# Hurricane Category Establishment Identification Project (HCat)

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# QCEW and Mapping

1. **QCEW Basics – What We Have**
2. **Past: 9/11, Katrina, Sandy – Reactive Mapping**
3. **Present: HCat – A Proactive Solution**
4. **Future: What's Next for HCat**

# QCEW Basics:

- **BLS/State cooperative program**
- **Quarterly census of employers:** 9.2 million establishments.
- **Publication:** Industry by county, 6 months after quarter.
- **Sample frame:** For all BLS business surveys.

# Past: Early Efforts in QCEW Mapping

- QCEW local data (County, MSA) = detailed, descriptive maps.
- Allows visualization of disasters and other anomalies.
- Many improvements have increased quality of maps.

# 9/11/2001: Zip-based

- **First mapping attempt:** Employment in lower Manhattan.
- **Geocoding:** Zip code was most local available.
- **Mapping:** Zip map was manually colored.
- **Reactive:** Developed after event.

# Areas of Manhattan Affected by the Events of September 11, 2001

AREAS AFFECTED

- Area 1
- Area 2
- Area 3

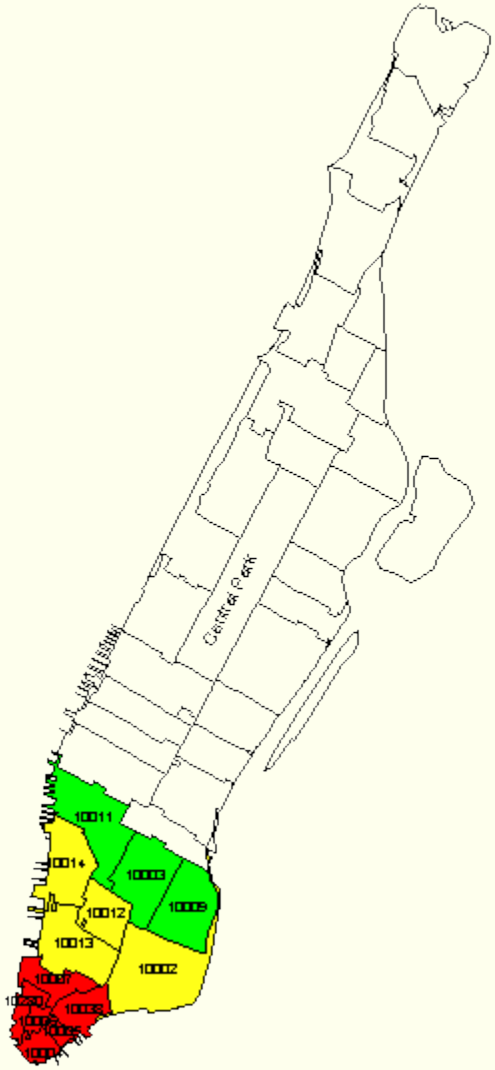
Area 1 is bounded on the north by Chambers Street and Worth Street.

Area 2 is bounded on the north by W. 14th Street, Greenwich Avenue, and E. Houston Street.

Area 3 is bounded on the north by W. 25th Street and E. 21st Street.

