

29th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Access to Space for Small Satellite Missions (5)

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COMPREHENSIVE CAPACITY BUILDING INITIATIVES AND INTERNATIONAL CONTRIBUTION
THROUGH THE CUBESAT DEPLOYMENT FROM ISS, KIBO

Abstract

Japanese Experiment Module called “Kibo” has unique capabilities such as Airlock and Kibo Robotic Arm, which enable to conduct various space experiments on the Kibo Exposed Facility (EF). One of the unique systems is “J-SSOD”(JEM Small Satellite On-orbit Deployer) to deploy 1U to 6U(1U: 10cm10cm10cm) CubeSats and 50kg size small satellite. JAXA have been offering the CubeSat deployment opportunities to space emerging nations through KiboCUBE program with UNOOSA since 2012 to provide the access to the space and to share the values of ISS/Kibo.

Since 2021, JAXA launched new comprehensive capacity buildings, called KiboCUBE Academy, to provide the series of educational opportunities so that the satellite deployment is to be more than the snapshot event. In addition, new J-CUBE program was also launched to provide the fee-based but up to 3U satellites deployment opportunities. In order to implement this program more effectively, JAXA signed an agreement with University Space Engineering Consortium (UNISEC-Japan) which has many experiences and technologies for CubeSat development, operations and utilizations.

For the KiboCUBE Academy with UNOOSA supported by UNISEC-Japan, this program is designed for willing students and covers all aspects such as CubeSat development, testing, operations, utilizations and project managements. 15 video lectures have been released on the UNOOSA website and 6 video lectures will be posted on the website in middle of 2022. 3 online educational events were hold and several technical consultations were remotely conducted.

For the J-CUBE, JAXA allocates 6 satellite deployment opportunities at maximum a year. Since up to 3U satellites will be able to be deployed in J-CUBE, more challenging satellite deployment opportunities will be provided for the space emerging countries. In addition, since the Japan’s “Basic Plan for Space Policy” states the importance of strengthening the human resources base in the space field plan for policy, the J-CUBE provides the satellites deployment opportunities so that Japanese domestic universities can challenge more advanced technology and mission with the collaboration of multiple universities.

The KiboCUBE, KiboCUBE academy and J-CUBE are to aim at expanding the scope of the number of potential satellite users as well as stepping up the technology of their satellites. The J-SSOD is the infinites tool diversifying Kibo Exposed Facility utilization to achieve the SDGs goal 4, 8 and 9 by integrating all aspects not only the satellite deployment itself but also combining the educational aspects for the space emerging countries and the Japanese domestic universities.