NOTES:

30 billion in business losses.

Construction industry will get back to work.

And gas prices going down. No supply disruptions.

Insurers will have to charge higher premiums.

The coastal New Jersey town of Seaside Heights was majorly damaged by the wrath of Hurricane-turned-Superstorm Sandy, but at least one notable building remains in tact: The vacation home used by [**"Jersey Shore"**](http://tvlistings.zap2it.com/tv/jersey-shore/EP01207999) for the past four years.

A reporter for the Newark Star-Ledger tells [**E! Online**](http://www.eonline.com/news/358615/jersey-shore-house-unharmed-by-hurricane-sandy) that the iconic home is still standing even after Sandy tore up the town, including a majority of the boardwalk. But the cast has spoken out on Twitter and via statement to MTV, sending their well-wishes to the town.

"Sandy destroyed Seaside, our second home," **Nicole "Snooki" Polizzi** tells [**MTV News**](http://www.mtv.com/news/articles/1696471/hurricane-sandy-jersey-shore-cast-seaside-statements.jhtml). "It's devastating to see our boardwalk and favorite spots ruined. My prayers go out to everyone affected by the storm."

**Pauly D** thanks all the first responders, while **Sammi Giancola** and **Jenni "JWOWW" Farley** say they're keeping the town and its residents in their thoughts. Adds **Vinny Guadagnino**, "Over the last few years, it feels like Seaside Heights has become my second home. My thoughts and prayers go out to everyone who was affected by this disaster in Seaside and all across the Northeast. I'm here to support in any way I can."

 “We’re talking about **a pressure washer y**ou could buy in a hardware shop, a long hose, and two bathloads of water, so you couldn’t have a more benign experiment,” he told BBC News.

This is cheap – cheaper than cutting emissions.

2007 David Keith TED: Environmental scientist David Keith proposes a cheap, effective, shocking means to address climate change: What if we injected a huge cloud of ash into the atmosphere to deflect sunlight and heat?

It was supposed to be tested this year

((SPOT))

We now know The best solution would be to prevent hurricanes… and since it may be too late to stop the atmosphere from warming up, maybe the best way would be to attack the storms themselves.

A team of British researchers called SPICE (Stratospheric Particle Injection for Climate Engineering) is trying to pump particles of water into the atmosphere as a test run before moving onto sulfates and aerosols that would reflect sunlight away from earth, mimicking the aftereffect of a massive volcanic eruption. SPICE is building the garden hose at an undisclosed location, with £1.6 million in U.K. government funding and the backing of the Royal Society.

<http://www.guardian.co.uk/environment/2011/aug/31/pipe-balloon-water-sky-climate-experiment>

Planet Hacking.

COMMENT:

A lot of these projects fail when things are “sized up”. A cloud of no special importance weighs five million tonnes. Care to duplicate one?

Better yet–quit having kids. The average first-world baby contributes over one-million kilograms of CO2 throughout its lifetime.

Intellectual Ventures has released the video above to demonstrate the concept, which it calls the Salter Sink, based on its origins in the ideas of British engineer [Stephen Salter](http://en.wikipedia.org/wiki/Stephen_Salter). It was also highlighted in [a recent segment on ABC's 20/20](http://www.youtube.com/watch?v=eOsNOmUJjtI&NR=1).

…David Keith – it’s bene done. Volcanoes, like Mt Pinatubo, which erupted and depressed global temperatures almost immediate. Immediate is important. A giant natural mushroom cloud… cools the surface.

But here’s what we’ve learned form this latest espiode. The difference betweena normal day in New York city, and New York city as a bunch of abandoned buildings – is about 13 feet of water.

It wasn’t the wind it was sea level.

It sounds barmy, audacious or sci-fi: a tethered balloon the size of Wembley stadium suspended 20km above Earth, linked to the ground by a giant garden hose pumping hundreds of tonnes of minute chemical particles a day into the thin stratospheric air to reflect sunlight and cool the planet.

But a team of British academics will next month formally announce the first step towards creating an artificial volcano by going ahead with the world's first major "[geo-engineering](http://www.guardian.co.uk/environment/2011/feb/18/geo-engineering?intcmp=239)" field-test in the next few months. The ultimate aim is to mimic the cooling effect that volcanoes have when they inject particles into the stratosphere that bounce some of the Sun's energy back into space, so preventing it from warming the Earth and mitigating the effects of man-made [climate change](http://www.guardian.co.uk/environment/climate-change).

Before the full-sized system can be deployed, the research team will test a scaled-down version of the balloon-and-hose design. Backed by a [£1.6m government grant](http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/I01473X/1), the team will send a balloon to a height of 1km over an undisclosed location. It will pump nothing more than water into the air, but it will allow climate scientists and engineers to gauge the engineering feasibility of the plan. Ultimately, they aim to test the impact of sulphates and other aerosol particles if they are sprayed directly into the stratosphere.

If the technical problems posed by controlling a massive balloon at more than twice the cruising height of a commercial airliner are resolved, then the team from Cambridge, Oxford, Reading and Bristol universities expect to move to full-scale solar radiation tests.

The principal investigator, [Matthew Watson](http://www.gly.bris.ac.uk/people/imw.html), a former UK government scientific adviser on emergencies and now a Bristol University lecturer, says the experiment is inspired by volcanoes and the way they can affect the climate after eruptions.

"We will test pure water only, in sufficient quantity to test the engineering. Much more research is required," he said, in answer the question of what effect a planetary-scale deployment of the technology could have.

Other leaders of the government-funded [Stratospheric particle injection for climate engineering (Spice) project](http://www2.eng.cam.ac.uk/~hemh/climate/Geoengineering_RoySoc.htm) have investigated using missiles, planes, tall chimneys and other ways to send thousands of tonnes of particles into the air but have concluded that a simple balloon and hosepipe system is the cheapest. The [research is paid for](http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/I01473X/1) by the government-funded Engineering and Physical Sciences Research Council.

