



UNIVERSITY OF ILLINOIS SYSTEM

NASA R&D EXPENDITURES, FY2020

URBANA-CHAMPAIGN: \$8.4 MILLION | UIC: \$1.28 MILLION

The NASA Science Mission Directorate is an essential part of meeting the growing challenges to fully understand global changes to the Earth and answer fundamental questions regarding the universe through space exploration.

NASA-Supported Projects at Urbana-Champaign

SPACE

In Dec. 2020, NASA [announced](#) the selection of just two projects to “to share a ride to space in 2025 with the agency’s Interstellar Mapping and Acceleration Probe (IMAP).” A UIUC researcher will [lead](#) one of the missions, a \$75M project, called Global Lyman-alpha Imagers of the Dynamic Exosphere, or GLIDE.

UIUC graduate students have [received](#) NASA **Space Technology Research Fellowships**, which provide financial and material support to graduate students through training grants and opportunities to conduct research at a NASA Center.

[Undergraduates benefit](#) from NASA’s **CAPSat project**, where we are responsible for one of three payloads on the “CubeSat” (a mini-satellite), which launched in fall 2018. Our payload will test techniques to reduce the deleterious effects of background space radiation on single-photon detector noise.

Some of the data collected as part of the Ionospheric Connection Explorer (ICON) mission, which launched in 2019, was the [result of work](#) done at UIUC’s Grainger College of Engineering.

AVIATION

NASA is [providing](#) \$6M over 3 years to UIUC to support the **Center for High-Efficiency Electrical Technologies for Aircraft (CHEETA)**, which seeks to develop, mature, and design disruptive technologies for electric aviation. Research themes include distributed electric propulsion, electrical components, energy storage, and systems integration.

The Urbana campus is a partner in a \$9.9M research center for **aviation innovation**, supported by NASA under its University Leadership Initiative. The goal of this research center is to mature a disruptive airfoil design concept, known as the **Slotted Natural Laminar Flow Airfoil**, aimed at producing low-drag wing configurations for commercial transport vehicles.

UIUC has been [helping](#) to break down technical barriers to **hybrid electric propulsion for commercial transport aircraft**. Multiple grants from NASA’s AATT and LEARN programs (roughly \$4M over four years) have supported work on high-power density electrical machines and drives and system level modeling and analyses.

REMOTE SENSING

UIUC researchers provide critical ongoing support for instruments on NASA’s Terra satellite, the flagship of the **Earth Observing System**, providing data critical for understanding weather, air pollution, food security, the hydrological cycle, radiation budgets, and the link between aerosol pollutants and health problems.

National Aeronautics and Space Administration (NASA)

FOR FY2022, THE U OF I SYSTEM REQUESTS **\$9 BILLION FOR THE NASA SCIENCE MISSION DIRECTORATE**, INCLUDING **\$900 MILLION FOR AERONAUTICS RESEARCH DIRECTORATE** AND **\$1.5 BILLION FOR SPACE TECHNOLOGY**

Science Mission Directorate
FY2022 PBR = TBD
FY2021 = \$7.301B
FY2020 = \$7.139B
FY2019 = \$6.905B
FY2018 = \$6.222B
FY2017 = \$5.765B
FY2016 = \$5.589B

Aeronautics
FY2022 PBR = \$TBD
FY2021 = \$828.7M
FY2020 = \$784M
FY2019 = \$725M
FY2018 = \$685M
FY2017 = \$660M
FY2016 = \$640M

Space Technology
FY2022 PBR = TBD
FY2021 = \$1.1B
FY2020 = \$1.1B
FY2019 = \$927M
FY2018 = \$76M
FY2017 = \$687M
FY2016 = \$687M

Appropriations Bill:
Commerce, Justice, Science,
and Related Agencies

Agency: National Aeronautics and Space Administration

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REMOTE SENSING, CONTINUED

These include the Multi-Angle Imaging SpectroRadiometer and the Moderate Resolution Imaging Spectroradiometer, and will include the Multi-Angle Imager for Aerosols instrument, with a nominal launch date of 2021. UIUC is a key site for the **ACCESS to Terra Data Fusion Products project**, which aims to harmonize use of the 1.2 petabytes of data from instruments on the Terra satellite through the use of a common format and grid, and development of needed software tools and cyberinfrastructure.

NASA [funds research](#) in the use of novel sensing technology and satellite data to improve **monitoring and predictability of the broader U.S. Midwest carbon budget and food productivity**. Awards totaling more than \$1.2M focus on the integration of multi-source satellite data with improved land surface modeling to improve monitoring of the carbon budget for the U.S. Corn Belt, and the use of chlorophyll fluorescence measurement to improve crop modeling from both ground and space.

NASA-Supported Projects at UIC

UIC has a \$1.1M, five-year [grant](#) from NASA's Astrobiology Institute to identify **biosignatures of life on Titan** — Saturn's largest moon — from either currently living or long-extinct life.

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