

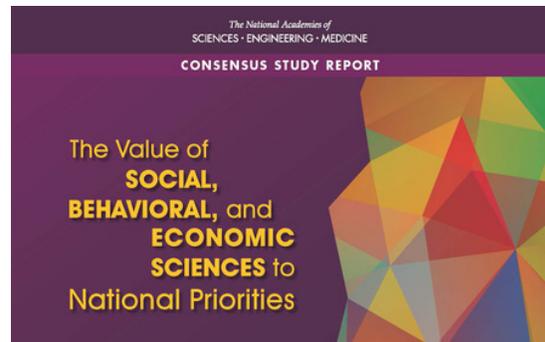


# 10 Quick Reads From NSF.gov

July 21, 2017

## 01 Social, behavioral and economic sciences further NSF's mission to advance national priorities, says National Academies report

A new report, released by the National Academies of Sciences, Engineering and Medicine, finds the social, behavioral and economic sciences (SBE) are crucial to NSF's mission to advance the nation's health, prosperity, welfare and defense. According to the report, *The Value of Social, Behavioral, and Economic Sciences to National Priorities: A Report for the National Science Foundation*, "Nearly every major challenge the United States faces--from alleviating unemployment to protecting itself from terrorism--requires understanding the causes and consequences of people's behavior." At NSF's request, the National Academies evaluated whether the federal government should fund SBE research and, specifically, whether SBE research furthers NSF's mission, the missions of other agencies, and the needs of business and industry. Find out more about the report and a public discussion hosted by the National Academies on July 19 in this NSF [news release](#).



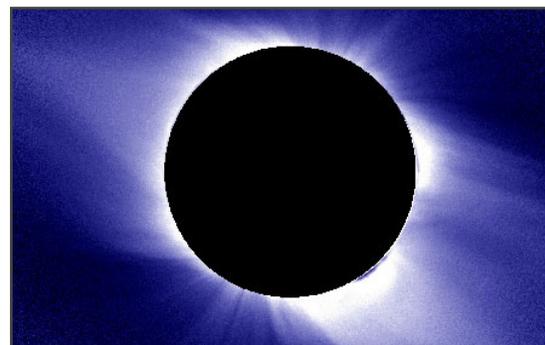
## 02 House Appropriations Committee approves FY 2018 funding for NSF

The House Appropriations Committee approved the fiscal year (FY) 2018 Commerce, Justice, Science and Related Agencies funding bill on July 13 by a vote of 31 to 21. NSF would receive \$7.34 billion, a reduction of \$132.67 million (1.8 percent) from the FY 17 enacted amount. Approximately \$131.12 million of the reduction comes out of the Major Research Equipment and Facilities Construction (MREFC) account, with the remainder coming from the Agency Operations and Award Management (AOAM) account. The Research and Related Activities (R&RA) account is funded at the current level of \$6 billion. The FY 18 mark for NSF is a \$686.64 million (10.3 percent) increase over the President's budget request for NSF. Read more in this NSF [congressional update](#).



## 03 New solar science special report previews the total solar eclipse happening on August 21st

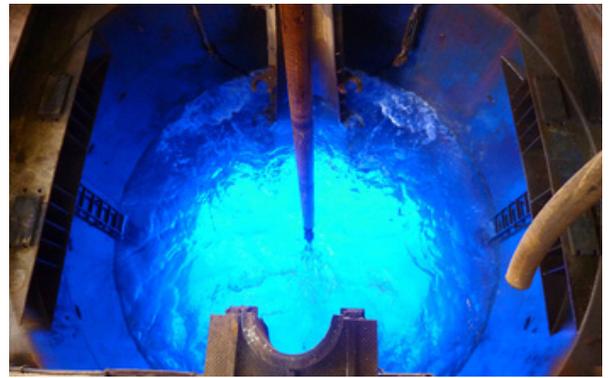
Next month's total solar eclipse--the first to cross the U.S. from coast to coast in nearly a century--will give scientists a unique opportunity to observe the sun's corona with an array of technologies and methodologies, and it will give the public a huge reason to find out about solar science. On August 21, the total solar eclipse will take place along a path from Oregon to South Carolina; it will last about 90 minutes from start to finish. To preview what scientists hope to learn from the total solar eclipse, find links to an interactive map and other tools for the public, and learn about solar research funded by NSF, check out the [special report](#), "Solar science: Exploring the power of our closest star."



