

UNISEC-Japan Regional Report 2021

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Board member of UNISEC-Japan

Outline

- Overview of UNISEC-Japan
- Activities of 2020

Overview of UNISEC-Japan

- UNISEC: “University Space Engineering Consortium”
 - UNISON: UNISEC Student Organization
 - UNISAS: UNISEC Alumni Organization
- Established in 2002
- NPO/NGO to facilitate/promote university level students’ practical space development activities, such as designing, manufacturing and launching small satellites and hybrid rockets.
- 49 laboratories/groups from 36 universities
- 636 student members, 262 individual supporters, and 19 corporate supporters
- 3 pillars: Human resource development,
Technological development, Outreach



New Board Members

New generation!



Toshinori Kuwahara
President



Ryu Funase
Vice-President



Yutaka Wada
Vice-President

They are all former UNISEC students

Activities in FY 2020

- July: Takumi Conference
- May-June, Sept.-Dec. : Lessons Learned Sharing Meeting
 - JAXA Nano-satellite Mission Assurance Handbook
- August 1: General Assembly
- Nov.21-23: Noshiro space event (CanSat, Rocket)*
- Dec.5-6: Space Job Fair
- Dec.12-13: ACTS CanSat Campaign*
- Dec.19-20: Annual Workshop
- Jan.-Feb.:KiboCUBE Academy
- Feb.~: UNISEC Academy

*Done non-remotely

Student activities



Noshiro space event (CanSat, Rocket)



ACTS CanSat Experiment Campaign

These were done physically!

