

Members of BIRDS -1, -2, and -3 on 4 October 2017, at Tobata Campus

**Archive website:** <http://birds1.birds-project.com/newsletter.html>

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**Acknowledgment of support:** This newsletter is supported, in part, by  
*JSPS Core-to-Core Program,*  
*B. Asia-Africa Science Platforms.*

ISSN 2433-8818

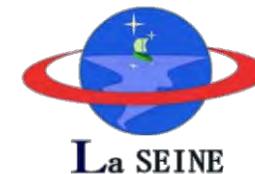
# BIRDS Project Newsletter

**Issue No. 30**  
(21 July 2018)

*Edited by:*

G. Maeda

Laboratory of Spacecraft Environment  
Interaction Engineering (LaSEINE),  
Kyushu Institute of Technology (Kyutech)  
Kitakyushu, Japan



**All back issues of this newsletter can be easily downloaded.**

Go to here: <http://birds1.birds-project.com/newsletter.html> and scroll down to the desired issue.

### Table of Sections

1. Kyutech and UNISEC-Global attended COPUOS/UNISPACE+50 at the UN in Vienna
2. A letter from Dr Pauline Faure to the BIRDS Family; and “Back Stage”
3. BIRDS students followed the World Cup with intense interest
4. An update on space programs in Latin America
5. Get ready for “Tobata Gion Festival 2018”
6. University Laboratory for Small Satellites and Space Engineering Systems (ULyS<sup>3</sup>ES)
7. Japan’s Hayabusa-2 space probe arrives at its asteroid destination
8. UN Register of Objects Launched into Outer Space
9. Mongolia’s registration of its BIRDS-1 satellite (launched in 2017)
10. Launch of BIRDS-2 was viewed at Kyutech
11. BIRDS-2 launch: media reports from the Philippines
12. BIRDS-2 launch: media reports from Malaysia
13. BIRDS-2 launch: media reports from Bhutan
14. BIRDS-2 launch described by “spacetech – asia”
15. New Kyutech promotional video
16. A propulsion system for possible use in CubeSat constellations
17. BIRDS-2 launch excitement at the Philippines

**CONTINUED ON THE NEXT PAGE**

**From Nepal**

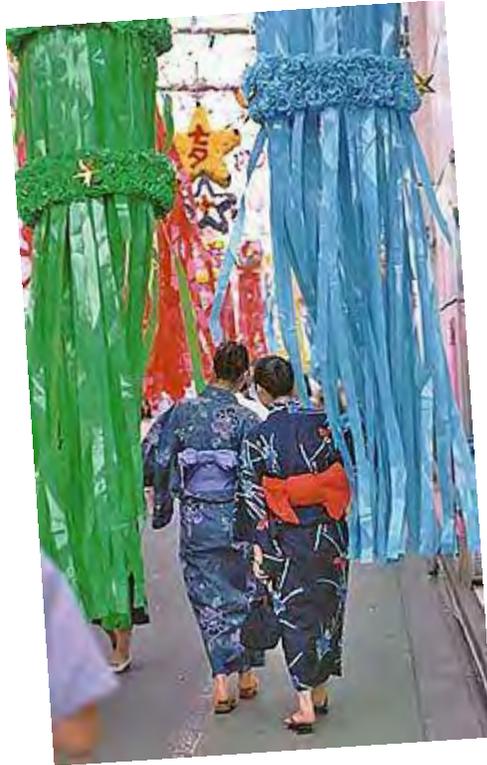
**The Guest Box**



Nepalese dumplings, locally called as *MoMo*, is perhaps the most popular fast food in the Himalayan nation. It represents a culmination of influences from both China and India but with a local twist; the use of buffalo meat, primarily due to Newari influence in Kathmandu Valley. The sauce is as important as the main meal.

-- Sarita Shrestha Maskey , Nepal

**Tanabata** (Japanese: たなばた or 七夕, meaning "Evening of the seventh"), also known as the **Star Festival**. Generally it is celebrated in Japan on the 7th of July.



**Tanabata** explained at Wikipedia  
<https://en.wikipedia.org/wiki/Tanabata>

## Table of Sections (continued from the previous page)

18. Olayinka's World – Column #1
19. BIRDS-3: Activities of June-July 2018
20. BIRDS-3: Preparing for the Critical Design Review (CDR)
21. BIRDS-3: Thermal Vacuum Testing
22. BIRDS-3: Anechoic Chamber Test
23. BIRDS-3: Ground component of data collection system
24. BIRDS-3: Additional thermal cycling
25. Some of the new SEIC students arriving in the fall
26. The Airbus GEDC Diversity Award
27. Guest article by Gladys Yaa Saah Oppong (Ghana)
28. BBQ, BIRDS-2 & BIRDS-3
29. 1KUNS-PF, Kenya's first satellite
30. BIRDS described in Japanese aviation magazine (March 2018)
31. Symposium about the int'l aspects of space development – at the Univ. of Tokyo, 29 June
32. The 2018 UNISEC T-shirt design (probable design)
33. Mast goes up for the ground station at FUTA, Nigeria
34. "Space Enable Research Group" is launched by Dr Wood at MIT Media Lab
35. Special travel section on Japan

**THE END**

# 01. Kyutech and UNISEC-Global attended COPUOS/UNISPACE+50 at the UN in Vienna



Yeshey (BIRDS-2), Prof Cho, Benjamin (BIRDS-1)



On the opening day (18 June 2018) of UNISPACE+50, a special **"KiboCUBE" session** took place at the UN complex in Vienna. On the panel were Prof Mengu Cho of Kyutech and Ms. Rei Kawashima of UNISEC-Global, as shown in the photo on the left (other panelists are not in this photo). Also, in the audience, were two BIRDS students, Yeshey (Bhutan) and Benjamin (Ghana). Afterwards, UNOOSA issued a **Press Release** – see the next page.

After the special  
*KiboCUBE session*,  
UNOOSA released  
this press release →



## Team from the Mauritius Research Council selected for third round of KiboCUBE

Press Release From:  
United Nations Office for Outer Space Affairs  
Posted: Monday, June 18, 2018

The United Nations Office for Outer Space Affairs (UNOOSA) and the Japan Aerospace Exploration Agency (JAXA) have selected a team from the Mauritius Research Council for the third round of the UNOOSA-JAXA KiboCUBE programme. The Mauritius Research Council is the third successful candidate to participate in this capacity-building initiative. The KiboCUBE programme was launched in 2015 by UNOOSA and JAXA to offer educational and research institutions from developing countries the opportunity to develop cube satellites (CubeSats) for deployment from the International Space Station (ISS).

Through KiboCUBE, the Mauritius Research Council will be able to deploy the first Mauritian satellite "MIR-SAT1". The satellite will include a longwave infrared thermal camera that will allow it to collect thermal infrared images of Mauritius and its surrounding areas. The team also aims to test the onboard communication capabilities of the CubeSat by studying the satellite's capacity to transfer information via satellite radio wave frequency.

**The announcement of the selection of the Mauritius Research Council for the third round of KiboCUBE took place during a side event at UNISPACE+50.** During the same event, UNOOSA and JAXA, on the basis of their successful collaboration to date, also signed an amendment to their Memorandum of Understanding to extend the duration of the KiboCUBE project for three more years, and to allow the selection of a second entity in a single round. Due to the large number of high quality applications for the third round of KiboCUBE, UNOOSA and JAXA have agreed to find an additional opportunity for a second entity from the third round applicants. The selection will be announced in northern hemisphere fall timeframe in 2018. [\[cont'd next page\]](#)

"The UNOOSA-JAXA KiboCUBE partnership is a great example of a triangular capacity-building initiative, where UNOOSA partners with a space-faring nation to assist non-space-faring nations in the development of their space technology, research and exploration. The third round of the KiboCUBE programme is yet another exciting step towards increasing the space capabilities of countries and ensuring we close the "space divide" between those that have access to space and its benefits, and those that do not. My congratulations to the Mauritius Research Council for their selection for the next round of KiboCUBE. I look forward to seeing the development and deployment of the first Mauritian satellite," said UNOOSA Director Simonetta Di Pippo

"It is exciting news that JAXA and UNOOSA have reached an agreement to further the partnership in the KiboCUBE programme, which assists the sustainable development of space technologies in non-space-faring countries. I am delighted about the announcement that the first ever small satellite from Mauritius was picked in the third selection round of the KiboCUBE project. **Currently, Kibo is the only module on the International Space Station equipped with a small satellite deployment function.** I am pleased about JAXA's contribution to the development of space technologies in various nations around the world utilizing the unique capacity of Kibo," said JAXA ISS Program Manager Koichi Wakata.

"The Republic of Mauritius is deeply honoured that the first Mauritian Infrared Satellite initiative by the Mauritius Research Council, operating under the aegis of the Ministry of Technology, Communication and Innovation, has been selected for the 3rd round of the UNOOSA/JAXA KiboCUBE Programme. Mauritius intends to use its first CubeSat platform to acquire knowledge on satellite technology and how to efficiently collect and process land and ocean data coming from space. This big data analysis will lead to better monitoring, decision-making and management of both land based and maritime activities, and advancements in capacity-building, research and development and innovation, which will ultimately benefit the people of Mauritius. We believe that this space project could serve as a model for other Small Island Developing States," said Minister of Technology, Communication and Innovation of Mauritius Yogida Sawmynaden.

The first round of the KiboCUBE initiative enabled a team from the University of Nairobi in Kenya to develop a cube satellite that was successfully launched from the ISS on 11 May 2018. This was Kenya's first satellite, and the first space hardware deployed under the auspices of the United Nations. A team from the Universidad del Valle de Guatemala was selected for the second round of the initiative. Their satellite is expected to be deployed in 2018, subject to the ISS operational requirements and progress of the CubeSat development.

\*\*\*

Further information about the United Nations/Japan Cooperation Programme on CubeSat Deployment from the International Space Station (ISS) Japanese Experiment Module (Kibo), "KiboCUBE", is available at:  
<http://www.unoosa.org/osa/en/ourwork/psa/hsti/kibocube.html>

\* \* \* \* \*

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**END OF UNOOSA PRESS RELEASE**

# UNISPACE+50 Symposium

## 18 - 19 June 2018

### M Building, Vienna International Centre, Vienna, Austria

#### Background

UNISPACE+50 is a milestone opportunity to consider the broad societal benefits of space as an area of innovation, inspiration, interconnectedness, integration and investment. The event will bring together the international community to discuss how to enhance the use of space as a driver for sustainable development.



The United Nations Office for Outer Space Affairs is organizing on 18 - 19 June 2018 a dedicated UNISPACE+50 Symposium for the wider space community to exchange views on the future of international space cooperation and the peaceful uses of outer space. This symposium will feature exciting talks from a wide range of experts from around the world, who will address the past, present and future role of space science and technology in fostering global development and cooperation. Over the two days participants will hear from a series of high-level panel discussions, including a panel with Heads of Space Agencies from a wide range of United Nations Member States.

Web link: <http://www.unoosa.org/oosa/en/ourwork/unispaceplus50/symposium.html>

## Letter within the newsletter... (1/3)

by Pauline Faure

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*Dear BIRDS family,*

*I received an offer from California Polytechnic State University, a.k.a. CalPoly, to become assistant professor in the aerospace engineering department and I decided to accept. Hence, I will leave Kyutech at the end of August.*

*For me this represents an opportunity to develop further my skills, broaden my knowledge, and overall improve as a professional.*



## Letter within the newsletter... (2/3)

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*However, this does not mean the end of the BIRDS journey for me (and I hope you agree!). This new chapter can serve broadening the BIRDS capabilities through new partnerships and collaborations for the enhancement of the respective space activities.*

*I will always be available for the BIRDS family and gladly help and support it in whatever capacity I have.*



## Letter within the newsletter... (3/3)

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*Unfortunately, I will not be able to join you at the 3<sup>rd</sup> BIRDS International Workshop, but I certainly hope to meet up with you again in a closer or further future.*

*Of course, if you happen to stop by California for business or holiday, let me know, I will gladly show you around!*

*Sincerely yours,*

*Pauline Faure, Dr. Eng.*

*10 July 2018*

# BIRDS BACKSTAGE (1/4)

BY PAULINE FAURE

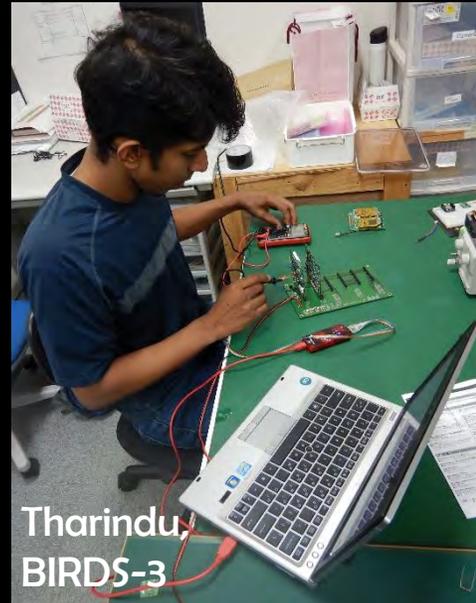
Students are working hard with their stakeholders to make a nation's dream come true...



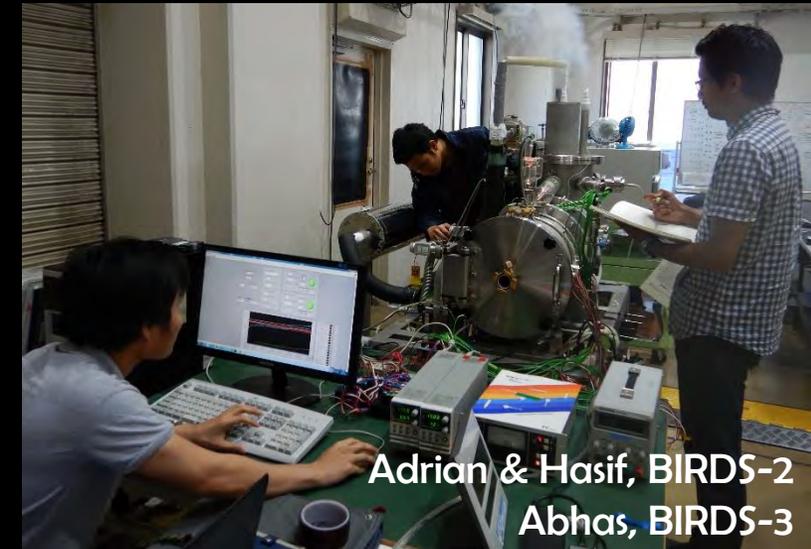
Joven, BIRDS-2



Dulani & Pooja,  
BIRDS-3



Tharindu,  
BIRDS-3



Adrian & Hasif, BIRDS-2  
Abhas, BIRDS-3

# BIRDS BACKSTAGE (2/4)

But, in the backstage, is the heart of the laboratory!

Without these people's relentless hard work ranging from visa preparation to testing schedule and events management, and...

LaSEINE's hard working heart



# BIRDS BACKSTAGE (3/4)

... most importantly their perpetual smiles, joy, and care, BIRDS could not perform well.

LaSEINE's joyful heart



# BIRDS BACKSTAGE (4/4)

So let's take a moment to recognize, thank, and let shine on the front stage all the people working in the backstage!

Not only here at Kyutech, but also in each institution. So many unknown people without whom BIRDS could not be successful.

The marvelous  
Mr. Seiji Kawano



The remarkable and  
most beautiful  
Ms. Kumiko Shirakawa

The wonderful  
Ms. Sayo Tsukinari



### 03. BIRDS students followed the World Cup with intense interest



*Many of our BIRDS students skimped on sleep to follow the World Cup games in Russia. Shown at the right are Reuben, Taiwo, and Ibukun – all members of BIRDS-1. They are passionate fans of Nigeria, as they are from Nigeria.*



Showing national spirit and unity with jerseys

## 04. An update on space programs in Latin America

**The Space Review**  
essays and commentary about the final frontier  
in association with  
**SPACENEWS**

**This recent article (22 Jan. 2018) provides a good review of the situation in Latin America.**

Of interest to the BIRDS Project is the creation of the space agency in Paraguay. This article states the following:

*Coincidentally, also in October, Paraguay held its first ever conference on space issues at the country's Central Bank. The landlocked nation's space agency (Agencia Especial del Paraguay: AEP) organized the event, and brought renowned special guests like Brazilian astronaut Marcos Pontes, to develop interest among the audience members to support AEP.*



PeruSAT-1, built by Airbus Defence and Space for the government of Peru, has delivered more than 70,000 images since its launch in September 2016. (credit: Airbus Defence and Space)

### Latin America's space programs: an update

by W. Alejandro Sanchez  
Monday, January 22, 2018

See the entire article here:

<http://www.thespacereview.com/article/3413/1>

## 05. Get ready for “Tobata Gion Festival 2018”

### History and highlight of Tobata Gion

The people involved in this festival walk through the town shouldering the giant 10 meter floats with 12 tiers of lanterns. They wear traditional coats (Happi) and headbands (Hachimaki) and to keep their steps in time they shout-out, “Yoitosa! Yoitosa!” The festival is concluded with a spectacular competition.

This festival originated from the Tobata Ward, back in 1802. The village people suffered a wide-spread plague. The people continuously prayed to the Gods for the epidemic to cease. Then one by one, those who were suffering from the plague recovered. The village people believed it was because of the praying, so they built the Yamagasa and celebrated in 1803. Decorations of the Yamagasa dated in 1829 and its curtains tell us its history and tradition.

The Tobata Gion summer festival consisted of 3 Shrine festivals, the Tobihata Hachimangu, the Sugawara Jinja, and the Nakabaru Hachimangu that are held every years for 3 days, including the 4th Saturday of July.

There are 4 giant floats with 12 traditional decorated flags that are carried through the town during the day. In the evening, the decorated style changes, and the float is called the “Pyramid of Light,” because of the 309 paper lanterns that hand in 12 tiers.

Each float is 10 meters tall and weighs 2.5 tons, so it needs about 80 float carrier to shoulder it.



There are 4 giant floats and 4 small floats that gather to compete at a competition called the Kyoenkai.

*All of the above text and photo come from here:*

<http://japan-attractions.jp/festivals/tobata-gion-festival/>

The dates of this festival

**27 - 29 July 2018**

*See also:*

BIRDS Project Newsletter, Issue No. 6, page 19.

BIRDS Project Newsletter, Issue No. 7, pages 13-15.

The following article (the next six pages) was prepared by

*Yvette Morales*  
*Daneza Balagbagan*

with much input from the **PHL-Microsat Team** of UPD  
(Univ. of Philippines at Diliman, Quezon City, Philippines)



*University of the Philippines-Diliman (UPD)*



*University Laboratory for Small Satellites and Space Engineering Systems (ULyS<sup>3</sup>ES) at the UP Electrical and Electronics Engineering Institute*



*The fifth floor of the ULyS<sup>3</sup>ES will be the workspace of the technical team.*

Soon, more Filipino engineering students will have the chance to get their hands dirty on building small satellites with the upcoming “space hub” in the Philippines’ premier state university.

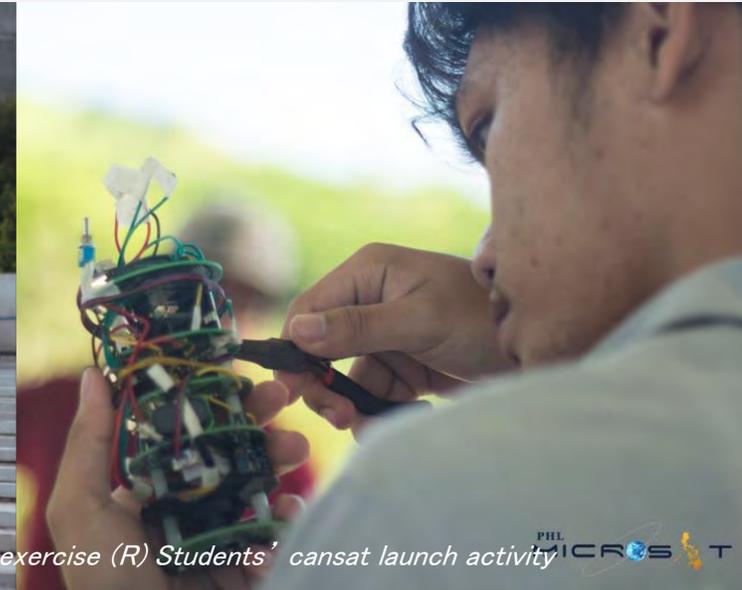
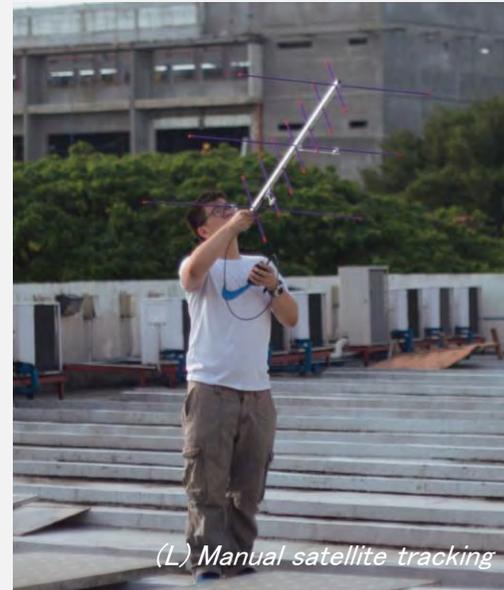
The University Laboratory for Small Satellites and Space Engineering Systems (ULyS<sup>3</sup>ES), which is part of the Philippine Microsatellite Program (PHL-Microsat)’s capacity building initiatives, aims to create a conducive learning and research environment on space science and technology applications.

