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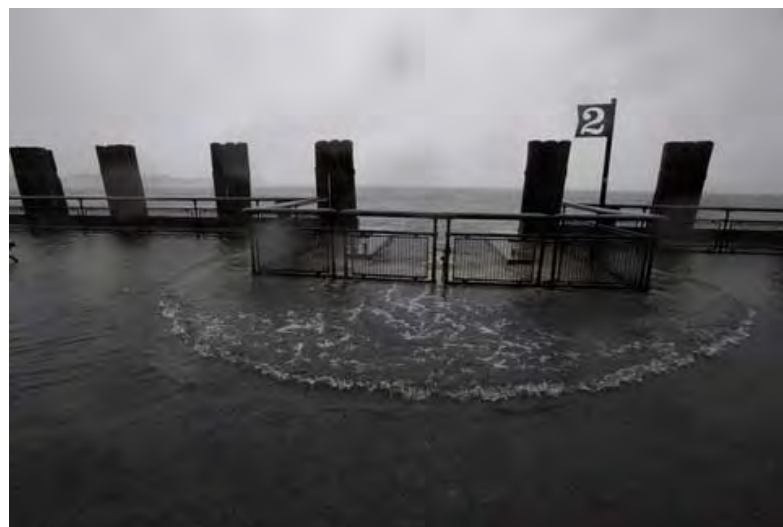
## Dot Earth

ANDREW REVKIN

August 28, 2011, 10:25 AM

# Will New York Be Lulled by Moderate Hurricane Surge?

By ANDREW C. REVKIN



Rising water lapped over the seawall at Battery Park in Lower Manhattan. [See the Slide Show.](#)

**11:50 a.m. | Updated**

This was the view at the south tip of Manhattan this morning, as Irene, [now a tropical storm, headed north mainly as a Floyd-like rainmaker](#) on its way toward Canada. (Having covered Tropical Storm Floyd in 1999, [I noted similarities in a post](#) on Tuesday.) There's a lot more minute-to-minute input on the City Room blog on regional impacts. In the Hudson Valley the winds are picking up but the power's still on.

There's been some flooding of low spots, as is seen in this photo of a biker in Battery Park, from the [City Room's live blog of the storm's impacts](#):

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A cyclist in Battery Park.

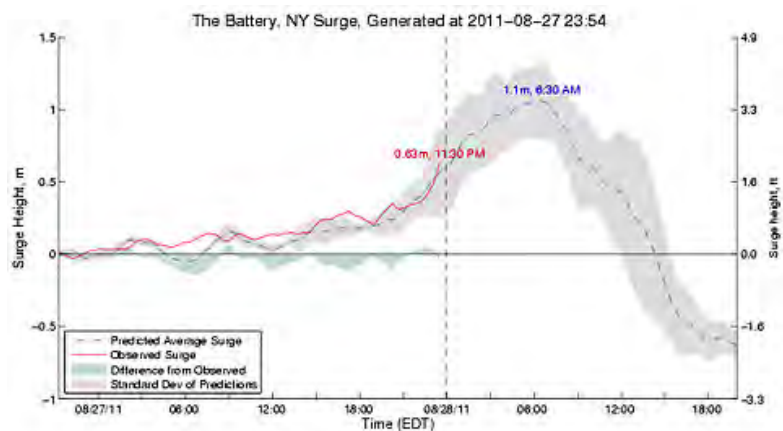
But the storm surge has remained on the modest side, [as forecast by researchers](#) at the State University of New York, Stony Brook, and Massachusetts Institute of Technology.

**[10:31 a.m. | Updated |** In a conversation about the storm with Malcolm Bowman of Stony Brook late last night, we mused on whether Irene's impact would serve as a wakeup call prompting the city, which [will face rising damage risk as sea levels rise](#) in this century, to seriously [consider storm surge barriers](#) like those on the Thames. (Robert Lee Hotz wrote an excellent Wall Street Journal column in 2009 [on the city's sea-level threat.](#))]

My guess is that the dodged hydrological bullet may work the other way, allowing city officials to punt the question. The difference between New York and London — and even more so the Netherlands, which [built storm defenses sturdy enough for the rarest calamity](#) — is likely in part a function of America's newness, Bowman said, adding, "The United States is a young country with that exuberance and sense of indestructibility of youth."]

