

# Everyone Listens to Columbia's Disaster Expert—Except Columbia Itself

**When Klaus Jacob talks, important people take action. Except the important people paying him.**

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Columbia geophysicist Klaus Jacob is such a highly regarded expert on urban environmental disasters related to climate change that governments and scientists all over the world take him seriously, revising building codes and altering the construction of dams as a result of his warnings.

When Jacob talks, important people take action.

Except, it turns out, at his own place of employment, where he's spent almost 40 years as a research scientist.

Jacob tells the *Voice* that he's repeatedly been given the brush-off by Columbia officials regarding his specific and detailed warnings that their ambitious development plans in Harlem could lead to a wide-scale disaster.

Much has been written about the



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university's plans to spread northward across 17 acres of developed land—but Jacob is concerned less about the school's move outward than he is about something that's garnered less attention: Columbia's intention to dig deep into the ground.

Expansion plans call for the largest underground complex in the city, a massive, 80-foot-deep basement that

will extend only a block from the banks of the Hudson River. That's an underground space large enough to hold an eight-story building, lying only a few hundred feet from water that's susceptible to storm surge.

Imagine this scenario, based on Jacob's research: It's the year 2065, and Columbia University's 17-acre West Harlem expansion is abuzz with activity. Students hurry through rainfall along a tree-lined promenade overlooking the Hudson. In a biotechnology lab nearby, scientists are engineering lethal pathogens to respond to the next generation of infectious diseases and bioterrorist threats. Deep down below, engineering majors use the future version of Facebook to instant-message their friends.

Warnings, meanwhile, are steadily being broadcast about an oncoming storm. A Category 2 hurricane with 110-mile-an-hour winds is barreling down on the city—a more frequent occurrence than in decades past. New Yorkers have become familiar with the drill: They evacuate to local shelters set up by the city's Office of Emergency Management. Over several hours, the Hudson rises 10 feet, flooding the waterfront promenade and the rest of the campus. Many, but perhaps not all, have heeded warnings to leave the deep basement. Damage will be extensive and exorbitantly expensive. And some of the sprawling labs that contain biohazardous material may become another kind of floating threat to the city.

Sounds like the plot of some sci-fi disaster movie. But without the kinds of precautions that Jacob has been urging Columbia to take, he says, the prospect of inundation is all but inevitable.

This is how seriously officials—at least those outside of Columbia—take Klaus Jacob's research: When he was conducting the first national study on the environmental impact of climate change in major East Coast cities for the Clinton administration, he consulted with the Port Authority and the Federal Emergency Management Agency (FEMA) to help the agencies understand how to prevent floods. In the early '90s, his research on earthquakes led the city to ask him to help rewrite its building code. That code was later adopted nationwide. Now he's working with the Transportation Research Board—a branch of the National Research Council—to issue federal guidelines on how cities can protect themselves from environmental disasters related to global warming.

"We're working with the Transportation Research Board in Washington," says Jacob. "And yet, here I'm trying to convince my own alma mater to do the right thing, and I can't. And that's bad news."

After trying for four years to get university officials to respond to his concerns, Jacob says he's now given up and is willing to talk publicly about that struggle for the first time. In a few months, New York's Empire State Development Corporation will decide whether to give Columbia the right to use eminent domain to force a few remaining business owners that stand in the way to give up their properties. That decision is the last major hurdle before the university can break ground—when West Harlem officially becomes "Manhattanville."

In 2004, when Jacob first heard that his employer was planning to expand from 125th Street to 133rd Street across two avenues, he asked to see the plans. At the time, he and his wife Isabella lived in faculty housing on 125th Street at Riverside Drive, so he went to an open house not only for professional reasons, but also as an interested neighborhood resident. (He has since moved upstate.)

He says the first thing he noticed about the building plans, as they were presented at the time, was that the effects of global warming weren't being taken seriously. In fact, they

weren't being taken into account at all.

The plans didn't include floodgates, dikes, or levee systems, but Jacob knew that sea levels in New York are expected to rise between two and three feet—perhaps more—by the end of this century. That sea-level rise will shift the area expected to be flooded during a hurricane storm surge. As a result, Columbia's expansion site, Jacob believes, is located squarely in a future flood zone.

To make matters worse, the likelihood of hurricanes hitting New York will also rise with the sea level. There's a current probability of 1 in 100 that a storm will hit the city in any given year. That number could grow to 1 in 10 by the year 2100, according to a widely publicized report issued last year by the Union of Concerned Scientists.

The expansion plans so worried Jacob that he decided it was his professional responsibility to tell someone about it. As he attended public presentations of the plans, he took down the names of the people in charge of each aspect of the project. Armed with those names, he composed a letter on May 4, 2004, and mailed copies to Columbia vice president Mark Burstein, four additional university officials, and some of the project architects at Skidmore, Owings & Merrill.