Employment:
March 2001 Preliminary

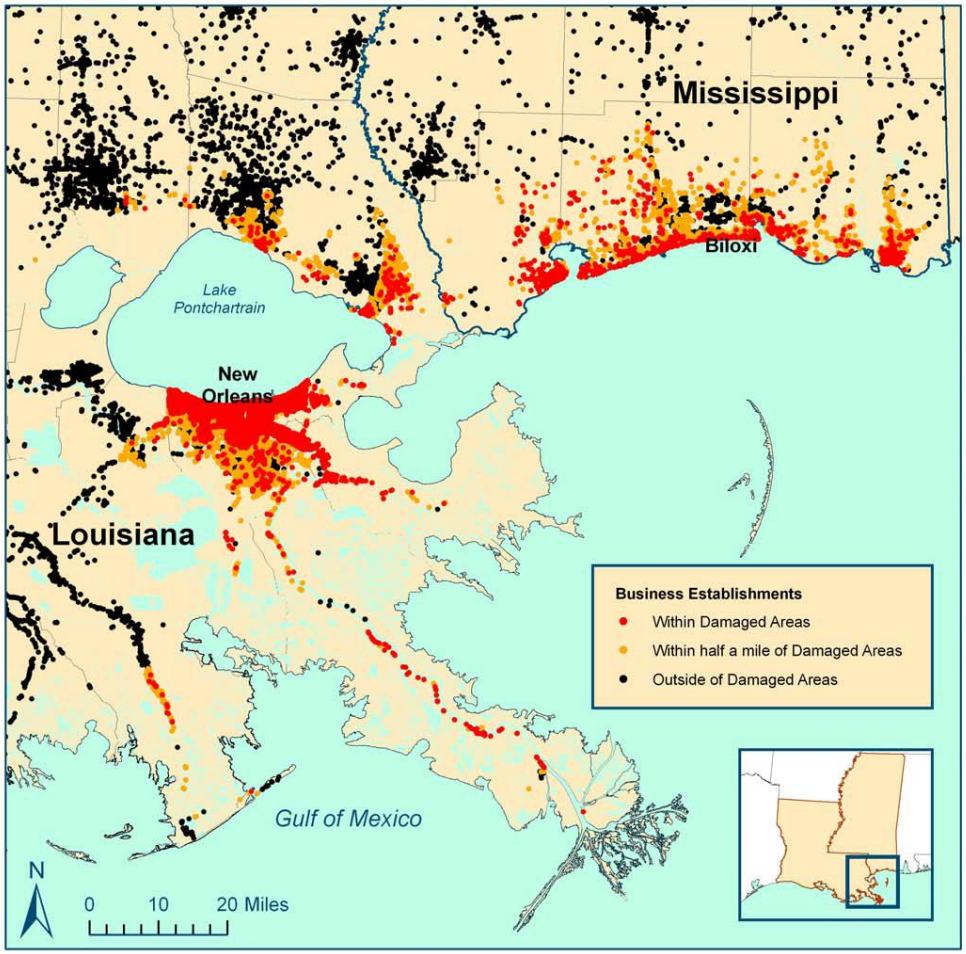
| | |
|---|---|
| Area 1: | 368,000 |
| Areas 1 and 2: | 566,000 |
| Areas 1,2, and 3: | 698,000 |



# Katrina 2005: Geocode-based

- **Numerous products:** Maps, tables, affected sample members.
- **Geocoding:** Geocoded data were available by this time.
- **Mapping:** GIS based, created by California and Missouri LMI.
- **Reactive:** Developed after event.

# Business Establishments within Katrina-Damaged Areas as Identified by FEMA
## Louisiana and Mississippi




**Louisiana**
17% of Louisiana's employment was within the FEMA Identified Damage Areas

| Business Establishments | Employees | Quarterly Wages |
|---|---|---|
| 18,997 | 316,063 | $3,047,142,670 |

27% was inside or within half a mile of the FEMA Identified Damage Areas

| Business Establishments | Employees | Quarterly Wages |
|---|---|---|
| 31,133 | 499,650 | $4,668,063,720 |

**Mississippi**
5% of Mississippi's employment was within the FEMA Identified Damage Areas

| Business Establishments | Employees | Quarterly Wages |
|---|---|---|
| 3,352 | 55,081 | $419,139,867 |

13% was inside or within half a mile of the FEMA Identified Damage Areas

| Business Establishments | Employees | Quarterly Wages |
|---|---|---|
| 7,718 | 136,406 | $1,082,573,551 |

Data source:
Quarterly Census of Employment and Wages (QCEW), developed through a cooperative program between the states and the U.S. Bureau of Labor Statistics.
FEMA Imagery Derived Assessment Damage Areas September 6, 2005, www.gismaps.fema.gov

