“CubeSat collaboration between Africa and Japan”

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Successful deployment of 1KUNS-PF (Kenyan Satellite, selected as 1st round of KiboCUBE) 2018
Africa-Japan CubeSat Cooperation

TUNSAT-1
- KiboCUBE 6th round
- ESPITA (Private Higher School of Engineering and Applied Technology) leads development
- Deployment planned in 2023

GhanaSat-1
- 1st satellite of the country
- Built by university (ANU) through BIRDS
- Deployed in 2017

Nigeria EduSat-1
- 1st university built satellite
- Built by FUTA through BIRDS project
- Deployed in 2017

PearlAfrica Sat-1
- 1st satellite of the country
- Through BIRDS project
- Deployed in 2022

ZIMSAT-1
- 1st satellite of the country
- Through BIRDS project
- Deployed in 2022

NARSSCube-1
- Built by gov't related authority (NARSS) through Kyutech collaboration
- Deployed in 2019

1KUNS-PF
- KiboCUBE 1st round
- University of Nairobi led development
- Deployed in 2018

RwaSat-1
- 1st satellite of the country
- Built by gov't related authority (RURA) with support from UOT
- Deployed in 2019

MIR-SAT-1
- KiboCUBE 3rd round
- Mauritius Research and Innovation Council led development
- Deployed in 2021

ZIMSAT-1
- 1st satellite of the country
- Through BIRDS project
- Deployed in 2022

出典: 外務省HP(JAXA加工)
KiboCUBE: Joint Program of JAXA and UNOOSA

What is KiboCUBE?

- Collaboration program between UNOOSA and JAXA
- To provide educational and research institutions from developing countries with the opportunity to develop a CubeSat and have it deployed from "Kibo"

Selected Winners in Africa

KENYA, 2016
Team from the University of Nairobi

Deployed in 2018

MAURITIUS, 2018
Team from the Mauritius Research and Innovation Council (MRIC)

Deployed in 2021

Tunisia, 2022
Team from the Private Higher School of Engineering and Applied Technology (ESPITA)

Under development

Launch

Deployment from "Kibo"

CubeSat handover to JAXA

Final setting @ISS
Kyutech : BIRDS Project (BIRDS-1 ～ BIRDS-5)

BIRDS Project

The Joint Global Multi-Nation Birds Satellite project. acronym as “BIRDS project.” is a cross-border interdisciplinary satellite project. for non-space faring countries supported by Japan (Kyushu Institute of Technology; Kyutech)

Participating countries in Africa

- Ghana
- Nigeria
- Egypt
- Uganda
- Zimbabwe

BIRDS-1
(deployed in 2017)

BIRDS-5
(deployed in 2022)

PearlAfricaSat-1 (Uganda)
ZIMSAT-1 (Zimbabwe)
University of Tokyo: Collaboration with Multi Sector

Satellite collaboration: Rwanda Govt. and Univ. of Tokyo

Remote operation of RWASAT-1 in Rwanda

Joint Research of Univ. of Tokyo, Fukui Pref., Univ. and private companies

CubeSat development with Rwandan researchers

Case of Rwanda

Launch to “Kibo”

H-IIB for launch of satellites

Handover to JAXA

Completion of the CubeSat Replica

Joint Press Conference of Launch

Deployment of RWASAT-1

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Main theme: “Toward establishing Sustainable Space Activities”

Objective: To deepen the understanding of space players in Africa and Japan, at what stage we are now, to what specific issues we are facing, and what effective efforts we can make, to further promote space activities in African continent

Contents:
1. Program introduction (KiboCube, Kibo Academy, BIRDS Project etc.)
2. Message of Astronauts on J-SSOD deployment
4. Lessons - Learned (Summary of achievement & Future actions required)
5. Discussion for future satellite development and utilization in Africa

Opportunity & Challenge
9 African Countries – Cooperation through CubeSat Deployment
(KiboCUBE) Kenya, Mauritius, Tunisia
(Kyutech(BIRDS)) Ghana, Egypt, Nigeria, Uganda, Zimbabwe
(Univ. of Tokyo) Rwanda
Workshop on Africa-Japan CubeSat Cooperation and KiboCUBE Academy in Tunis

Workshop on Africa-Japan CubeSat Cooperation  
(26 August, 2022  Participants : 120)

Reported from 4 nations deployed satellites from Japanese Experiment Module “Kibo”  
(Kenya, Mauritius, Nigeria, Egypt) and 3 nations expected to be deployed satellites  
(Uganda*, Zimbabwe*(deployed Dec.), Tunisia)
Findings of the Workshop

1. African CubeSat partners still have intention to keep developing their own CubeSats.
2. Africa-Japan CubeSat Workshop enabled to strengthen ties among African CubeSat partners.
3. It is significant to promote satellite data utilization to contribute to solutions on the ground.
4. It will be beneficial for both African countries and Japan to discuss next satellite collaboration in the future.
**Small Satellite Services: Features of JAXA CubeSat Collaboration**

**Kibo CUBE**
- Program in collaboration with UNOOSA
- To provide 1U size CubeSat deployment opportunities for Access to Space for All

**J-CUBE (Fee-Based)**
- To provide more challenging satellite deployment opportunities for various countries in collaboration with Japanese universities

**Kibo CUBE Academy**
- To provide opportunities for educational aspects through satellite lifecycle
- Sustained international contribution by construction of relation in various countries and university in Japan

Online education program (2021～)
*Offer of the theoretical knowledge to develop, operate and utilize a CubeSat
*Partner: UNOOSA, *Cooperation: UNISEC Global

*1U
*Partner: UNOOSA
• Free launch / deployment
*Target: Public entities of developing countries

*2016～

*1-3U
*Partner: UNISEC ※
• Fee-based launch / deployment
*2021～
*Two categories including International Collaboration

※UNISEC: University Space Engineering Consortium
Thank you for your attention