JOE RAEDLE/GETTY

Hurricane Harvey lingered over eastern Texas for days, flooding cities including Houston (pictured).

recent global simulations estimate up to a 10% increase in rainfall per degree Celsius of warming.

Slower, more rain-heavy hurricanes would lead to more flooding events, says David Nolan, a hurricane scientist at the University of Miami in Florida. Stronger, more sustained winds are also more likely to damage buildings, he says.

The study results are interesting, says Tom Knutson, a research meteorologist at NOAA's Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey. But researchers aren't sure what has caused the slowdown. Knutson says it's an open question whether human-driven climate change or natural variability is to blame. It's also unclear if the slowdown in atmospheric tropical circulation patterns influences the speed at which hurricanes move across the globe. Knutson notes that his team's climate models, which simulate future Atlantic hurricanes, don't predict that storms will slow down — even when researchers tweak their models to slow those circulation patterns[2].

The observed decrease in hurricane speed could be a result of unreliable data, says Kevin Trenberth, a climate scientist at the US National Center for Atmospheric Research in Boulder, Colorado. He notes that satellites have tracked storms across the globe only since the late 1960s, so data acquired before then might not be reliable and should be discounted.

But Kossin disagrees, saying that data on the speed of these storms are less sensitive to technological advances than data about their frequency and intensity. Moreover, he says, a study this year found that several past hurricanes would have been slower had they ocurred in a warmer climate[3]. "That gives us more confidence that the slowing is there and is related to warming." ■

1. Kossin, J. *Nature* https://doi.org/10.1038/s41586-018-0158-3 (2018).
2. Knutson, T. R. *et al. J. Clim.* **26**, 6591–6617 (2013).
3. Gutmann, E. D. *et al. J. Clim.* **31**, 3643–3657 (2018).

RESEARCH GRANTS

Europe's top funder shows high-risk research pays off

European Research Council publishes third impact assessment of the projects it supports.

BY INGA VESPER

A popular and unusual self-review carried out by Europe's most prestigious science funder is back. The annual assessment, now in its third year, found that nearly one in five projects supported by the European Research Council (ERC) led to a scientific breakthrough.

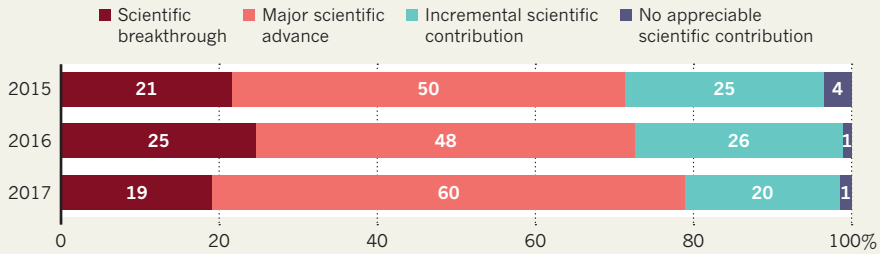
The independent review, undertaken in 2017 and published on 31 May (see go.nature.com/2jg2n3v), assessed 223 completed ERC projects that had ended by mid-2015. It concluded that 79% of them achieved a major scientific advance, 19% of which were considered fundamental breakthroughs. That proportion rose to 27% for ERC Advanced Grants, which are awarded to experienced researchers. Only 1% of the total were judged to have made no appreciable scientific contribution.

Established in 2007 to improve the quality of Europe's science, the ERC is the European Union's premier funder of blue-skies research and is part of Horizon 2020, the EU's main science-funding programme. It awards generous, multiyear grants in any discipline, and applications are judged solely on their quality. The council has undertaken annual reviews of the projects it funds since it ran a popular pilot assessment in 2015. That is a pioneering strategy among European funders, most of which evaluate success on a project-by-project basis, and it has been praised for taking a qualitative approach rather than relying, for instance, on bibliometrics.

The latest assessment was carried out by senior scientists convened by the ERC's Scientific Council. Each panel member was asked a series of questions about a randomly selected

EUROPE'S TOP RESEARCH GRANTS

About one-fifth of projects funded by prestigious European Research Council grants make scientific breakthroughs, according to the council's qualitative self-assessments.



SOURCE: ERC

set of projects. This year, evaluators were also asked to focus on a project's risk to a greater extent than in previous years. (A spokesperson for the ERC said that the council is still refining the assessment's methodology.)