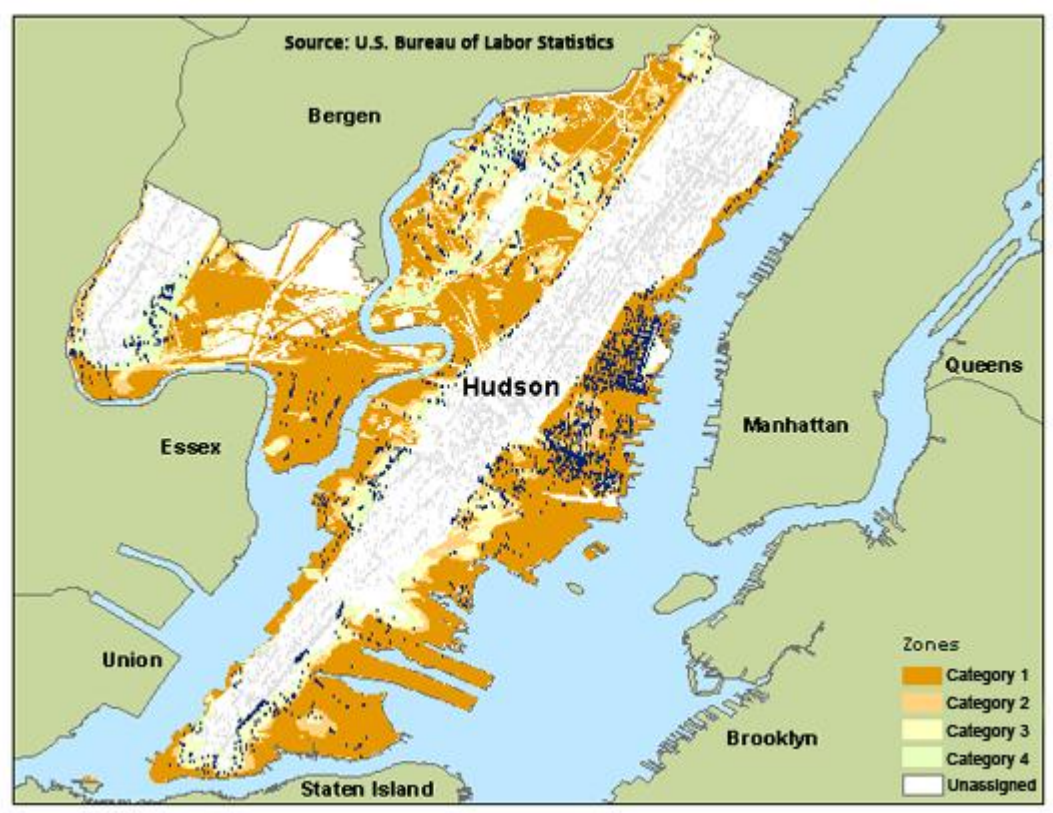
Data notes:
Employment is from December 2004. Quarterly Wages are the total paid for the Fourth Quarter of 2004.
Data are adjusted to include business establishments for whom accurate addresses are not available.

Cartography by:
State of California
Employment Development Department
www.labormarketinfo.ca.gov
September 2005

# Sandy 2012: Hurricane Categories

- **Hurricane Category Shapefiles:** Produced by US Army Corps of Engineers, using Saffir-Simpson scale as standard.
- **Geocoding:** Shape files matched to geocoded data.
- **Mapping:** GIS based, produced by QCEW staff.
- **Reactive:** Developed after event.

# Hurricane Storm Surge Zones, Hudson, New Jersey



# Aggregates by Hurricane Category Zones: Hudson, NJ

| Hurricane Category | Fourth Quarter 2011 Establishments | October 2011 Employment |
|---|---|---|
| | | |
| 1 | 3,309 | 92,212 |
| 2 | 1,363 | 24,650 |
| 3 | 589 | 10,864 |
| 4 | 798 | 14,878 |
| Outside of Zones | 7,838 | 88,649 |

# HCat: a systematic, proactive approach

- **Hurricane Category Shapefiles for Atlantic and Gulf Coast Counties** : Worked with US Army Corps of Engineers and State Emergency Management Agencies. All shape files based on National Weather Service SLOSH model.

- **Inputs:** Shapefiles are joined with geocoded QCEW establishment files. Scope includes 18 states and the District of Columbia. Counties are limited to those for which shape files exist.

