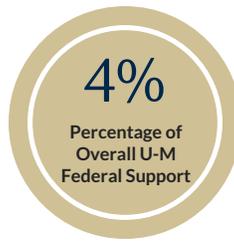


# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SUPPORTED RESEARCH AT THE

# UNIVERSITY OF MICHIGAN

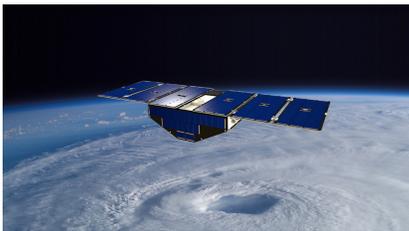


FY 2017 Research Expenditures: \$31,580,805

Year-to-year, NASA-supported projects involve about:

Faculty Researchers.....	156
Postdoctoral Fellows.....	50
Graduate Student Researchers.....	70

### Examples of U-M projects supported by NASA:



#### HURRICANE TRACKER

A \$151 million NASA mission led by U-M researchers has provided scientists with the ability to see inside hurricanes as never before.

The Cyclone Global Navigation Satellite System, or CYGNSS, is designed to improve forecasts of hurricane intensity and storm surge, the swells of water that do the most damage when hurricanes make landfall.

The constellation of eight hurricane-tracking microsattellites makes frequent measurements of ocean surface winds in the tropics, with a primary objective of monitoring the location, intensity, size and development of tropical cyclones.



#### MARS THRUSTER

An advanced space engine in the running to propel humans to Mars broke records for operating current, power and thrust for a device of its kind, known as a Hall thruster. U-M Dean and Professor Alec Gallimore led the development of the thruster.

Hall thrusters offer exceptionally efficient plasma-based spacecraft propulsion by accelerating small amounts of propellant very quickly using electric and magnetic fields. They can achieve top speeds with a tiny fraction of the fuel required in a chemical rocket.

A \$1 million upgrade of the test facility in Gallimore's lab is funded, in part, by NASA and the Air Force Office of Scientific Research.



#### BRAINS IN SPACE

MRIs taken before and after space missions reveal that astronauts' brains compress and expand during spaceflight.

The findings could have applications for treating other health conditions that affect brain function, says U-M Professor Rachael Seidler.

The NASA-funded study, believed to be the first to examine structural changes that take place in astronauts' brains during spaceflight, found the volume of gray matter increased or decreased, and the extent of the alteration depended on the length of time spent in space.