



Response to Media Reports on NSF-supported Glaciers and Glaciology Award

The National Science Foundation (NSF) has been the backbone of America's science and engineering research enterprise for more than 60 years. In fact, NSF is the only federal agency that supports all fields of fundamental science and engineering research and education. NSF supports cutting-edge research projects — many of which serve as bellwethers for solutions to the myriad complex issues facing society. NSF programs also traditionally integrate research and education, fast tracking innovation excellence via hands-on learning to train the next generation of researchers and innovators.

Each year, NSF competitively awards thousands of grants that collectively advance our nation's scientific capabilities and engage the talents of hundreds of thousands of researchers, postdoctoral fellows, technicians, teachers and students in every field of science and engineering. NSF is the primary source of federal funding for non-medical basic research, providing approximately 12,000 new awards annually.

Through its merit review process, NSF ensures that proposals submitted are reviewed in a fair, competitive and in-depth manner. Competition for funding is intense, with only about one out of five proposals ultimately being approved. Each proposal submitted to NSF is reviewed by science and engineering experts well-versed in their particular discipline or field of expertise. Nearly every proposal is evaluated by a minimum of three independent reviewers consisting of scientists, engineers and educators who do not work at NSF or for the institution that employs the proposing researchers.

All proposals submitted to NSF are reviewed according to two merit review criteria: Intellectual Merit and Broader Impacts. The Intellectual Merit criterion encompasses the potential to advance knowledge. The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The results of this process — funding the best and brightest ideas through competitive merit review — have been profound. NSF-supported research has underpinned multitudinous discoveries leading to new inventions — the Internet, web browsers, Doppler radar, Magnetic Resonance Imaging, DNA fingerprinting, and bar codes — to name a few. These diverse examples underscore NSF's significant contributions to our nation's prosperity, health and wellbeing. NSF-funded discoveries have expanded our understanding of the world in which we live, led to life-saving medical advances, enhanced our national security, improved our everyday lives and yielded insights into the creation of the universe.

Yet, a simple truth remains regarding fundamental scientific breakthroughs: Before these discoveries were made, these ideas, too, might have been considered novel or outside-of-the-box. These research projects may have seemed impractical or inappropriate based solely on their titles, an out-of-context excerpt from a journal article, or a misinterpretation of their intentions or findings. If one relied on this kind of incomplete or misleading information, crucial developments and technologies, from Google, to mobile communications, to U.S. spectrum auctions that have generated billions in U.S. revenue — all of which are rooted in NSF-supported research — might not exist today.

An NSF-supported research project was subjected to this kind of unfair treatment in media reports. NSF stands behind its process for responsibly investing taxpayer dollars by supporting fundamental research with the potential to benefit society. We welcome the chance to provide more information, and clarity, on this award.

Glaciers and Glaciology: How Nature, Field Research, and Societal Forces Shape the Earth Sciences
NSF Award 1253779
University of Oregon

This is a Faculty Early Career Development (CAREER) Program award. CAREER awards support junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education, and the integration of education and research within the context of the mission of their organizations. The award focused on the history of glaciology and glaciers – specifically the nature of how knowledge of glaciers is produced and shared in society, or how that knowledge has changed over time. This area of research has received comparatively little scientific analysis, but has potentially great societal value.

NSF did not issue its award to specifically support this paper, and the award proposal did not mention a paper on gender and glaciers as a potential outcome. The award involved five case studies: the formation of glaciology and theories of ice dynamics; the role of the International Ice Patrol (1913-present) in iceberg analysis and ocean-glacier interactions; the establishment of theories about catastrophic glacial lake megafloods; the Cold War context for ice coring and climatology; and hydrological aspects of glacier retreat. The paper represents one small piece of scientific research accounting for just a fraction of the award's value. This award supported research that resulted in two books, multiple peer reviewed journal articles and educational materials.

Hundreds of millions of people worldwide live near glaciers, depend on glacier runoff for their water, reside in zones subjected to ongoing glacier hazards, inhabit coastal areas that could be flooded by melting ice sheets, and vacation in glaciated landscapes that hold particular cultural value, such as national parks. In addition, the U.S. Intelligence Community recognizes that the effects of glacier retreat potentially threaten national security. New research about glaciers and glaciology – such as the work supported by this award – will contribute to policy developments impacting the economy, security and social well-being in the U.S. and around the globe.

This award focused on the interactions of several important factors: the natural benefits and dangers of glaciers, the scientific knowledge generated about those natural resources, and the ways societies shape policies involving them. Despite the enormous importance of glaciers, glaciology is one of the most overlooked areas of research – particularly with regards to what occurs at the intersection of nature, science and society. This award helps fill that gap, while promoting greater awareness and understanding about the role of glaciers and glaciology with regards to their relation to broader societal concerns.