

SMALL INNOVATIVE MISSIONS FOR PLANETARY EXPLORATION

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Abstract

When we think of space satellites that assist with communications, weather monitoring and GPS here on Earth, we likely picture them as being quite large—many are as big as a school bus and weigh several tons. Yet there's a class of smaller satellites that's growing in popularity. These miniaturized satellites, known as nanosatellites or CubeSats, can fit in the palm of your hand and are providing new opportunities for space science.

CubeSats are small satellites built from a set of standardized subunits that each measure 10x10x10 cm and weight 1.33 kg (designated '1U'). Common configurations include 1U, 2U, 3U, and 6U (2Ux3U) satellites, deployers for all of which are commercially available. Due to their standardized form and low-cost disposable nature, these satellites are suitable platforms on which to train students and early career researchers. Indeed, while CubeSats have historically been used as teaching tools and technology demonstrations, today's CubeSats have the potential to conduct important space science investigations as well.

The NASA Planetary Science Division (PSD) Small Innovative Missions for Planetary Exploration (SIMPLEX) supports the formulation and development of science investigations that require a spaceflight

mission that can be accomplished using small spacecraft.

This program encourages the submission of CubeSat investigations that operate in interplanetary space and would, therefore, meet more demanding engineering and environmental requirements than has been experienced by previous CubeSats. While it is expected that proposed investigations would involve some advanced engineering development of instruments and/or spacecraft systems technology, all proposals must include a science investigation that will return and publicly archive usable scientific data and result in the publication of results in refereed scientific journals.

This presentation will discuss the NASA Planetary Science Divisions SIMPLEx initiative and provide a status update on the first cadre of selected investigations.