

more and more dangerous, and more and more transmissible? Do the research benefits outweigh the risks?"

The WHO's imminent biosafety guidelines will try to address such proliferation concerns, says one WHO official. Beyond making recommendations about biological containment levels and other physical precautions, the WHO will also suggest that labs should meet the highest standards of safety, attaining international standards for staff training and managing biological risks. The idea, says the WHO official, is to set a high bar for entry into this type of work.

Four leading public-health scientists also called for caution in an article⁶ published in the same issue of *Science* as Fouchier's paper. Any predictions of flu's behaviour based on its complex genetics and host interactions are "highly speculative", they write, which raises questions about the potential benefit of mutant-virus work to flu surveillance. Moreover, current systems of genetic surveillance of flu viruses are too patchy, and years can pass before samples are sequenced⁷. Contrasting the uncertain benefits with an "exceptional level of risk should motivate exceptional caution by scientists, funders, and regulators worldwide", the authors write⁶.

But Fouchier says that the mutant flu viruses that he and Kawaoka have worked on raise few new biosafety issues. "For over a century, the infectious-disease community has published work on dangerous pathogens while relying on national governments, institutional biosafety offices and the responsibility of scientists to ensure that the work is done under appropriate conditions," Fouchier adds. "Very little has gone wrong so far, so why would that be different now?"

The debate over risks and benefits is likely to come to a head at a meeting that the WHO will convene early next year to discuss the wider implications of high-risk biological research and how researchers, institutions and governments might best assess and manage risk. "The meeting will not be restricted to flu researchers, or virologists or researchers of any sort," says the WHO official. "They will certainly be represented, but so too will other groups which have very legitimate interests and perspectives on this whole question." ■

1. Herfst, S. *et al.* *Science* **336**, 1534–1541 (2012).
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3. Imai, M. *et al.* *Nature* <http://dx.doi.org/10.1038/nature10831> (2012).
4. Butler, D. & Ledford, H. *Nature* <http://dx.doi.org/10.1038/nature.2012.10369> (2012).
5. Butler, D. *Nature* **482**, 447–448 (2012).
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CLIMATE

Sea versus senators

North Carolina sea-level rise accelerates while state legislators put the brakes on research.

BY LEIGH PHILLIPS

Could nature be mocking North Carolina's law-makers? Less than two weeks after the state's senate passed a bill banning state agencies from reporting that sea-level rise is accelerating, research has shown that the coast between North Carolina and Massachusetts is experiencing the fastest sea-level rise in the world.

Asbury Sallenger, an oceanographer at the US Geological Survey in St Petersburg, Florida, and his colleagues analysed tide-gauge records from around North America. On 24 June, they reported in *Nature Climate Change* that since 1980, sea-level rise between Cape Hatteras, North Carolina, and Boston, Massachusetts, has accelerated to between 2 and 3.7 millimetres per year. That is three to four times the global average, and it means the coast could see 20–29 centimetres of sea-level rise on top of the metre predicted for the world as a whole by 2100 (A. H. Sallenger Jr *et al.* *Nature Clim. Change* <http://doi.org/hz4>; 2012).

"Many people mistakenly think that the rate of sea-level rise is the same everywhere as glaciers and ice caps melt," says Marcia McNutt, director of the US Geological Survey. But variations in currents and land movements can cause large regional differences. The hotspot is consistent with the slowing measured in Atlantic Ocean circulation, which may be tied to changes in water temperature, salinity and density.

North Carolina's senators, however, have tried to stop state-funded researchers from releasing similar reports. The law approved by the senate on 12 June banned scientists in state agencies from using exponential extrapolation to predict sea-level rise, requiring instead that they stick to linear projections based on historical data.

Following international opprobrium, the state's House of Representatives rejected

the bill on 19 June. However, a compromise between the house and the senate forbids state agencies from basing any laws or plans on exponential extrapolations for the next three to four years, while the state conducts a new sea-level study.

According to local media, the bill was the handiwork of industry lobbyists and coastal municipalities who feared that investors and property developers would be scared off by predictions of high sea-level rises. The lobbyists invoked a paper published in the *Journal of Coastal Research* last year by James Houston, retired director of the US Army Corps of Engineers' research centre in Vicksburg, Mississippi, and Robert Dean, emeritus professor of coastal engineering at the University of Florida in Gainesville. They reported that global sea-level rise has slowed since 1930 (J. R. Houston and R. G. Dean *J. Coastal Res.* **27**, 409–417; 2011) — a contention that climate sceptics around the world have seized on.

Speaking to *Nature*, Dean accused the oceanographic community of ideological bias. "In the United States, there is an over-emphasis on unrealistically high sea-level rise," he says. "The reason is budgets. I am retired, so I have the freedom to report what I find without any bias or need to chase funding." But Sallenger says that Houston and Dean's choice of data sets masks acceleration in the sea-level-rise hotspot.

North Carolina is not the only hotspot for efforts to legislate away the reality of sea-level rise. In 2011, the Texas Commission on Environmental Quality removed all references to rising sea levels from a scientific study of Galveston Bay on the Gulf of Mexico. And this month, the Virginia General Assembly passed a bill commissioning a study on rising sea levels — but only after references to sea-level rise and climate change had been removed. ■



The tide will not be held back by law-makers.

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