The laboratory is housed at the University of the Philippines Electrical and Electronics Engineering Institute (UP EEI) located in Diliman, Quezon City.

Building on the gains from the Joint Global Multi-Nation Birds Satellite (BIRDS) Program in Japan, the UP EEI eyes offering graduate courses on the development of cube satellites.

The Philippines completed its first cube satellite under the second BIRDS Program. Maya-1 will be launched to the International Space Station (ISS) via SpaceX Falcon-9 CRS 15 in Cape Canaveral, Florida on June 29.

An elective course on space science and technology titled “Introduction to Satellite Systems” is already being offered at UP EEI. Taught by lecturers from different fields in engineering, the course aims to provide students a wider understanding of principles and applications of space science and technology.



(L) Manual satellite tracking exercise (R) Students' cansat launch activity

The five-floor laboratory will be the home to the graduate program, as well as the administrative and technical team of the PHL-Microsat.

The first floor of the building will be an exhibit and lobby area. It will also house the Amateur Radio and Satellite Station or ARSS, which supports terrestrial and satellite communications in the amateur radio bands.



*The Amateur Radio and Satellite Station (ARSS)*

The ARSS will also be the ground station of the BIRDS-2 constellation in the Philippines.

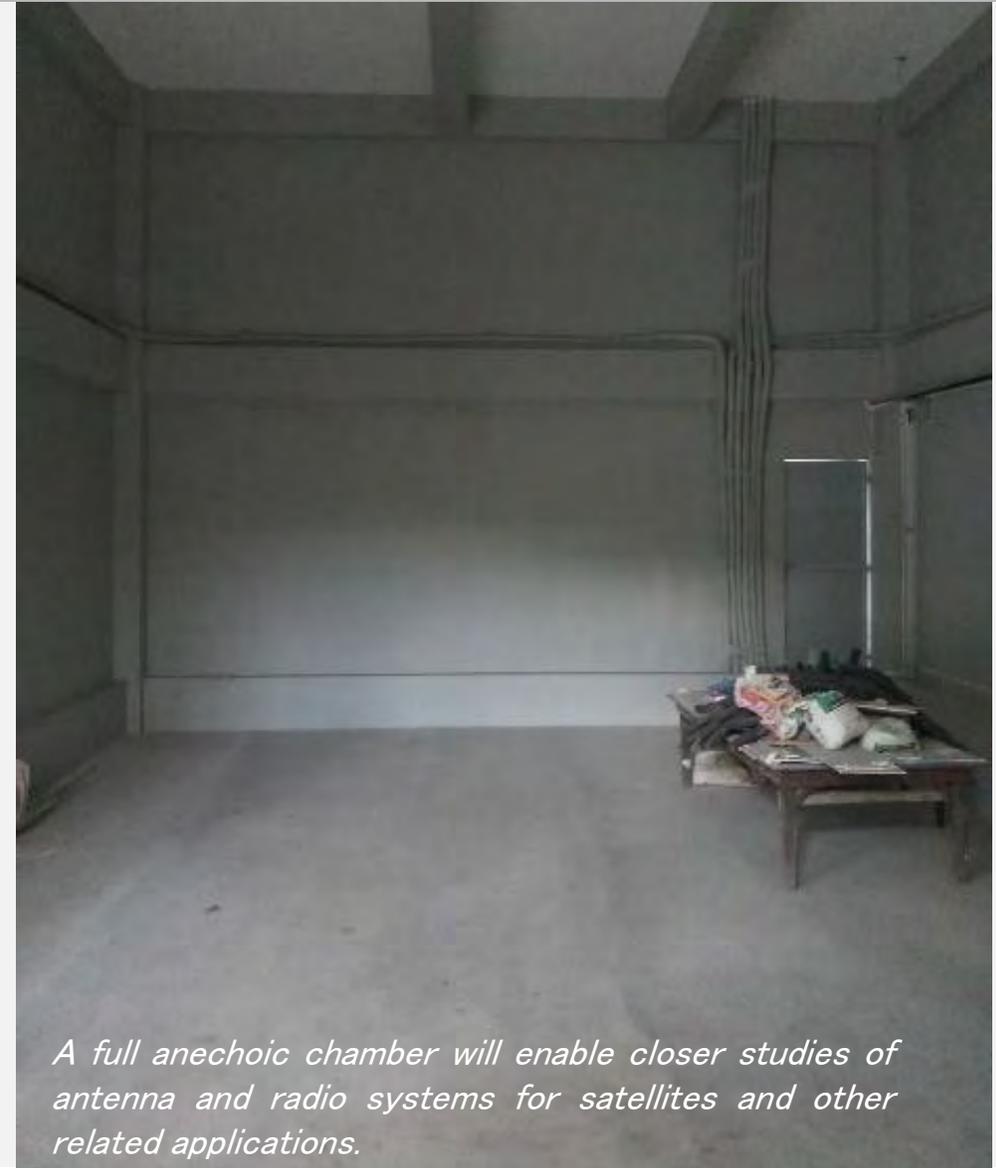
On the second floor and the mezzanine will be the graduate students' area, which will include classrooms and lounge. The fourth floor will be the faculty and administration office while the fifth floor will be the workspace of the technical team.



*The second floor and the mezzanine of the ULyS<sup>3</sup>ES will be the graduate students' area.*

Aside from the microsatellite research and instructional facility, a full anechoic chamber is also being built inside the university -- a first in the country -- to enable closer studies of antenna and radio systems for satellites and other related applications.

It can test antennas up to 1.4 m in diameter or up to 70 kg by mass. The facility will have a frequency range of 600 MHz to 25 GHz and can measure near-field to far-field transformation. It can specifically support tests such as 2D and 3D E-field and power patterns, directivity, gain, HPBW, cross-polar discrimination, efficiency, total radiated power, and S11.



*A full anechoic chamber will enable closer studies of antenna and radio systems for satellites and other related applications.*



*The Philippines' BIRDS-2 Team in Japan: Adrian Salces and Joven Javier*

Investing in the development of people and institutions on space technology will allow the continued growth of the sector and the empowerment of relevant stakeholders in the science community. The University's program on space technology will also, hopefully, make the Philippines a more active collaborator in the global space-faring community.

*Text and photos by the PHL-Microsat Team*

**The End.**

## 07. Japan's Hayabusa-2 space probe arrives at its asteroid destination

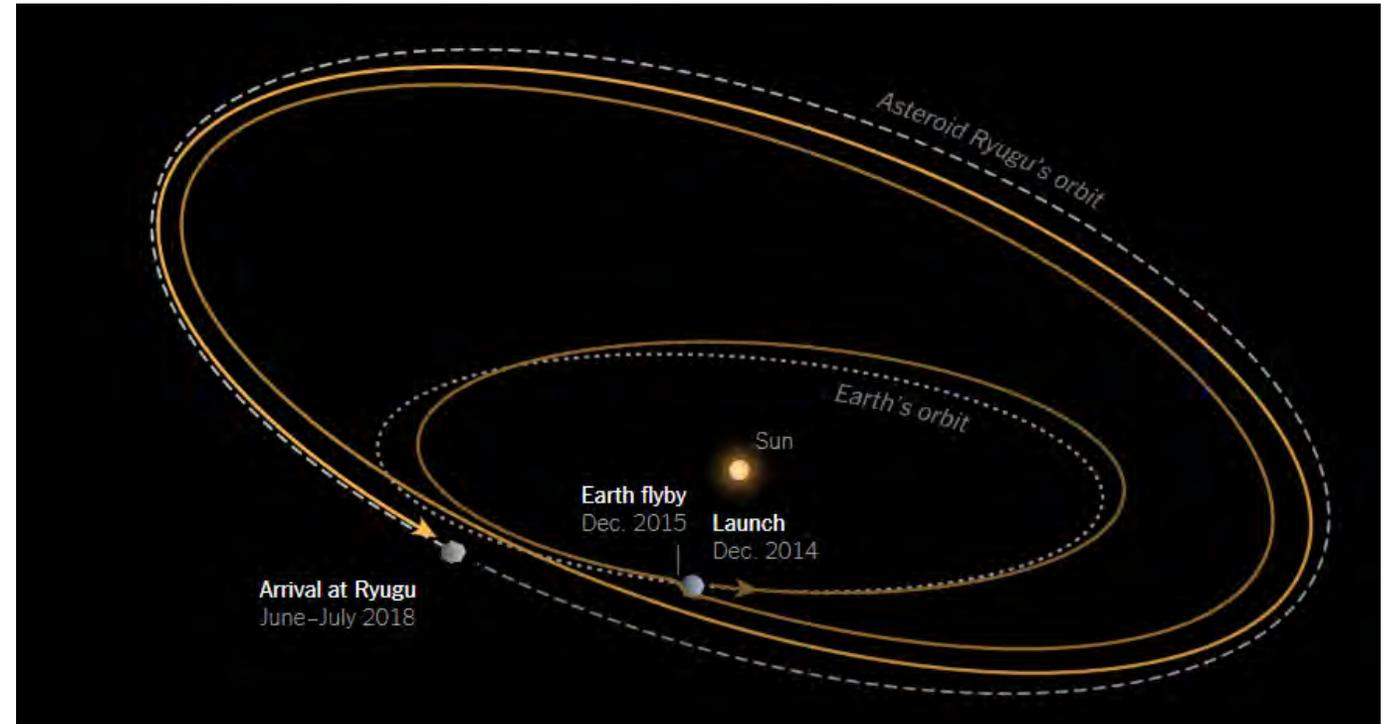


### Touching an Asteroid

If Hayabusa2 is successful, it will study Ryugu in detail, drop a small probe and three mini-rovers, touch its surface and return a sample of the asteroid to Earth in 2020.



Hayabusa-1 successfully brought an asteroid sample back to Earth. Let's hope Hayabusa-2 can repeat that success.



Full **New York Times** article here:

<https://www.nytimes.com/interactive/2018/06/25/science/hayabusa-ryugu-photos.html>

# 08. UN Register of Objects Launched into Outer Space



UNITED NATIONS  
Office for Outer Space Affairs



- About Us ▾
- Our Work ▾
- Benefits of Space ▾
- Information for... ▾
- Events ▾
- Space Object Register ▾
- Documents ▾
- COPUOS 2018 ▾

Space Object Register

## United Nations Register of Objects Launched into Outer Space

Since 1962, the United Nations has maintained a Register of Objects Launched into Outer Space. Originally established as a mechanism to aid the United Nations Committee on the Peaceful Uses of Outer Space in its discussions on the political, legal and technical issues concerning outer space, the evolution of international space law resulted in space object registration becoming a means of identifying which States' bear international responsibility and liability for space objects.

Following multi-year discussion among States, the [Convention on Registration of Objects Launched into Outer Space](#) entered into force



- Space Object Register
- Registration Convention
- Registration Submissions
- National Space Object Registries
- Online Index of Objects Launched into Outer Space
- Treaty Implementation
- Resources on Space Object Registration

See the rest here:

<http://www.unoosa.org/oosa/en/spaceobjectregister/index.html>



# 09. Mongolia's registration of its BIRDS-1 satellite (launched in 2017)



SCIENCE NEWS - APRIL 19, 2017  
Mongolia launches its first satellite

<https://www.reuters.com/article/us-mongolia-satellite-idUSKBN17L18W>

UN registration by Mongolia for BIRDS-1:

[http://www.unoosa.org/oosa/osoindex/search-ng.jsp?lf\\_id=#?c=%7B%22filters%22:%5B%7B%22fieldName%22:%22en%23object.launch.stateOrganization\\_s%22,%22value%22:%22Mongolia%22%7D%5D,%22sortings%22:%5B%7B%22fieldName%22:%22object.launch.dateOfLaunch\\_s1%22,%22dir%22:%22desc%22%7D%5D%7D](http://www.unoosa.org/oosa/osoindex/search-ng.jsp?lf_id=#?c=%7B%22filters%22:%5B%7B%22fieldName%22:%22en%23object.launch.stateOrganization_s%22,%22value%22:%22Mongolia%22%7D%5D,%22sortings%22:%5B%7B%22fieldName%22:%22object.launch.dateOfLaunch_s1%22,%22dir%22:%22desc%22%7D%5D%7D)

International Designator	National Designator	Name of Space Object	State/Organization	Date of Launch	GSO Location	UN Registered	Registration Document	Other Documents	Status	Date of Decay or Change	Function of Space Object	Secretariat's Remarks	External website
1998-067MW	M2017-001	Mazaalai (NUMSat-1, Birds-1))	Mongolia	2017-06-03		Yes	<a href="#">ST/SG/SER.E/827</a>		in orbit		The Mazaalai satellite is part of the Birds-1 satellite constellation. The Birds-1 project is intended to help universities in non-spacefaring countries get satellites into space. The satellite performs experiments, including self-location by means of the Global	Date of launch provided is date of launch of cargo vehicle Dragon CRS-11. Date of deployment from the ISS is 7 July 2017.	

# Launch Viewing Event of BIRDS-2 CubeSats

-- by Cheki Dorji



## Launch Information

Rocket : Falcon 9

Time : 6:42 p.m. JST on 29 June 2018

Launch Site: Cape Canaveral Air Force Station, Florida, USA

**The viewing event was held in Kyushu Institute of Technology**

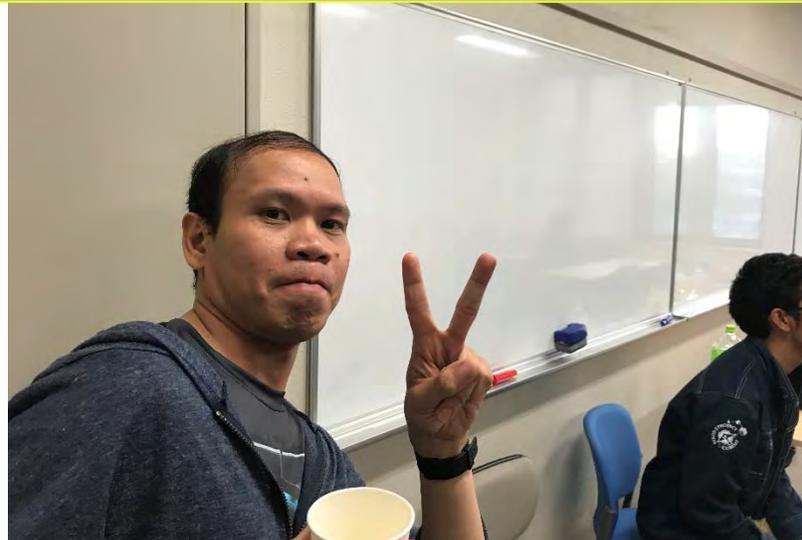


Two staff of the laboratory: Dr Kim (L) and Dr Pauline (R)

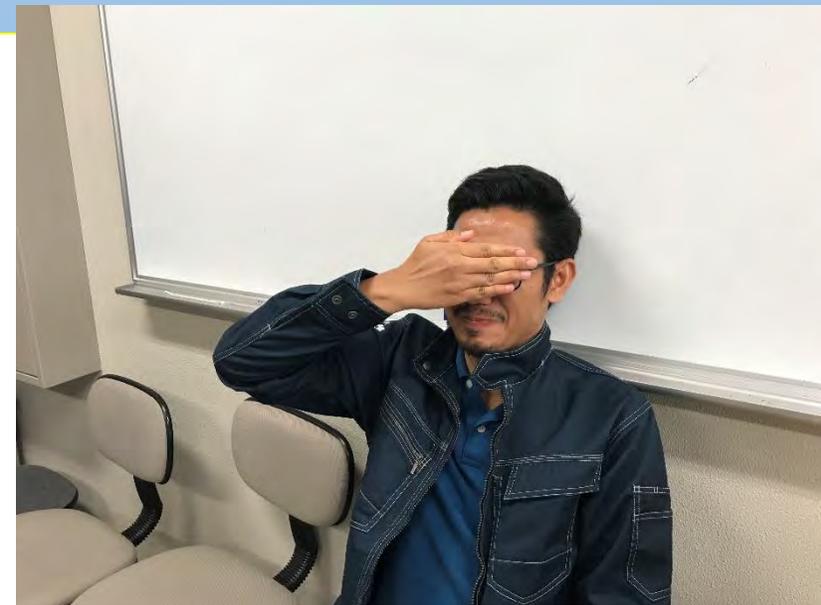


Drinks and snacks sponsored by BIRDS-2 members for the event

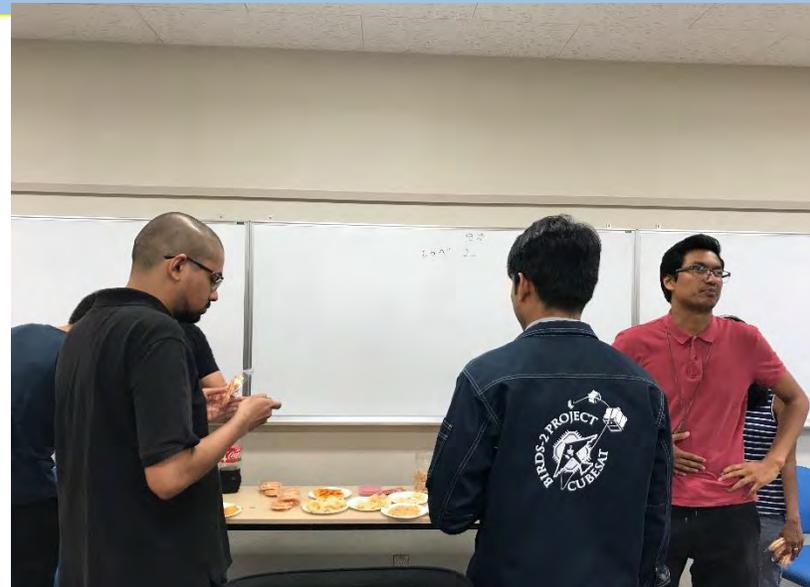
# Before the Launch



# Waiting Anxiously for the Launch



# Chit-chat After Successful Launch



# Journey of BIRDS-2 CubeSats to ISS

## Dragon on its way to ISS



## Dragon capture by robotic arm of ISS

Time : 7:54 p.m. JST  
Date : 2 July 2018

## Dragon spacecraft separation from rocket

Time : ~ 6:52 p.m. JST  
Date : 29 June 2018



## Liftoff

Time : 6:42 p.m. JST  
Date : 29 June 2018  
Launch Site: Cape Canaveral Air Force Station, Florida, USA



©C.Dorji

Page 34 of 119

Also, check out this eight-minute video by Maisun about the BIRDS-2 launch viewing:  
[https://www.youtube.com/watch?v=2tNA\\_dhb1vw&feature=youtu.be](https://www.youtube.com/watch?v=2tNA_dhb1vw&feature=youtu.be)



Nice job, Maisun ! .... Editor

## View the launch of BIRDS-2 on board Falcon 9 of SpaceX (CRS-15)



The launch viewed from the ground:

<https://www.youtube.com/watch?v=SHyHvSltdK>



The launch viewed from the air:

<https://www.youtube.com/watch?v=K6BVSOOG8fA>

## 11. BIRDS-2 launch: media reports from the Philippines



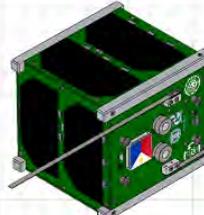
EARTH & SPACE

# Philippines launches 1st CubeSat into space

*Maya-1 belongs to the family of satellites produced by the Philippine Scientific Earth Observation Microsatellite or PHL-Microsat, and developed by Two Filipino graduate students in Japan*

Philippine's first CubeSat is launched

<https://www.rappler.com/science-nature/earth-space/206090-philippine-launches-cube-satellite-space-june-29-2018>



**Maya-1**  
The Philippines' first CubeSat

<b>MISSIONS:</b>	<b>DIMENSIONS:</b> 10x10x10 cm <sup>3</sup>
* Camera	<b>MASS:</b> 1 kg
* Automatic Packet Reporting System Digipeater and Store and Forward	<b>ROCKET LAUNCH:</b> 29 June 2018
* GPS Chip Demonstration	via SpaceX Falcon-9 CRS 15
* Single Event Latch-Up	
* Magnetometer	



MANILA, Philippines – Maya-1, the Philippines' first cube satellite (CubeSat) has flown into space through SpaceX Falcon-9 CRS 15 rocket. The rocket was launched into space on Friday, June 29, from Cape Canaveral, Florida, in the United States. As of [April 2018](#), at least 800 CubeSats have been launched into space.

This cube satellite, measuring 10 cm<sup>3</sup> and weighs about one kilogram, aims to collect data from ground sensor terminals and pass them on to a ground control system. Maya-1 also carries an automatic packet radio service digipeater, enabling it to communicate with ham radios. It also has two cameras to capture images for research purposes. **SEE THE LINK BELOW FOR MORE**

# Maya-1: Cube satellite latest Pinoy venture into space

By: Dexter Cabalza - Reporter / @dexcabalzaINQ Philippine Daily Inquirer / 07:11 AM July 01, 2018



ONE-KILO WONDERS Adrian Salces (left) and Joven Javier (right) smile with pride after the launch of the 10-cubic centimeter Maya-1 satellite they had developed at Kyushu Institute of Technology in Fukuoka, Japan. Standing behind them is Joel Joseph Marciano, program leader of the Development of Philippine Scientific Earth Observation Microsatellite program. PHOTO FROM PHL-Microsat.

