

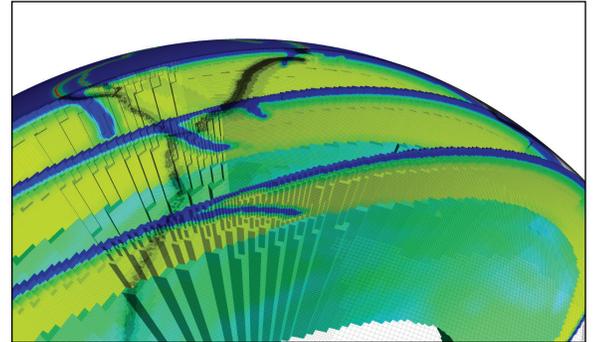


September 7, 2018

## 01

### NSF awards \$60 million for next-generation supercomputer

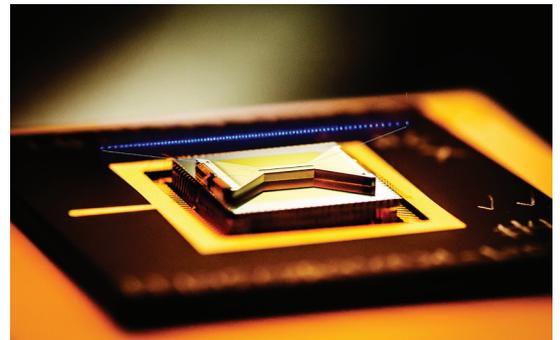
NSF has made a \$60 million award to fund the largest and most powerful supercomputer the agency has ever supported to serve the nation's science and engineering research community. The new high-performance computing system, to be called Frontera, will be located at the University of Texas at Austin's Texas Advanced Computing Center. "For over three decades, NSF has been a leader in providing the computing resources our nation's researchers need to accelerate innovation," said NSF Director France Córdoba. "Keeping the U.S. at the forefront of advanced computing capabilities and providing researchers across the country access to those resources are key elements in maintaining our status as a global leader in research and education. This award is an investment in the entire U.S. research ecosystem that will enable leap-ahead discoveries." Find out more in this [NSF news release](#).



## 02

### NSF launches effort to create first practical quantum computer

To accelerate the development of a practical quantum computer that will one day answer currently unsolvable research questions, NSF has awarded \$15 million over five years to the multi-institution Software-Tailored Architecture for Quantum co-design (STAQ) project. "Quantum computers will change everything about the technology we use and how we use it, and we are still taking the initial steps toward realizing this goal," said NSF Director France Córdoba. "Developing the first practical quantum computer would be a major milestone. By bringing together experts who have outlined a path to a practical quantum computer and supporting its development, NSF is working to take the quantum revolution from theory to reality." Read more in this [NSF news release](#).



## 03

### NSF invests in research to help disrupt operations of illicit supply networks

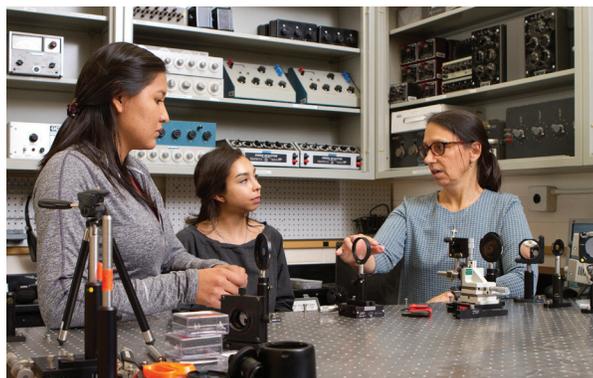
Networks that illegally traffic in everything from people and opioids to human organs and nuclear material pose threats to U.S. health, prosperity and security. Nine new awards from NSF will advance the scientific understanding of how such illicit supply networks function -- and how to dismantle them. The new awards support research that combines engineering with computer, physical and social sciences to address a danger that poses significant consequences for national and international security. Find out more in this [NSF news release](#).



# 04

## NSF awards forge partnerships between minority-serving institutions and leading research facilities

NSF has awarded new Partnerships for Research and Education in Materials (PREM) grants to support eight collaborations across the United States aimed at fostering cutting-edge materials research while increasing diversity. Each award is expected to total nearly \$4 million and will support a materials research partnership between a minority-serving institution and a large-scale research facility supported by NSF's Division of Materials Research. The PREM partnerships will provide pathways for recruitment, retention and degree-attainment of underrepresented minorities in materials research professions across the country. Read more in this NSF [news release](#).



