

WHY SUPPORT THE NATIONAL SCIENCE FOUNDATION?

FOR STARTERS, SO WE CAN PREVENT HIGH-SPEED STREAMS OF SOLAR PLASMA FROM DISRUPTING OUR VITAL COMMUNICATIONS SYSTEMS.

The National Science Foundation (NSF) funds research that advances the frontiers of human knowledge, resulting in breakthroughs by leading organizations and researchers in areas ranging from computing to physics to economics. More specifically, through \$32.2 million in grants to Boston University, the NSF makes possible advances and discoveries like these:

■ FIGURING OUT OUR URBAN ENVIRONMENT—BEFORE IT'S TOO LATE.

Without funding from the NSF, it's possible Lucy Hutyra, a BU College of Arts & Sciences assistant professor of earth & environment, would never have been able to map historical land patterns and ecosystem changes across an urban-to-rural spectrum and to assess "the carbon consequences of increasing urban lands," among other things. Why is that such a big deal—big enough to earn Professor Hutyra the NSF CAREER Award? Because it helps develop life-altering policies for environmental protection and food and energy production as populations mushroom in urban areas.

■ BIOPHOTONIC RESEARCH AND THE QUEST FOR BETTER DIAGNOSTIC TOOLS.

The Center for Biophotonic Sensors & Systems, a National Science Foundation Industry/University Cooperative Research Center, brings together top minds in business and academia to create tools that diagnose disease, test the efficacy of drugs, and assess the safety of food and water. So what is photonics research, anyway? It's the study of light—and, yes, we're using it to change the way health care operates.

■ PREDICTING AND PREPARING FOR THE NEXT BIG SOLAR BLAST.

We're all used to checking the forecast to see what the weekend weather is going to be, but there's another kind of forecast that's even more important: a one-to-four-day advanced forecast for warning of high-speed streams of solar plasma and Earth-directed coronal mass ejections (CMEs). These streams from the sun may severely disrupt or damage space-based and ground communications systems, and pose hazards to satellite operations. But thanks to funding by the NSF's Science and Technology Centers program, the Boston University Center for Integrated Space Weather Modeling has transitioned the first large-scale, physics-based space weather prediction model from research into operation.

We hope you'll give strong consideration to supporting funding for the NSF. If you have any questions or would like to discuss further the role the NSF plays in our daily lives, please visit bu.edu/federal.



WITH FUNDING FROM NSF, **BOSTON UNIVERSITY** RESEARCHERS ARE DEVELOPING AN ADVANCED FORECAST OF HIGH-SPEED, POTENTIALLY DISRUPTIVE SOLAR STREAMS.