Read the full article here:

<http://technology.inquirer.net/77081/maya-1-cube-satellite-latest-pinoy-venture-space>

Adrian Salces and Joven Javier were calm and composed as they waited for the tiny satellite they had built under the “Birds-2” project in Japan to be blasted into orbit 400 kilometers above the Earth.

After all, the doctorate and master’s students in space engineering at Kyushu Institute of Technology (Kyutech) in Fukuoka, made sure that their 10-cubic-centimeter Maya-1 satellite could withstand the extreme conditions of its space voyage.

Much more excited than the pair were the students and engineers watching via livestream the countdown to the historic moment at University of the Philippines Diliman (UPD) in Quezon City.

At exactly 5:41 p.m. on Friday (Manila time), SpaceX’s Falcon-9 CRS 15 rocket blasted off at Cape Canaveral in Florida, heading to the International Space Station (ISS), carrying Maya-1, the country’s first Filipino-made cube satellite (cubesat), and the Philippines’ hope that it could build its next satellites on its own shores.

Salces and Javier developed Maya-1 under the Development of Philippine Scientific Earth Observation Microsatellite program (PHL-Microsat), a research and development project implemented by UPD and the Department of Science and Technology-Advanced Science and Technology Institute (DOST-Asti).

### Three-point constellation

Maya-1 is one of the three cube satellites under Kyutech’s 2nd Joint Global Multination Birds Project (Birds-2), along with Bhutan’s Bhutan-1 and Malaysia’s UiTMSAT-1. Salces and Javier took a year and three months to build the nanosatellite.

While independently made, the operation and control of the three cubesats will be shared by the three countries after they are released from the ISS early in August. They will be operational for six months . . . .

## 12. BIRDS-2 launch: media reports from Malaysia



### UiTM first varsity to build, launch nano-satellite

Bernama | June 30, 2018

The UiTMSAT-1 nano-satellite was sent to the ISS from the Cape Canaveral Air Force Station in Florida yesterday.



UiTM vice-chancellor Hassan Said (right) watches the launch of UiTMSAT-1. (Bernama pic)

SHAH ALAM: Universiti Teknologi Mara (UiTM) made history as the first public university to build and launch a nano-satellite into outer space yesterday.

The UiTMSAT-1 was sent to the International Space Station (ISS) via cargo rocket Space X Falcon 9 which was launched from the Cape Canaveral Air Force Station in Florida at 5.47pm local time.

The cube-shaped nano-satellite measuring 10cm was built by UiTM students Syazana Basyirah Mohamad Zaki and Muhammad Hasif Azami, who are currently studying in Japan. It followed a collaborative effort with the Kyushu Institute of Technology under the Joint Global Multi-Nation programme.

The launching of UiTMSAT-1, screened via an ISS live feed on YouTube, was witnessed by UiTM vice-chancellor Hassan Said, the director of the university's Centre for Satellite Communication Mohamad Huzaimy Jusoh as well as lecturers and students.

Hassan said the nano-satellite would be temporarily kept at ISS and was expected to be released into its orbit, about 400,000km from earth, in August.

Mohamad Huzaimy said the nano-satellite had six missions, including to capture images, test the satellite location correlation and the Global Positioning System chip, and measure the magnetic field in outer space to obtain data on geomagnetic mapping in Southeast Asia. It will also be used for radio communication.

by Taboola

<http://www.freemalaysiatoday.com/category/nation/2018/06/30/uitm-first-varsity-to-build-launch-nano-satellite/>

## UiTM reaches milestone in space



Blast off: Dr Hassan Said (right) watching the launch with (from left) Prof Dr Mohad Nasir Taib and Prof Dr Mohamad Kamal Harun in Shah Alam.

SHAH ALAM: Universiti Teknologi Mara (UiTM) can proudly say that it is the first local university which has a nanosatellite in space.

The UiTMSAT-1 is being transported to the International Space Station on board the SpaceX's Dragon spacecraft which was launched from Cape Canaveral Air Force, Florida, in the United States yesterday.

**Cont'd next column**

<https://www.thestar.com.my/news/nation/2018/06/30/uitm-reaches-milestone-in-space-varsitys-nanosatellite-launched-into-orbit/>

The commercial resupply mission is expected to reach the space station with its payload, including UiTMSAT-1, on July 2.

UiTM vice-chancellor Prof Emeritus Datuk Dr Hassan Said said UiTMSAT-1 marks another milestone for the public university and is paving the way for Malaysia to become “a space-faring nation”.

“We didn’t think we could do it,” he said before watching the live feed of the launch at the Shah Alam campus.

Prof Hassan added that this is also a significant moment for Malaysia.

The nanosatellite is the product of Malaysia’s collaboration with Japan, Bhutan and the Philippines under a project called Joint Global Multi-Nation BIRDS-2 Project.

Bhutan and the Philippines also developed a nanosatellite each, which are also on the way to the International Space Station together with UiTMSAT-1.

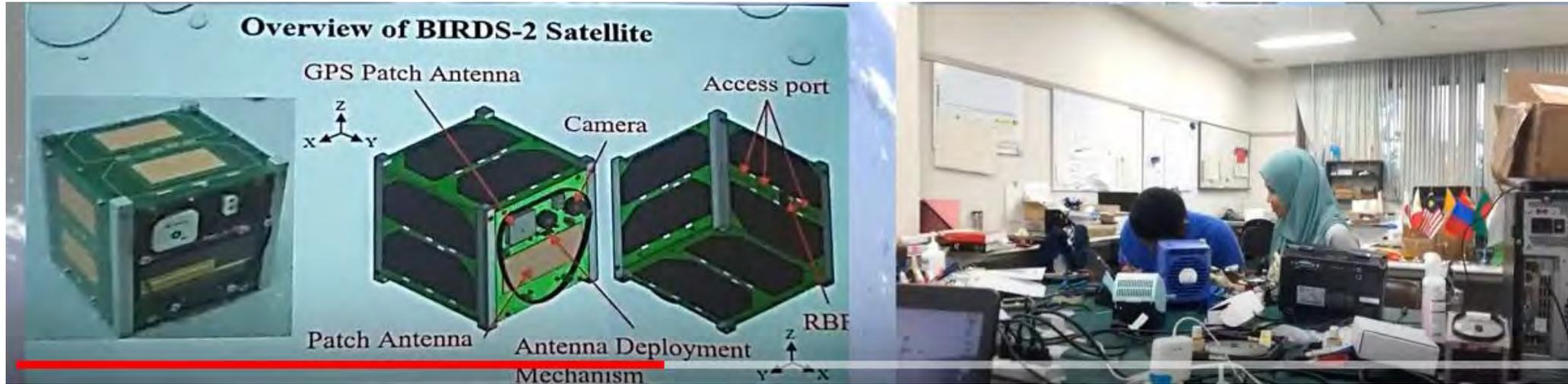
The nanosatellites or CubeSats were developed and tested by 10 postgraduate students – two Malaysians, two from the Philippines, three Japanese and three from Bhutan – at the Laboratory of Spacecraft Environmental Interaction Engineering, Kyushu Institute of Technology, Japan.

The Malaysians on the team, UiTM postgraduate students Syazana Basyirah Mohammad Zaki and Muhammad Hasif Azami, have been working on the project since December 2016.

The nanosatellite is a low-cost miniature instrument for space research. The data collected can be used for research, and also pave the way for industry and government-led initiatives, said UiTM Centre for Satellite Communication director Assoc Prof Mohamad Huzaimy Jusoh.

Each CubeSat, measuring 10cm × 10cm × 10cm and weighing 1kg will be sent into orbit from the International Space Station in mid-August.

# One-minute video about the Center for Satellite Communication (UiTMSAT)



Launch of Center for Satellite Communication at UiTM, Malaysia; view the video:

<https://www.youtube.com/watch?v=tlAgvMKk1jY>

## 13. BIRDS-2 launch: media reports from Bhutan



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**Ministry of Information and Communications**  
"Connecting the unconnected and establishing a harmonious knowledge society"

29 June 2018

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Press Release Launch of Bhutan's First Satellite BHUTAN-1



The Hon'ble Minister for Information and Communications congratulated the Space Engineers studying at Kyutech, Japan, for developing the CubeSat BHUTAN-1. BHUTAN-1 marks Bhutan's first step towards development of Bhutan's Space Science and Technology Program, which is a vision of His Majesty the King.



**CONTINUED ON THE NEXT PAGE**

### Launch of BHUTAN-1, the First Satellite of Bhutan



#### Functions of the CubeSat BHUTAN-1

The missions finalized for the CubeSat are as follows:

- ◆ Camera mission
  - Take photograph of homeland via 2 onboard cameras of 5 MP.
- ◆ Automatic Packet Reporting System (APRS) Digipeater Demonstration
  - Receive and send text messages message from an amateur radio
  - Broadcast/relay to all other amateurs within the range
  - Uplink and Downlink will operate in 145 MHz (VHF) Frequency Band.
- ◆ Demonstration of CubeSat's store-and-forward ability: collect data from remote sensors like weather stations and download it to central ground station.
- ◆ Commercial off the Shelf (COTS) GPS technology demonstration: Low power, less expensive and small size to be used in CubeSats and nanosatellites. Satellites use GPS to keep track of time and its location.
- ◆ Single Event Latch-up (SEL) detection: To study the radiation effect on satellites
- ◆ Bhutan-1 will pass around the country for 4-5 times in a day for 3-4 minutes.
- ◆ The lifespan of BHUTAN-1 is 6 to 9 months.

Bhutan's first satellite (a CubeSat), BHUTAN-1 piggybacked on the SpaceX Falcon 9 rocket with other payload to the International Space Station (ISS) at 3:42 p.m BST on Friday, 29th June, 2018 from Cape Canaveral Air Force Station in Florida, USA. The launch took place together with the BIRDS-2 CubeSats of Philippines and Malaysia i.e. MAYA-1 and UiTMST-1.

BHUTAN-1 has been developed by Bhutanese engineers at the Kyushu Institute of Technology as part of their Master's Degree under the BIRDS-2 Project. The BIRDS Project is a cross-border interdisciplinary satellite project for non space faring countries supported by Japan.

The BIRDS-2 CubeSats was launched with other payloads that the SpaceX Falcon 9 rocket is delivering to the ISS which include research hardware, crew supplies and spare parts for the ISS.

BHUTAN-1 will remain on the ISS and will be released into low earth orbit with the other CubeSats sometime second and third week of August 2018. Once released BHUTAN-1 will become operational and can be tracked from the ground station in MoIC.

View the original article here:

<http://www.moic.gov.bt/en/press-releaselaunch-of-bhutans-first-satellite-bhutan-1/>



## BHUTAN-1 leaves for space

June 30, 2018

Bhutan's first satellite, CubeSat BHUTAN-1, left earth for the International Space Station (ISS) yesterday afternoon.

Information and communications minister, secretary and officials watched in excitement the launch that was broadcast live on YouTube and NASA television. The crowd cheered as the SpaceX Falcon 9 rocket and Dragon spacecraft bearing BHUTAN-1 lifted off from Cape Canaveral Air Force Station in Florida, USA.

The visibly nervous officials made calls when the electricity went out about half an hour before the launch. Once it returned, the show was projected on a screen at the conference hall for about 50 people gathered to witness the making of history.

**CONTINUED ON THE NEXT PAGE**

BHUTAN-1 has been developed by Bhutanese engineers at the Kyushu Institute of Technology as part of their Master's Degree under the BIRDS-2 Project.

The BIRDS project is a cross-border interdisciplinary satellite project for non-space faring countries supported by Japan.

BHUTAN-1 will remain on the ISS and will be released into low earth orbit with the other CubeSats in August this year. Once released, BHUTAN-1 will become operational and can be tracked from the ground station at the information and communications ministry, a press release from the ministry stated.

The satellite will operate in a low altitude of about 500km to 1,500km. With the help of two high-end cameras fixed on the satellite, it will take high quality photographs of the country, help examine the conditions of the glaciers, lakes, forest cover, provide basic communication services, and to study the radiation effect on satellites.

BHUTAN-1 will pass around the country four-five times in a day for three-four minutes. BHUTAN-1 has a lifespan of six to nine months.

“It will then be disposed off,” an official from the MoIC said. However, sources said that the satellite could last up to one to two years.

Initial estimates showed that the whole process from training the engineers to launching the nanosat and building a ground station in the country would cost around USD 280,000.

Under the BIRDS-2 Project that began in November 2016, the engineers along with participants from the Philippines and Malaysia built three **1U** (10 x 10 x 10 cm) CubeSats.

Annually, the national broadcaster spends around Nu 9.5 million (M) to use the INSAT communication facilities to broadcast BBS TV throughout the country. Bhutan Telecom invests around Nu 3M to provide telecommunication services and the Department of Hydro-Met Services pays around Nu 1.2M every year for the GLOF early warning systems.

By Tshering Palden

**Original article is here:**

<http://www.kuenselonline.com/bhutan-1-leaves-for-space/>



## BHUTAN LAUNCHES ITS FIRST SATELLITE INTO SPACE

30 June 2018

Headline Stories | Democracy in Action | Business | About Town | The Nation | Editorial | Opinion | Letters | News | Local News



**The BHUTAN-1 satellite**

By the end of summer, late August side, Bhutan's first satellite, a CubeSat called Bhutan-1 weighing less than 2 kilograms shall be released into low earth orbit with the other CubeSats. Once released, BHUTAN-1 will become operational and can be tracked from the ground station in Ministry of Information and Communication (MoIC).

BHUTAN-1 was launched at 3:42 pm on Friday, 29th June 2018 from Cape Canaveral Air Force Station in Florida, United States of America. It was on the SpaceX Falcon 9 rocket with other payload being sent to the International Space Station (ISS), The launch took place together with the BIRDS-2 CubeSats of the Philippines and Malaysia MAYA-1 and UiTMST-1.

The four Bhutanese space engineers – Yeshey Choden, Kiran Kumar Pradhan, Cheki Dorji and Pooja Lepcha – pursued a two-year master's programs in space engineering at the Kyushu Institute of Technology (Kyutech) and developed the satellite. The CubeSat is expected to aid in research and was built by the students as a part of their Master's program.

**CONTINUED ON THE NEXT PAGE**

MoIC Minister, Lyonpo D.N Dhungyel, said Bhutan is proud to have its first satellite launched today and the four engineers working on the project in Japan should also be proud.

The Joint Global Multi Nation Birds Satellite Project called BIRDS project is a cross border interdisciplinary satellite project for non space faring countries supported by Japan.

The BIRDS-2 CubeSats will be launched with other payloads that the SpaceX Falcon 9 rocket is delivering to the ISS which include research hardware, crew supplies and spare parts for the ISS.

The mission finalized for the CubeSat BHUTAN-1 includes demonstration of CubeSat's store and forward ability, that is, collecting data from remote sensors like weather stations and downloading it to central ground station, Commercial off the Shelf (COTS) GPS technology demonstration with low power to be used in CubeSats and nanosatellites and Single Event Latch-up (SEL) detection to study the radiation effect on satellites are missions finalized for BHUTAN-1.

It will also take photographs of the homeland via two onboard cameras of 5 Megapixel (MP) and Automatic Packet Reporting System (APRS), receive and send text messages from an amateur radio and broadcast to all other amateur radio within the range. Uplink and downlink will operate in 145 Megahertz (MHZ) frequency band.

BHUTAN-1 will pass around the country for 4-5 times in a day for 3 to 4 minutes and the lifespan of BHUTAN-1 is 6 to 9 months.

A Cube Sat is a miniaturized satellite for space research that is made up of multiples of  $10 \times 10 \times 11.35$  cm cubic units. Cube Sats have a mass of no more than 1.33 kilograms.

DITT earlier stated that the participating countries developed identical CubeSats and Bhutan's Cubesat it its first satellite.

“This Project is a good opportunity for Bhutan to build, launch and operate Bhutan's first space-borne satellite, thus paving the way for Bhutan to move forward in the field of space and satellite technology. This also marks Bhutan's first step towards development of Bhutan's Space Science and Technology Program, which is a vision of His Majesty the King,” said the earlier release.

After the launch, a space agency has been setup within the information and communications ministry.

Training the four space engineers, building and launching the CubeSat and building a ground station cost the government around USD 280,000.

**Original article is here:**

<https://thebhutanese.bt/bhutan-launches-its-first-satellite-into-space/>



This was published back in February of 2018 . . .



## Bhutan's first satellite to orbit earth soon

Sherub Dorji, Thimphu  
Feb 26, 2018

Four Bhutanese [the photo above] studying space engineering at the Kyushu Institute of Technology (KyuTech) in Japan have been building the satellite. Bhutan is part of a joint global multi-nations project, BIRDS-2. Along with the Philippines and Malaysia, Bhutan's first cubesat is ready to be delivered to the Japan Space Exploration Agency or JAXA.

Today, a joint press conference was held by the three nations and KyuTech to mark the completion of the flight model.

The Secretary of the Ministry of Information and Communication, Dasho Karma Wangchuk Penjor, said space science and technology and its applications are indispensable in today's world.

"They have become indispensable to facilitate development and also important sectors such as communications, disaster risk mitigation and management, weather reporting for agriculture, global weather monitoring and navigation. All these are impossible without space technology and its various applications," he said.

The cubesat will be delivered to JAXA sometime in April. JAXA will then launch it to space either from Japan or the United States depending on Earth's trajectory to the International Space Station. **VIEW THE ARTICLE AT THE LINK BELOW**



Pooja, Kiran, Yeshey, Cheki

Link: [www.bbs.bt/news/?p=90777](http://www.bbs.bt/news/?p=90777)

## 14. BIRDS-2 launch described by “spacetechnic – asia”

Today, at 5.42 a.m. UTC, SpaceX launched its 15th Cargo Resupply Mission (CRS) to the International Space Station (ISS), with the Falcon 9 lofting the Dragon cargo spacecraft into orbit.

Along with numerous experiments and necessities, Dragon carried three CubeSats belonging to Malaysia, Bhutan and the Philippines. These CubeSats will be delivered to Japan’s ISS module known as Kibo, from where they will be launched into orbit.

All three CubeSats are part of the international BIRDS-2 project initiated by Japan’s space agency, the Japan Aerospace Exploration Agency (JAXA). This is the second phase of the programme following BIRDS-1, which saw CubeSats from Bangladesh, Mongolia, Ghana and Nigeria being launched from the ISS in July last year. Under this scheme, non-spacefaring countries are given the opportunity to build their own satellites under the guidance of JAXA and Japan’s Kyushu Institute of Technology. **SEE THE LINK BELOW FOR THE ORIGINAL**

### Cubesats from Malaysia, Bhutan & the Philippines on SpaceX’s Dragon launch

By Deyana Goh - June 29, 2018

[www.spacetechnicasia.com/cubesats-from-malaysia-bhutan-the-philippines-on-spacexs-dragon-launch/](http://www.spacetechnicasia.com/cubesats-from-malaysia-bhutan-the-philippines-on-spacexs-dragon-launch/)



**BIRDS-2 Team with their flight models**

Erratum to this article: *BIRDS-2 Project was initiated by Kyutech, not JAXA.*

## 15. New Kyutech promotional video



Just released promotional video about Kyutech [about 5 minutes]  
[https://www.youtube.com/watch?v=\\_fhWeeWFRSQ&feature=youtu.be](https://www.youtube.com/watch?v=_fhWeeWFRSQ&feature=youtu.be)

This version is Japanese; English version will be released soon.



# 16. A propulsion system for possible use in CubeSat constellations

Acta Astronautica xxx (2018) xxx-xxx



Contents lists available at ScienceDirect

Acta Astronautica

Journal homepage: [www.elsevier.com](http://www.elsevier.com)



## CubeSat constellation management using Ionic Liquid Electro spray Propulsion

Marco Gomez Jenkins<sup>a,\*</sup>, David Krejci<sup>b</sup>, Paulo Lozano<sup>b</sup>

<sup>a</sup> Space Systems Laboratory, Costa Rica Institute of Technology, Cartago, 30101, Costa Rica

<sup>b</sup> Space Propulsion Laboratory, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA

Refer to the journal homepage for access to the entire paper – I reprint here only the abstract.

The first author was the Project Manager for the Irazu Project of Costa Rica.