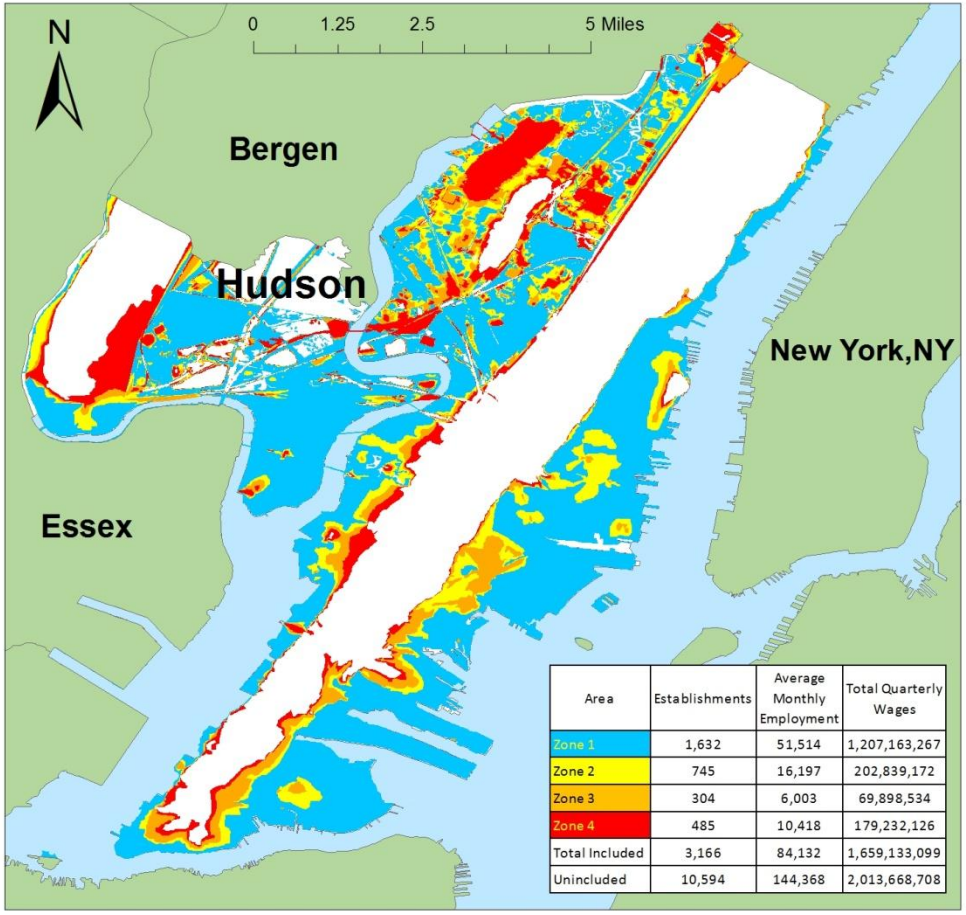
- **Output:** Maps, unique new datasets. Datasets include a new column for hurricane category, which allows us to sort and aggregate establishments by their vulnerability to particular storms.

# Proactive Approach – HCat Products

- **External:** Maps and tables – will be hosted on the BLS web site. Media, researchers, emergency managers will have easy access to data anytime. Potential economic impacts available as storm approaches.

- **Internal:** HCat datasets – the establishments have hurricane codes added to the Longitudinal Data Base (LDB). Sample frame users (CES, PPI, JOLTS) can incorporate these codes to assist in explaining non-response rates and unusual shifts in their data.

## Employment in Hurricane Storm Surge Flood Zones, Hudson County, NJ




| Area | Establishments | Average Monthly Employment | Total Quarterly Wages |
|---|---|---|---|
| Zone 1 | 1,632 | 51,514 | 1,207,163,267 |
| Zone 2 | 745 | 16,197 | 202,839,172 |
| Zone 3 | 304 | 6,003 | 69,898,534 |
| Zone 4 | 485 | 10,418 | 179,232,126 |
| Total Included | 3,166 | 84,132 | 1,659,133,099 |
| Unincluded | 10,594 | 144,368 | 2,013,668,708 |

Note: Storm surge flood zones represent a conservative estimation of areas that would experience flooding in the event of a hurricane. Zone 1 is the area that would be flooded by a Category I hurricane. Each subsequent zone covers the area that would be flooded given its equivalent category of hurricane. For example, a Category III hurricane would cause flooding in Zones 1,2, and 3. The hurricane categories are derived from the Saffir-Siimpson Hurricane Scale.