"The whole weight of this thing is going to be a few hundred tonnes. That's the weight of several double-decker buses. So imagine how big a helium balloon do you need to hold several double-decker buses – a big balloon. We're looking at a balloon which is possibly 100-200m in diameter. It's about the same size as Wembley stadium," said the Oxford engineering lecturer Hugh Hunt in an [interview earlier this year](http://www.thenakedscientists.com/HTML/content/interviews/interview/1568/).

"This hose would be just like a garden hose, 20km long and we pump stuff up the pipe. The nice thing about it is that we can really have a knob, if you like, which we can control to adjust the rate at which we inject these particles."

While the October experiment is expected to have no impact on the atmosphere, it could also be used to try out "low-level cloud whitening", a geo-engineering proposal backed financially by Microsoft chairman and philanthropist Bill Gates.

In this case, fine sea salt crystals would be pumped up and sprayed into the air to increase the number of droplets and the reflectivity in clouds. Together, many droplets are expected to diffuse sunlight and make a cloud whiter.

However, environment groups in Britain and the US said the government's experiment was a dangerous precedent for a full-scale deployment that could affect rainfall and food supplies. Even if the approach successfully cools the planet by bouncing some of the Sun's energy back into space, it would do nothing for the build up of CO2 in the atmosphere, which leads to increased [ocean acidity](http://www.guardian.co.uk/environment/2011/may/29/global-warming-threat-to-oceans).

"What is being floated is not only a hose but the whole idea of geo-engineering the planet. This is a huge waste of time and money and shows the UK government's disregard for UN processes. It is the first step in readying the hardware to inject particles into the stratosphere. It has no other purpose and it should not be allowed to go ahead," said Pat Mooney, chair of [ETC Group](http://www.etcgroup.org/) in Canada, an NGO that supports socially responsible development of technology.

Mike Childs, head of science, policy and research at [Friends of the Earth UK](http://www.foe.co.uk/), said: "We are going to have to look at new technologies which could suck CO2 out of the air. But we don't need to do is invest in harebrained schemes to reflect sunlight into space when we have no idea at all what impact this may have on weather systems around the globe."

But the principle of large-scale [geoengineering](http://www.guardian.co.uk/environment/geoengineering) has been backed strongly by Sir Martin Rees, the former president of Royal Society, which in 2009 concluded in [a report](http://royalsociety.org/Geoengineering-the-climate/) that it may be necessary to have a "plan B" if governments could not reduce emissions.

"Nothing should divert us from the main priority of reducing global greenhouse gas emissions. But if such reductions achieve too little, too late, there will surely be pressure to consider a 'plan B' – to seek ways to counteract the climatic effects of greenhouse gas emissions by 'geoengineering'," said Rees.

Members of the British public [who were consulted by researchers](http://psych.cf.ac.uk/understandingrisk/docs/spice.pdf) in advance of the Spice experiment were broadly sceptical.

"Overall almost all of our participants were willing to entertain the notion that the test-bed as an engineering test – a research opportunity – should be pursued. Equally, very few were fully comfortable with the notion of stratospheric aerosols as a response to climate change," the Cardiff University-based researchers concluded.

**Hacking the planet - potential geo-engineering solutions**

**Ocean nourishment**

Billions of iron filings are [deposited in the ocean](http://en.wikipedia.org/wiki/Ocean_nourishment) to stimulate a phytoplankton bloom. The aim is to enhance biological productivity to remove carbon dioxide from the atmosphere. Many [experiments have been conducted](http://www.newscientist.com/article/dn16390-climate-fix-ship-sets-sail-with-plan-to-dump-iron.html), including fertilisation of 900 square kilometers (350 sq miles) of the Atlantic. Results so far are disappointing.

**Space mirrors**

[Giant "mirrors", made of wire mesh,](http://en.wikipedia.org/wiki/Space_mirror_%28anti-global_warming_measure%29) could be sent into in orbit to deflect sunlight back into space. But the scale needed, the expense and the potential unintended consequences are so great that it is widely considered unrealistic. In the same league as the idea to mine the moon to create a shielding cloud of dust.

**Cloud whitening**

The idea is to [increase the water content in low clouds](http://www.guardian.co.uk/environment/2010/may/14/bill-gates-cloud-whitening-dangerous) by spraying sea water at them. This makes them reflect more sunlight. It would be pretty harmless, and cheap but would have to be done on an immense scale to have any global effect. Backed by Bill Gates.

**Artificial trees**

Proposed by climate scientist [Wallace Broecker](http://www.earth.columbia.edu/articles/view/2246) who imagines 60m [artificial "trees" dotted around the world](http://www.thetechherald.com/article.php/200822/1122), "scrubbing" the air by capturing CO2 in a filter and then storing it underground. The trees could remove more carbon dioxide than an equivalent-sized real tree.

**Albedo changes**

[Painting roofs and roads white](http://www.guardian.co.uk/environment/2009/jan/16/white-paint-carbon-emissions-climate), covering deserts in reflective plastic sheeting, dropping pale-coloured litter into the ocean and genetically engineering crops to be paler have all been proposed to [reflect sunlight back into space](http://en.wikipedia.org/wiki/Solar_radiation_management).

**Carbon capture and storage (CCS)**

[Carbon dioxide is collected](http://www.guardian.co.uk/environment/2008/sep/05/carboncapturestorage.carbonemissions1) from coal or other fossil fuel power plants and is then pumped underground. Works in principle but it is expensive and increases the fuel needs of a coal-fired plant by 25%-40%. More than 40 plants have been built with many others planned.

• This article was amended on 7 September to remove a reference to the Royal Society