Attaching a topographical map to the letter, Jacob wrote that the portion of Upper Manhattan at issue in the expansion plans is located in a valley with low elevations. (This is vividly demonstrated if you travel north on Broadway past Columbia's campus: As you go steeply downhill, you'll see the No. 1 train emerge from the ground and continue on a trestle for several blocks before re-entering the tunnel.) In his letter, Jacob outlined the most current climate-change research on New York's flooding potential. He also wrote that the expansion site might be vulnerable to an earthquake, but he has since dropped those concerns, saying that subsequent engineering plans have resolved that issue.

In the last four years, Jacob estimates that he has spoken with or written letters to about 20 different people on the flood risk facing the expansion. His letters have gone unanswered; meetings haven't been followed up. And at this point, when he attends public discussions

where school officials talk up the expansion, he says the reaction in the room is: "Oh, there's that guy again."

"It's a low-lying area that, sooner or later, is going to be flooded," Jacob said last week, after finishing a class on risk management in environmental disasters that he teaches at Columbia's School of International and Public Affairs.

Jacob is 72 years old, wears red wire-rimmed glasses, and moves with an energetic gait. After class, he sticks around to talk with students, speaking in a noticeable German accent. (He speaks with the measured precision of a scientist and is also wary about speaking to reporters: "Don't make me out to be a martyr," he cautioned.) Jacob came to the U.S. in 1968 as a postdoctoral researcher and has been at Columbia ever since. In that time, he has never applied to be a professor, preferring the position of senior research scientist because it allows him to do more outside consulting and to work more closely with doctoral students.

Though he hasn't spoken out publicly—until now—about his struggle with Columbia, Jacob spends considerable time on the lecture circuit warning the public about what climate change means for the city as a whole. New York is increasingly going to be vulnerable to flooding, and Jacob wants citizens to be prepared. He also serves on Mayor Bloomberg's climate-change panel. But when it comes to Columbia, Jacob has preferred to reach out privately to university officials, expecting—naively, he now realizes—that they would respond.

"The real problem is the whole region," he says. "Columbia is just one speck. It just irks me that I belong to a university that I cannot convince to take the lead."

The country is only starting to come to terms with the realities of climate change, Jacob explains. He says that his conflict with Columbia reveals how difficult it will be to get institutions to shoulder the real costs of disaster prevention. But because Columbia professes to be a leader on the issue—sending Jacob and other experts around the world to consult with governments and industries about climate change—he's especially disappointed that the school doesn't appear to be taking that advice itself.

For three years, Jacob waited for a reply to his initial letter, growing increasingly frustrated at the university's secretive way of going about things. He began bringing up the flooding issue at faculty meetings and attended many of Columbia's open houses. "My original concern was to help Columbia solve its own problem. But for some reason, they weren't interested," he says. "I was naive enough to think that by mentioning something, I could make something happen."

On August 20, 2007, Joe Ienuso, Columbia's vice president of facilities, agreed to meet with him. At that meeting, Jacob explained his concerns and said that Columbia should hire a flood expert to analyze the risk—and make the information available to the public.

Two months later, Columbia released its environmental-impact statement, a document the city planning commission requires when a site is proposed for rezoning. The school had hired Mueser Rutledge Consulting Engineers, known for its expertise in dealing with environmentally complex urban projects, to do the study. Mueser prepared a special memorandum on flood and earthquake hazards.

It's when he read through the report that Jacob learned for the first time details of the plans for the underground basement—essentially a gigantic bathtub that would stretch eight stories below ground and almost 17 acres across. As large as the World Trade Center basement, it would be one of the largest underground structures in the city. According to a General Project Plan that Columbia issued this past July, the basement facility will house "centralized energy plants to provide heating, ventilation, and cooling, and other mechanical facilities." It could also include goods-distribution facilities, space for recreation, a large parking garage, classrooms, libraries, food-service areas, meeting spaces, and computer labs. The area may even house a bus depot, according to a plan the school supplied at a July eminent-domain hearing. (Columbia spokeswoman La-Verna Fountain, however, tells the *Voice* that the complex would house a parking garage and a loading dock and said she didn't know about plans to build anything else in the location.)

When he saw the plans for the basement, Jacob realized that any flooding of the area would have much greater consequences.

**Ironically, in Columbia's environmental-impact statement, there *is* an acknowledgment of Jacob—the scientist is cited by name, and the report devotes an entire section to his 2004 letter. Mueser recommended further studies of the flood hazard and agreed with Jacob's demand to hire an independent risk-assessment firm—but no firm was named. A floodgate of the type Jacob recommends is mentioned as a possibility. The report also points out that many underground structures already exist in Lower Manhattan and ultimately concludes that the engineering concerns can be resolved, and that therefore the project shouldn't be prevented from going forward.**

**Jacob calls the report "cautious and clever" and says that he isn't at all satisfied. The university didn't commit itself to building a floodgate or taking other serious measures to address what he sees as a grave risk. Such a commitment would require a frank discussion of the actual financial costs of building a floodgate or a levee, and Jacob thinks those costs will be extremely high. "Of course, the most expensive solution is to do nothing," he adds. As for the report's observation that many underground structures already exist in New York, Jacob scoffs: "And because there are many thefts, that means that you can steal?"**