Data Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages
2012 Third Quarter
http://www.bls.gov/cew

Flood Zone Source: National Hurricane Program - Federal Emergency Management Agency/National Oceanic & Atmospheric Association/United States Army Corps or Engineers

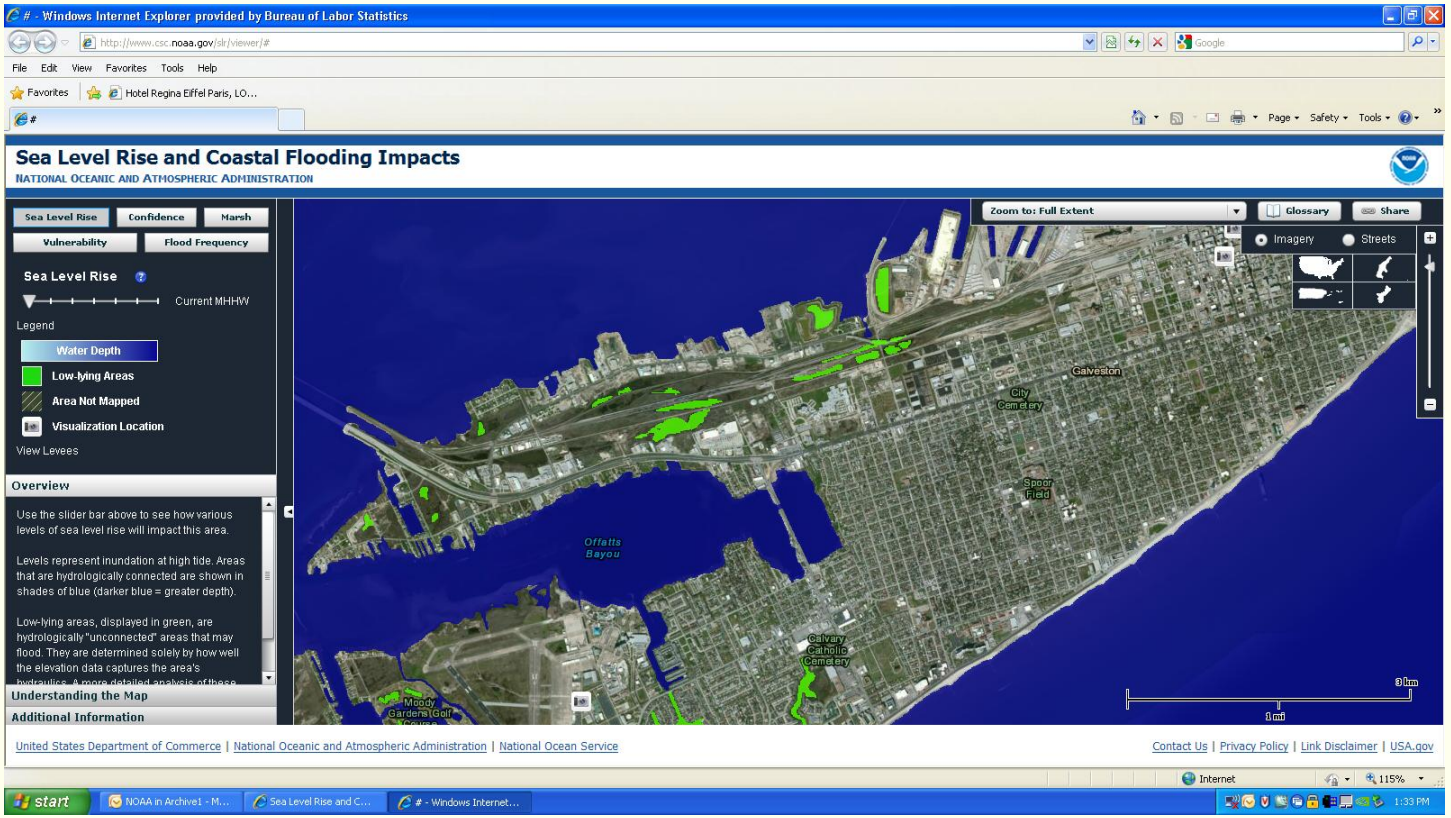
BLS

# HCat Status
## as of 11/5/13

- A dynamic project
- Microdata shared with sample frame users
- Maps and tables developed. Fact checking, web site publication ongoing.
- Updates expected to be annual
- New sources of data: more precise, work in progress