Activities under Covid-19

But, almost everything was done remotely

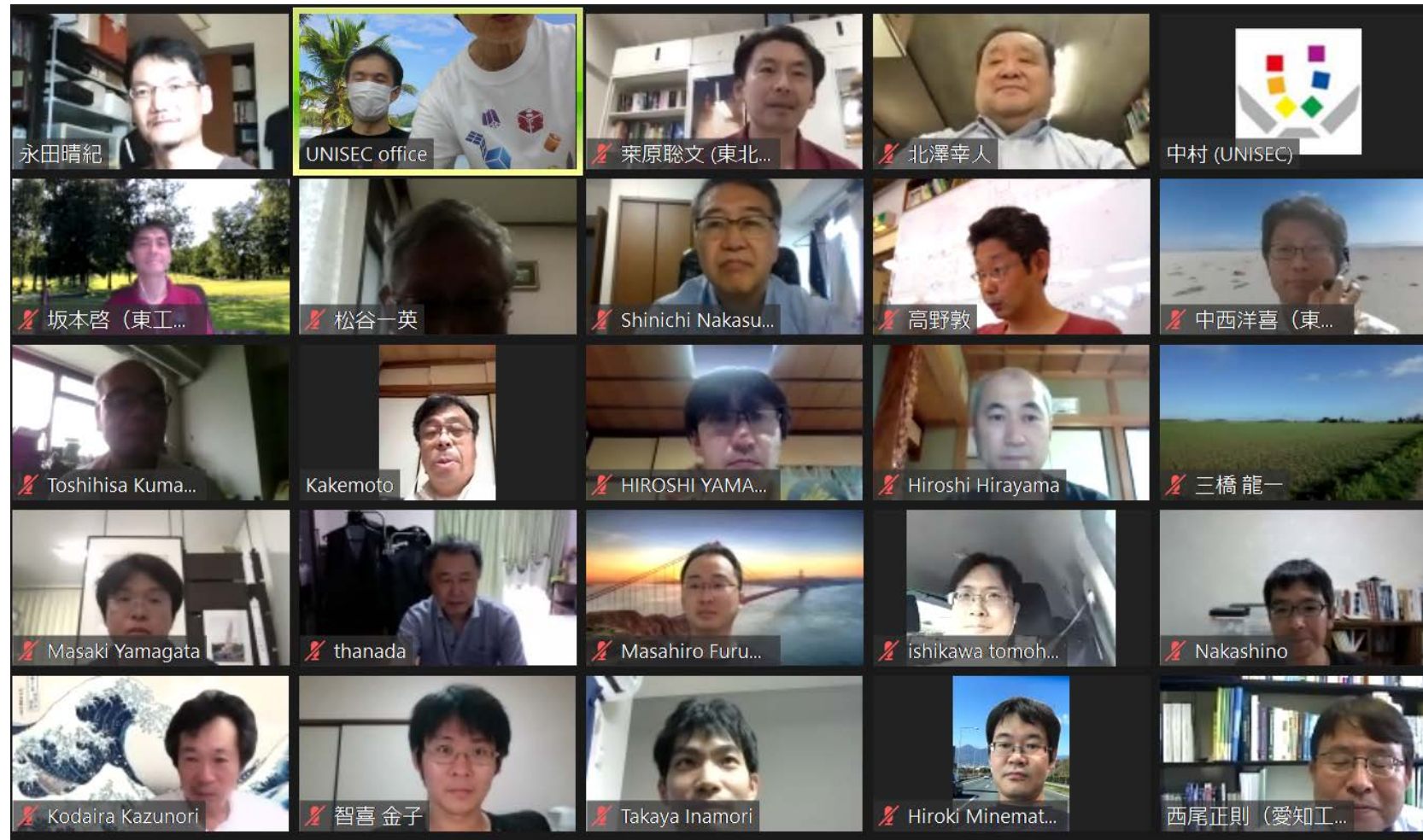
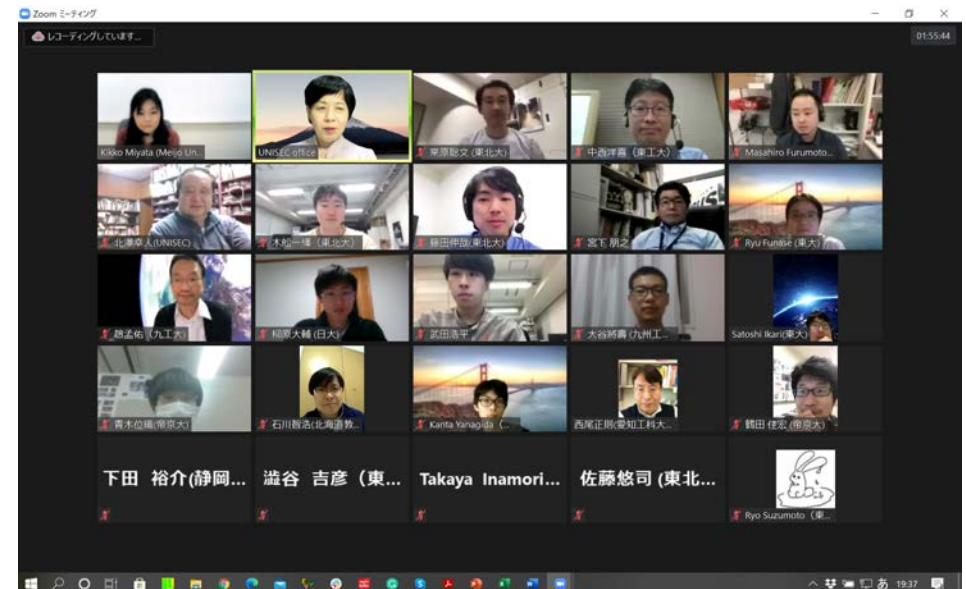


Photo of general assembly

Lessons Learned Sharing Meeting

- Sharing lessons learned from Nanosatellite development and operation
- 23 presentations by faculty members
- Honest and sincere disclosure of the information and discussion in depth
- 50~100 participants via Zoom



JAXA Nano-satellite Mission Assurance Handbook

- JAXA asked UNISEC to do study on
 - Investigation of success/failure cases of domestic nanosatellites (a.k.a. lean satellites)
 - Analysis on success / failure factors
 - List-up requirements for mission assurance of nanosatellites
- Eventually this will lead to JAXA Nanosatellite Mission Assurance Handbook

Space Job Fair

- A forum to connect students who want to work in the space sector and companies who want to recruit them
- First Job Fair was held in 2019 (in-person)
- Second job Fair was done remotely
 - Quite successful
 - 26 companies, 240 participants
 - Thanks to the remote gathering, many students from non-Tokyo area could join
- World Space Job Fair?

