NASA scientific balloons take to the sky in New Mexico

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A scientific balloon for the fall campaign is inflated before it will be released for flight. Credit: NASA's Wallops Flight Facility

NASA's Scientific Balloon Program will take flight with eight planned launches from the agency's balloon launch facility in Fort Sumner, New Mexico, flying scientific experiments to a near-space environment via a football-stadium-sized NASA balloon.

The 2023 fall balloon campaign window opens August 10 and features 24 payloads led by teams of scientists, engineers, and students.

"Our annual Fort Sumner campaign is always our most ambitious and packed with cutting-edge science developed from teams here in the United States and around the world," said Debbie Fairbrother, Scientific Balloon Program chief at NASA's Wallops Flight Facility in Virginia.

One mission on deck is the Exoplanet Climate Infrared Telescope (EXCITE). The mission features a suborbital astronomical telescope developed to study Jupiter-type exoplanets orbiting other stars. After this fall's engineering test flight, a flight on a long-duration super pressure balloon is planned.

The EXCITE mission team is composed of members from NASA's Goddard Space Flight Center, Arizona State University, Brown University, Cornell University, University of Oxford, University of Rome, StarSpec Technologies, Inc., University of Toronto, and University College London.

Some additional missions set to fly during the fall campaign include:

- Gamma-Ray Polarimeter Experiment (GRAPE): Instrument will measure the Crab nebula to demonstrate imaging and polarization of gamma-ray bursts.
- Jet Propulsion Laboratory (JPL) REMOTE: Instruments will address science issues in NASA's Atmospheric Composition focus area, including providing validations data for NASA satellites.
- Faint Intergalactic-medium Redshifted Emission Balloon (FIREBall-2): The mission features an ultraviolet multi-object spectrograph designed to detect faint emission from the circumgalactic medium of nearby galaxies.

- High-Altitude Student Platform (HASP): This platform assists in training the next generation of aerospace scientists and engineers. On board experiments include an Ozone detection system and an electron spectrometer telescope. A flight test of experimental hardware for larger future experiments will be conducted.
- Testbed for High-Acuity Imaging and Stable Photometry and Image-Motion Compensation (THAI-SPICE): The goal of this project is to build and demonstrate a fine-pointing system for stratospheric payloads with balloon-borne telescopes.
- Thermalized Neutron Measurement Experiment (TinMan): This mission features a 60-pound payload designed to address concerns about thermal neutron effects on avionics.

Sixteen smaller payloads, called piggyback missions, will ride along during the launches as a valuable and efficient means of supporting additional science and technology development. One of these missions, ComPair, is a Goddard instrument that will test new technologies for studying gamma rays.

Scientific balloons are a quick and cost-effective way to test, track, and recover scientific experiments for NASA and universities from all over the world. Zero Pressure Balloons, used in the upcoming fall campaign, feature open ducts that allow gas to escape and prevent an increase in pressure from inside the balloon. Gas expansion occurs as it heats during the balloon's rise above Earth's surface. These balloons typically have a shorter flight duration due to the loss of gas from the cycle of day to night.

To follow the missions in the 2023 Fort Sumner fall campaign, visit NASA's Columbia Scientific Balloon Facility website for real-time updates of a balloon's altitude and GPS location during flight.

Provided by NASA