**Other Columbia scientists have said little publicly about the project. And George Deodatis, a Columbia civil engineer and hazards-analysis expert who recently collaborated with Jacob on a flood study for the MTA, says he differs with his colleague on the flooding issue. He's convinced that engineering can take care of the flooding risk—and not at a monstrously high cost. Deodatis doesn't think Columbia needs to make plans now for events that could occur so far in the future. "To design such a wall today that will be good 100 years from now doesn't make economic sense now," Deodatis says. "There's always a possibility of a worst-case scenario, but the question is, are we going to design for something like that?"**

**Jacob recognizes that he's somewhat of a lone voice. It wouldn't be the first time, he says, citing the resistance he encountered when he tried to create a national building-code standard for earthquake hazards. Ultimately, he succeeded.**

**Columbia denies that its expansion will face a serious risk of flooding. But for evidence, the university has repeatedly pointed to outdated maps that don't show the new flood zones**

Jacob is trying to warn it about.

Flood risk in the United States has customarily been calculated using Flood Insurance Rate Maps that were prepared by FEMA and last updated in 1983. Columbia and its engineering firm relied on those FEMA maps when assessing risks to the expansion project. And according to those maps, the Manhattanville campus will not be located in a flood zone.

Those 25-year-old FEMA maps don't take into account the effects of climate change, however—and forward-thinking governments and agencies are well aware of that fact. The Bloomberg administration, for example, has called for new flood-zone maps in its PlaNYC 2030 project, the mayor's much-touted long-term sustainability plan. That initiative calls for maps that would take global climate change into account, as well as changes in the building code to match.

Columbia's officials, Jacob says, aren't the only ones resisting the move to use up-to-date maps that reflect the reality of rising sea levels. He's also run into opposition at the federal level. Last year, at a 300-person Transportation Research Board committee meeting that he chaired, Jacob asked the head of FEMA's flood division when the agency was going to update the maps. "I'll change them when Congress tells me to change them," the official answered.

Two months after Columbia delivered its environmental-impact statement based on the old FEMA maps—and a year after the city itself had warned that the maps were out of date—the city planning commission approved the university's rezoning of Manhattanville. (Seven out of the 13 commission members, including the chair, are mayoral appointees.)

Within a few months, Nick Sprayregen, the owner of Tuck-It-Away Self-Storage in Manhattanville and perhaps the expansion's most visible opponent, filed a lawsuit against the planning commission. Tuck-It-Away is one of the three remaining businesses that will be displaced if Columbia obtains eminent domain, and Sprayregen has dedicated most of his waking hours to lobbying against it. (He's waging his campaign on two websites: [BiohazardonHudson.com](http://BiohazardonHudson.com) and [MyLandIsMine.com](http://MyLandIsMine.com).) Sprayregen's lawsuit charged the

agency with not taking the legally mandated "hard look" at whether the basement area was vulnerable to flooding when it evaluated the environmental-impact statement. Last week, a State Supreme Court judge decided in favor of the city, and Sprayregen plans to appeal the decision.

Earlier this year, Sprayregen asked Jacob to join him in his lawsuit against the planning commission. Ron Shiffman, a former city planning commissioner and the author of the alternative community plan for Columbia's Manhattanville expansion, had already submitted an affidavit in support. But Jacob refused to join the suit. "In no way am I going to be used to represent concerns that aren't my own," he says. "This is a technical matter, and it should be solved on technical grounds."

Jacob doesn't want to become a partisan player in the battle over the expansion. He just wants someone at Columbia to take his concerns seriously.

Ienuso acknowledges meeting with Jacob and says the university was "absolutely" taking his concerns into account, along with those of other scientists. But the school still has said nothing about hiring the risk-assessment firm called for in its own environmental-impact statement. Columbia has hired many firms to assess all sorts of risks, Ienuso says, though he and university spokeswoman La-Verna Fountain refused to identify any of them. Jacob asked Ienuso about the risk-assessment firm one last time in an e-mail in June, but the administrator didn't reply. Ienuso says the buildings will be constructed in accordance with the New York City Building Code, which has some of the strictest regulations when it comes to environmental disasters (a number of them written by Jacob). When asked whether the university intends to build a floodgate around its underground complex, Ienuso and Fountain repeated that details about the project's infrastructure would not be disclosed to the public or the press at this time.

"Common sense dictates that we would not put our students and our scientists at risk," Ms. Fountain said, adding that the administration was too busy to address any further questions about flooding.

Jacob believes that the university probably *did* attempt to hire a risk-assessment firm, since he was contacted last year by just such a company in California. The firm wanted to employ him to offer expert advice on the environmental risks posed by the Columbia expansion plan.

The scientist politely declined; he'd already given the university his opinion.