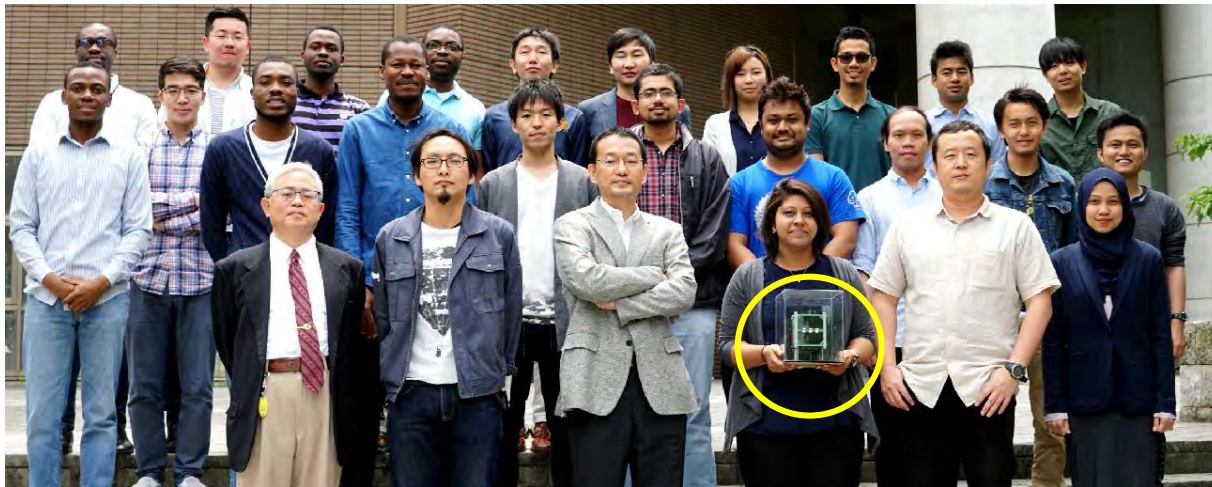




BIRDS Project Newsletter

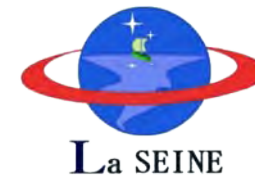
Issue No. 20 (18 September 2017)



Members of BIRDS-1 Team and BIRDS-2 Team -- 16 May 2017, at Tobata Campus
Note the mock-up being held by Antara in the front row.

Edited by:
G. Maeda, Tejumola Taiwo, Joven Javier, M. Cho,
Laboratory of Spacecraft Environment Interaction
Engineering (LaSEINE)
Kyushu Institute of Technology (Kyutech)
Kitakyushu, Japan

Project website: <http://birds.ele.kyutech.ac.jp/>
All back issues are archived at this website.



All back issues of this newsletter can be easily downloaded. Go to here: <http://birds.ele.kyutech.ac.jp/>
At the top, click on the tab called NEWSLETTER. You will get a menu for all back issues.

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9. The current situation of the BIRDS-2 antenna system
10. Three BIRDS students attend UN symposium in Austria
11. BIRDS students participate in LaSEINE Summer Camp at a retreat in Oita Prefecture

The Guest Box

AFRICAN SPACE GENERATION WORKSHOP
AF-SGW
SPACE: THE DRIVER OF THE DESIRED FUTURE IN AFRICA

NOVEMBER 16-17, 2017
THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE
AKURE, ONDO STATE, NIGERIA 340252

The 1st African Space Generation Workshop (AF-SGW) is a two-day regional workshop for students and young professionals in the African region and is hosted by the Centre for Space Research and Applications, Federal University of Technology, Akure.

Akure, Nigeria

CESRA SPACE GENERATION ADVISORY COUNCIL

The Federal University of Technology, Akure, Nigeria, will be hosting this event in November of 2017.

01. An outstanding video by JAXA about JAXA-Kyutech collaboration (BIRDS-1)



This 6.5-minute video can be downloaded from here

<http://birds.ele.kyutech.ac.jp/video.html>

The video is really well produced.

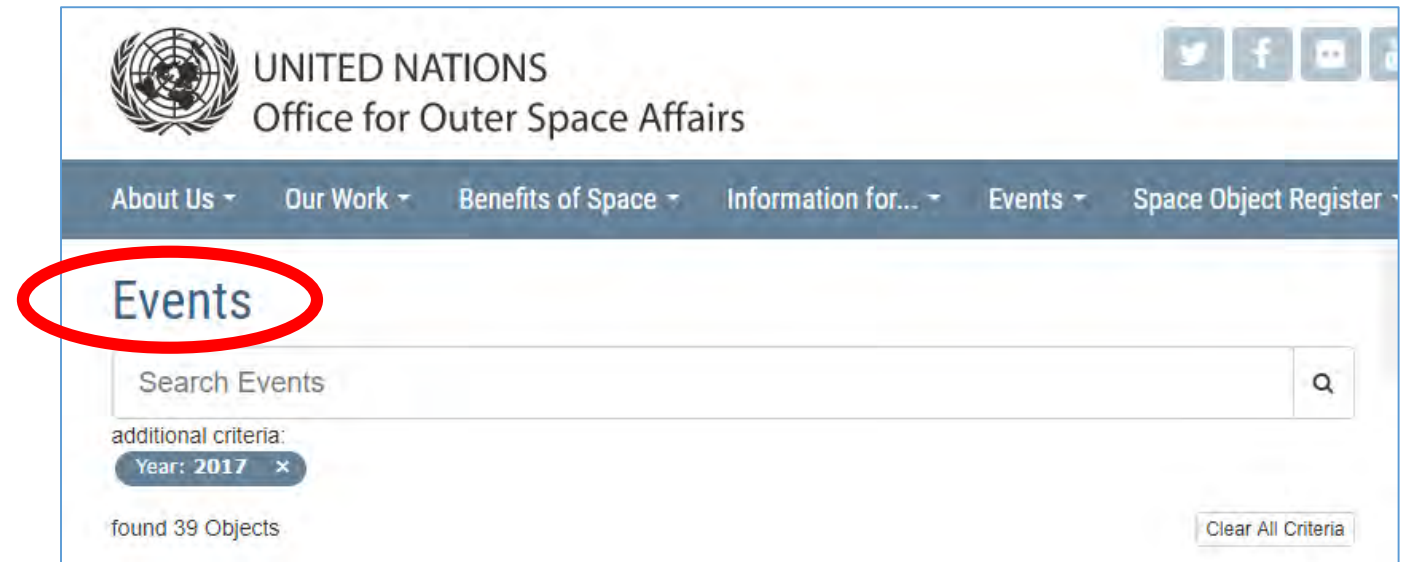


JAXA×Kyutech had an agreement to promote utilization of J-SSOD and to contribute capacity building around the world through BIRDS Project.

02. Events - UNOOSA

Check out these UNOOSA events – many are related to small satellites and to BIRDS – at their website

http://www.unoosa.org/oosa/events/search-events-ng.jspx#?c=%7B%22filters%22:%5B%7B%22fieldName%22:%22event.startDate_year_s1%22,%22value%22:%222017%22%7D%5D,%22sortings%22:%5B%5D%7D



Upcoming:

- UNOOSA will have a booth at 2017 IAC in Adelaide, Australia, 25-29 September 2017, to explain various international space activities.
- *United Nations/Russian Federation Workshop on Human Capacity-Building in Space Science and Technology for Sustainable Social and Economic Development*; starts 30 Oct.; G. Maeda will be there.

http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2017/workshop_russianfederation_capacity.html

- From 20 to 21 June 2018 the international community will gather in Vienna for **UNISPACE+50**, a special segment of the 61st session of COPUOS. If possible, please attend it so that capacity building is supported at the UN – do not take it for granted. See the next page for more.

The seven thematic priorities of **UNISPACE+50** are:



1. Global partnership in space exploration and innovation;
2. Legal regime of outer space and global space governance: current and future perspectives;
3. Enhanced information exchange on space objects and events;
4. International framework for space weather services;
5. Strengthened space cooperation for global health;
6. International cooperation towards low-emission and resilient societies;
7. **Capacity-building for the twenty-first century.**

If you want the UN to do more for capacity building, your nation needs to support Thematic Priority 7. If it is not supported, UN member states will conclude that capacity building is not important.

