

Langley AFB Deploys Flood-Mapping Tool to Prepare for Ophelia



LAFB Flooded from Hurricane Isabel, September 18, 2003



Staff Members Jennifer Anderson and Jermaine Smith in Map Production Using ArcGIS



Patricia McSherry

On September 14–15, 2005, tropical storm Ophelia buffeted Langley Air Force Base with heavy winds and rain and the threat of flooding that comes with each hurricane season. Prior to the storm, some were reminded of Hurricane Isabel, which came ashore almost two years prior to the day, but this time, Langley had a new weapon in its emergency response and preparedness arsenal.

Isabel was a major hurricane of the 2003 Atlantic hurricane season that made landfall on September 18, 2003, just south of Cape Hatteras. While still over the Atlantic, Isabel's winds peaked at 160 miles per hour, classifying it as a deadly category 5 storm. Clouds associated with Isabel covered an area of 275,000 square miles, roughly the size of Texas.

Hurricane Isabel cut a devastating path across the North Carolina Outer Banks islands, Virginia, and Maryland, leaving behind a wake of destruction. Langley Air Force Base also experienced significant damage from the wind and storm surge.

Armed with lessons learned from the planning for and response to Hurricane Isabel, Langley Geo Integration Office (GIO) chief Patricia McSherry set out to develop a tool that would allow the base to better predict the effects of flooding from storm surges and other occurrences so that emergency preparations could be focused on those areas most vulnerable in any given flooding event. McSherry also recognized that with so many Air Combat Command (ACC) bases located in hurricane-prone areas, Langley AFB would not be the only ACC base that could potentially benefit from this kind of planning and response flood-mapping tool.

To build this FloodTool and provide other support to the GIO, McSherry contracted with Penobscot Bay Media, a Maine-based, service-disabled, veteran-owned small business that specializes in GIS technology and applications, geospatial information security, support services, and training. Penobscot Bay Media worked closely with GIO staff to build and deploy the FloodTool in time for the 2005 flood season, and Ophelia was the first to put it to the test.

The FloodTool is a Web-deployed geospatial application that enables users to dynamically create flood modeling scenarios and provide real-time access to distributed emergency response teams, facilities managers, and command personnel. These scenarios provide accurate, detailed maps of flooded or potentially flooded areas and identify facilities that are affected and/or vulnerable within each event model.

On September 13, Ophelia changed course again and was upgraded to hurricane strength. Within minutes of the hurricane condition declaration, there were the usual requests for maps from base personnel trying to assess the predicted effects of the storm and determine where to deploy various

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