## ABSTRACT

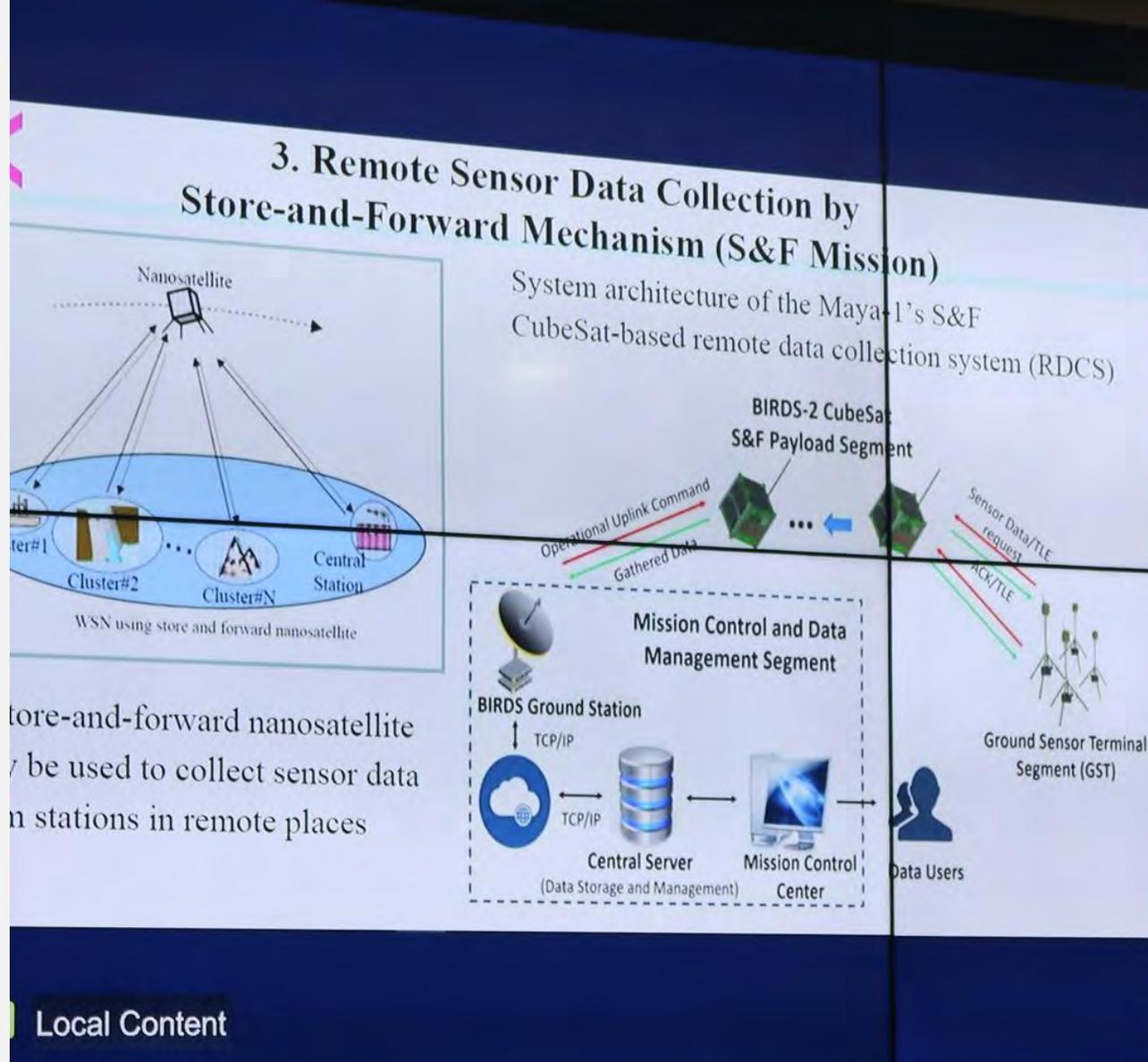
The Space Propulsion Laboratory (SPL) of the Massachusetts Institute of Technology (MIT) is developing the Ion Electro spray Propulsion System (iEPS), designed to address a current need in CubeSat technology: miniaturized electric thrusters. These could be used for different applications, ranging from attitude control to interplanetary flights. In this work, performed together with the Space Systems Laboratory of the Costa Rica Institute of Technology (SETEC Lab), we explore a case study in which the iEPS is used for constellation management in Low Earth Orbit (LEO) when integrated in a 3U CubeSat. We analyze how a 180° separation in the Right Ascension of the Ascending Node (RAAN) between two CubeSats (SatA and SatB) starting in the same orbit can be achieved by modifying one of the spacecraft's orbital altitude, resulting in a difference in their rate of nodal precession (defined as the drift rate) due to the  $J_2$  effect, and therefore a difference in their relative RAAN. The method consists of SatB increasing its semi-major axis, drifting in a higher orbit with a lower drift rate, and returning to the original semi-major axis once the desired difference in RAAN is achieved relative to the other spacecraft. SatA will stay in its original orbit, using its thruster to compensate for orbital energy loss due to atmospheric drag, therefore demonstrating another application of iEPS for constellation management. Three different simulations were studied, defined as the minimum time trajectory, minimum propellant trajectory and a hybrid trajectory, consisting of reaching a higher altitude orbit, but actively changing the RAAN using the propulsion system instead of drifting. It was observed that the difference in this orbital element could be achieved using 85 g of propellant in as little as 164 days for the minimum time trajectory. The same difference could also be achieved using only 44 g of propellant in 245 days for the minimum propellant trajectory. Furthermore, the results of the hybrid trajectory showed that the goal could be achieved in 161 days, but using 158 g of propellant mass, demonstrating the benefit of using a drift orbit. The results proved the feasibility of implementing iEPS for constellation management using 3U CubeSats in LEO.

# The launch of BIRDS-2 as viewed from the Philippines

Text and photos by Yvette B. Morales / PHL-Microsat  
13 July 2018

# 'Cube Computing' in Space

Source of the left diagram on S&F nanosatellite: A. Addaim, A. Kherras and Z. Gennoun., "Design of WSN with Relay Nodes Connected Directly with a LEO Nanosatellite", Int. J. of Computer and Communications Engineering, Vol. 3, No. 5, September 2014.



*Maya-1 engineers Joven Javier and Adrian Salces gave a short talk on Maya-1 and the BIRDS Project during the local viewing of the rocket launch on 29 June 2018.*



As Maya-1, a 1U CubeSat awaits deployment into low earth orbit from the International Space Station sometime in August this year, the two Filipino researchers who worked on the satellite in Japan are already looking forward to the next milestone – going back to the Philippines and teaching more Filipinos the “ins and outs” of small satellite development and space engineering.



*Maya-1 was launched to the International Space Station (ISS) through the SpaceX Falcon 9 Rocket CRS 15 | Screenshot from the SpaceX CRS 15 Mission livestream (Youtube)*

“Nagpadala tayo ng scholars abroad to get knowledge how to make satellites,” 36-year-old Joven Javier, one of the Maya-1 engineers, said during the rocket launch on June 29, 2018. “Hindi siya magsa-stop dito sa Kyutech. The aim is, pagbalik namin sa country, gagawa kami ng sariling satellite na homemade or doon pinanganak yung satellite sa Pilipinas.”

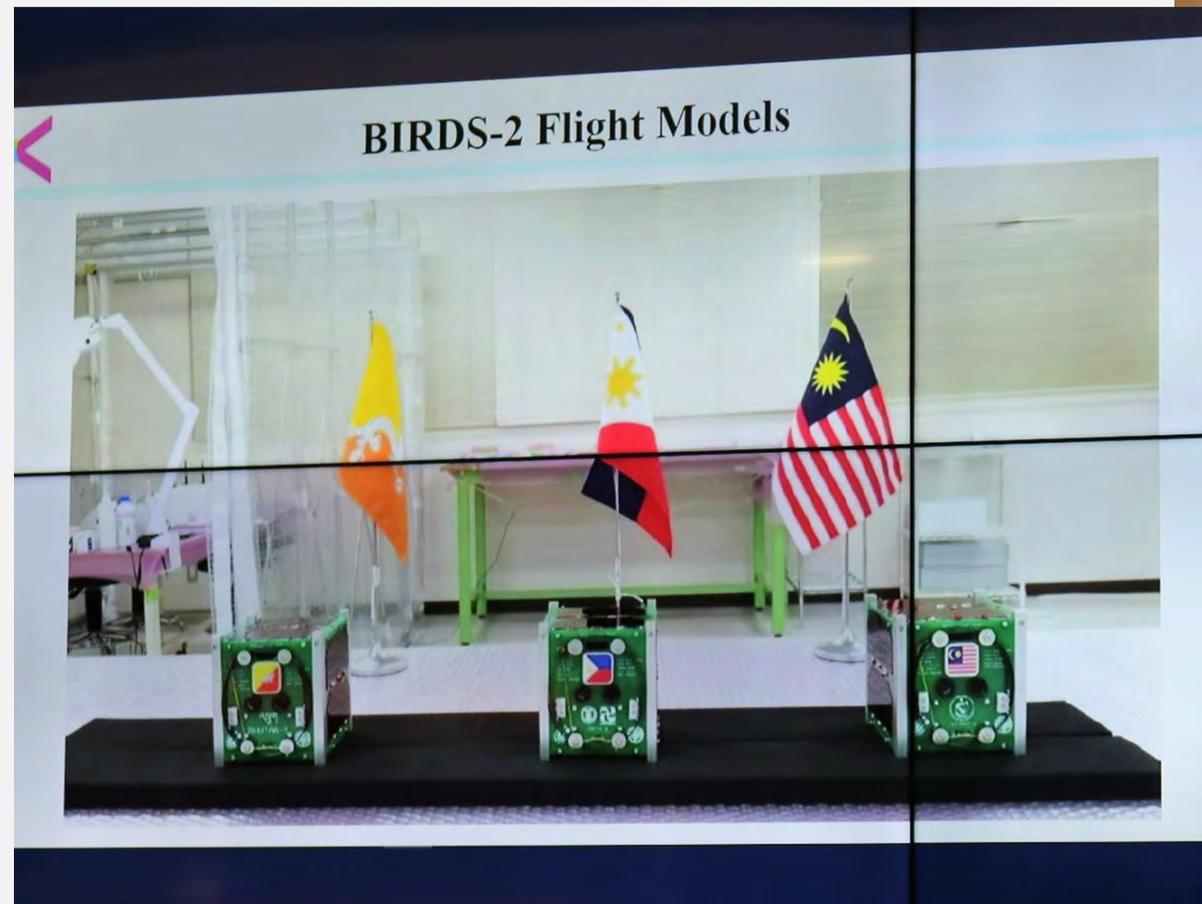
(Translation: We sent scholars abroad to get knowledge how to make satellites. It doesn't stop here in Kyutech. The aim is when we go back to the Philippines, we'll be able to produce our own, homemade satellites.)



*Maya-1 engineers Joven Javier (L) and Adrian Salces (R).*

Javier is taking up his masters studies in Space Engineering International Course (SEIC) at the Kyushu Institute of Technology (Kyutech) in Japan. He is joined in Kyutech by Adrian Salces, a Doctor of Engineering student in Applied Science for Integrated System Engineering, in designing and developing Maya-1.

Both Javier and Salces are researchers belonging to the Philippine government-funded research program, “Development of the Philippines’ Scientific Earth Observation Microsatellite” (PHL-MICROSAT) being implemented by the University of the Philippines Diliman (UPD) and the Advanced Science and Technology Institute of the Department of Science and Technology (DOST-ASTI).

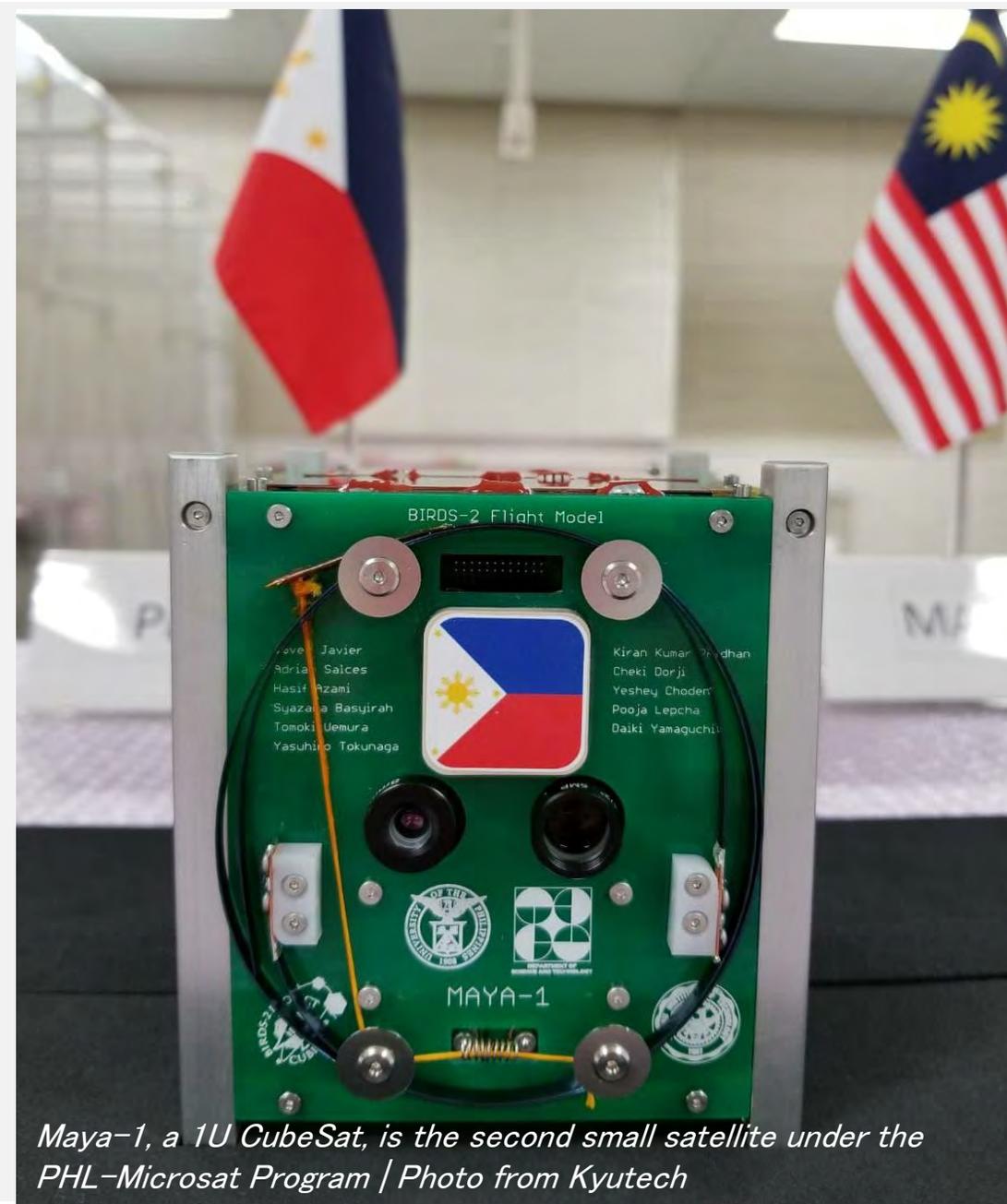


*CubeSats of Bhutan, Philippines, and Malaysia under the BIRDS-2 Project.*



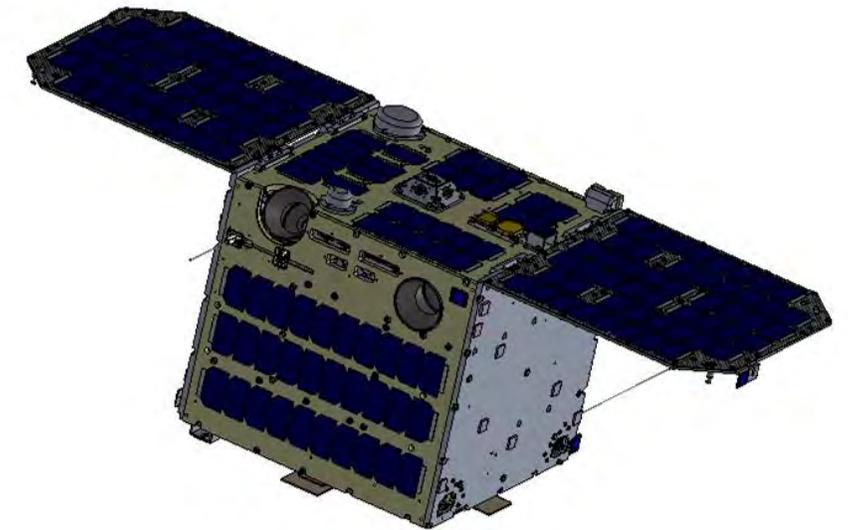
*PHL-Microsat Project 1 Leader Dr. Marc Caesar Talampas at the local viewing of the Maya-1 Rocket Launch on 29 June 2018.*

Maya-1 is the second small satellite to be developed and launched into space through the PHL-MICROSAT Program, the first being Diwata-1, a bigger satellite the size of a “balikbayan box” and belonging to the 50-kg class of microsatellites.



*Maya-1, a 1U CubeSat, is the second small satellite under the PHL-Microsat Program | Photo from Kyutech*

Diwata-1 has been in orbit since April 2016, conducting scientific earth observation with its onboard cameras. There is ongoing work on a third small satellite, Diwata-2, which is another 50-kg microsatellite aimed at scientific earth observation and amateur radio communications. Diwata-2 is expected to be completed and launched into low earth orbit in the fourth quarter of 2018.



*Mechanical drawing of Diwata-2, which is currently under development.*

The Maya-1 CubeSat was developed under the 2nd Joint Global Multi-Nation Birds Project or **BIRDS-2 Project** of the Kyushu Institute of Technology in Japan. Bhutan and Malaysia also launched their CubeSats BHUTAN-1 and UiTMSAT-1 on June 29, also under the BIRDS Project. The three participating nations will also have their own ground station terminals where they can operate the three CubeSats as shared resources.



**The Maya-1 CubeSat has six scientific missions:**

- 1) Automatic Packet Reporting System (APRS) Message Digipeater,
- 2) Remote Data Collection by Store and Forward (S&F) Mechanism,
- 3) GPS Chip Demonstration,
- 4) Single Event Latch-up Detection,
- 5) Magnetic Field Measurement by Anisotropic Magnetoresistance, and
- 6) Image and Video Capture.

The S&F System allows the CubeSat to collect data from ground sensor terminals within its footprint, save it, and forward the data to any member ground station. Meanwhile, the APRS Message Digipeater can communicate with ham radios. Maya-1's two cameras — a wide-angle and a narrow-angle lens — can capture images and minimum resolution videos for research purposes.

“They’re going to operate in a constellation. What that does is when you have three CubeSats passing above us at different times, we have three opportunities to make measurements and do experiments instead of just one”, Dr. Joel S. Marciano, Jr., program leader and acting director of the Department of Science and Technology Advanced Science and Technology Institute (DOST–ASTI) said.

Marciano, who is also a professor at the University of the Philippines–Diliman Electrical and Electronics Engineering Institute, referred to satellites as “computers in space”.

“You associate ‘Maya’ with birds that are so common and ubiquitous. That represents what we mean when we named the CubeSat ‘Maya’ because we see that computing is becoming increasingly ubiquitous. The CubeSat is actually a computer that happens to be in space. Computing is becoming pervasive and embedded in the environment, including in space,” he said.

Marciano said small satellites are computers with a distinct vantage point in that it can make measurements and collect data over large geographical scales. By operating as a constellation, such data and computation can be cost-effectively accessed over more regular temporal intervals as well.

“It’s about the data”, Marciano said. “In an information society and knowledge economy, data is the new oil. It leads to actionable information that underpin sound, responsive, effective, evidence-based policies and interventions,” he added.

Aside from training engineers and scientists and getting their hands dirty with building small satellites, Marciano said partnerships with local industry is also important to drive further economic benefits from space technology in the Philippines. To support this, engineers from the PHL-MICROSAT Program have undertaken the development of electronic modules such as the Amateur Radio Unit (ARU), Sun Aspect Sensor (SASZ), and Attitude Control Unit (ACU) that will onboard Diwata-2 and engaged local manufacturers in the prototyping of these blocks.

“We started it in the laboratory but eventually, what we want to do is for the local industry to take it up. We want to engage and challenge them in terms of their manufacturing and their other logistics capabilities to scale these up and to do it reliably and cost-effectively,” Marciano said.



Photos from PHL-Microsat

As far as sustaining the momentum of these initial efforts, Marciano says that the country needs to have the “stamina” for space technology research and development.

“We have to use the long lens when viewing such efforts. We must be looking at the impact and outcomes,” he added.



**PHL-Microsat Program Leader and DOST ASTI Director Joel Marciano answered questions from the media during the local viewing of the rocket launch.**



*PHL-Microsat Project 1 Leader Marc Caesar Talampas congratulates Joven Javier and Adrian Salces for Maya-1*

*Select students and members of the media joined the local viewing of the rocket launch on 29 June 2018.*

**The End**

Text and photos by Yvette B. Morales / PHL-Microsat



## OLAYINKA'S WORLD

15 July 2018, Column #1

OLAYINKA FAGBEMIRO  
NATIONAL SPACE RESEARCH &  
DEVELOPMENT AGENCY (NASRDA),  
ABUJA. NIGERIA

## 18. Olayinka's World – Column #1

**This is expected to be  
a monthly column – from Nigeria. - Editor**

### MYTHS, LEGENDS AND PROGRESS -- MY EXPERIENCE WITH AWBNIGERIA

In the neighborhoods of Nigeria, it is commonplace for myths about the wonders of the sky to fly around unfiltered and uncontrolled. For instance, in times past, certain myths about Solar eclipse in several communities in Nigeria included the belief that it is an act brought about by Elephants fighting in the bush, Signs of end times (Apocalypse), The gods are angry and several other tales and legends.

When I was entrusted with the task of being the National Coordinator of Astronomers Without Borders Nigeria (AWBNigeria), I took it upon myself to focus on educating the younger generation, focus on gender inequality issues and encourage STEM Education. At first I looked at the task with trepidation due to its gargantuan nature. I said to myself 'How do I make a difference?' My first move was to be in contact with school kids that come to the Obasanjo Space Centre, Abuja for excursion from their schools. I knew this was a great opportunity as this may be their only chance to learn about Astronomy and Space Science. I organized a team to this effect that understood the aim and drive of AWBNigeria. Together we have reached out to thousands of school kids in a space of less than 5 years.