# 05

## Diving robots find Antarctic seas exhale surprising amounts of CO2 in winter

A new study has found that the open water nearest the sea ice surrounding Antarctica releases significantly more carbon dioxide (CO2) in winter than previously believed. The findings were the result of data gathered over several winters by robotic floats diving and drifting in the Southern Ocean around the southernmost continent. The effort is part of Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM), a six-year, \$21 million program funded by NSF through its Office of Polar Programs and based at Princeton University. Find out more in this NSF [news release](#).



# 06

## NSF announces first research awards under Hispanic-Serving Institutions Program

NSF's Improving Undergraduate STEM Education: Hispanic-Serving Institutions Program (HSI Program) issued its first research awards for 31 projects totaling approximately \$45 million. Hispanics constitute 16 percent of the U.S. workforce, but they make up only 6 percent of the U.S. science, technology, engineering and mathematics (STEM) workforce. More than 60 percent of Hispanic students attend an HSI. NSF's HSI Program invests in projects that build capacity and increase retention and graduation rates for STEM students at HSIs. Read more about the awards in this NSF [news release](#).



# 07

## NSF selects Karen Marrongelle to head its Education and Human Resources Directorate

NSF has selected Karen Marrongelle to serve as head of the Directorate for Education and Human Resources (EHR). EHR supports fundamental research that enhances learning and teaching, and broad efforts to achieve excellence in U.S. science, technology, engineering and mathematics education at all levels and in all settings. Marrongelle's career as a leader in the research community has been marked by a deep commitment to diversity, equity and inclusion. As an administrator, she has focused on understanding the causes of disparities in educational opportunities and establishing strategic visions for addressing those issues. She will begin her NSF appointment Oct. 1, 2018. Find out more in this NSF [news release](#).



# 08

## Summer monsoon rains benefit underground aquifers of the desert Southwest

Summer monsoon season in the deserts of the Southwest U.S. is known for bringing torrents of water, often filling dry stream beds and flooding urban streets. A common misconception, however, is that most of the water is swept away into large rivers, with very little percolating into underground aquifers. Using a combination of field instruments, unmanned aerial vehicles and a hydrologic model, a team of researchers affiliated with Arizona State University (ASU) and the NSF Jornada Basin Long-Term Ecological Research (LTER) site has been studying monsoon rainfall and its impact on groundwater recharge in the Chihuahuan Desert of New Mexico. Jornada Basin is one of 28 NSF LTER sites located in ecosystems from salt marshes to forests, coral reefs to arctic tundra. The researchers found that a surprising amount of rainfall -- nearly 25 percent -- from monsoon storms is absorbed into small streambeds and percolates into the groundwater system. Learn more in this NSF [Discovery](#).



# 09

## In drought and heavy rains, ecosystems function like information communication networks

Tree canopies and the running streams below, or coral reefs and the ocean waters that flow around them, are interconnected components of a larger whole: an ecosystem. These ecosystem parts are in communication with one another, scientists have learned, via signals transmitted among earth, air and water. This idea has led to new ways of tracking how precipitation alters interactions among the atmosphere, vegetation and soil, according to researchers reporting new findings this week. Scientists affiliated with two NSF Critical Zone Observatory (CZO) sites in the Western U.S. -- the NSF Reynolds Creek CZO in Idaho and the NSF Southern Sierra CZO in California -- conducted the research. Find out more in this NSF [news release](#).



# 10

## Clay fights MRSA, other 'superbugs' in wounds

The use of mud or wet clay as a topical skin treatment is a common practice in many cultures. In fact, the concept of using mud as medicine goes back to the earliest times. Now, researchers from Arizona State University and the Mayo Clinic have found that one type of clay, Oregon blue clay, may help fight disease-causing bacteria in wounds, including treatment-resistant bacteria like MRSA. "The study is an important advance in understanding how clays, specifically blue clay from Oregon, have shown medicinal properties by attaching to pathogenic bacteria," says Enriqueta Barrera, a program director in NSF's Division of Earth Sciences, which funded the research. Find out more in this NSF [Discovery](#).



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