



Maya-2 takes flight

Maya-2, the second cube satellite (cubesat) designed and developed by Filipino scholars has arrived at the International Space Station (ISS) following a successful launch earlier this week.

IMAGES COURTESY OF PHL-Microsat



The ISS received Cygnus NG-15 (S.S. Katherine Johnson)—the rocket carrying Maya-2—on Feb. 22, 5:38 p.m. Philippine Time (PHT). Cygnus NG-15 was launched on Feb. 21 from the National Aeronautics and Space Administration (NASA)'s Wallops Island flight facility in Virginia, USA.

From there, the 1.3-kg cube-shaped Maya-2 will be released into orbit and will travel around the earth daily, primarily taking pictures/images of the earth but also relay information such as weather station telemetry and emergency announcements in the area it may happen to be passing over.

Maya-2 was designed and developed by Mark Angelo Purio, Izrael Zenar Bautista and Marloun Sejera, Filipino scholars who were sent to Kyushu Institute of Technology (Kyutech) through the Space Science and Technology Proliferation through University Partnerships Project (STeP-UP) of the Space Technology and Applications Mastery, Innovation and Advancement (STAMINA4Space) Program.

Maya-2 is an improvement on and succeeds the first cubesat Maya-1, began in 2016 and decommissioned in November 2020.

Aboard the cubesat is a camera for image and video capture, an Automatic Packet Reporting System Message Digipeater, attitude determination and control units for active attitude stabilization and control demonstrations, Perovskite solar cells and Latchup-detection chip.

“As of now, the team is finalizing the mission operation for the first 24 hours, first week and first month. We are also preparing to coordinate with ground stations of the BIRDS network to ask for their help and cooperation in operating the satellites once deployed in orbit,” Bautista said.

STAMINA4Space is funded by the Department of Science and Technology (DOST), monitored by DOST-Philippine Council for Innovation, Energy, and Emerging Technology Research and Development (DOST-PCIEERD), and implemented by DOST-Advanced Science and Technology Institute (DOST-ASTI) and UP Diliman (UPD).

Maya-2 was launched with two other identical cubesats from Japan (named Tsuru) and Paraguay (named GuaraniSat-1). All three were developed under Kyutech's 4th Joint Global Multi-Nation Birds Satellite (BIRDS-4) Project.



Maya-2 designers

According to NASA, BIRDS-4 is the “continuation of an international small satellite development project under a strategic partnership agreement between Kyutech and the Japan Aerospace and Exploration Agency.”

“The mission of the BIRDS-4 satellites is to test commercial off-the-shelf components, as well as new technologies such as Perovskite solar cell and antenna using the satellite structure to prove their worthiness in space,” the agency added.

According to the BIRDS project's digital textbook, the program—funded by the Japanese government—began in 2015 as a “way for non- space-faring nations to begin significant activities in space.” Projects such as Maya-1 and -2 are significant steps in having “a long-term and sustainable space program established in each BIRDS nation.”

Even as Maya-2 is being primed for release into orbit, Mayas 3 to 6 are already in their design and development phases in the STAMINA4Space laboratories at the UPD College of Engineering Electrical and Electronics Engineering Institute (EEEI).

“Maya-2 is the manifestation of our country's commitment to build and sustain our own Space Science and Technology and Applications (SSTA) ecosystem. This is but another step in our long journey as a space-faring nation,” said STeP-UP head and EEEI professor Paul Jason Co.

STAMINA4Space Program Leader Prof. Maricor Soriano of the UPD College of Science National Institute of Physics stressed the importance of sustaining projects like Maya-2.

“More than the product, sustaining local cubesat research and development potentially leads to (1) a systems engineering mindset among our researchers, (2) local partners that can co-develop our space industry, and (3) enhanced Science Technology and Engineering curricula in K-12 and higher education,” she said.