

Levee and Elevation Data Used in Climate Central's Surging Seas - Louisiana

On the Surging Seas Map, low-lying isolated areas are indicated with stippling. Isolated areas are areas below the selected water level, but apparently not connected to the ocean, due to natural or built breaks such as levees. (Conversely, some areas may be connected, but apparently isolated, due to hidden connections such as culverts or elevation errors.) Levees are displayed as red lines on the map.

For Surging Seas mapping and analysis, due to incomplete data on levee height, mapped levees are assumed high enough and strong enough to protect against floods at least 10 ft above local high tide lines. However, many levees in the CPRA database (see below) are not that high, and only 8% of monitored levees in the U.S. are rated in "Acceptable" condition (ASCE)¹. Thus, comparing Surging Seas mapped areas and analyses that do vs. do not factor in levees, may bracket true exposure.

For Louisiana, Surging Seas utilizes the following explicit levee location source data:

1. CPRA Flood Protection GIS Database (Louisiana Coastal Protection and Restoration Authority 2015, as of June 2015)
2. Midterm Levee Inventory (FEMA 2013)

The Surging Seas Submergence Risk Map implicitly also includes additional unmapped levees captured directly by elevation data. However, data errors at only a small number of pixels may suggest large areas are unprotected at water levels where they are protected.

In Louisiana, Surging Seas uses the following elevation source data (in order of precedence in case of overlap, from high to low):

1. USGS Northern Gulf of Mexico Topobathy DEM (post-Katrina lidar, for vast majority of affected area; all areas not covered by 2 and 3)
2. USACE / Louisiana Oil Spill Coordinator's Office (pre-Katrina lidar, for southwest of Lake Charles, and northern La. (for short potentially affected reaches of the Mississippi and Red Rivers north of Simmesport and Red River Landing)
3. USGS National Elevation Dataset (slivers south and west of the Sabine National Wildlife Refuge in southwest La.)

At some flood levels, there may exist alternate pathways around – not through -- levees, walls, and flood gates, which allow water to flow into areas protected at lower levels. In general, imperfect levee and elevation data make assessing protection difficult, and small data errors can have large consequences. For more general information click on the About and Terms tab on the map.

¹ <http://www.infrastructurereportcard.org/a/#p/levees/conditions-and-capacity>

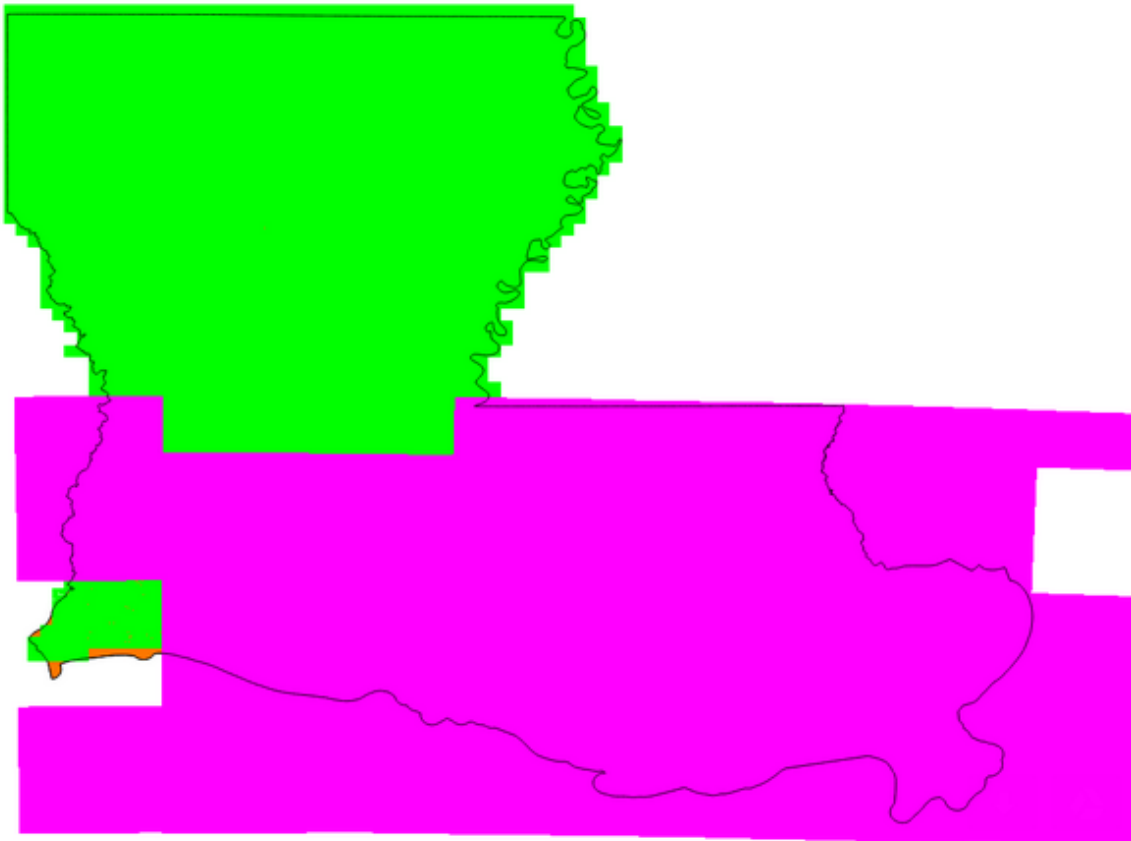
Within the Surging Seas Risk Finder's Analysis section, click on the data tiles to learn how much the exposure of certain areas, populations or features may be protected from flooding at different levels by levees, floodgates or ridges.

In the Risk Finder Comparison Section, the user can select the "All" link at the top to view the statistics (percent or total) of the user-selected feature type (e.g. schools, population) that sits on land below a certain water level, not taking into account barriers such as levees or natural ridges (as represented in the elevation data) that may protect against flooding.

Alternatively, if the user selects the "Unprotected" link at the top, the statistics displayed would only include feature types (e.g. schools, population) that reside on land that in our analysis appears unprotected by any barriers, and as such, the flood extent is connected directly to the ocean.

Map of LA data sources.

Purple=USGS Topobathy lidar / Green = USACE lidar / Orange = USGS NED.



For more information about [Surging Seas](#), visit our [FAQ](#) page or contact Dan Rizza at drizza@climatecentral.org