03. Malaysians of BIRDS-2 offer celebration event for the entire BIRDS-2 team



Chocolate Muffins



Chicken Gravy



Mutton Curry



'Roti Jala'



Chicken Gravy



Pickled veggie salad



Carrot Cake



Tomato Rice

A fantastic and colorful array of food from Malaysia



[A] Azami
 [B] Akmal, Syazana's husband
 [C] Syazana
 [D] Fadhilah, Azami's wife



Akmal gives a presentation about Malaysia



Fadhilah and Syazana hold the nicely-made menu.



Below: Yummy food.



2017 Malaysian Independence Day Group Photo

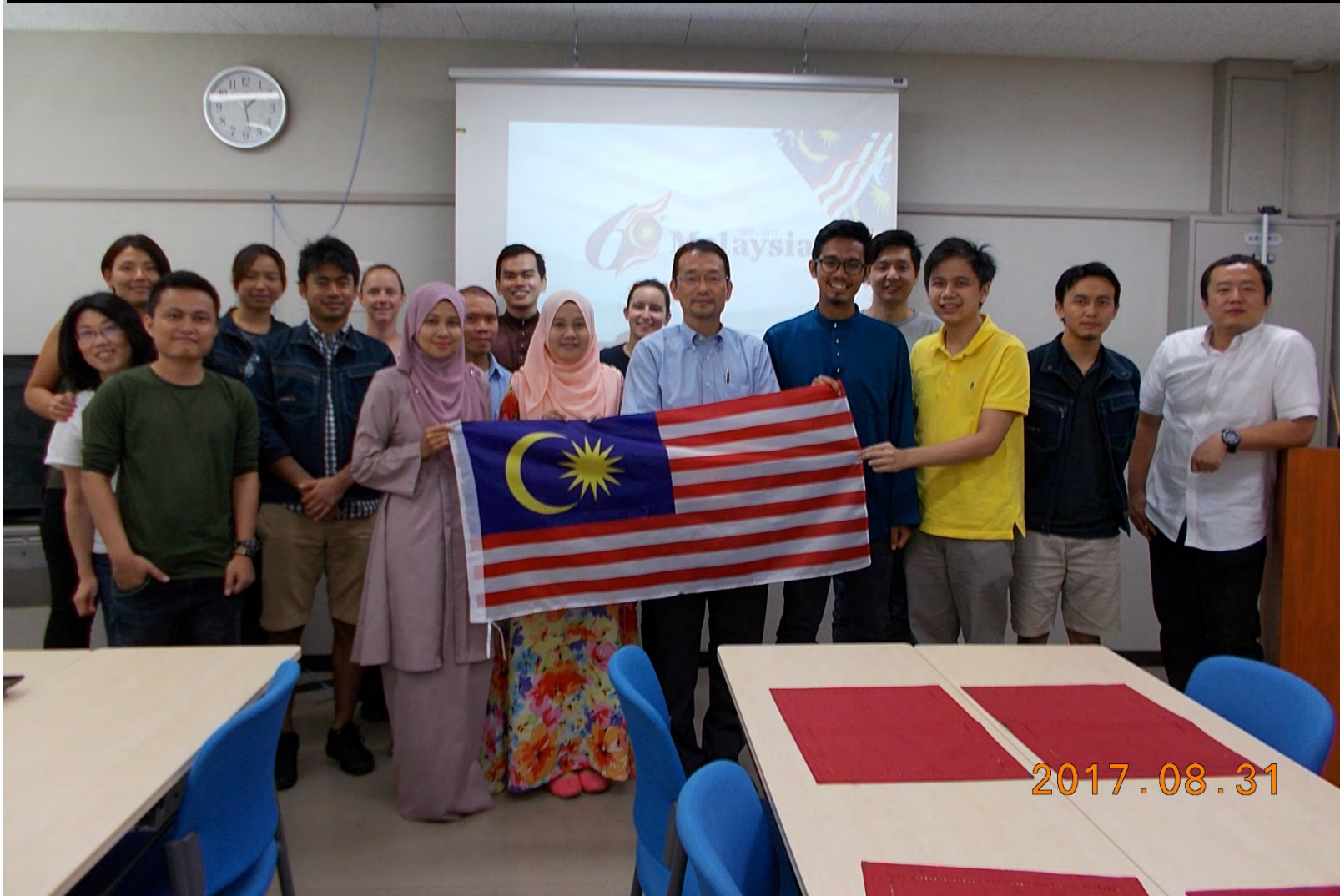


Photo taken by G.Maeda



Explaining the menu

**Great Job
Malaysia
BIRDS-2 Team !**

04. BIRDS Project is one of three finalists for the GEDC-Airbus Diversity Award

See the next 3 pages for social media announcements by **Airbus** regarding this competition:

- ① on Twitter
- ② on Facebook



Check out the video for this award

<http://www.gedcouncil.org/gedcairbusdiversityaward>

Statement by the organizers of the Award

“BIRDS Project is one of three finalists for the GEDC-Airbus Diversity Award

The GEDC has teamed up with Airbus, the global leader in aeronautics, space and related services, to present the GEDC Airbus Award for Diversity in Engineering Education. This award is aimed at shining a light on successful projects which have encouraged more young people of all profiles and backgrounds to study and succeed in engineering. The 2017 Award has been placed under UNESCO patronage.

The long-term aim of the GEDC Airbus Diversity Award is to increase diversity among the global community of engineers so that the engineering industry reflects the diversity of the communities it supports, and the wide-ranging work that engineers do. The 2017 Award, which is the fifth edition, will be presented during GEDC 2017 Niagara Falls, Canada between October 10th and 13th, 2017.”

Note: BIRDS-1 Project Manager Taiwo will be at GEDC 2017 Niagara Falls to compete in the final round. [Hang tough, Taiwo!](#)



Airbus Careers
@AirbusCareers

The announcement on Twitter

Congratulations to @kyutech; BIRDS Satellite project on #DiversityAward2017 shortlist company.airbus.com/diversityaward #EmbraceDiversity



Twitter

<https://twitter.com/AirbusCareers/status/901822110871552005>

The announcement on Facebook



Airbus Careers
Like This Page · August 28 · 🌐

Congratulations to Kyushu Institute of Technology in Japan for their Joint Global Multi Nation Birds - BIRDS project, a unique collaboration with universities from developing countries including Ghana, Mongolia, Nigeria and Bangladesh. This exciting programme joins 10 other inspirational #DiversityAward2017 projects from around the world on our 2017 shortlist: www.company.airbus.com/diversityaward #EmbraceDiversity

👍 Like 💬 Comment ➦ Share

👍 🗣️ 🙄 Toshi Wakabayashi, Tejumola Taiwo and 54 others

1 share

Write a comment...

Facebook

<<https://www.facebook.com/AirbusCareers/photos/a.378492408953051.1073741830.325409844261308/1027327414069544/?type=3&theater>>



The Three Finalists for 2017

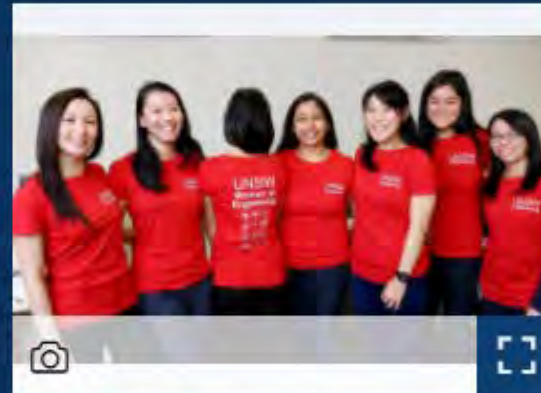
Attached media Airbus, UNESCO and GEDC select Australian, Canadian and Japanese projects for Diversity Award final



BIRDS Satellite Project, Japan



The Schulich School of Engineering: Discover Engineering Programme, Canada



UNSW Women in Engineering (WIE) Programme, Australia

<http://www.airbus.com/newsroom/press-releases/en/2017/09/airbus--unesco-and-gedc-select-australian--canadian-and-japanese.html>

05. Messages from BIRDS members who return to their homelands this month

I invited them to say a few words; and to furnish one last photo.

They shall be missed.

G. Maeda
Editor

Dear Fellow Members of BIRDS-1 Team:
First of all, thank you very much for being part of my life. I am really proud to have been member of this great team. We made history to our countries. I hope this will be also future of our country and our friendship will become our countries collaboration in that future.

For me this project is opportunity to see life from wider angle. I wish you all the best for your career and personal life. Thank you very much see you in further.