The final output from the Stony Brook group on the New York City storm tide and surge (for the Battery, at the south tip of Manhattan) is below:

Storm surge:



Storm Surge Research Group, SUNY Stony Brook

Sea level including tides (including moon-driven extra tide):



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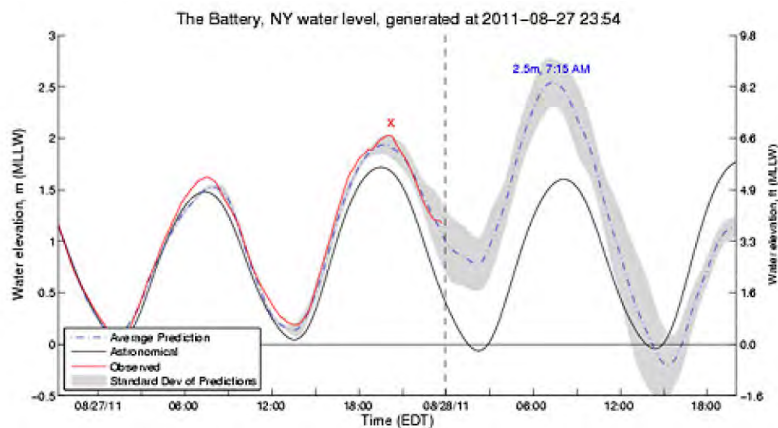
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Storm Surge Research Group, SUNY Stony Brook

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ANDREW REVKIN

August 27, 2011, 12:42 PM

# Irene Still Seen as Potent on N.Y. Arrival; New City Surge Estimate Serious, But Not Worst Case

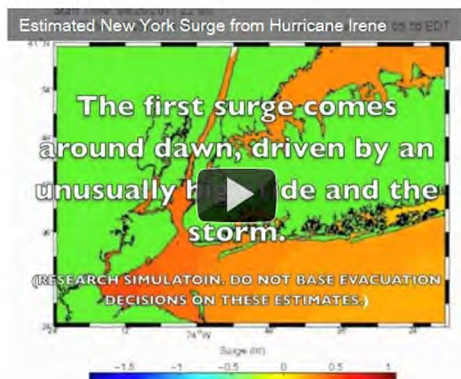
By ANDREW C. REVKIN

The [latest word from the National Hurricane Center on Irene](#) is that the storm is likely to remain a dangerous hurricane as it reaches New York City and Long Island. It may weaken to a tropical storm around that point, but federal forecasters warned:

Whether Irene is a strong tropical storm or hurricane over New England will make little difference in the expected impacts of damaging winds...a dangerous storm surge... and flooding rains.

The [high cumulative rainfall](#) on top of saturated land, means the storm poses a severe threat to the safety and property across thousands of square miles in the region.

As for storm surge, the latest simulations from [the Storm Surge Research Group](#) at the State University of New York, Stony Brook, point to serious danger, but nothing close to a worst case. Here's an animation showing the surge anticipated from New York Harbor around to Long Island Sound (*It's important to note that these simulations are a work in progress and, as the group warns, should not be used to make decisions on evacuation, navigation or the like*):



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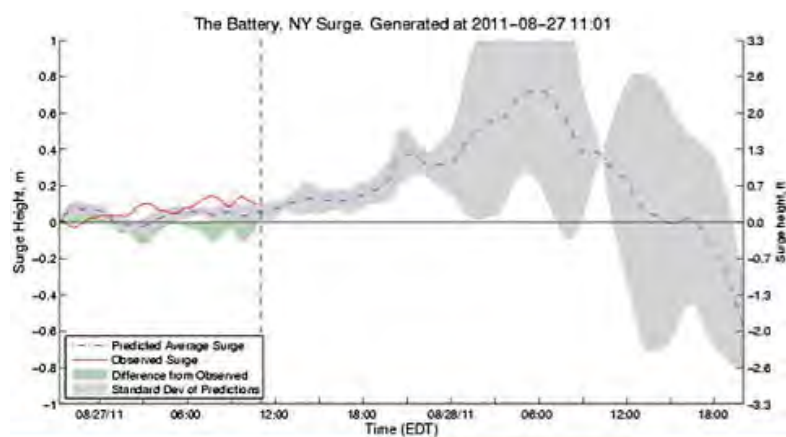
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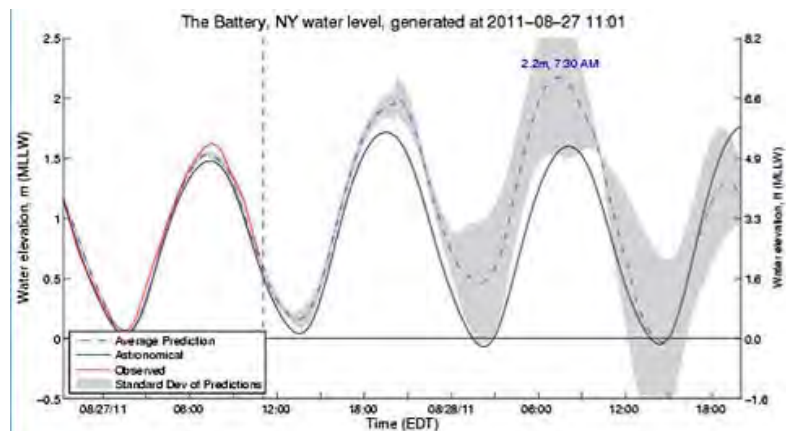
[As I wrote yesterday](#), the group has a great online tool that provides an [advance estimate of storm surge at important spots around New York City](#) and Long Island Sound. Click on a buoy to see the current state of sea level and what's anticipated, both tide and surge, over the next 24 hours. Here's the latest view of the surge at The Battery, at the south end of Manhattan:

Here's the estimated surge alone (note the gray areas indicating the uncertainty):



[Stony Brook Storm Surge Research Group](#)

Here's the total rise in sea level above the mean, including the impact from [a particularly high tide driven by the phase of the moon](#):



[Stony Brook Storm Surge Research Group](#)

I'll repeat: The group emphasizes that this modeling is for general edification and **should not be used to make evacuation decisions** or the like. Follow the guidance or orders you get from local officials. There's more on the New York City situation at our [City Room blog](#).

Climate Central has [a good graphic showing areas of New York City at risk](#) from the higher end of the surge projections.

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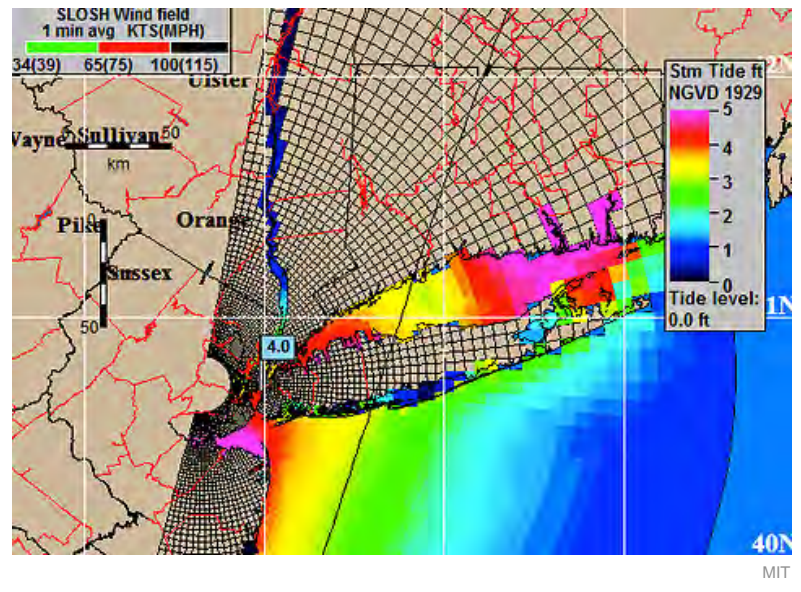
## Dot Earth

ANDREW REVKIN

August 26, 2011, 12:45 PM

# New York Surge From Irene Looks Bad, But Not Off Charts

By ANDREW C. REVKIN



A simulation of the storm surge from Hurricane Irene (using the [Slosh model](#)) shows severe flooding in New Haven and New London, Conn., (the scale is in feet) and parts of New Jersey, with extra sea height of around four feet (on top of the tide) in New York City.

9:11 P.M. **Update**

The M.I.T. team has done more surge simulations using other scenarios for the track of Hurricane Irene and finds some [very bad outcomes are possible](#) (up to 10 feet at the Battery).

4:26 P.M. **Update**

The [Storm Surge Research Group](#) at the State University of New York, Stony Brook, has a great online tool that provides [an advance estimate of storm surge at important spots around New York City](#) and Long Island Sound. Click on a buoy to see the current state of sea level and what's anticipated over the next 24 hours (the models are run twice a day). The group emphasizes that

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this is a work in progress and should not be used to make evacuation decisions or the like. (Thanks, [Jeff Masters of Wunderground](#), for alerting me to this.)

2:35 P.M. **Update**

New York City has ordered its [first-ever mandatory evacuation of low-lying areas](#).

Researchers at the Massachusetts Institute of Technology focused on coastal impacts from hurricanes have run fresh simulations of the possible [storm surge](#) as Hurricane Irene hits the New York metropolitan region. Simulations using two surge models (known by their acronyms, [SLOSH](#) and [ADCIRC](#)) found 1.22 and 1.05 meters of surge (4 and 3.44 feet) of surge at [the Battery](#), at the southern tip of Manhattan.

This would pose serious risks to low installations and the subways but is nowhere near [a worst case \(think 13 feet, as in 1821\)](#).

The scientists, [Ning Lin](#) and [Kerry Emanuel](#), stressed that these simulation were run only for a single model of storm track and intensity — the [National Hurricane Center's central scenario](#). As Emanuel noted, "Small errors in track and intensity could have a big effect on these surge predictions."

The surge model also does not include waves\* and the extra tide expected because it's a new moon. They're in the process of running a simulation with that factor included.

The bottom line, as always, is to prepare for the worst while hoping for the best.

### 1:07 p.m. | Clarification

\*Ning Lin said a parenthetical passage that is now excised above — *(although Lin said waves are not much of an issue around New York City)* — wasn't quite right. There can be big waves. That's part of the next round of modeling.

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