Also, recently, we have started public star gazing whereby we set up our telescopes at public places such as parks and malls, where people usually gather to get a glimpse of the night sky in all its beauties and splendour, seeing the beautiful stars and planets. The great excitement shown and the interesting questions asked by these people are reasons enough to know these activities are making huge impact in the society.

**CONTINUED ON THE NEXT PAGE**

# Various outreach activities on Astronomy and Space Awareness across Nigeria



## 19. BIRDS-3: Activities of June-July 2018

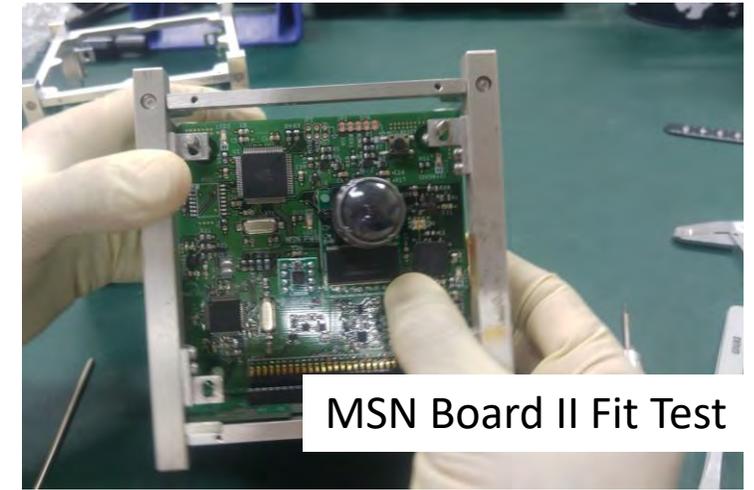
By Abhas



Weekly Meeting in Progress



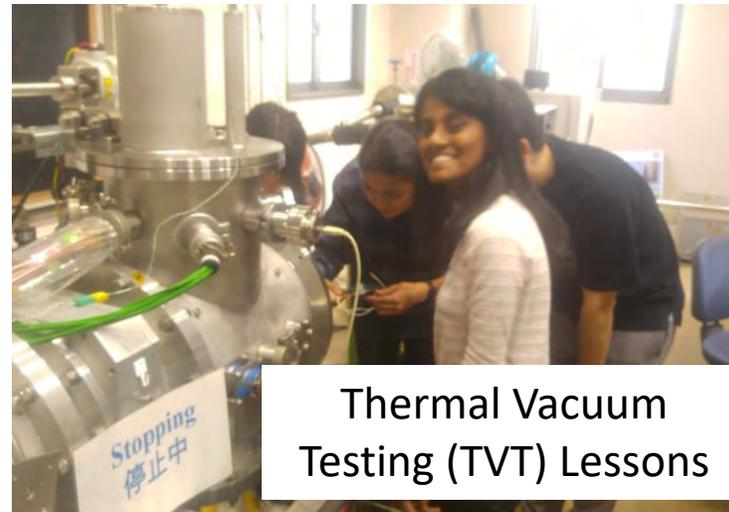
Anechoic Chamber Introduction



MSN Board II Fit Test



Pooja and Dulani Teamwork



Thermal Vacuum Testing (TVT) Lessons

**BIRDS-3** is now integrating the Engineering Model and preparing for Space Environment Testing that is scheduled to begin from 30th of July, 2018. The team is working round the clock to get all the systems working together in time. This is the crucial phase of design and development. The team will start with the TVT test.

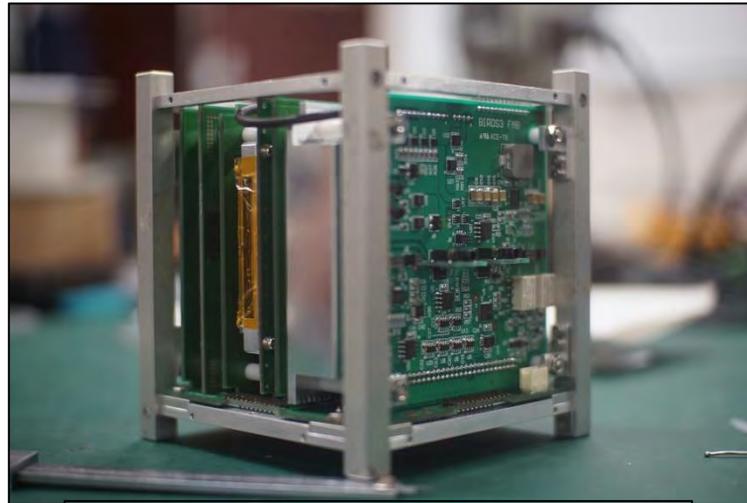
## 20. BIRDS-3: Preparing for the Critical Design Review (CDR)

By Dulani

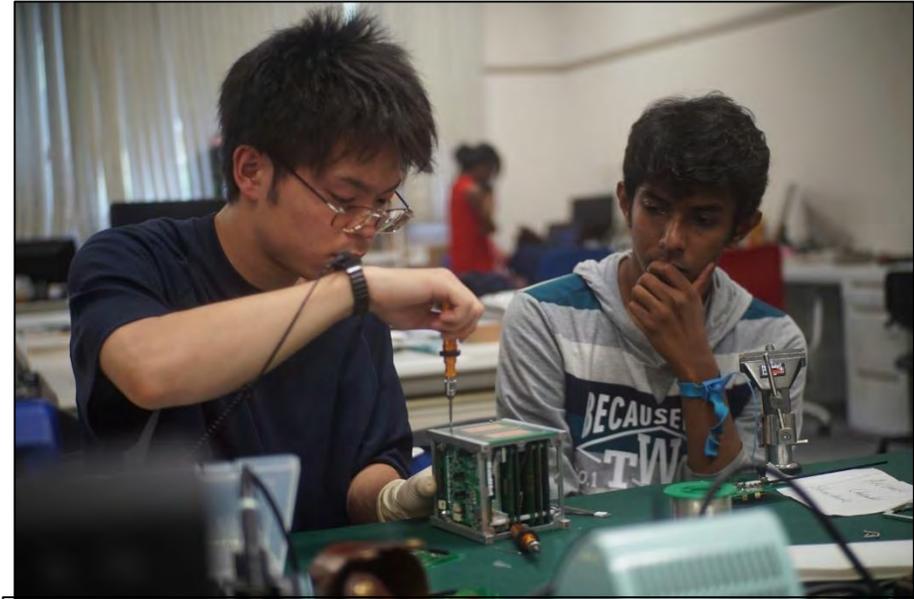
BIRDS-3 CDR will be held on 31<sup>st</sup> of August 2018 .  
Venue: Nakamura Hall, Kyutech



Sasaki checking the assembled satellite



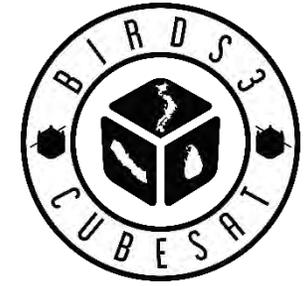
EM of BIRDS-3 (before fixing solar panel boards)



Sasaki and Tharindu assembling the satellite

Currently BIRDS3 team is integrating the whole system. EM(Engineering Model) will be tested at this point. Environment testing will begin at the end of this month.

## 21. BIRDS-3: Thermal Vacuum Testing



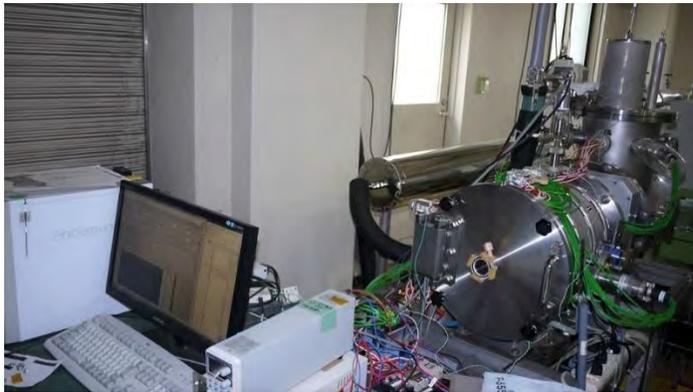
Yuta Kakimoto, July 14, 2018

今回は熱真空試験についてお話しします。

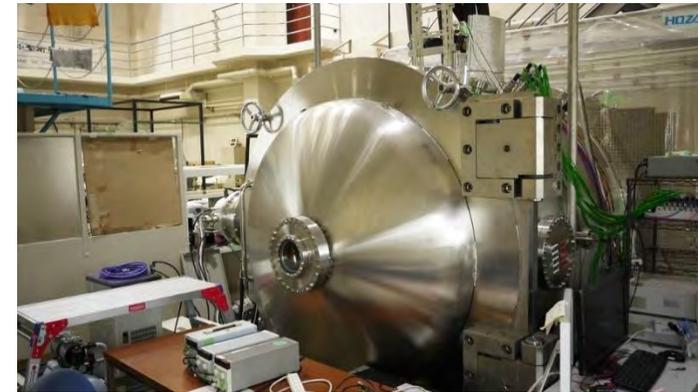
BIRDS-3のエンジニアリングモデルの熱真空試験は、本学内の超小型衛星試験センターの小型熱真空チャンバーを用いて行います。

試験は、チャンバー内部の圧力0.001Pa以下、内壁の温度を $-170^{\circ}\text{C}$ 程度に保ち行います。また、フライトモデルの熱真空試験は一度に3機を試験するために、大型熱真空チャンバーを用いる予定です。

現在、BIRDS-3はEMの統合段階で、熱真空試験は8月に行う予定です。



小型熱真空チャンバー



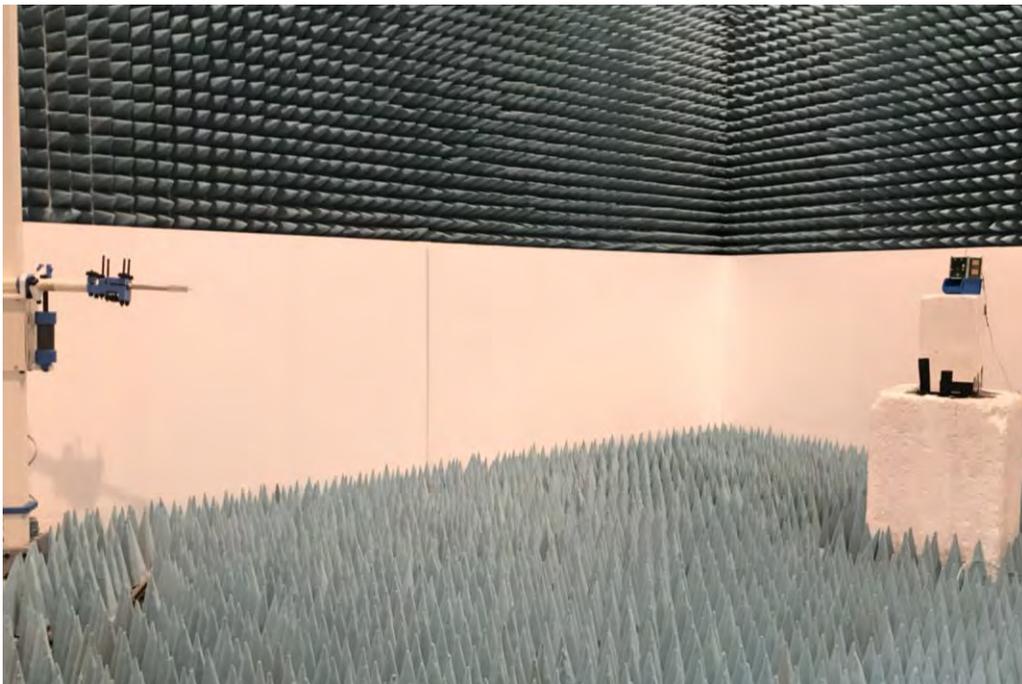
大型熱真空チャンバー

## 22. BIRDS-3: Anechoic Chamber Test

By Kishimoto-san (Makiko)

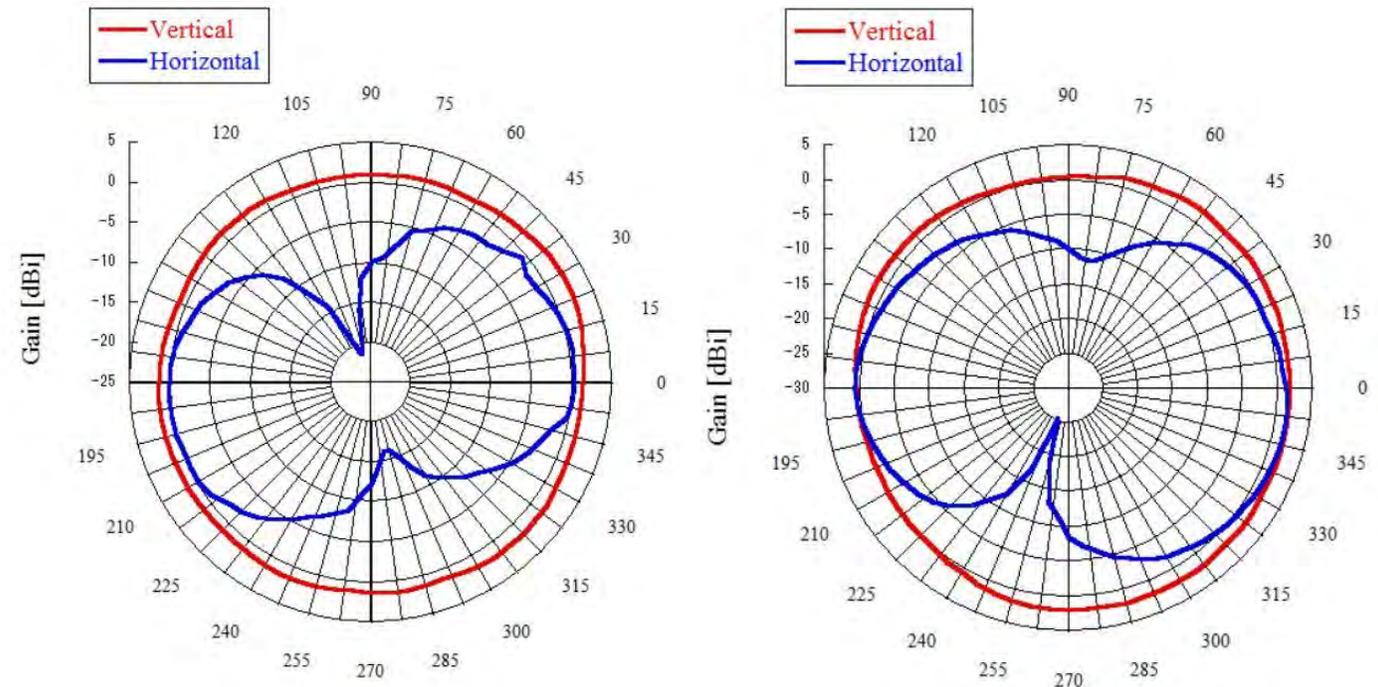
Tharindu and Makiko did the test using Anechoic Chamber. It is for measurement of the antenna length and the antenna radiation pattern. At the preparation stage, all BIRDS-3 member and some other member helped us and we arranged absorbers. It was so hard work, so thank you very much.

The graphs are the results of BIRDS-3 monopole antenna. We measured the antenna at two different positions.



Anechoic Chamber

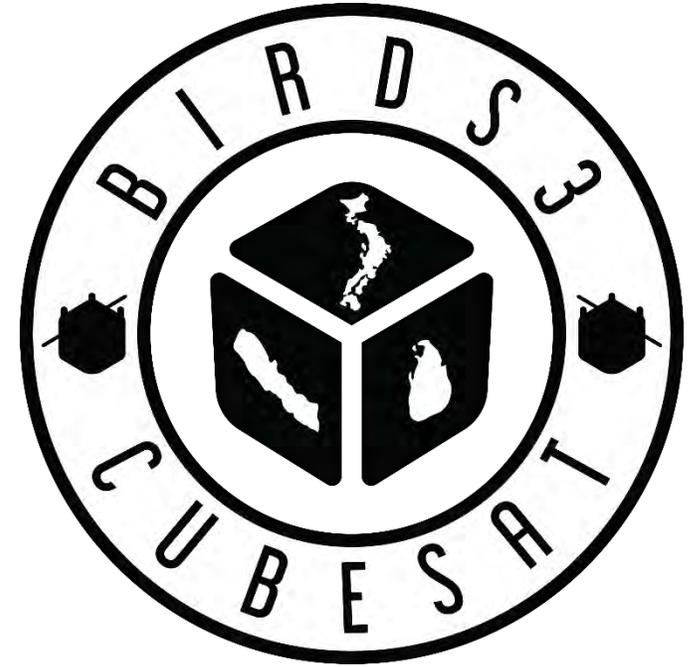
(measuring the antenna radiation pattern)



Test results (Vertical, Horizontal)

# Development of Compact Low Cost Sensor Station for Remote Data Collection

Pooja Lepcha  
BIRDS-3



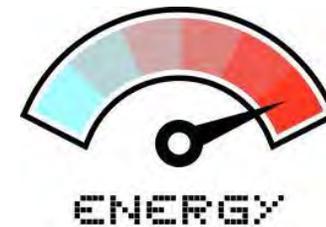
## Background

Earth is constantly changing and often, these changes lead to natural disasters like Glacier Lake Outburst Floods (GLOF) due to rapid melting of glacier lakes, as in the case of Bhutan, poses threat to lives and properties. Therefore, these lakes need to be constantly monitored using remote sensor stations.



## Problem Statement

The conventional remote sensor stations are huge in size with higher power requirement and often sparsely located owing to its huge cost. In some cases they aren't located remotely since constant maintenance might be required.

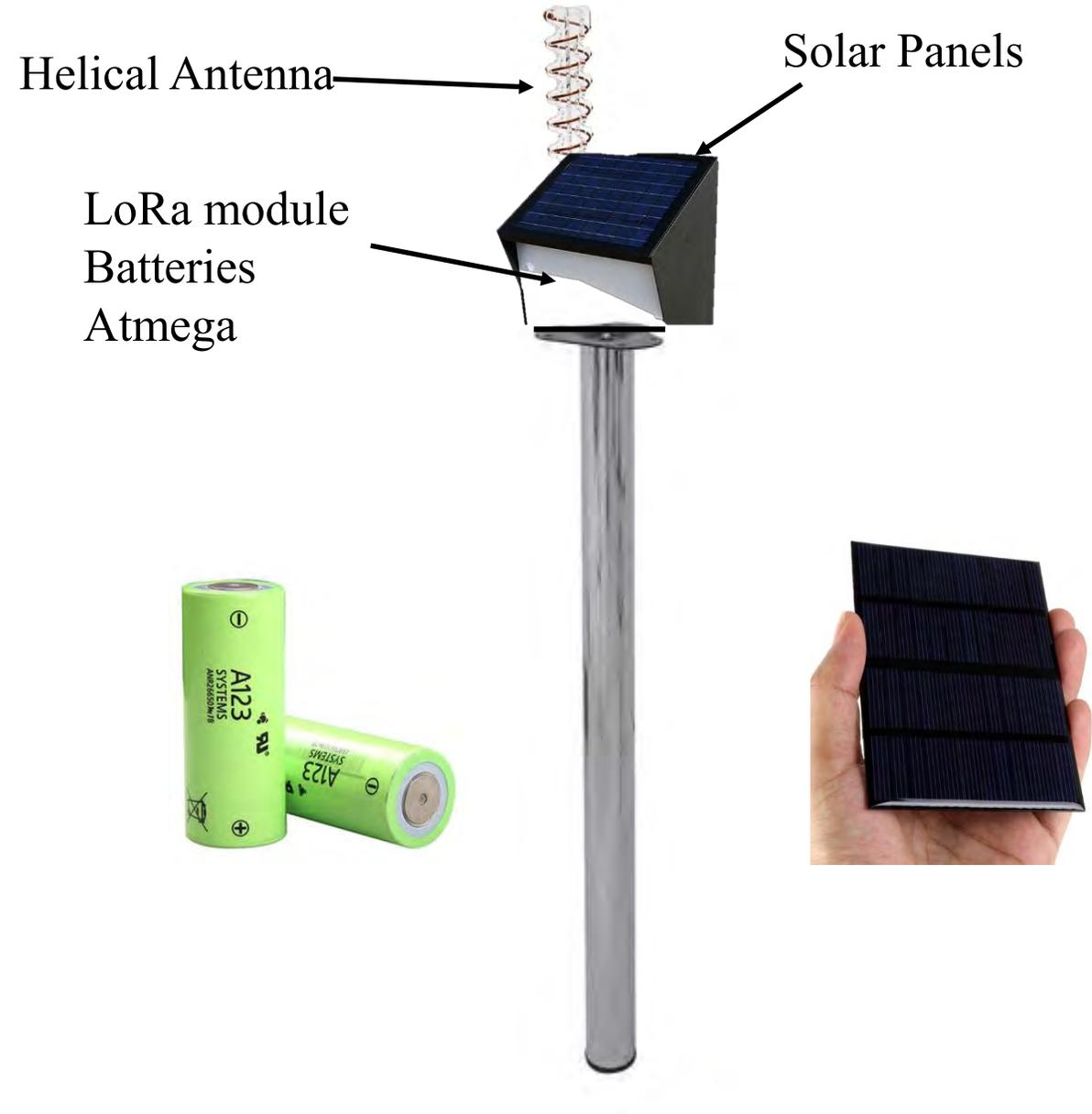


## Objectives

- Develop a robust and compact stand-alone remote station for data collection with minimum complexity using LoRa modulation

## Methodology

- LoRa modules will be used owing to its low power requirement and wide area coverage.
- The sensor stations shall have transmission power as low as 20mW so that a small rechargeable battery and 1.5W solar panel can power it up.
- Due to its lower cost, it will be spread around an area for remote data collection.