Sincerely,
Erdenebaatar Dashdondog,
Mongolia, 2017/09/08



Mid-December of 2016, atop the Cho Lab building

Dear Fellow Members of BIRDS-1 Team:

I believe the BIRDS project has served as a platform for a good multi-cultural experience aside all the technical opportunities it currently serves. It has been good. My two year experience with this honourable team actually disproves a fact to me. An idea is painted that people from different places can be very different in any aspect we can think about. Well, it didn't seem so. I personally didn't realize any significant difference in a particular person for which other team members have to be over-conscious about in order to prevent trespass or offenses. Ironically, I will say; "Different people are same everywhere". Therefore I believe that the same basic ethics hold to all people and any good team, which is

"The Right Intension, the Right Heart is the real boss"

Thank You
Ernest, Ghana,
2017/9/12



Image taken on 27th June 2016 at the 1st BIRDS International Workshop reception at the Blue River Walk, Nishi Kokura, Japan.

Dear Fellow Members of BIRDS-1 Team:

As always said, there is time for everything, and a season for every activity under the heavens. So there came a time we all set foot in the four walls of Kyutech [Specifically Prof. Cho-Lab]. It was a moment of adventure, studies, fun and teamwork. Our coming together as colleagues was really interesting and historic. Especially working together on a multicultural platform to build, launch and operate the first satellite of our home countries. Thanks to you all for sharing ideas and encouraging each other, not forgetting the moment of teasing and sharing of Jokes with the international flavour! In moment like this, it usually not exciting to say goodbye to comrades like you..... I opt to say "Hello" to us all on our next phase of Life! Let's continually strengthen the international human network! Cheers!

Sincerely,
Quansah Joseph
Neenyi Kojo Krobo,
Ghana, 11/09/2017



First Attempt of BIRDS-1 CubeSat Launch by SpaceX. [Seminar Room-LaSEINE]

Dear Fellow Members of BIRDS-1 Team:

A team is not about joining hands, it is about joining hearts no matter what. The definition and meaning of teamwork is not found in management textbooks, but in the minds and hearts of team members. It makes me sad to have to leave, but also makes me feel happy to remember the good times we passed as a team and the satisfaction of having done the right thing. I'm going to start a new path in my life soon. Since now, we stop being co-workers, today I say goodbye to all of you who have been my friends and I thank you for making pleasant the moments we spent together. I know you will remember me every time, when you will search for your old picture of BIRDS project. :D

I hope to meet you again one day.
Good job team,
thank you.

Sincerely,
Raihana Shams
Islam Antara,
Bangladesh,
September 11, 2017.



BIRDS Clean Room

Dear Fellow Members of BIRDS-1 Team:

Last two year was a nice journey with you all. When I first came here I was very excited about the project because of its multicultural features.

This two years was very eventful. We work together, cooked together, organized space world, went to conferences. I will never forget the last day of 31st ISTS at Matsuyama when I got second best poster award for one of the BIRDS missions. Every member was very happy as it was the first of any award received by BIRDS.

I learned a lot in these two years. Before coming here, I was not in touch with corporate world. This project gave me the idea how corporate world and its politics goes on.

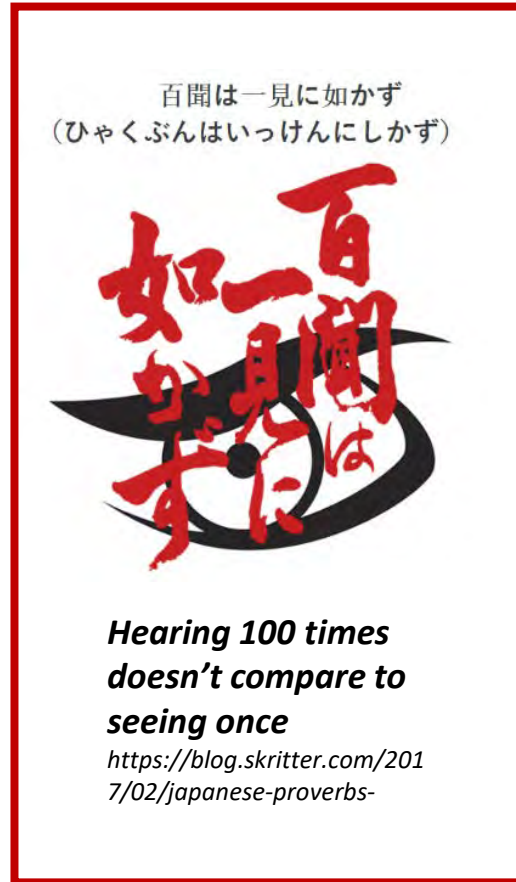
Last I want to thank you all to make this two years one of the most memorable one.

Sincerely,
Abdulla Hil Kafi
Bangladesh,
September 11, 2017

Clean Room of CENT
February 8, 2017

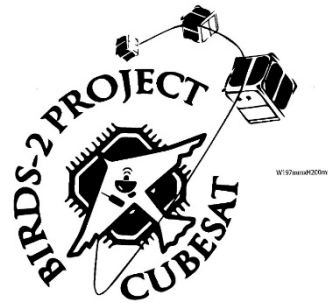


06. Update of the camera mission of BIRDS-2



BIRDS-2 CAM Mission Update

[the next four pages]



Article prepared by:

Muhammad Hasif Bin Azami (Malaysia)

11th September 2017

Current Design of CAM Mission

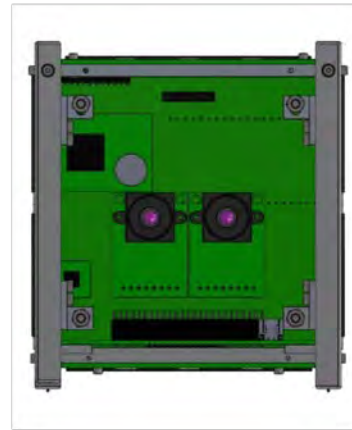


Real OVCAM module

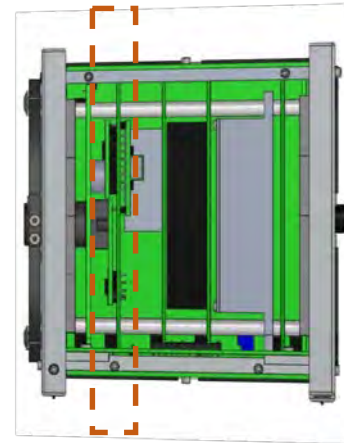
BIRDS-2 will have 2 OVCAMs for capturing images and recording short video



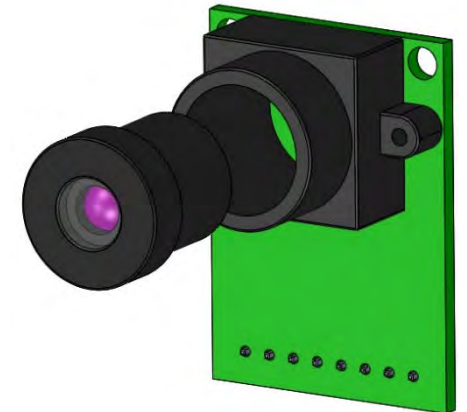
BIRDS-2_+Y
(outer view)



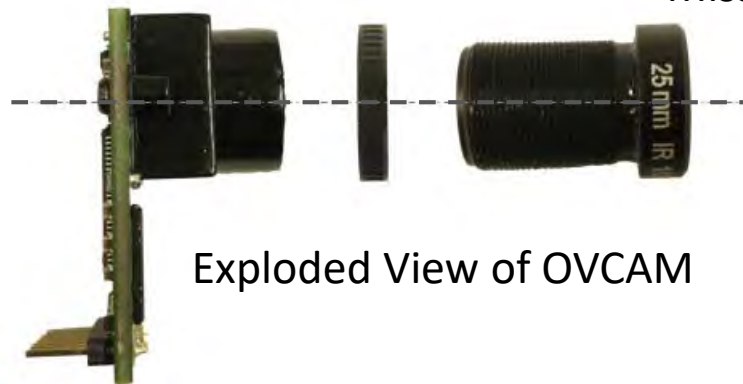
BIRDS-2_+Y
(inner view)



BIRDS-2_-X
(CAMs are on the
Mission Board)



CAD Drawing



Exploded View of OVCAM

Installation of CAM Lens

Steps of tuning the camera's lens at infinity focus

- I. Place the special pattern
 - a. Near distance (3m)
 - b. Far distance (10m)
- II. Try to focus at the centre point of the pattern
- III. Check the pattern's other lines
- IV. Try to capture a long distance image (building, mountain, etc.)
- V. Finally, ensure the camera captured sharp and clear images



