USA TODAY

Home   News   Travel   Money   Sports   Life   Tech   Weather

Weather   Weather Now   Maps   Storm Center   Weather/Climate Science   Photo Galleries   Interactive Graphics

■ **Find a forecast:** [Enter ZIP/City] GO Provided by The Weather Channel weather.com

Hurricane-calming technology? Bill Gates has a plan

Updated 7/16/2009 1:53 PM | Comment | Recommend

E-mail | Save | Print | Reprints & Permissions | RSS

By Dan Vergano, USA TODAY

Good news, folks. Microsoft founder Bill Gates has turned his attention to controlling the weather.

Five U.S. Patent and Trade Office patent applications, made public on July 9, propose slowing hurricanes by pumping cold, deep-ocean water in their paths from barges. If issued, the patents offer 18 years of legal rights to the idea for Gates and co-inventors, including climate scientist Ken Caldeira of the Carnegie Institution of Washington.

Hurricanes, most famously demonstrated by the deadly intensification of Hurricane Katrina before its landfall in 2005, draw strength from warm waters on the ocean's surface. The patents describe a system for strategically placing turbine-equipped barges in the path of storms to chill sea surfaces with cold water pumped from the depths.

USA TODAY GRAPHIC: Hurricane tracking, science, and history

First requested by Gates and colleagues last year, the patents describe methods "not limited to atmospheric management, weather management, hurricane suppression, hurricane prevention, hurricane intensity modulation, hurricane deflection" to manage storms.

Given the scope of the applications, "I suspect these will have a lengthy stay in the examiner's office. They are talking about some interesting issues here," says patent expert Gene Quinn of IPWatchdog.com.

The Bill & Melinda Gates Foundation and Caldeira declined to comment on the patents.

⊕ Enlarge   By David J. Phillip, AP

Floodwaters from Hurricane Katrina fill the streets of New Orleans Aug. 30, 2005. Bill Gates has an ambitious plan to prevent or lessen this type of damage by using barges to pump cold water from deep in the ocean to lower the surface temperature of the water in a hurricane's path, thus slowing down the destructive winds produced by the storms.

HURRICANE CATEGORIES

Storms are classified as hurricanes once their sustained winds top 74 mph.
Click for details:

Hurricane categories
① ② ③ ④ ⑤

Category 1
(minimal)
Winds 74-95 mph

Source: National Oceanic and Atmospheric Administration
By Sam Ward and Frank Pompa, USA TODAY

"The bottom line here is that if enough pumps are deployed, it is reasonable to expect some diminution of hurricane power," says hurricane expert Kerry Emanuel of the Massachusetts Institute of Technology. He is not part of the patent effort. Cutting sea surface temperature by 4.5 degrees under the eye of a hurricane would actually kill a storm, he adds. "This would have to be done on a massive scale, but is still probably within the realm of feasibility."

Says climate scientist Michael Mann of Pennsylvania State University in State College: "Needless to say, there is a whole lot of skepticism about this among tropical meteorologists. But it's not so ridiculous that I would actually dismiss it out of hand. There is certainly an important role of upper ocean mixing on tropical cyclone behavior."

CLIMATE TROUBLEMAKER: New El Nino could fuel more Atlantic hurricanes

Ocean water quickly grows colder with depth, reaching temperatures of 28 to 37 degrees (salty ocean water doesn't freeze at 32 degrees) about 500 feet down. The patents envision sail-maneuvered barges, with conduits 500 feet long, pumping warm water down to the depths and bringing cold water up. The average depth of the Gulf of Mexico is 5,300 feet.

"By cooling a region in the path of a hurricane (over 60 square miles), models suggest we could knock a half-a-category in wind speed out," says Philip Kithil of Atmocean in Santa Fe, an ocean-pumping firm mentioned in Gates' applications. "All the models indicate the path of the storm would be unaffected."

In the average year, six hurricanes develop in the Atlantic Ocean, Caribbean or Gulf of Mexico in a season that

officially extends from June 1 to Nov. 30. Over the past century, the annual cost of hurricanes to the USA has averaged about $10 billion, according to a 2008 *Natural Hazards Review* study. In 2005, Hurricane Katrina killed at least 1,800 people and caused at least $81 billion in damage.

"From a scientific and political standpoint, (the Gates plan) looks fanciful," Quinn says. "But the physics is real and like a lot of things, the question is whether the damage you prevent is worth the money you would spend to develop something so massive."

You might be interested in:

- Experts predict average Atlantic hurricane season   (USATODAY.com in News)
- Hurricane season prediction: average   (USATODAY.com in On Deadline)
- Carlos becomes hurricane again in open Pacific   (USATODAY.com)
- Colorado State forecasters lower Atlantic hurricane prediction   (USATODAY.com in News)

Share this story:

Mixx it   **Yahoo! Buzz   Digg   Newsvine   Reddit   Facebook** What's this?

Posted 7/15/2009 7:25 PM

Updated 7/16/2009 1:53 PM   E-mail | Save | Print | Reprints & Permissions | RSS

*To report corrections and clarifications, contact Reader Editor **Brent Jones**. For publication consideration in the newspaper, send comments to letters@usatoday.com. Include name, phone number, city and state for verification. To view our corrections, go to corrections.usatoday.com.*

Guidelines: You share in the USA TODAY community, so please keep your comments smart and civil. Don't attack other readers personally, and keep your language decent. Use the "Report Abuse" button to make a difference. Read more.

Newspaper Home Delivery - Subscribe Today

Home • News • Travel • Money • Sports • Life • Tech • Weather

About USATODAY.com: Site Map | FAQ | Contact Us | Jobs with Us | Terms of Service
Privacy Policy/Your California Privacy Right | Advertise | Press Room | Media Lounge | Reprints and Permissions

News Your Way: Mobile News | Email News | IM Alerts | Add USATODAY.com RSS feeds | Podcasts | Widgets

Partners: USA WEEKEND | Sports Weekly | Education | Space.com