## 24. BIRDS-3: Additional thermal cycling

Sasaki Yuji

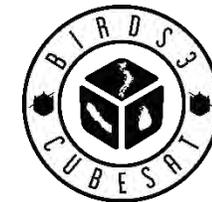
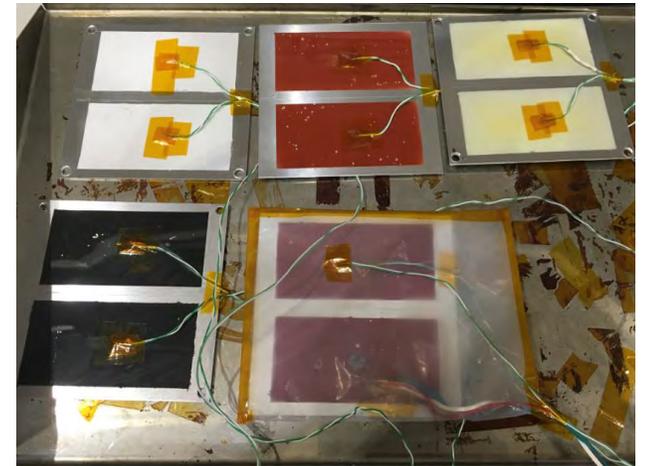
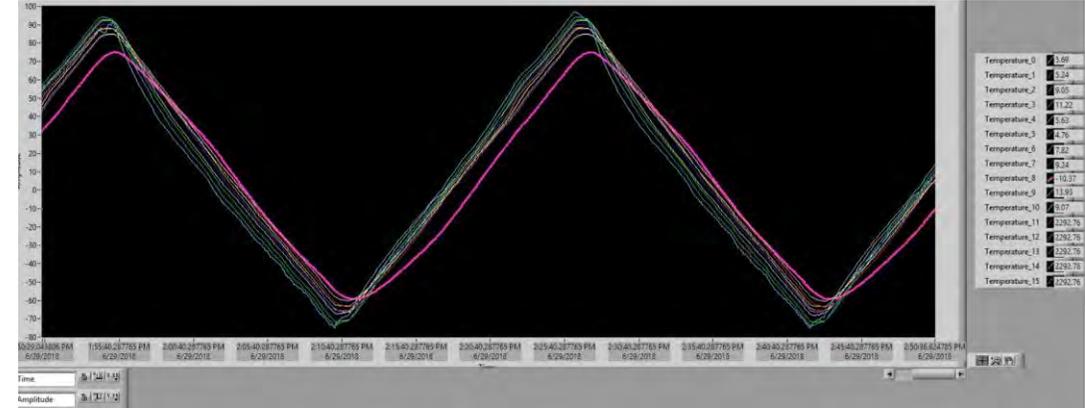
14/07/2018

### 熱サイクル試験

今回は5月に紹介した熱サイクル試験の続きを紹介します。前回のニュースレターでは100サイクルでしたが今回は数が増えて+200サイクルしました。この試験は軌道上の熱サイクルによる太陽電池の耐性を見るためのものです。

この試験をする前に候補の2つの接着剤をなくして、新しい接着剤の候補を1つ追加しました。これはより温度範囲を広く持つ接着剤を試験するためです。低軌道の衛星は1年間で約5000サイクルの熱サイクルを受けます。地上でこのような大きなサイクルはかけられないので、試験する温度の範囲を宇宙上でのものに比べると広くとっています。

この実験は長時間、実験機器を動かしてさらに液体窒素を使うため定期的に状況をチェックしなければなりません。写真のように1時間おきにメールで温度状況を確認します。200サイクル後の結果は1つ接着剤の色に変化が見られましたが剥がれてはいませんでした。引き続きサイクルをかけていきます。 Although we performed additional thermal cycles, visual changes were seen, but functional changes were not seen. We will continue the thermal cycling.



## 25. Some of the new SEIC students arriving in the fall



Space  
Engineering  
International  
Course



# Welcome some of the incoming

[https://www.google.co.jp/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwir7ae086LcAhXBQN4KHR7RBjwQjRx6BAgBEAU&url=https%3A%2F%2Fwww.thecompleteuniversityguide.co.uk%2Finternational%2Fstudying-abroad%2F&psig=AOvVawOT34pSaMKZ\\_cy6vAKrAv6c&ust=1531805782813008](https://www.google.co.jp/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwir7ae086LcAhXBQN4KHR7RBjwQjRx6BAgBEAU&url=https%3A%2F%2Fwww.thecompleteuniversityguide.co.uk%2Finternational%2Fstudying-abroad%2F&psig=AOvVawOT34pSaMKZ_cy6vAKrAv6c&ust=1531805782813008)

# INTRODUCTION

- **Name: Hari Ram Shrestha**
- **Nationality: Nepalese**
- Bachelor Degree: Electronics and Communication Engineering (Purbanchal University)
- Current Job Position: Work as a Chief Technical Assistant at NAST.
- Major Activities: Solar PV training to Engineering Students, To Monitor of GPS station and its data, Smart City Awareness Program .
- It is a matter of honor and privilege to be involved in BIRDS-3 Project and launch Nepal's first satellite into the space. Personally, I take this opportunity as a learning and I am enthusiastic about joining the team.



# Cont....

- During my valuable time at Kyutech, I would like to specialize in Communication System. Ensuring smooth information exchange between ground station and satellite . I also Look forward to be involved in design of components , their fabrication, assembly, testing and operation of cubesat. I believe the immense knowledge that I shall acquire will be a healthy experienced to work as a satellite Engineer after returning to Nepal.
- I expect BIRDS-3 Project to be challenging yet illuminating and I feel fortunate to be a part of the team. I shall give my best during the project tenure. I believe I will potentially take back home valuable knowledge, robust experience, international friendship, and lot of happy memories.





**Thank You**



# Know a little about me

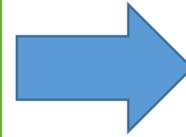
- I am **Hind Mahmoud**.
- I am 29 years old, from Sudan.
- I hold B.Sc in electronics engineering and M.Sc in embedded systems.
- I work as a **researcher** for the Institute of Space Research and Aerospace (**ISRA**), Electronics Systems Department.



**An optimistic and dynamic researcher**

# What I hope to achieve

One of the main goals I want to achieve is to be an effective member in the Sudanese team in BIRDS, **build** Sudan's cubesat **ISRASAT1** and **contribute** in the development of Sudan's space technology in general and of ISRA specifically.



I want to build constructive **relationships** with my colleagues and gain the utmost knowledge and experience.



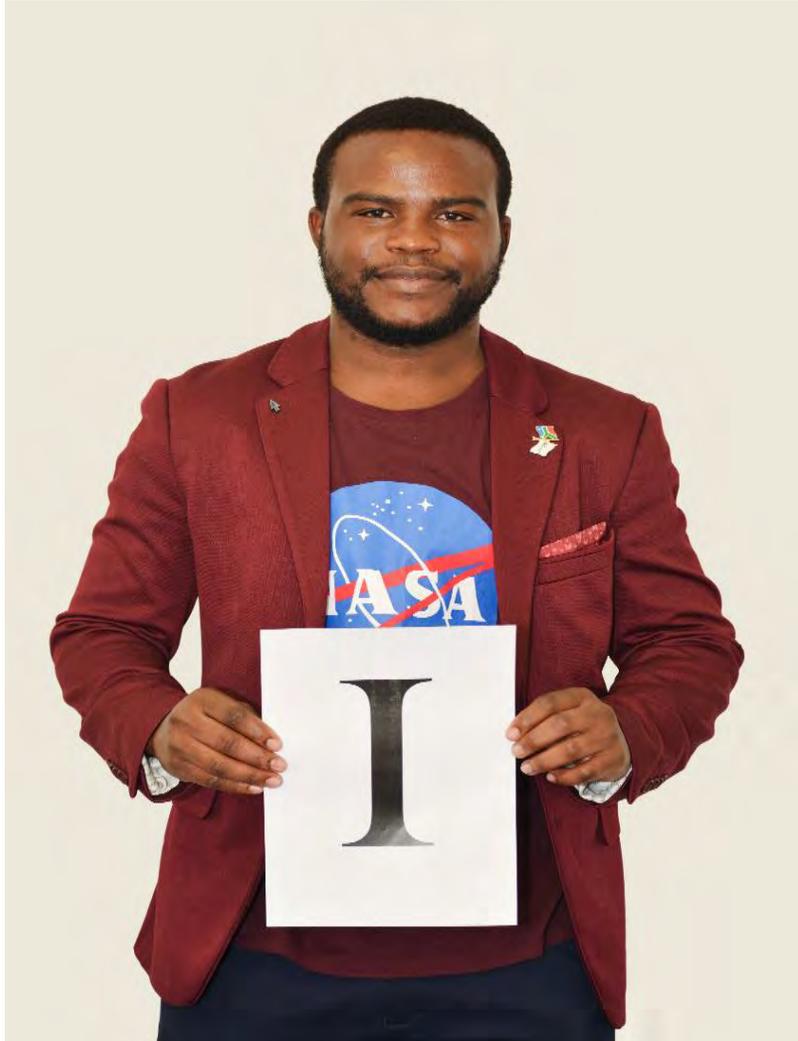
I want to learn Japanese language, experience the Japanese lifestyle and culture and share mine.



The ISRA family



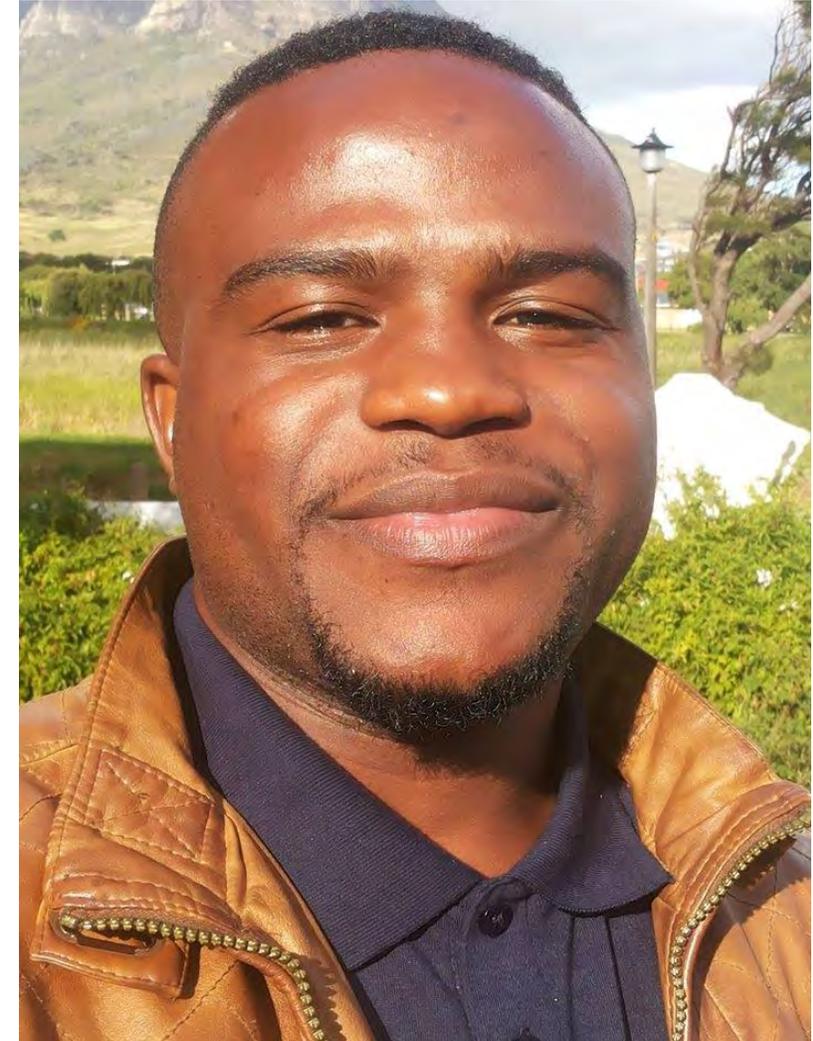
Celebrating the final EPS test



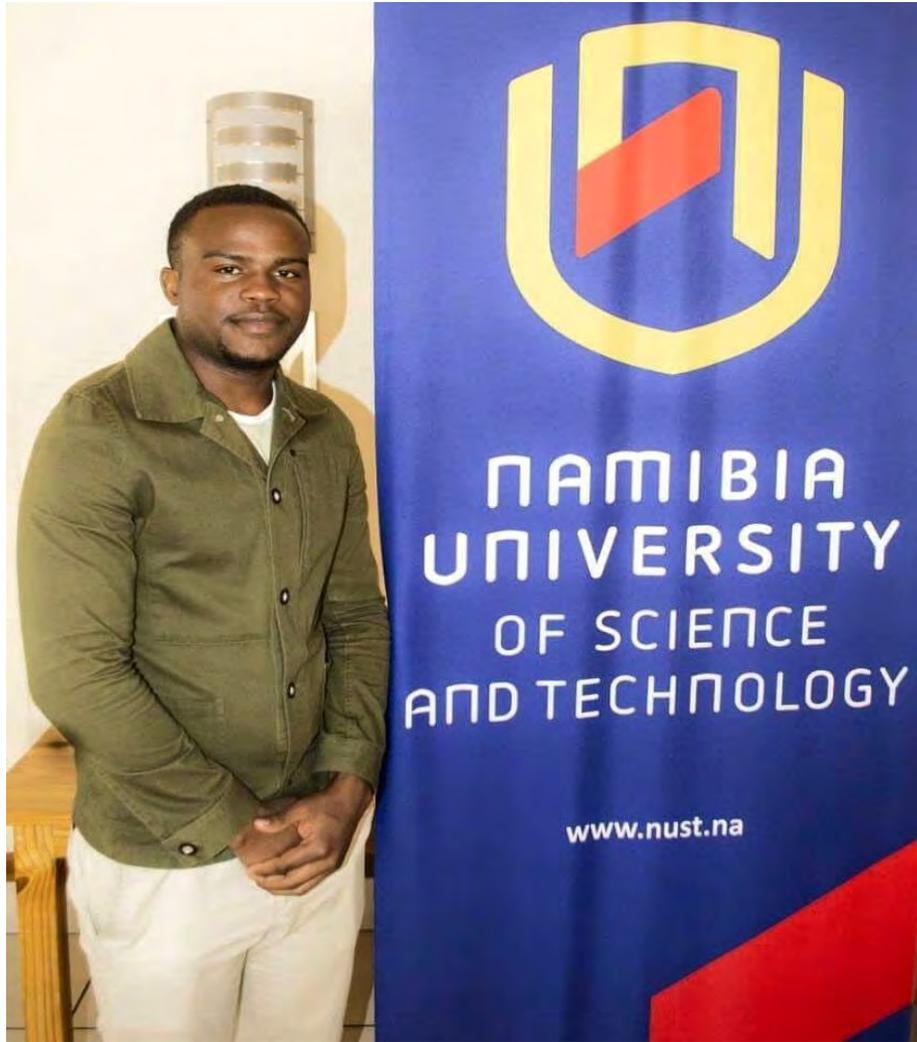
Developing capacity in Space Engineering will help Namibia to become spacefaring in the near future.

## Senior of Namibia

Senior is an electronic and telecommunication engineer and Space Generation Advisory Council's Regional Coordinator for the African Region. His undergraduate project was a review of the GNSS and determination of ionospheric total electron content. Senior was part of a group of 5 Namibian students who shadowed scientists from USA's National Aeronautics and Space Administration (NASA) under the Observations of Aerosols Above Clouds and their Interactions (ORACLES) programme in 2016. After graduation, he was employed as a Research Assistant in the Civil and Environmental Engineering Department at NUST. Subsequently, he was selected as one of five Namibian candidates for the Development in Africa with Radio Astronomy (DARA) Basic Training Programme 2016/17. DARA is a Newton Fund's human capacity development initiative to convert redundant satellite dishes into radio telescopes across Africa to form the Africa VLBI Network (AVN). Senior is passionate about space systems engineering, rockets, nanosatellites, electric cars and renewables. Elon Musk is a personal hero and I feel lucky to witness his efforts to colonise Mars and make humanity a multi-planetary species. In terms of social life, Senior is a diehard Real Madrid and Manchester United fan. Words cannot explain my excitement – I had a Japanese teacher in high school who taught us physical education and I have a lifelong dream to study in Japan. It's the technology powerhouse and my dad's favourite car brand (Toyota) is Japanese. I'm fascinated by the Japanese culture (bushido), Japan's beauty (Mount Fuji) and the delicious food (sushi & ramen)! SEIC is a lifetime opportunity for me to get involved in space projects and hopefully design and test winged rockets.



SEIC is a lifetime opportunity as I've always wanted to join an interdisciplinary, multicultural team.



Senior as the Vice-chairperson of NUST's Student Research Symposium Committee (2017)



With Taiwo Tejumola at 2017's UN/SA BSTI symposium at Stellenbosch



Senior as part of the SGAC team celebrating the 2018 IAF Excellence in "3G" Diversity Award intended to recognize IAF member organizations worldwide for outstanding contributions to the fostering of "3G" (Geography, Generation, Gender) Diversity within the space sector.

# Self-introduction

Izrael Zenar C. Bautista  
(The Philippines)

# About myself



Me and my family



My band with me as drummer

Hobbies: Anime/Manga, Music and travelling



Me with UP team testing amateur radio payload at Kyutech CeNT as part of the PHL Microsat program

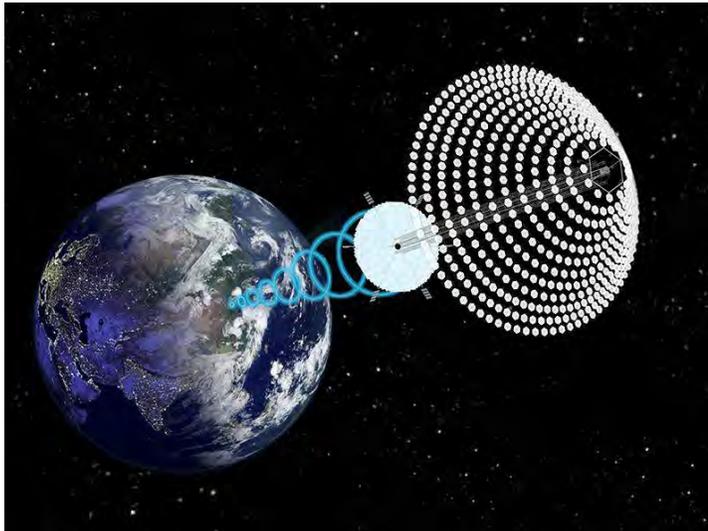


Graduated BS Electronics and Communications Engineering and MS Energy Engineering at University of the Philippines Diliman

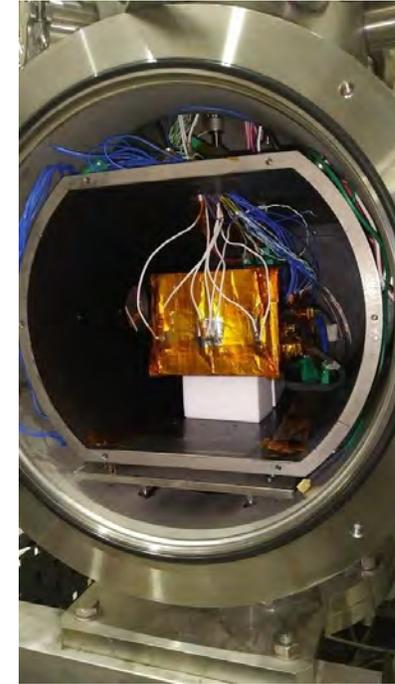
# Research at Kyutech



Me at Kokura castle,  
Kitakyushu



Contribute in the  
realization of  
space based solar  
power



Develop space  
ready satellite  
power supply



The Philippines

# MARK ANGELO C. PURIO

Assistant Professor III, Adamson University

## RESEARCH INTERESTS

*Instrumentation and Control, Machine Learning and Intelligent systems, and their application to Agriculture, Environment and Biomedical Engineering*

## ACADEMIC BACKGROUND

- ❑ *MA in Education*  
Adamson University
- ❑ *MS in Electronics Engineering*  
De La Salle University
- ❑ *BS in Electronics and Communications Engineering*  
Batangas State University

## AFFILIATION

- ❑ *Mechatronics and Robotics Society of the Philippines, Professional Member*
- ❑ *Institute of Electronics Engineers of the Philippines, VG for Education*
- ❑ *ASEAN Engineers Register, Associate ASEAN Engineer*
- ❑ *Institute of Electrical and Electronic Engineers, Member*



# MARK ANGELO C. PURIO

## ACTIVITIES





# MARK ANGELO C. PURIO

## ACTIVITIES



## Engr. Marloun Sejera is from the Philippines.

A graduate of Master of Engineering, and Bachelor of Science in Electronics Engineering. He is the current ECE Program Chair in the School of Electrical, Electronics and Computer Engineering at MAPUA UNIVERSITY.