Rondexter special pattern (left)

Guidance from Amara (BIRDS-1)

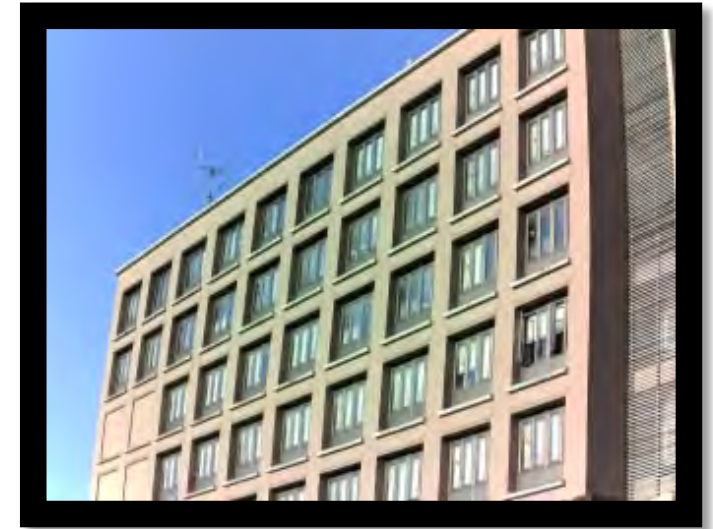
Results of Tuning CAM Lens



OVCAM1 in 5MP resolution (f=25mm)



OVCAM2 in 5MP resolution (f=8mm)



Random image in low resolution (f=8mm)



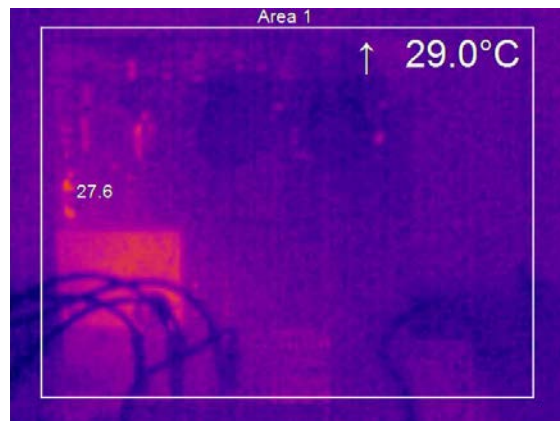
Sequential of images saved into full FIFO memory create a short video at low resolution



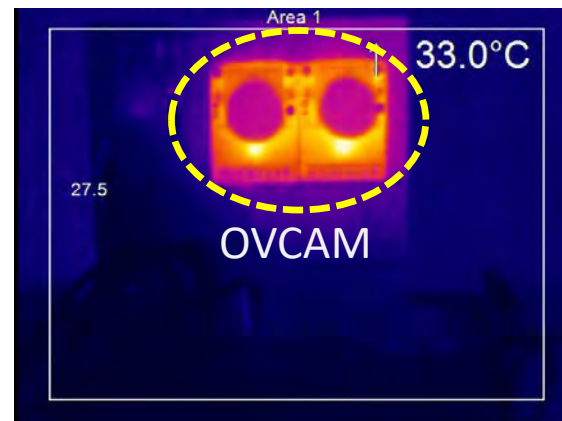
High Power Consumption Issues

(action taken after CDR of 18 July 2017)

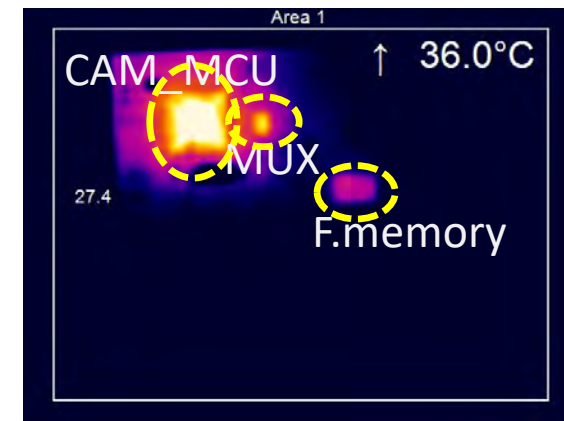
- Carried out **Thermal Camera Observation Testing** to monitor power leakage of CAM subsystem on mission board
- From the testing, we make some changes:
 - I. We will use CAM_MCU of **Atmega2560V (3.3V)** instead of Atmega2560 (5V)
 - II. Controlling both OVCAMs by adding 1 **power switch** for each camera



Before power line turned ON



After 3.3V power line only turned ON (front side view)



After 5V power line only turned ON, the flash memory and MUX shouldn't be turned ON because they are using 3.3V power line (back side view)

End of CAM article by Azami

基本的なルール

The Ten Rules

for BIRDS
engineers, now
and forever



1. No Excuses
2. Be on time
3. Respect others
4. Be responsible
5. Watch the schedule
6. Act as a team player
7. Maintain a long view
8. Be clean
9. Work hard
10. Have fun

07. Reminder: The Ten Rules of the BIRDS Project (for students)

BE PUNCTUAL AND INSIST
ON IT IN OTHERS.

THERE IS NO
SUBSTITUTE
FOR HARD WORK

Thomas Edison

This page was originally
published in Issue No. 10 of
the BIRDS Project Newsletter.

08. Reminder: The 2nd BIRDS International Workshop, in Ghana

Section 08 is comprised of 3 pages, including this page.

See pages 12-14 of
Issue No. 16 of this newsletter
for the original announcement.

Hosted by:



**ALL NATIONS
UNIVERSITY COLLEGE**

<http://www.anuc.edu.gh>

Co-sponsored by:



Kyutech

Kyushu Institute of Technology

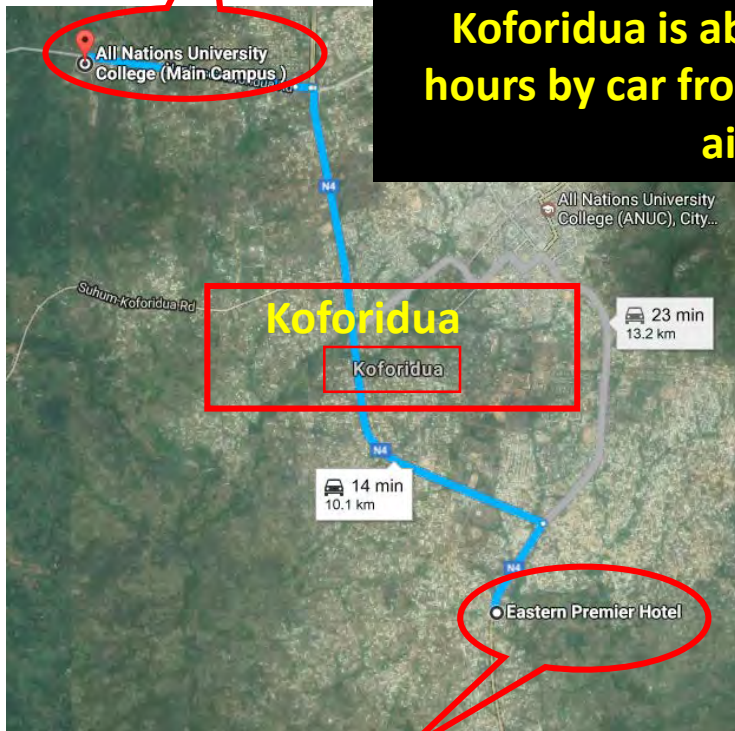
and





**ALL NATIONS
UNIVERSITY COLLEGE**

Workshop venue is the main campus



Koforidua is about 2 hours by car from the airport.



<http://easternpremierhotel.com/>

The overall schedule

19 Nov. 2017	Day 0	Arrive in Ghana
20 Nov. 2017	Day 1	AM: Intro's and keynotes PM: Panel discussion about <i>Galamsey</i>
21 Nov. 2017	Day 2	Other panel discussions (formation of Ghana space agency, MDR for GhanaSat-2)
22 Nov. 2017	Day 3	Main BIRDS Workshop, including technical session on <i>Store and Forward</i>
23 Nov. 2017	Day 4	Excursion to the Volta River

Due to the time needed to secure a visa for Ghana, if you are interested in attending this workshop you must express an interest before 01 Oct. 2017.