Companies who participated in Space Job Fair



UNISEC Academy

- Online lectures on nanosatellite development, operation and utilization
- Taught by UNISEC faculty members
 - Orbital mechanics
 - Satellite operation
 - Satellite structure
 - Propulsion
 - Electronics
 - Frequency coordination
 - Attitude control
 - Others
- Target
 - Employees of New Space companies
 - Students studying at non-space department
- So far, all the lectures are done in Japanese
- New revenue source for UNISEC



Lecture by Prof. Y. Sakamoto



Lecture by Prof. K. Sakamoto



Lecture by Prof. Sahara

KiboCube Academy

The United Nations/Japan Cooperation Programme on CubeSat Deployment from the International Space Station (ISS) Japanese Experiment Module (Kibo) "KiboCUBE"

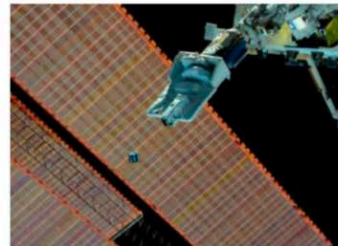
6th round is OPEN!!! Go to Application page for details

Check out our new brochure: "KiboCUBE: Expanding Possibilities for Space Emerging Countries"

Read stories from the winning teams from Kenya and Guatemala: Testimonies

The United Nations Office for Outer Space Affairs (UNOOSA) and the Japan Aerospace Exploration Agency (JAXA) are pleased to announce the United Nations/Japan Cooperation Programme on CubeSat Deployment from the International Space Station (ISS) Japanese Experiment Module (Kibo) "KiboCUBE".

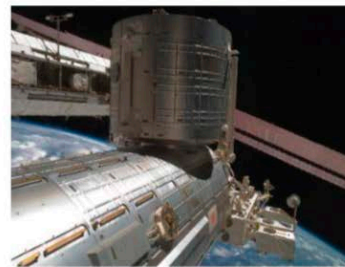
KiboCUBE is the dedicated collaboration between UNOOSA and JAXA in utilizing the ISS Kibo for the world. KiboCUBE aims to provide educational or research institutions from developing countries of United Nations membership with opportunities to deploy, from the ISS Kibo, cube satellites (CubeSats) which they develop and manufacture.



Deployment of a CubeSat from the ISS. Photo: NASA/JAXA

Currently, the only module to deploy CubeSats from the ISS is from Kibo. Kibo's unique capability is comprised of an airlock system and a robotic arm. The first orbital deployment of CubeSats from Kibo was successfully conducted in October 2012 through the Small Satellite Orbital Deployer developed by JAXA. Since then, nano-satellites and CubeSats from various countries around the world have been deployed from Kibo.

The deployment of CubeSats from ISS is easier than the direct deployment by a launch vehicle thanks to the lower vibration environment during launch. With this comparatively less demanding interface requirements, UNOOSA and JAXA believe that KiboCUBE will lower the threshold of space activities and will contribute to build national capacity in spacecraft engineering, design and construction.



Kibo Module on the ISS. Photo: NASA/JAXA

Our Work

Secretariat of COPUOS

Programme on Space

Applications

PSA News

Schedule of Activities

Fellowships

Basic Space Science Initiative (BSSI)

Basic Space Technology Initiative

(BSTI)

Human Space Technology Initiative

(HSTI)

Events

Ground-based Experiments

ZOE

DeepTID

HyperTID

Orbital Opportunities

KiboCUBE

Orbital Mission

China Space Station

Partnerships

Subsides with Vega-C

Areas of work

Regional Centres for Space Science

and Technology Education

Publications

Reports

UN-SPIDER

International Committee on GNSS

UN-Space

UNISPACE+50

Space Law

Benefits of Space

Space4Health

Access to Space for All

Space4Youth

World Space Forum

Worldwide Space Agencies

Capacity Building Activities

- Working with JAXA and UNOOSA to promote KiboCube
- 6 online lectures by UNISEC faculties
- To be continues for FY 2021 (probably)

Conclusion

- In 2020, many of UNISEC-Japan activities were forced to do remotely
- There are new things born from the new situation, e.g. Lessons Learned Sharing
- Generational change is in progress in the UNISEC-Japan board members
 - Many of former UNISEC students are now leading UNISEC

Announcement

- UNISEC-Japan signed MOU with JAXA on April 1, 2021
- Partnership on utilization of CubeSat release from ISS/Kibo for academic research and capacity building
- UNISEC and JAXA jointly work on
 - KiboCube Academy
 - J-CUBE
 - Inexpensive price for CubeSat release
 - International collaboration for capacity building
 - Domestic advanced mission
 - Up to 12U per year
 - Each satellite is 1U~3U
- Details will be announced later this year