He also served as a Faculty Member, for 15 years now, teaching Major courses in ECE Program such as Electronics, Microwave, and Satellite Communications. Recently, he had undergone a Short Course on Satellite Mission in Dehradun, India under the ASEAN India Space cooperation Program.

He is optimistic and plans to actively participate in the development of Space Technology in his country upon completion of Space Engineering program at Kyutech.





With Mapua University President, Dr. Reynaldo Vea, and winners of the Magsaysay Future Engineers/Technologists Award



Students from Mapua University accepting the Best Innovation Award during the 2017 Project Design Summer Internship At CYCU University, Taiwan

At the 13<sup>th</sup> Analog Devices Technical Symposium



Hiking and Marathoning once in a while



## 26. The Airbus GEDC Diversity Award

Entries are now being accepted

**AIRBUS** JOB SEARCH LOGIN MENU

SHARE THIS PAGE

2018 AWARD

**This is the BIRDS-1 Project**

2017 WINNER

INSPIRING INITIATIVES

NEWS

# Airbus GEDC Diversity Award

for engineering education

### Introduction

The Airbus GEDC Diversity Award aims to shine a light on successful projects that inspire students from all profiles and backgrounds to study and succeed in engineering. The award was developed and funded by Airbus in partnership with the GEDC, the leading international organisation for leaders of schools and colleges of engineering education. Launched in 2012, the award is now in its 6th year.

### Enter Now

Start your entry for the 2018 Airbus GEDC Diversity Award

### Entry Information

Read all of the important information about the award.

***Enter today for the 2018 award***  
<http://company.airbus.com/careers/Partnerships-and-Competitions/GEDC-Airbus-Diversity-Award.html>

## 27. Guest article by Gladys Yaa Saah Oppong (Ghana)



# Inspiring women into Space Science

Author: Ms. Gladys Yaa Saah Oppong

Country: Ghana

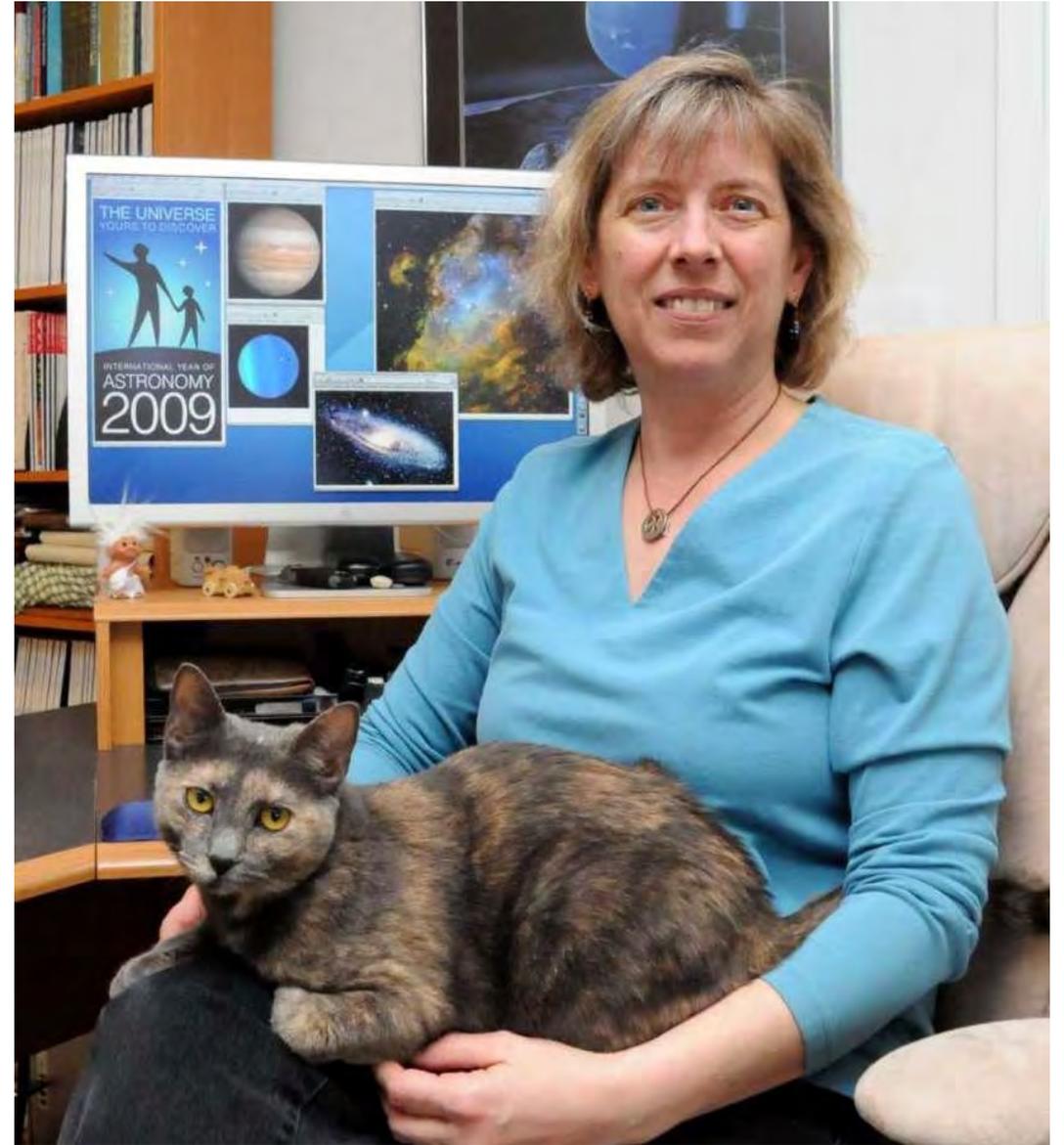
Position: Administrator of All Nations University Space Science and Technology Laboratory (ANU-SSTL)

Background: PhD Candidate (Women Entrepreneurship)  
Masters in Business Administration

8<sup>th</sup> July, 2018

- There has been an increase in the demand of Science & Technology in growth and development in every field of life. The area of Science, Technology and Engineering are mostly classified as a male dominated place to be, more specifically in most developing nations. Nevertheless, not many people know of the few women that are doing well in these fields of discipline and as a matter of fact exploring the unknowns.
- Space science & technology, an area of study being explored for sustainable development to human benefit has not been cut off from empowering women in Technology and the Sciences. Women empowerment remains one of the factors of the United Nations Sustainable Development Goals (UN SDGs) covering social and economic development issues, that target poverty, hunger, health, education, climate change, gender equality, water, sanitation energy, urbanization, environment and social justice. The history of women in space science and technology has been in existence. In June 2013, four out of eight NASA candidates to space were women, the first time ever there has been an equal balance of men and women on such a program. One could say that this new development is one big leap for women. But how does news like this impact the upcoming generation?

Heidi Hammel, a woman Scientist in Physics and Astronomy is successfully influencing others to join the field of astronomy and science. Hammel who got frightened to read a course in astronomy with guys in a class once said to herself “I don’t think I belong to this class” and she nearly gave up to reading the course. Fortunately, she was lucky to have been encouraged by her teacher, saying to her “no no this is for you”. Even though Hammel struggled with her studies yet she did not drop her course nor gave up but persisted on her decision. Women are paving the way to the future, and now is the time to follow them in leadership and various fields.



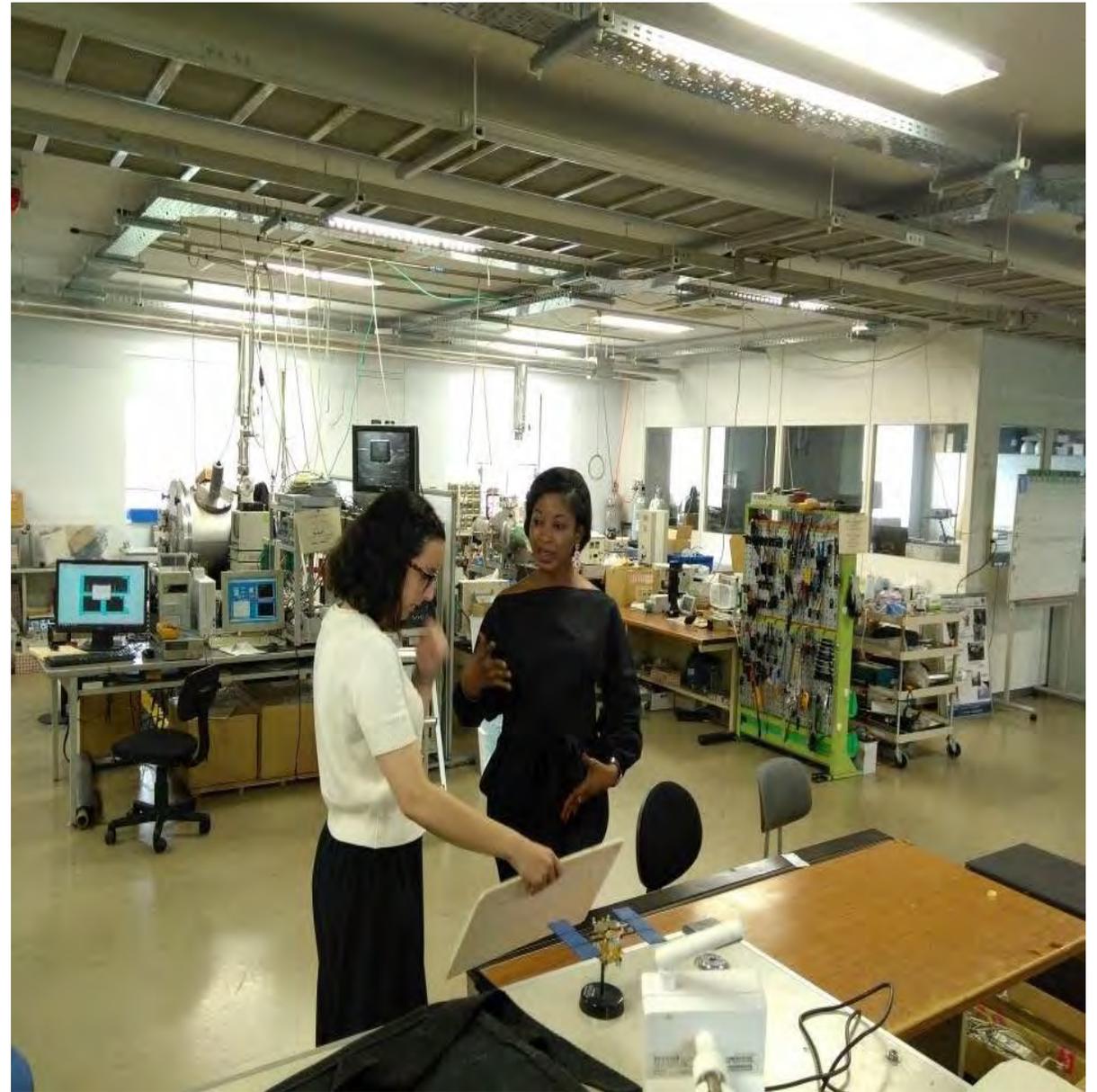
We therefore ought to encourage women more in our homes and societies to embrace science and engineering. Inspiring an interest in such topics (Woman Empowerment) also becomes a key to stimulating the success of women. I believe, women being interested about a particular subject matter can keep them engaged even through the tough moments in various fields of discipline. It is said “if you educate a man, you’ve educated one person but if you educate a woman, you’ve educate a nation”.

Governmental and private organizations, universities, societies and nations at hand has to continue to encourage our young women to enter into Science, Technology and Engineering careers since it’s the backbone of nation building.

I end with Gertrude Elion who said “Don’t be afraid of hard work. Nothing worthwhile comes easily. Don’t let others discourage you or tell you that you can’t do it. In my day I was told women didn’t go into chemistry, but I saw no reason why we couldn’t”.

Thank you.

Gladys Yaa Saah Oppong





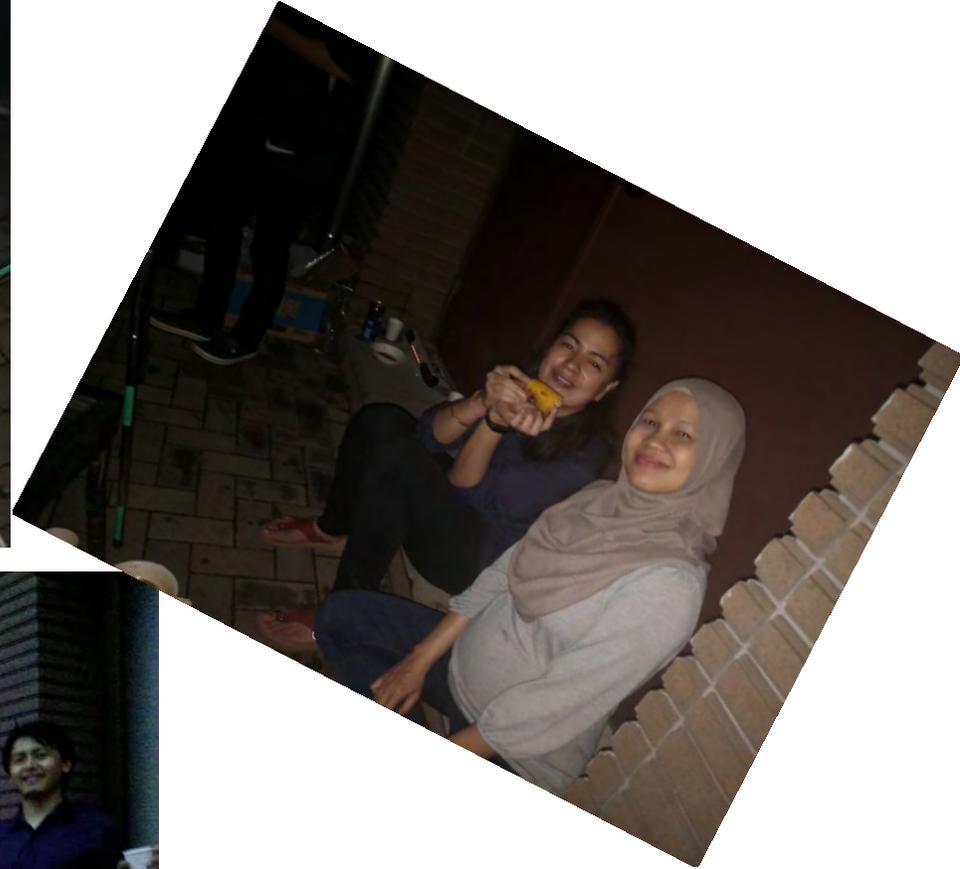
Shopping for supplies at Costco.  
Goto-san's mom (standing in the center) helps out.

# BIRDS-2 / BIRDS-3 BBQ PARTY

2018-06-29

Photo report by: Tharindu (BIRDS-3, Sri Lanka)

It rained all day  
– but came to a halt around the  
time we started cooking.



This time, BIRDS-3 monthly pot luck dinner party was converted to a evening BBQ party with BIRDS-2



Venue : Behind the general research building



While Abhas was explaining How it's made

There were reasons to celebrate



**Dr. Pauline:  
Got a position at Cal Poly**



**Joven:  
Successful BIRDS-2 launch to ISS**

## 29. 1KUNS-PF, Kenya's first satellite

This satellite was deployed under the [UN/Japan KiboCUBE](http://www.unoosa.org/oosa/en/ourwork/psa/hsti/kibocube.html) program; see <http://www.unoosa.org/oosa/en/ourwork/psa/hsti/kibocube.html> It appears to be working fine. We are hoping that Kenya will join the BIRDS-4 project.



Pictures at: <https://1kuns-pf.ns0.it/index.php/satellite-pictures/>



**Continued on the next page.**

# Kenya's first satellite



A video from Kenya

[https://www.youtube.com/watch?v=7WH-a\\_lCdl](https://www.youtube.com/watch?v=7WH-a_lCdl)

# 30. BIRDS described in Japanese aviation magazine (March 2018)



## Topics

### 九州工業大学 「BIRDS Satellite Project」 非宇宙先進国の持続可能な 宇宙プログラムに向けて

写真/文 編集部

日本の大学で初めてエアバス ダイバーシティ・アワードを受賞した九州工業大学が2017年12月13日、東京都内のエアバス・ジャパンオフィスでプロジェクトの説明会を行った。

エアバスとエンジニア教育の世界団体GIEDCが協力して開催する本賞は今年で5回目。エンジニアの多様性促進と人材育成支援を目的とし、世界中から応募された中から最も優秀なプロジェクトに対して賞を贈るもので、今回は185か国の39団体から45のプロジェクトが集まった。

受賞した九州工業大学による「BIRDS Satellite Project (BIRDS)」は、CubeSat「キューブサット」タイプ (1辺約10cmの立方体) の超小型衛星の開発を通じた人材育成を目的とする、2年間の包括衛星開発プロジェクト。同大学に留学している非宇宙先進国の大学生が超小型衛星を設計・製作し、衛星開発から運用までの一連の技術を習熟することを目標としている。

説明会には学生達がそれぞれの母国で持続可能な宇宙開発プログラムを立ち上げる知識や技術を得につけることを目標としている。

同大学はJAXAと「きぼう」日本実験棟からの超小型衛星放出の利用拡大を目指す包括的な連携協定を17年4月に締結。同年7月7日に、同大学とJAXA協力によるBIRDS第1シリーズの超小型衛星5機 (日本、ガーナ、モンゴル、パングラデシュ、ナイジェリア) が「きぼう」から放出された。現在もBIRDS 2 (ブータン、マオリピン、ネパール)、BIRDS 3 (日本、スリランカ、ネパール) とプロジェクトは拡大しており、BIRDS 5 (2019～) まで継続する予定。

BIRDS-1のプロジェクトチームからは5人の卒業生 (ガーナ、パ



エアバス ダイバーシティ・アワードの場でキューブサットタイプ10cm型衛星の説明

ンダラデシュ、モンゴル) を輩出しており、今後は母国に帰る教員として活動しながら各国で衛星を開発する。

BIRDSプロジェクトの開催を熱心な支援教授によると、最新プレゼンテーション時に審査員から、回響性が好まれる日本に多国籍の教育プログラムがあるというのが驚きだと指摘されたという。「このプロジェクトが日本の大学の企業教育に一石を投じ、世界に通用する“グローバル技術者”を育成し、世界のあらゆる国で宇宙開発・利用ができる時代を目指す」とこの教授は語った。

#### 九州工業大学

1939年創立の国立大学。工学部、情報工学部があり、大学院に生命体工学研究科を設け、2018年4月には、日本で初めて宇宙工学に特化した「宇宙システム工学科」を開講する。

2013年4月、協賛団々と連携し毎年約5名の次宇宙先進国の留学生を受け入れる「宇宙国際コース」を大学院(工学部)に設置した。

宇宙環境技術ラボトリー、超小型衛星試験センターなど高度な研究環境を持ち、外部機関からの委託に応じた試験も行っている。超小型衛星試験センターでは50cm-50kgまでの衛星に対して試験環境を整えすべての開発試験が実施可能。



エアバス・ジャパンオフィスに受賞報告を行ったプロジェクトチーム、モンゴル、ガーナ、パングラデシュ、ナイジェリア、ドイツ、日本と多国籍なメンバーが並ぶ

# 31. Symposium about the int'l aspects of space development – at the Univ. of Tokyo, 29 June



平成 30 年 6 月 吉日

関係者各位

東京大学空間情報科学研究センター「G 空間宇宙利用工学」社会連携・寄付研究部門  
東京大学生産技術研究所 柴崎・関本研究室

CSIS-S4D 第 6 回公開国際シンポジウム

「宇宙開発の国際協力：教育・社会問題解決からビジネス化まで」の御案内

- 13:30-13:40 開会挨拶 東京大学空間情報科学研究センター・教授/S4D 研究部門長・柴崎亮介
- 13:40-14:00 今回のシンポジウムの趣旨・ねらい 東京大学大学院 工学系研究科 航空宇宙工学専攻・小畑 俊裕
- 14:00-14:20 講演 1 我が国の宇宙システム海外展開戦略 内閣府宇宙開発戦略推進事務局・池田敬氏
- 14:20-14:40 講演 2 宇宙航空研究開発機構(JAXA)・祖父江真一氏
- 14:40-15:00 講演 3 Working with the UN to do space engineering capacity building at Kyutech  
九州工業大学 宇宙環境技術ラボラトリー -- George Maeda 氏
- 15:00-15:20 講演 4 UNISEC-Global の挑戦：国際連携プラットフォームの構築 UNISEC・川島レイ氏
- 15:20-15:40 講演 5 The role of multilateral development banks in mainstreaming space  
and geospatial technology for sustainable development (英語による講演)  
東京大学公共政策大学院・Quentin Verspieren 氏  
(休憩 20 分)
- 16:00-16:20 講演 6 海外との協業による SAR データの利用と活用シーン(仮) Synspective 株式会社・新井元行氏
- 16:20-16:40 講演 7 海外教育及び国際協力による Cubesat 通信ネットワークの構築(仮)  
東京大学 大学院工学系研究科航空宇宙工学専攻・教授/CSIS 客員教授・中須賀 真一
- 16:40-17:30 **パネルディスカッション** 宇宙開発における国際協力とビジネス化に向けた取り組み 各講演登壇者  
Panel discussion involving all the speakers -- **see photo at right, top.**  
コーディネータ：東京大学大学院工学系研究科航空宇宙工学専攻・小畑俊裕
- 17:30- 閉会挨拶 東京大学 大学院工学系研究科航空宇宙工学専攻・教授/CSIS 客員教授・中須賀真一
- 18:00 **懇談会** (会場：An 棟 1 階：レストラン・アペ) Reception -- **see photo at right, bottom.**