The 2nd BIRDS Int'l Workshop is conducted in parallel with: The 6th Space Science and Satellite Technology Applications Conference (SSTA)

5th Annual International Conference On Space Science and Satellite Technology Applications - SSSTA2016 [Share This](#)

Some scenes from the 5th Annual SSTA

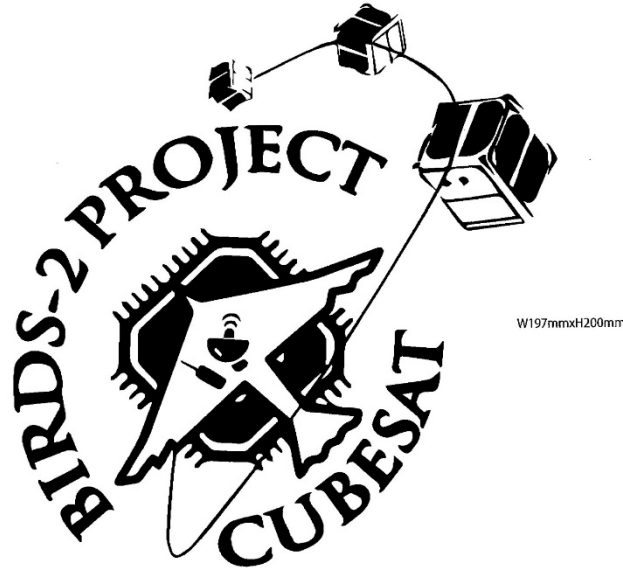
5th Annual International Conference On Space Science and Satellite Technology Applications SSSTA2016



<http://anuc.edu.gh/home/imagegallery/5th-annual-international-conference-on-space-science-satellite-technology-applications/7/7/subgallery.html>

09. The current situation of the BIRDS-2 antenna system

Section 09 is comprised of 5 pages, including this page.

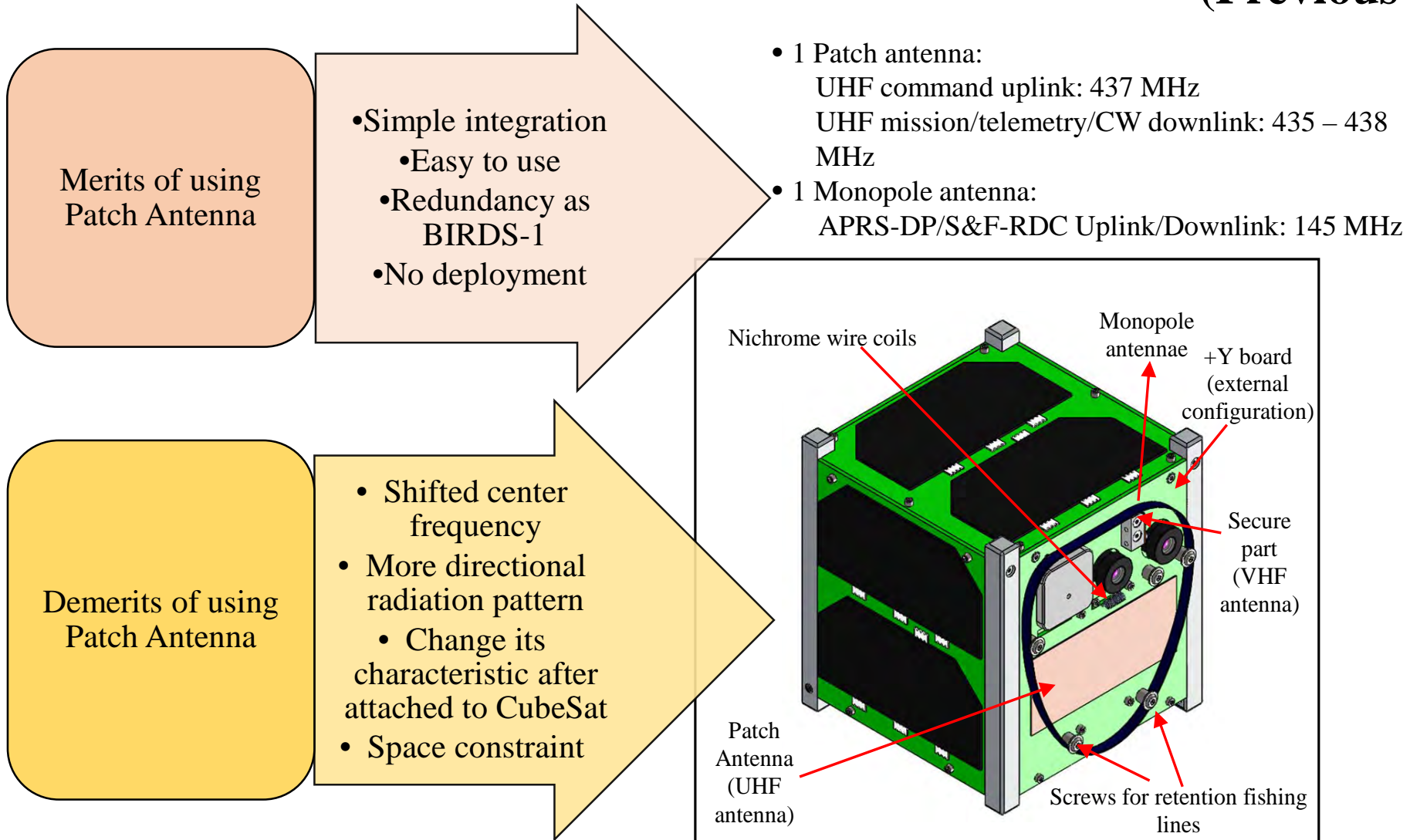


BIRDS-2 Antenna Selection Design & Configuration

*This article was submitted by
Syazana Basyirah (Malaysia)
on August 30th 2017.*

From the antenna radiation pattern measurement test performed in an anechoic chamber, we realized that patch antenna (redundancy from BIRDS-1) did not meet BIRDS-2 link budget estimation (gain within 0 – 2.2 dBi). Since we have an APRS and Store & Forward mission that require higher gain in VHF uplink and downlink, we need to select the best option of our antenna subsystem to achieve successful communication.

BIRDS-2 Antenna Design Configuration at +Y Board (Previous Design)



Monopole Antennae Deployment Mechanism for BIRDS-2 CubeSat

Nano-satellite has faced problems in designing antennae deployment system due to space and deployment mechanism constraints. After discussing this matter among BIRDS-2 team members, we finally came out with an approach to implement the design of UHF and VHF deployable monopole antennae in BIRDS-2 CubeSat.

Both monopole antennae deployment will be using a nichrome wire burning release mechanism which when activated, it will be heated up and thermally cut through fishing lines, and allowing the two monopole antennae to be deployed on +Y board and at +Z axis direction of the satellite.

The UHF frequency band was used for command uplink, mission, telemetry, and CW beacon downlink whilst the VHF frequency band was used specifically for APRS-DP/S&F-RDC mission for both uplink and downlink.

In order to achieve the effectiveness of the BIRDS-2 CubeSat communication system agreed with the link budget estimation, the dimensions of antennae on the CubeSat structure depend on the required gain and operating frequency.

Thorough analysis and experiments need to be performed to ensure the mechanical, electrical interfaces of monopole antennae fit with the satellite. The nichrome wire burning release mechanism should be verified 100% works successfully on the ground. The functionality test results of the antennae deployment will be analyzed particularly on the deployment time, current drawn across the nichrome wire and the nichrome wire temperature differences (during thermal vacuum test).