The 19% figure for scientific breakthroughs in the latest assessment is lower than in previous years: 21% and 25% of ERC projects assessed in the 2015 and 2016 exercises, respectively, were classed as such (see 'Europe's top research grants').

The reviewers concluded that most projects that made breakthroughs were high risk and high reward, and only 10% of projects were considered low risk. "The ERC has really pushed the expectation of raising the boundaries of science and taking more risks," says Jan Palmowski, secretary-general of the Guild of European Research-Intensive Universities, a lobby group in Brussels.

"The ERC has really pushed the expectation of taking more risks."

The assessment shows that risk-friendly funding is crucial for retaining talent in Europe, where research funders are generally risk-averse, says Martin Vechev, a computer scientist at the Swiss Federal Institute of Technology in Zurich who received an ERC grant aimed at early-career researchers in 2015, after spending time at computing firm IBM in the United States. The grant encouraged him to stay in Europe, and he says that the funding helped his team to develop a new subfield of artificial intelligence that focuses on machines that automatically write computer code.

The reviewers also said that more than 50% of projects had already made an economic and societal impact. In a speech earlier this year, ERC president Jean-Pierre Bourguignon said that council-funded research generated 29% of patents approved through EU funding in 2007–13, despite receiving less than 17% of the money.

FUNDING INCENTIVE

The review comes at a crucial time for EU research funding, say observers. This week, the European Commission is expected to release a detailed budget plan for the next instalment of its main funding programme, which will include the ERC's next pot of money. The programme, called Horizon Europe, will run from 2021 to 2027 and has a proposed budget of nearly €100 billion (US$117 billion).

The latest review provides ammunition in the fight to raise the ERC's budget, says Palmowski. His organization is advocating for a doubling of the annual budget, which in 2017 was €1.8 billion; it started at €300 million in 2007. ■

VILNIUS UNIV. (LEFT)/HALLBAUER&FIORETTI FOTOGRAFIE (MIDDLE)/UC BERKELEY (RIGHT)

Virginijus Siksnys, Emmanuelle Charpentier and Jennifer Doudna won the 2018 Kavli nanoscience prize.

AWARDS

Kavli prize recognizes scooped biochemist

Virginijus Siksnys shares award for CRISPR contributions.

BY GIORGIA GUGLIELMI

CRISPR has hauled in yet another big science award, and this time the recognition includes a scientist whose contribution has sometimes been overlooked.

Two biochemists widely credited with co-inventing the gene-editing technology, Emmanuelle Charpentier and Jennifer Doudna, were named on 31 May as the winners of this year's Kavli Prize in Nanoscience. So was Virginijus Siksnys, a Lithuanian biochemist whose independent work on CRISPR has thus far garnered much less mainstream attention — and Nobel-prize buzz — than that of Charpentier, Doudna and some other scientists.

Researchers working on the mechanism of hearing and on the formation of stars and planets also won Kavli prizes this year, in neuroscience and astrophysics, respectively.

The Kavli Foundation — established by the late Norwegian philanthropist Fred Kavli in Los Angeles, California — and the Norwegian Academy of Science and Letters in Oslo announced the three biennial prizes, each of which comes with US$1 million to be split between the winners. First awarded in 2008, the prizes honour seminal research selected by three panels of experts from six global science societies and academies.

The nanoscience committee awarded the prize to Charpentier at the Max Plank Institute for Infection Biology in Berlin, Doudna at the University of California, Berkeley (UC-Berkeley) and Siksnys at Vilnius University in Lithuania "for the invention of CRISPR-Cas9, a precise nanotool for editing DNA, causing a revolution in biology, agriculture and medicine".

In 2012, a group led by Charpentier and Doudna[1], and several months later one led by Siksnys[2], reported programming the CRISPR–Cas9 system to cut DNA at specific sites. Since then, award committees, the media and some in the scientific community have emphasized the roles of Doudna and Charpentier in developing the transformative gene-editing tool. In 2015, the pair shared the Breakthrough Prize in Life Sciences, worth $3 million, for example.

But Siksnys's work on CRISPR has occasionally been overlooked. The Kavli nanoscience committee recognized that the three researchers conducted "key pioneering work" in the development of CRISPR-based genome editing, says chairman Arne Brataas, a physicist at the Norwegian University of Science and Technology in Trondheim.

Siksnys says he was "surprised" when a phone call from Oslo announced that he would share the Kavli prize with Doudna and Charpentier. "You don't expect such calls every day," he says. He adds that he is still disappointed it took so long to publish his results. *Cell* rejected his ▶