# Elevation—the next frontier

## Galveston at current high tide



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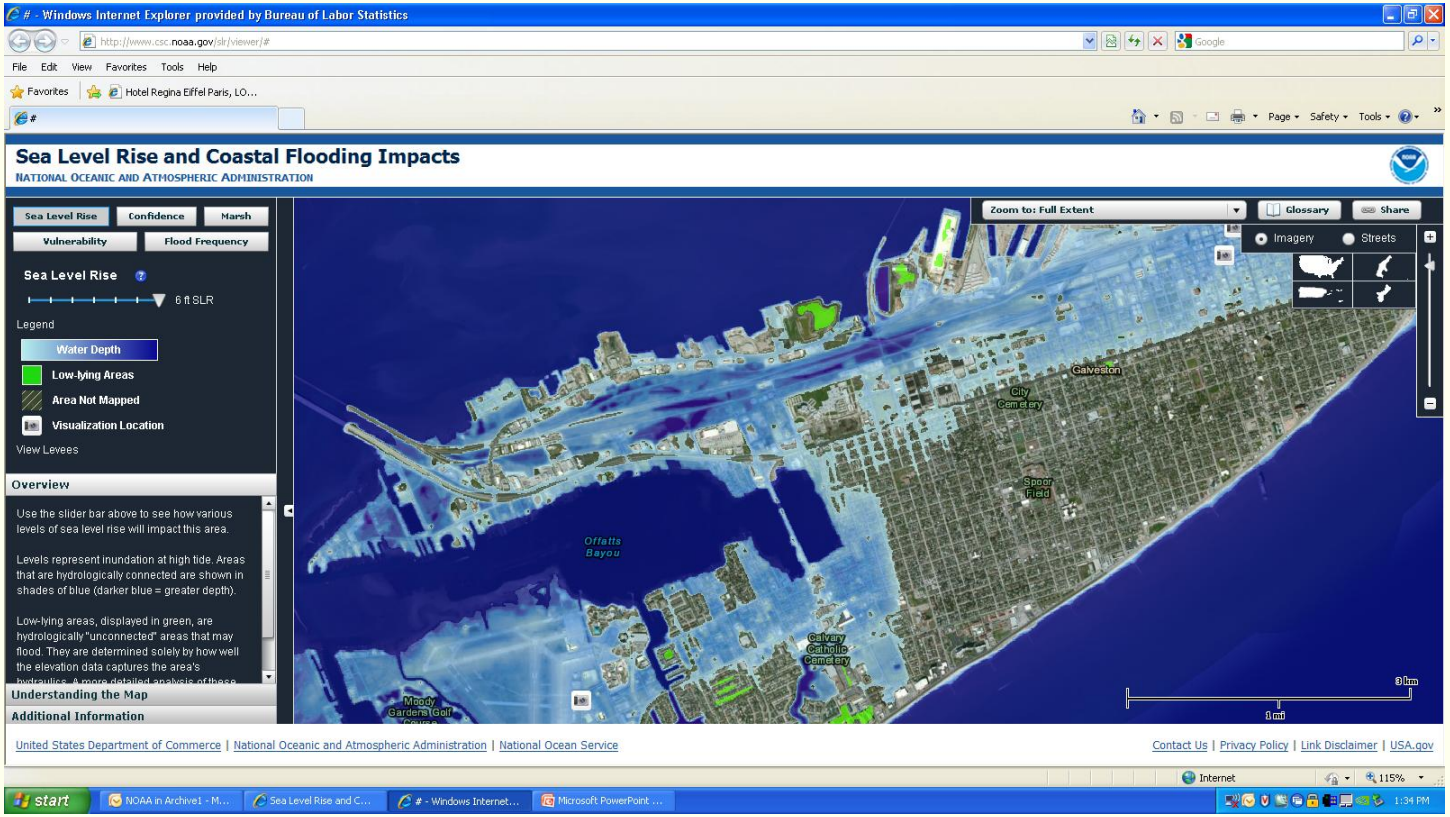
## Galveston with a 6 foot rise in sea level



# Questions?

- **BLS Quarterly Census of Employment and Wages**
  - **http://www.bls.gov/cew/**
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