BIRDS-2 Antenna Design Configuration at +Y Board (Current Design)

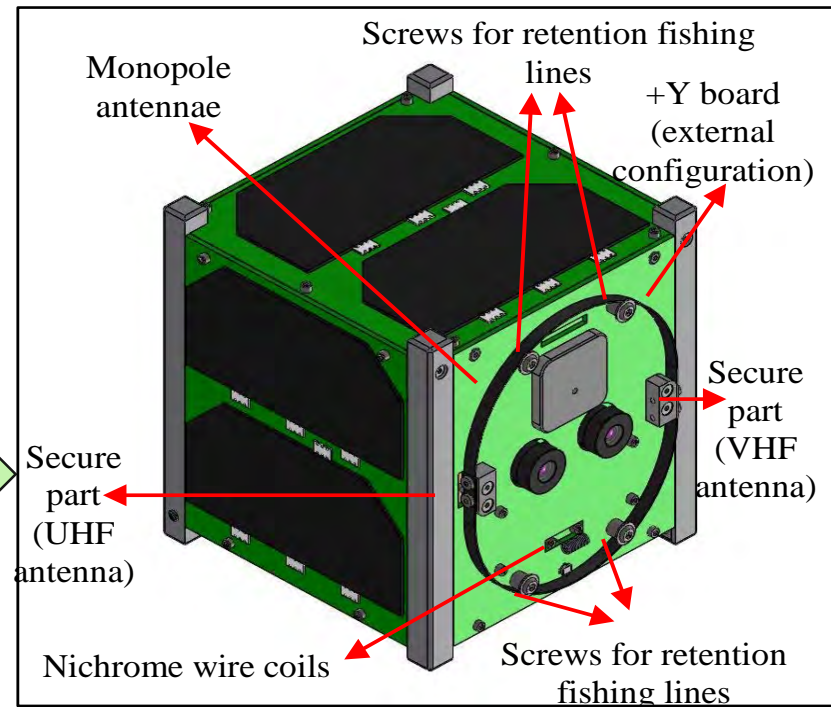
Merits of using Monopole Antenna

- High gain
- Easy center frequency tuning
- Omni-directional radiation pattern
- Stability

Demerits of using Monopole Antenna

- Complicated deployment mechanism
- Need to do a lot of functionality test to verify 100% successful antenna deployment
- No redundancy

- 1 Monopole antenna:
UHF command uplink: 437 MHz
UHF mission/telemetry/CW downlink: 435 – 438 MHz
- 1 Monopole antenna:
APRS-DP/S&F-RDC Uplink/Downlink: 145 MHz



Challenges of Implementing Current BIRDS-2 Antennae

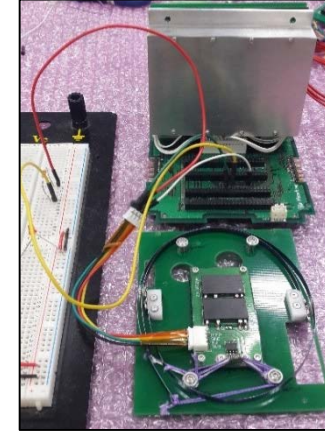
Design Configuration



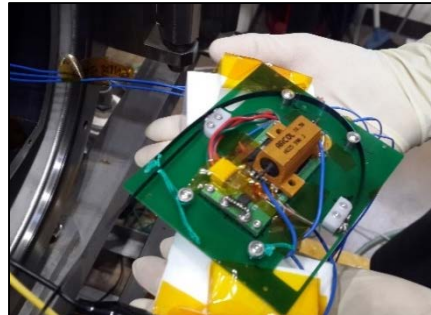
Monopole antenna dislocated easily from the mounted screw if the tightened technique is not followed accordingly



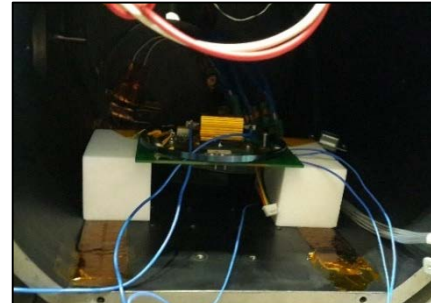
Battery capacity used is charged to 10% capacity charging and the capacity need to monitored throughout the functionality test



Room temperature functionality test should be performed frequently to ensure the deployable antenna works 100% successfully on ground



The fishing lines has to be tightened and secured carefully to ensure both antennae will be deployed successfully. This pic shows one of the UHF antenna got stuck due to the wrong technique of tightening the fishing lines



The antenna deployment test needs to be conducted in a few thermal cycle (hot and cold) temperature condition to ensure that the burner circuit can withstand the worst condition in space, especially at -40°C

The vacuum chamber needs to be opened/closed before/after performing the functionality test for every thermal cycle because the antennae need to be tightened from the beginning



End of BIRDS-2 antenna article by Syazana

UN/Austria Symposium Access to Space: Holistic Capacity Building for the 21st Century

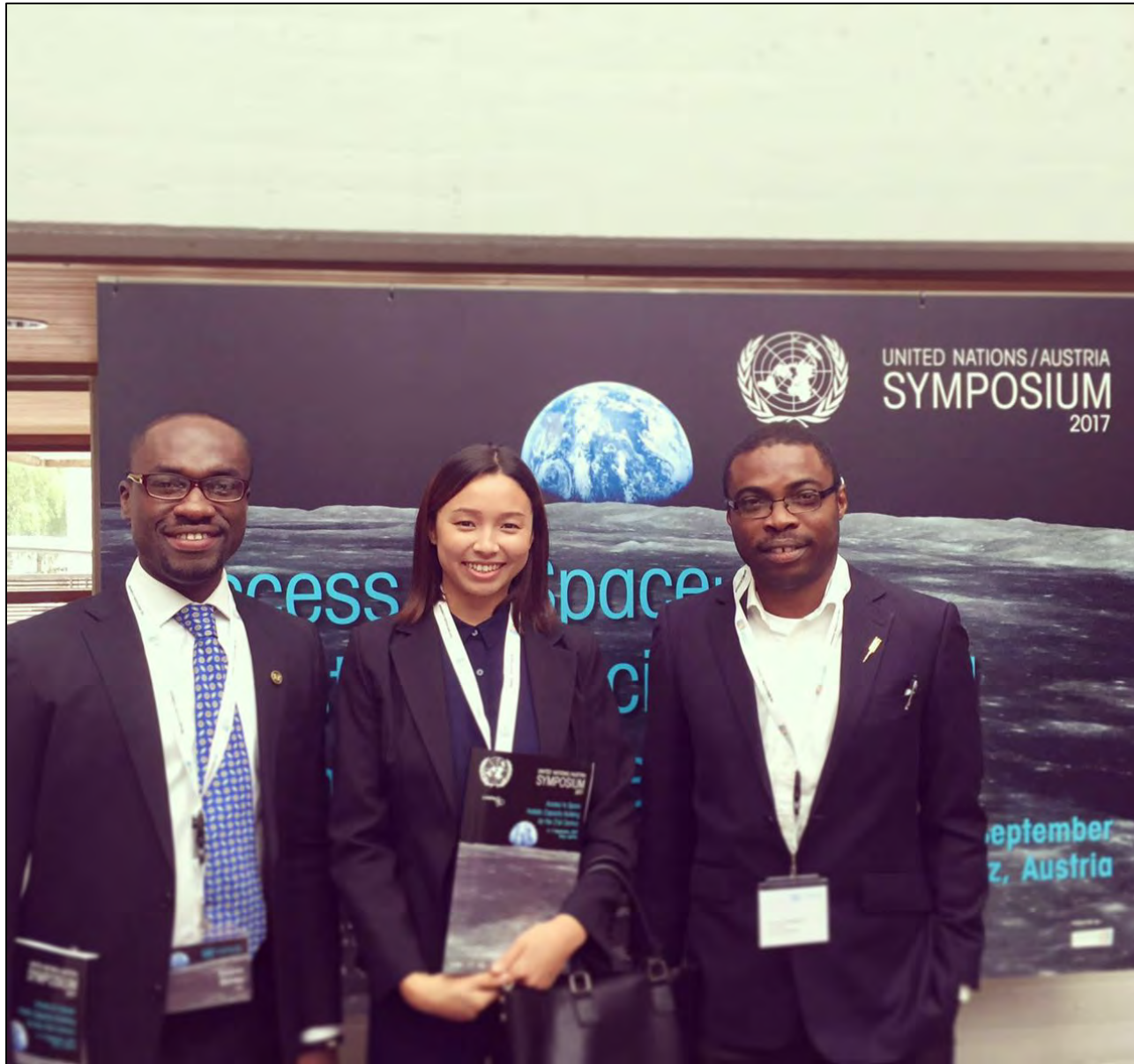


Graz, Austria

3rd – 7th September, 2017

Organized by United Nations Office for Outer Space Affairs

Written by: Yeshey Choden for Issue No. 20 of BIRDS Project Newsletter



Bonsu, Yeshey and Reuben at the symposium



(Left) Venue of symposium : Technical University of Graz

(Right) Welcome note by the organizers



Kyutech
Technology Transferred, what next? III

- Case 2: continued...
- Can stimulate national discourse on the use and role of space technology in creating abundance