# 04

## In search of clues to the history of Zealandia

Zealandia is a mass of the Earth's crust surrounding New Zealand. It's about half the size of Australia and, unlike other continents, more than 90 percent of it is submerged. On July 27, 30 researchers will embark on a two-month ocean drilling expedition to search for clues to Zealandia's history. Participants in International Ocean Discovery Program (IODP) Expedition 371, sponsored by NSF and its international partners in IODP, will sail from Townsville, Australia, aboard the *JOIDES Resolution*, one of the world's most sophisticated scientific drillships. The scientists and crew will collect cores--complete samples of sediments deposited over millions of years--at six Tasman Sea sites. Find out more about the expedition in this NSF [news release](#).



# 05

## Researchers discover how wildfires create their own weather

Scientists working close to the line of wildfires are obtaining a new understanding of the fires' smoke plumes. The results are providing real-time information, such as vertical wind profiles, to firefighters battling blazes. With support from NSF, Craig Clements, a meteorologist at San José State University (SJSU), and researcher Neil Lareau, also of SJSU, have discovered that wildfires can create their own weather, leading to extreme fire behavior. In a paper recently published in the *Journal of Applied Meteorology and Climatology*, the scientists report findings from inside wildfire plumes, information previously obtained only from computer simulations. Find out more in this NSF [Discovery article](#).



# 06

## Studying storms that can trigger flash floods; advances could lead to more accurate forecasts that save lives

Flash floods are one of the most common and deadly severe weather events in the U.S. In this video --from the NSF/NBC Learn series, "When Nature Strikes" -- Russ Schumacher tells why flash floods are difficult to forecast and also explains why it's critical that scientists gain a greater understanding of storm characteristics. Schumacher is an atmospheric scientist at Colorado State University and part of a research effort funded by NSF. He and his colleagues study large thunderstorm systems that can trigger severe flash floods. They hope the research efforts produce advances that will lead to more accurate flood forecasts and save lives. Find out more in this [video](#).



# 07

## The rhythms of sign language

One might think that understanding a spoken language versus a signed language would involve entirely different brain processes. The first one involves the ears and the other, the eyes -- and scientists have long known that different parts of the brain process these different sensory inputs. To scientists at the University of Chicago interested in the role rhythm plays in how humans understand language, the differences between these inputs provided an opportunity for experimentation. The resulting study, published in the *Proceedings of the National Academy of Sciences*, helps explain that rhythm is important for processing language whether spoken or signed. Find out more in this NSF [Discovery article](#).



# 08

## Send in the drones ... for Antarctic research

Drones can be valuable tools in scientific research. The Duke University Marine Lab is the first to win Federal Aviation Administration certification to operate scientific drones and provide training. David Johnston, assistant professor of the practice of marine conservation and ecology at Duke, has found that drone technology allows his research team to collect huge volumes of data from remote or extreme locations. He believes research using drones is transforming how people study and learn about marine ecosystems. See more in this NSF [video](#) showing researchers using drones to study whales, penguins and other life in the Antarctic.



# 09

## Researchers develop a yeast-based biosensor; low-cost tool could be a game changer in health and agriculture

A team at Columbia University has turned common household baker's yeast into an efficient biosensor. The researchers created a dipstick coated with yeast cells that have undergone two major changes: (1) The cells' surface receptors were swapped out for pathogen-specific receptors, and (2) the yeast's DNA has been modified to produce lycopene--the plant pigment that gives tomatoes their red color. The modified yeast cells now turn red in the presence of the targeted pathogens. This low-cost, on-site tool can test for fungal pathogens that cause devastating crop damage, wildlife declines, human disease and about 2 million deaths a year. Find out more in this Discovery Files [podcast](#).



# 10

## Remembering award-winning mathematician Maryam Mirzakhani

Iranian-born mathematician Maryam Mirzakhani died on July 14 after a long battle with cancer. She was 40 years old. In 2014, the Stanford University mathematics professor was named a winner of the Fields Medal for her "outstanding contributions to the dynamics and geometry of Riemann surfaces and their moduli spaces." The Fields Medal, awarded every four years since 1936, is considered to be the most prestigious honor in mathematics. Mirzakhani was the first, and to date only, woman to win the medal. NSF supported Mirzakhani's research studying the geometry and dynamics of moduli spaces of surfaces. Read about the 2014 Fields Medal winner in this NSF [news release](#).