## 32. The 2018 UNISEC T-shirt design (probable design)



⇐ This design was received from

□ ■ \_\_\_\_\_

NPO法人 大学宇宙工学コンソーシアム

中村 允哉 nakamura@unisec.jp

TEL: 03-5800-6645

FAX: 03-3868-2208

<http://www.unisec.jp/>

\_\_\_\_\_ ■ □

on 3 July 2018

Reminder about  
UNISEC-Global meeting this year:  
<http://unisec-global.org/meeting6.html>



In addition, UNISEC-Global announced on 3 July the finalists and semifinalists of MIC5 →



**Finalists of the 5th Mission Idea Contest (Oral Presenters)**

Title	Author(s)	Affiliation	Country
Smallsat Ionosphere Exploration at Several Times and Altitudes	William Evonosky	University of Colorado Boulder	USA
Arid and Semi-Arid Lands Satellite (ASAL-SAT): A LoRa ground sensor network for easing life in Sub-Saharan Africa ASAL areas	Kiruki Cosmas	Kyushu Institute of Technology	Japan
3U Cubesat to monitor Red Tide Blooming in Central America	Mariela Rojas Quesada	Universidad de Costa Rica	Costa Rica
Mining Surveillance Application Using a CubeSat Constellation	Ashley Naudé	Stellenbosch University	South Africa
Development of Microsatellite in Monitoring Initial Harmful Algae Bloom (HAB)	Aik Kwan Tan	University Sains Malaysia (USM)	Malaysia
HERON - An Open Source Microbiology Experiment Platform in Low Earth Orbit	Ali Haydaroglu	University of Toronto	Canada
HEMERA-Constellation of passive SAR-based micro-satellites for a Master/Slave configuration	Andrea Bellome	University of Rome -La Sapienza	Italy

**Semi-Finalist (Poster Presenters)**

Title	Author(s)	Affiliation	Country
In-Situ Measurement of Material Degradation in Space	James Xie	Queen's Space Engineering Team	Canada
In-Orbit Assembly of Cube Satellites with Novel Docking Techniques	Samuel Low and Parekh Shalv Amit	SINGAPORE SPACE AND TECHNOLOGY ASSOCIATION	Singapore
South American Seismic Sensing Constellation	Fraancisco Sanchez Olivera	Instituto Politecnico Nacional	Mexico
Nile River Quality Monitoring	Mariz Dief	Zewail city for science and technology	Egypt
Satellite laser tracking system for aquatic organisms	Yuki Kakushi	Kindai University	Japan

***Congratulations to these winners !***

### 33. Mast goes up for the ground station at FUTA, Nigeria



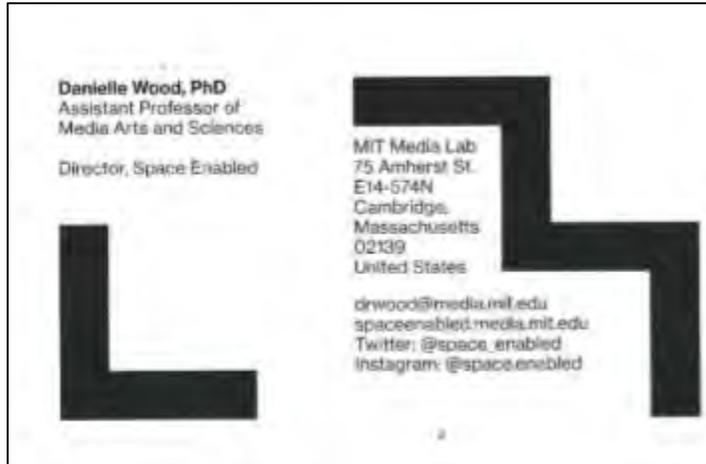
The photo at the left was received on 3 July 2018 from

Dr. Dahunsi Olurotimi Akintunde  
Department of Mechanical Engineering  
Federal University of Technology  
P. M. B. 704, Akure  
Ondo State, Nigeria

The vertical structure is the newly constructed mast for the UHF/VHF satellite antenna receiving system for BIRDS and other satellites. The top of the mast clears the concrete roof by about 26 feet.

FUTA is a member of BIRDS-1.

## 34. “Space Enable Research Group” is launched by Dr Wood at MIT Media Lab



Dr Danielle Wood is a long-time friend of LaSEINE.



space enabled



The mission of the Space Enabled Research Group is to advance justice in Earth's complex systems using designs enabled by space. Our message is that six types of space technology are supporting societal needs, as defined by the **United Nations Sustainable Development Goals**.

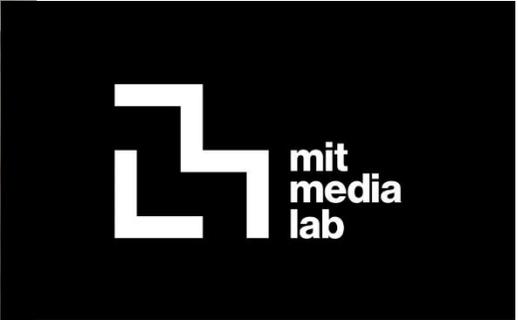
These six technologies include *satellite earth observation, satellite communication, satellite positioning, microgravity research, technology transfer, and the inspiration we derive from space research and education*. While much good work has been done, barriers still remain that limit the application of space technology as a tool for sustainable development. The Space Enabled Research Group works to increase the opportunities to apply space technology in support of the Sustainable Development Goals. Our research applies six methods, including design thinking, art, social science, complex systems, satellite engineering and data science. We pursue our work by collaborating with development leaders who represent multilateral organizations, national & local governments, non-profits and entrepreneurial firms to identify opportunities to apply space technology in their work. We strive to enable a more just future in which every community and country can easily and affordably apply space-enabled technology to improve public services and solve local challenges.

Follow Space Enabled on Twitter (@space\_enabled) or Instagram (@space.enabled).

<https://www.media.mit.edu/groups/space-enabled/overview/>



I was able to visit Dr Wood in May of 2018 – Editor.



“Let’s keep striving for the ideal that space really is for the benefit of all humankind,” Wood said at a Media Lab event in March 2018 when she took part in a panel discussion about the future of space research. A scholar of societal development with a background that includes satellite design, systems engineering, and technology policy for the US and emerging nations, Wood added that “space research is just a link in a bigger chain, part of a broad system of technology and art and science and design.” **Her passion, she said, has been in designing satellite systems that serve societal needs while integrating new technology.**

**More about Dr Wood here:**

<https://www.media.mit.edu/posts/danielle-wood-joins-media-lab/>

**Also check her really outstanding TED talk:**

[https://www.ted.com/talks/danielle\\_wood\\_how\\_we\\_can\\_use\\_space\\_technology\\_to\\_improve\\_life\\_on\\_earth](https://www.ted.com/talks/danielle_wood_how_we_can_use_space_technology_to_improve_life_on_earth)

## 35. Special travel section on Japan

**We  
invite  
you  
for  
a  
visit**



<https://ak7.picdn.net/shutterstock/videos/7835917/thumb/1.jpg>



June 2018

Flight Log

JAL Travel News



## Website Promoting Travel to Japan

Central Japan Railway Company (JR Central) and JAL have jointly established a website called Being Japan to promote Japan's destinations for overseas visitors. The site provides travel tips so that visitors can spend a pleasant and comfortable time while they are in the country.

The concept behind the website is to allow people abroad to experience Japan as if they were already there. The website introduces the culture and cuisine of Japan, and it covers events and experiences that visitors can enjoy. Being Japan provides information about destinations that can be reached using the Tokaido Shinkansen (bullet trains) of JR Central.

Being Japan includes links to JAL's international and domestic reservations. Shinkansen reservations can be made using the smartEX system of JR Central. Currently available in Australia, Hong Kong, Malaysia, Singapore, Taiwan, Thailand and the United States, smartEX allows customers to reserve Tokaido Shinkansen tickets by means of a smartphone application.

Visitors seeking information about hotels, restaurants, luggage delivery, taxis or public transport can also find such details on Being Japan.

For more information, visit [beingjapan.jp](http://beingjapan.jp)



## Basics of 和食

Based upon Buddhist teachings, which prohibit the taking of life, and using such non-animal ingredients as vegetables and seaweed, the cuisine known as *shojin ryori* has in recent years been attracting attention both in Japan and overseas.

WORDS HARUHI YASUMOTO  
PHOTOGRAPHS MAKOTO KONDO  
ILLUSTRATION ERIKO ITO

It is much harder than many people might think to find vegetarian restaurants in Japan. At first glance, many foods appear to use no meat or fish, but they almost all contain the fish-based broth known as *dashi*, which is akin to the stocks used in Western cuisine. It is against this background that *shojin ryori*, which uses no animal-based foods, has become increasingly popular.

Aiming to purify body and mind, *shojin ryori* arose from Buddhist precepts, and it began to develop fully in around the twelfth century. As well as avoiding meat and fish, *shojin ryori* contains no eggs, dairy or other animal-based foods. Despite the absence of such ingredients, *shojin ryori* has developed

From JAL Skyward  
June 2018

### Shojin



The word *shojin* has four primary meanings: applying oneself fully; ridding oneself of idle thoughts and devoting oneself to Buddhist training; abiding by Buddhist precepts, avoiding taboos and cleansing oneself; and giving up meat and embracing a vegetarian diet. *Shojin ryori* is a type of cuisine that aims to encourage monks studying Buddhist teachings, which satisfy all four of those meanings.

**Jodoshu Daihonzan Komyo-ji**  
6-17-19 Zaimokuza,  
Kamakura, Kanagawa  
+81-467-22-0603  
Open: *Shojin ryori* is served five times daily: 11:30 a.m., 12:00, 12:30, 1:00 and 1:30 p.m. Visitors should arrive at least 10 minutes before serving time. Closed: October 10-15; December 20-January 6; during temple functions. *Shojin ryori* costs 4,500 yen and 5,500 yen for open dining, 6,500 yen for private rooms. Reservations required. Reservations (minimum of two people) can be made 9 a.m.-4 p.m. two months to three days before the desired date.

various ideas over the course of its long history to ensure it is as tasty as possible.

Stock is a crucial ingredient in determining the taste of food, and with *shojin ryori* the rich flavor of its stock is made using kelp, shiitake mushrooms and other plant-based products. To create highly nutritious dishes, *shojin ryori* is also characterized by its widespread use of tofu and other soy foods. One surprising feature of *shojin ryori* is *modoki ryori* ("imitation food"), which uses plant-based ingredients to create foods that appear and taste like meat or fish. An example of this is *ganmodoki*, which is tofu that has been mashed and deep-fried and was originally devised as a meat substitute. *Shojin ryori* is a cuisine that can be thoroughly enjoyed by everyone, even vegans.

Visitors to Japan wishing to try *shojin ryori* should do so at a temple, and a good recommendation is Jodoshu Daihonzan Komyo-ji. This temple is believed to have been completed in 1243 and stands in the ancient city of Kamakura, not far from Tokyo. Here, visitors can enjoy *shojin ryori* in spacious tatami rooms with a view of the temple gardens.

One of the temple monks, Shoko Nishida, explained, "Even today, *shojin ryori* is eaten by monks who are undergoing training." Buddhist meals are typically frugal, but *shojin ryori* for visitors is served in more copious amounts. The items include *goma dofu*, which looks like tofu but is actually made from sesame paste, and *shojin-age*, a kind of vegan tempura. The food has a refined taste, and each dish carefully elicits the true flavor of the ingredients.

After having escaped the busy city and entered the simple, detached space of the temple, you are served food that inspires a gratitude for all living things. It is an experience that makes you feel as if your very soul has been cleansed.

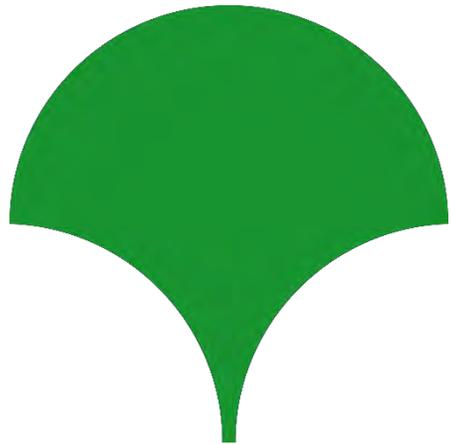
## 精進料理



**Shojin Ryori from Jodoshu Daihonzan Komyo-ji**  
Shojin Ryori is a type of Buddhist cuisine that is served at Jodoshu Daihonzan Komyo-ji, a temple in Kamakura, Japan. It is a vegetarian cuisine that is based on Buddhist precepts and is known for its simple and healthy dishes. The dishes are served in red bowls and are typically made with plant-based ingredients. The cuisine is known for its rich flavor and is a popular choice for visitors to the temple.



# The amazing commuter rail network of Tokyo



*It is more complicated than it looks.*



## MOST GOOGLED

### Why does Tokyo... have no bins?



There isn't one main reason why our fair city has so few places to dump your trash - rather, it's a culmination of factors. Our stringent recycling system (combustibles, non-combustibles, cans, PET bottles, plastics...) means that we wouldn't just need a bin here or there; we would need bins for all different types of waste, and pray that people actually use them properly.

Other than that, as in other big cities, a number of bins in public places were removed after the 1995 sarin attack on the Tokyo Metro to lessen their possible use in terrorist attacks. So for now, do as Tokyoites do and just carry your rubbish with you until you can dispose of it properly at home. Whatever you do, don't drop it on the floor - Tokyoites are proud of the city's litter-free streets.

# GET CUTE WITH TOKYO

The best things to do in the international capital of cute, from creating adorable character bento or anime nails to the more intricate and artistic amezaiku sugar work and Ikebana flower arrangements. By *Mayumi Koyama* and *Kirsty Bowers*

**KAWAII, OR CUTENESS,** is a prominent aspect of Japanese culture. But kawaii goes beyond just a look or mannerism; it is also a form of visual language, used to communicate everything from branding to public signage. And it's not just about being coy and cutesy, it's also used to refer to things that are attractive and appealing.

Spend enough time in Japan and you'll find it hard to resist the charm and humour of kawaii culture. To help you find your kawaii heaven, we've pulled together the best courses and on-the-spot experiences to get a touch of cute into your life. Bear in mind that all courses require advance booking unless stated otherwise.



### ↑ CHARACTER BENTO & SUSHI

The easiest way to get kawaii at a low price point, this course will teach you how to make a variety of different bento and sushi themes, from a simple Miso Egg and Avocado sandwich, with turkey, a bento with a character bento, to a more complex one with a bento.

There are a number of different courses available, but for a real taste of Tokyo's kawaii world, head over to the **Ameyoko** branch, located in the heart of Tokyo. **Trilogy Kawaii** is a cooking class in Ameyoko. They offer both bento and sushi with a kawaii theme - from a bento with a character bento to a more complex one with a bento.

The instructor, Yoko, will guide you through the steps of preparing the bento, and you'll leave with a bento that you can take home with you. This is a great way to get a taste of the kawaii world.

→ [Trilogy Kawaii](#) | 1000 Avenue Road, Toronto, Ontario M5E 1B5 | [trilogykawaii.com](#)

## Tokyo: The capital of cute

APR-JUN 2018 NO.18 TIMEOUT.COM/TOKYO

# TimeOut

## TOKYO

← Material is from here

New expressions stemming from the root word 'kawaii' are constantly being born. Here are the new words you need to know.

#### BATCHIKAWA

Meaning: Cuteness that is perfectly on point (*batchiri*)  
Usage example: "Your look today is *batchikawa!*"

#### GEROKAWA

Meaning: Cuteness so strong it makes you vomit (*geroru*). Generally used sarcastically and as a negative.  
Usage example: "Isn't that new character *gerokawa?*"

#### GUROKAWA

Meaning: Grotesque (*guroi*), but cute.  
Usage example: "The fish in that deep sea documentary feature were *gurokawa*. LOL!"

#### KIMOKAWA

Meaning: Gross (*kimoi*), but cute.  
Usage example: "I bought that popular *kimokawa* LINE sticker."

#### MEKKAWA

Meaning: Extremely (*metcha*) cute.  
Usage example: "Those new shoes are *mekkawa!* I want some!"

## KNOW YOUR KAWAII SLANG

#### MR KABUKI MELON PAN

A speciality found only at Dominique Ansel Bakery Japan's Ginza Mitsukoshi location, this super cute melon pan is coloured and designed to reflect a traditional kabuki performer, giving these traditionally boring-looking buns a unique look. Along with every other adorable creation from Dominique Ansel's fun bakery, they taste as good as they look, so you'll probably buy more than one.

→ Dominique Ansel Bakery Japan, Ginza Mitsukoshi B2F, 4-6-16 Ginza, Chuo (Ginza Station). [dominiqueanseljapan.com](http://dominiqueanseljapan.com). 10.30am-8pm. ¥360.



#### CUTE TOKYO



#### TOKYO BANANA PANDA

Everybody's favourite tasty souvenir, Tokyo Banana is now also available in panda form. Filled with yoghurt-flavoured banana cream, this special edition confection can be found at various locations including the New Days convenience store inside the JR ticket gates at Ueno Station. Best get them when you are passing through the station.

→ New Days, JR Ueno Station, 7-1-1 Ueno, Taito (Ueno Station). [toiyobanana.jp](http://toiyobanana.jp). ¥1,080.



#### SHAUN THE SHEEP CAKE

It's fair to say that the people behind Sunday Brunch in Kichijoji really like Shaun The Sheep. You'll find an entire menu based on this beloved television character here, the highlight of which is possibly the cutest cake ewe will ever see. Covered with numerous sugary sheep staring up at you, its flavour changes with the seasons, but it never looks anything less than amazing.

→ Sunday Brunch Kichijoji, Parco Kichijoji 4F, 1-5-1 Kichijoji-Honcho, Musashino (Kichijoji Station). [shamcafe.com](http://shamcafe.com), 11am-9pm. ¥730/slice, ¥8,030/cake.



From  
Time Out Tokyo April-June, 2018

## ONE DAY IN...



From *Time Out Tokyo* April-June, 2018

# Nakano

Sometimes dubbed 'Western Tokyo's Akihabara', Nakano, just a few stops away from Shinjuku, deserves its 'otaku heaven' moniker ('otaku' being 'geek' in Japanese). But considering the size of Nakano Ward and its sheer diversity, even those not obsessed with manga are bound to find a slice suited to them. The area has more or less survived Tokyo's incessant modernisation drive: head slightly northeast from the station and you'll find an old-school, partially pre-war block chock-full of izakaya, bars and more, while Edo-era temples and serene parks can be found further north still. It's a bustling mix of office workers, university students and families, and the locals are generally very friendly, laid-back and up for a chat.



## Evening

Wind down from your day at **Juke 60s**, an eighties music request bar where most drinks are a flat ¥500 (disclaimer: one of our staff used to work here). You could also get a prayer with your boots at the monk-run **Vowz Bar** inside the devilish **Nakano World Kaikan**, or have a beer at **Nakano Beer Kobe**. Walking around and just popping your head into any random bar is half the fun though, and you're bound to end up with a new friend anywhere you set foot.

## Lunch

Nakano is known for its ramen, and devouring a bowl or two is part of the essential local experience. Get fish-based spicy miso ramen at **Saika**: go for tsukemen with a thick, potato-like vegetable dipping broth at the ever-popular **Nidaime Enji**; order the special barasoba with its massive topping of thinly-sliced chashu at **Ramen Barasobaya**. Or, try to queue at **Aoba**, named one of Japan's best ramen.



## Morning

Unless it's a weekend, when Nakano Central Park's **Good Morning Café** serves food from 8.30am, you're best off grabbing something to go at a konbini or coffee chain for breakfast. Take a leisurely 20-minute walk north of the station to **Arayakushi Baishoin**, a temple complex which borders a calm park. It's also a local cherry blossom hotspot.

Feed your sweet tooth at **Kyle's Good Finds**, an American-run bakery that deals in proper carrot cake - a true rarity in Tokyo. Head down **Al Road**, a local shopping street where you can find all kinds of knick-knacks on the cheap.

## Dinner

As with most major stations on the western Chuo line, yakitori joints and izakaya are the name of the game in Nakano. Most of them are clustered in the old area north of the station. Many have become more English-friendly in recent years, but even if they're not, the often local clientele is always up for a chat and happy to help you out.

A good place to start is at any branch of **Shimonya**, a small chain of skewer specialists which started right here in Nakano. Each location specialises in one type of skewer (beef, pork, chicken, deep-fried kushiyaki, fish), but prices are uniformly low and the quality is pretty decent. Look out for the yellow signs saying '四ツ星'. Otherwise, follow your nose: there are okonomiyaki joints, sushi restaurants, standing wine bistros and everything in between.

END OF SPECIAL TRAVEL SECTION

# End of this **BIRDS Project Newsletter**

(ISSN 2433-8818)

## – Issue Number Thirty

This newsletter is archived at the BIRDS Project website:

<http://birds1.birds-project.com/newsletter.html>

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When a new issue is entered in to the archive, an email message is sent out over a mailing list maintained by the Editor (G. Maeda, Kyutech). If you wish to be on this mailing list, or know persons who might be interested in getting notification of issue releases, please let me know.

This newsletter is issued once per month. The main purpose of it is to keep BIRDS stakeholders (the owners of the satellites) informed of project developments. It is also a permanent record of project activities.