NigeriaEduSat-1 for launch today

দেশের প্রথম ন্যানো স্যাটেলাইট প্রস্তুত



ACCESS TO SPACE: HOLISTIC CAPACITY BUILDING FOR THE 21ST CENTURY
7TH SEPTEMBER, 2017

Kyutech
 Kyushu Institute of Technology

PRESENTED BY: YESHEY CHODEN

- KYUSHU INSTITUTE OF TECHNOLOGY, JAPAN
- MINISTRY OF INFORMATION AND COMMUNICATIONS, ROYAL GOVERNMENT OF BHUTAN

Presentations by Kyutech BIRDS students



There were a number of interesting panel discussions on various topics



TUGSAT-1 / BRITTE-AUSTRIA
ÖSTERREICH'S ERSTER SATELLIT IM WELTALL

Mit TUGSAT-1 / BRITTE-AUSTRIA entwickelt das Institut für Kommunikationsnetze und Satellitenkommunikation (IKS) der Technischen Universität Graz und gemeinsam mit der Universität Toronto (UTIAS/SFL), der Universität Wien und der TU Wien den ersten österreichischen Satelliten, der Ende 2010/Anfang 2011 mit einer indischen Trägerrakete ins ALL abheben wird. Mit diesem würdelförmigen Nanosatelliten von nur 20 cm Kantenlänge wird eine Mission zur Erfassung der Helligkeitsschwankungen massiver, sehr heller Sterne mit bisher einzigartiger Präzision realisiert, wie dies auch nur vom Weltraum aus her möglich ist. Die Messwerte sollen neue Erkenntnisse über Rotation und die inneren Vorgänge dieser Sterne mit der Helligkeitsklasse +3,5 liefern. Diese Erkenntnisse sollen helfen, die Theorien über die Entstehung des Universums zu verbessern.

Ziel der TU Graz ist die Entwicklung einer kostengünstigen Nanosatellitenplattform, die für zukünftige wissenschaftliche und technologische Missionen eingesetzt werden kann. Ein wichtiger Aspekt ist die Ausbildung. Zahlreiche Studierende sind in das Projekt im Rahmen von Diplomarbeiten und Dissertationen einbezogen.

TUGSAT-1 BESTEHT AUS FOLGENDEN HAUPTELEMENTEN:

- 1 Teleskop mit hoch empfindlichem Sensor zur Erfassung der Zielsterne
- 3 Bordcomputer für die Satellitenkontrolle/Datenübertragung, Lage- und Steuerung des Instruments (Teleskops)
- Lageregelungssystem mit drei Nanokreiseln, Magnetspulen, Magnetometer, Sternen- und Sonnensensoren
- UHF-Empfänger für den Befehlsempfang von der Erde
- S-Band-Sender für die Datenübertragung zur Bodenstation
- Solarzellen und Batterie zur Energieversorgung

denstation und Kontrollzentrum des in ca. 800 km Höhe um die Erde kreisenden Satelliten entstehen in Graz. Das Projekt wird von der Forschungsgesellschaft FFG im Rahmen des Österreichischen Weltraumprogramms, einem Impulsprogramm des Bundesministeriums für Verkehr, Innovation und Technologie, gefördert.

TUGSAT-1 / BRITTE-AUSTRIA
 Maßstab M 1 : 1
 Abmessungen: 20 x 20 x 22 cm
 Masse: 7 kg
 Energieversorgung: 6 Watt (Solarzellen)



