics, broken down into blocks by county, and covering the Gulf Coast counties of in Jackson, Hancock, and Harrison in Mississippi.

The second datasets of 30-cm imagery included more than 1,200 photos NOAA acquired primarily over Louisiana between August 31 and September 3. Fugro EarthData used Emerge software and 10m USGS digital elevation models to rectify the imagery and OrthoVista software to create large-area mosaics. Again, to speed the geospatial data to responders, products were delivered with no radiometric balancing or finishing. Under a separate request from URS, Fugro EarthData also compiled vector data from imagery processed by 3001, Inc., between September 4 and September 17.

With the loss of more than a thousand lives and damages estimated as high as \$200 billion, Hurricane Katrina ranks as one of the most devastating storms in US history. Victims, survivors, and emergency responders need and deserve the efficiency and knowledge geospatial products provide amid turmoil and often tragic circumstances. In supporting tasks such as pinpointing locations, monitoring unpredictable conditions, calculating volumes or subsidence of debris, and verifying and assessing damages, geospatial data has become a crucial tool in facilitating response and helping survivors resume their lives.



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