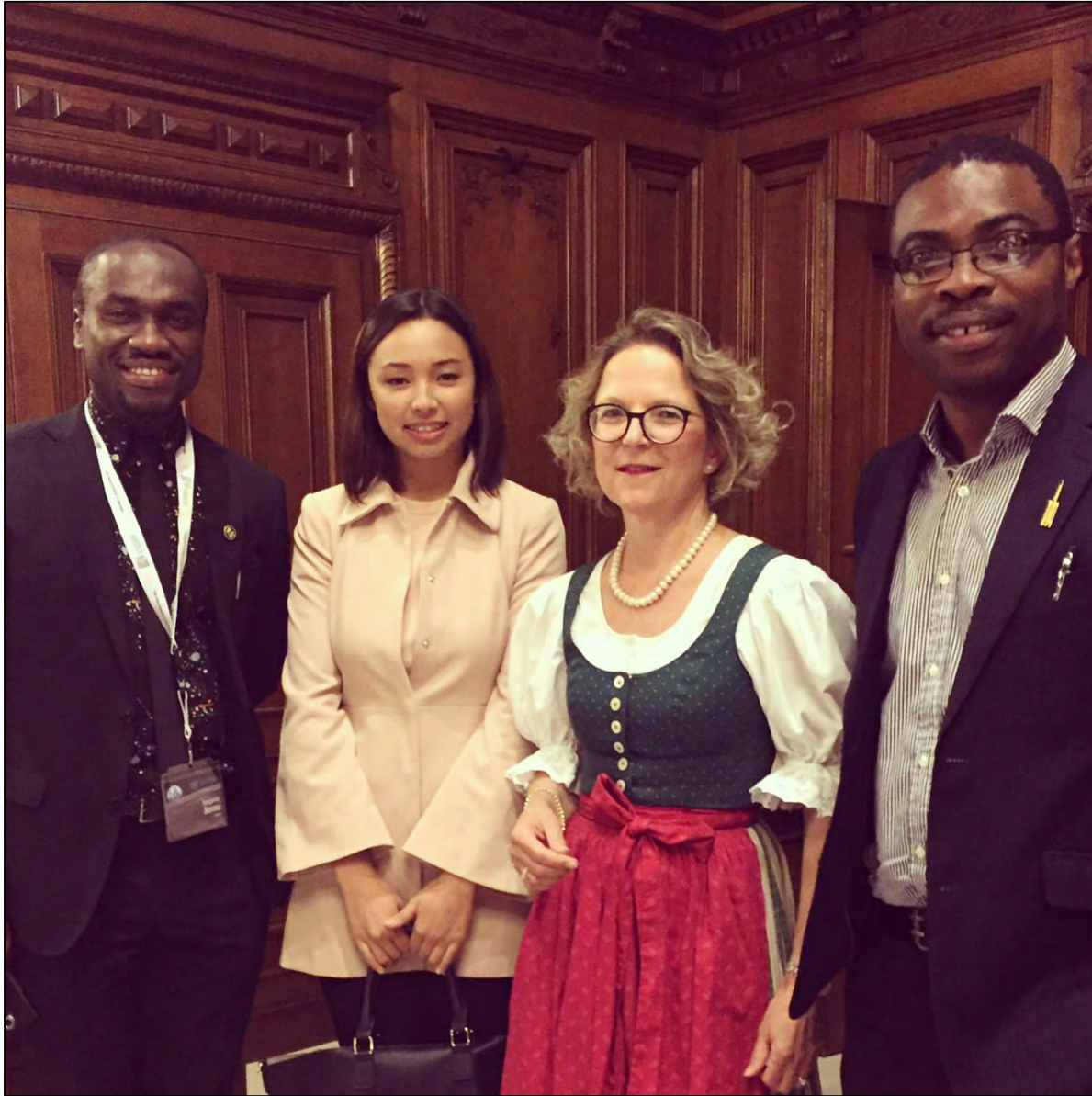





1 Panel mit Solarzellen
 2 Nanokreisels
 3 Bodenstationsantenne



Facility tour at TU Graz



Dinner hosted by the Mayor of Styria and governor on separate days



Meeting new friends
and spending quality
time with them

11. BIRDS students participate in LaSEINE Summer Camp at a retreat in Oita Prefecture

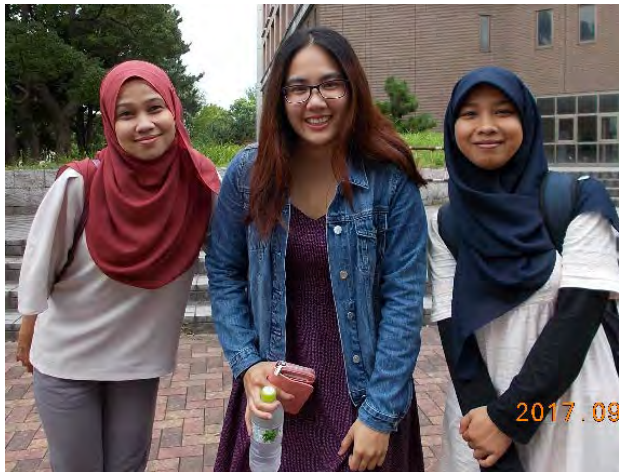
Monday, 4 Sept. (2017)		Tuesday, 5 Sept.		Wed, 6 Sept	
8:40	Gather at LaSEINE ground floor	7:00	Rise	7:00	Rise
8:50-9:00	Depart with rental cars	8:00-9:20	Breakfast	8:00-9:20	Breakfast
9:00-13:00	Drive to Kujyuu - lunch enroute	9:30-10:00	Lecture-5 (Taiwo) < practice BIRDS presentation for Airbus competition at Niagara Falls, Canada >	9:30	Checkout and depart
13:30-14:00	Break	10:00-10:30	Lecture-6 (G. Maeda) "How to start a space business"		
14:00-14:30	Lecture-1 (Bhutan Student Kiran) "School System & Student Life in Bhutan"	10:30-10:40	Break		
14:30-14:40	Break	10:40-11:10	Lecture-7 (Dr Amelia) "Tasmania"		
14:40-15:10	Lecture-2 (Dr Yamauchi) "Gourmet Map in Kokura"	11:10-11:40	Lecture-8 (Dr Masui) "Units" 「単位」について		
15:10-15:40	Lecture-3 (Dr Kate) "How to become an astronaut"	11:40-13:00	Lunch (bento box)		
15:40-15:50	Break	13:00-13:30	Lecture-9 (Dr Pauline) "Synchronized Swimming"		
15:50-16:20	Lecture-4 (Prof Cho) "Introduction to Standards"	13:30-14:00	Lecture-10 (Dr Kim) "Trans Siberian Railway"		
16:30-18:00	Free Time	14:00-14:10	Break		
18:10-18:30	Leave for dinner	14:10-14:40	Lecture-11 (Prof Toyoda) "Vacumm Systems"		
18:30-19:30	Dinner (restaurant)	14:40-18:00	Free Time		
19:30-22:30	Free Time	18:00-20:00	BBQ - barbecue		
22:30	Movie: "Shin Godzilla" [in large student tatami room]	20:00	Free Time		



9 AM Departure from Kyutech on 4 Sept.



Convoy of 9 rental cars



Loading the cars



Road trip from Kyutech to Kyujuu Camp



Many tunnels and bridges



Lunch in Yufuin



Trip takes about 3 hours



Lectures of Day 1

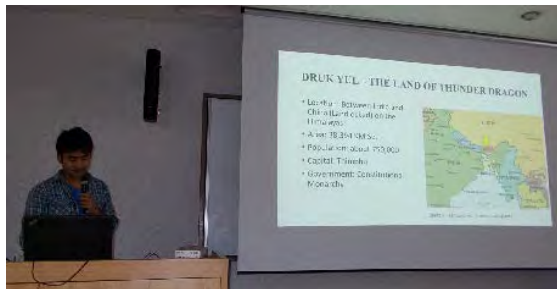


འབྲུག།
BHUTAN



School System & Student Life

Kiran Kumar Pradhan
September 4, 2017



Gourmet map in Kokura

4-6 Nov. 2017 Summer seminar

Yamauchi 山内



Lectures of Day 1 -- continued



Basketball and indoor soccer after the lectures



Off to dinner of Day 1



A rental car develops trouble

Students push the car



The problem: Transmission broke down

-- the car had to be replaced the next day

暗い山の中でちんたら運転になりました。

The screening 上映 of Shin Godzilla



Breakfast of Day 2



Lectures of Day 2



Taiwo practices his Airbus Diversity Contest presentation



九州工業大学
宇宙環境技術ラボラトリー
Laboratory of Space's Environment Interaction Engineering
Kyushu Institute of Technology



How to start a space business

- By G. Maeda
- For 平成 29年度 合宿
- 2017 Summer Camp, Cho Lab
- 4-6 September 2017



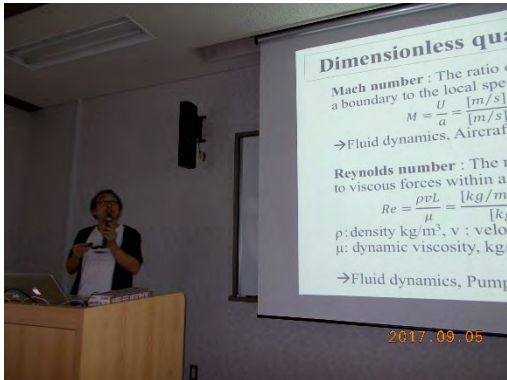
Dr Amelia Greig discusses Tasmania



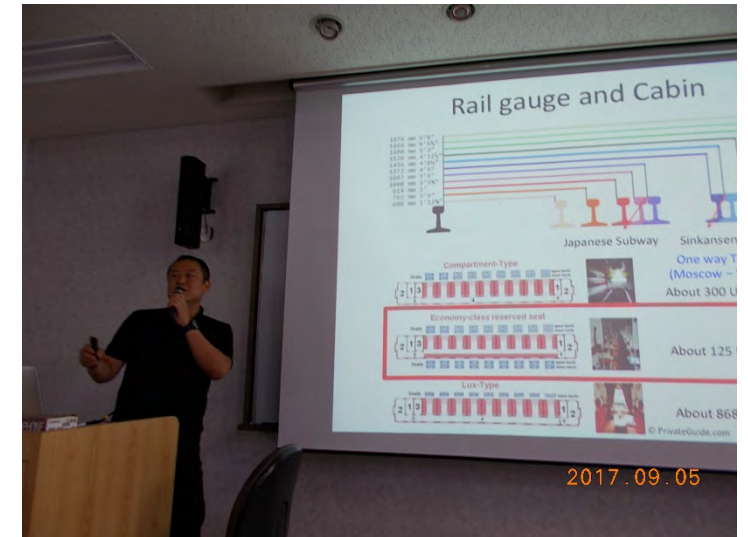
Lectures of Day 2 -- continued



Dr Masui discusses "Units" 「単位」について



Dr Kim

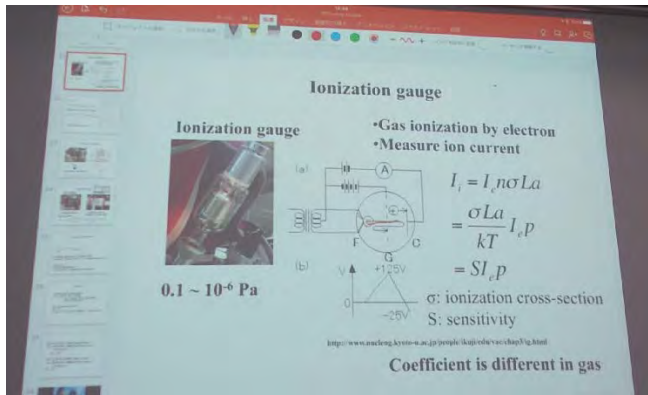


Traveling the Trans Siberian Railway

Lectures of Day 2 -- continued



Prof. Toyoda
"Vacuum Systems"



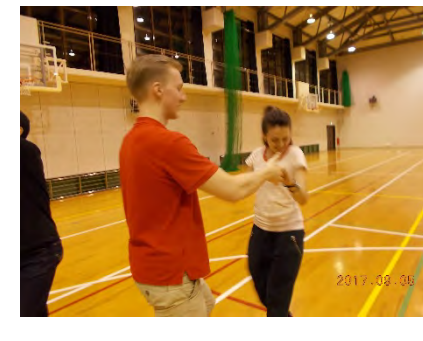
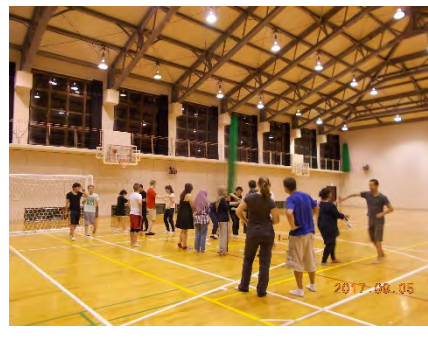
2017 Summer Camp BBQ Barbeque



Facilities



The dance session . . . occurred after the BBQ





**2017 LaSEINE
Summer Camp
Group Photo –
with a large
number of BIRDS
Project members.**

This was taken just before leaving the facility (on 6 Sept) to return to Kyutech.

This photo
courtesy of Dr. Kim

End of **BIRDS Project Newsletter** – Issue Number Twenty

This newsletter is archived at the BIRDS Project website:

Project website: <http://birds.ele.kyutech.ac.jp/>

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 purpose of it is to keep BIRDS stakeholders (the owners of the satellites) informed of project developments.