According to Bryce Space & Technology Co., among academic operators, Kyutech is No. 1 in small satellites launched

Members of BIRDS -1, -2, -3, and -4, on 29 Nov 2018 in front of the lab building

Archive website: http://birds1.birds-project.com/newsletter.html
All back issues are archived at this website.

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. 41
(30 June 2019)

Edited by:
G. Maeda
Laboratory of Spacecraft Environment Interaction Engineering (LaSEINE),
Kyushu Institute of Technology (Kyutech)
Kitakyushu, Japan

Space Engineering International Course

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.

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From Nepal **The Guest Box**

Chitwan National Park

Chitwan National Park in Nepal is a UNESCO designated World Heritage Site and is a popular destination for tourists. The park is home to one of the last populations of single-horned Asiatic rhinoceros. The conservation has allowed the endangered species to thrive. The park is about 4-5 hours drive down south from Kathmandu, the capital.

-- Abhas (BIRDS-3, Nepal)

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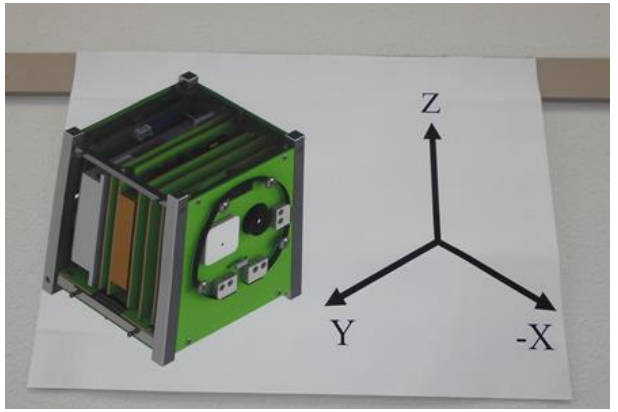
Reminder

When you publish a paper on a topic related to BIRDS, please include this acknowledgement in the paper:

This work was supported by JSPS Core-to-Core Program,
B. Asia-Africa Science Platforms.

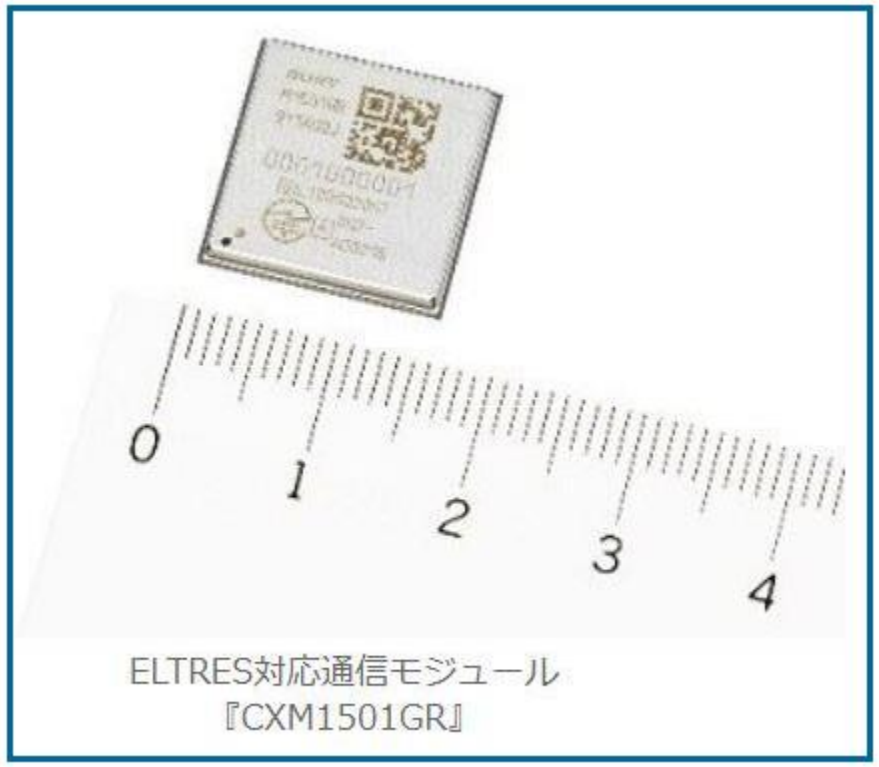
02. Weekly BIRDS-4 Meeting in the BIRDS Room

The weekly meeting of 28 May 2019. It started at 4:10 PM.



Posted on the wall as a reminder

03. Sony has developed LPWA device that can do 100 km distance



ELTRES対応通信モジュール
『CXM1501GR』

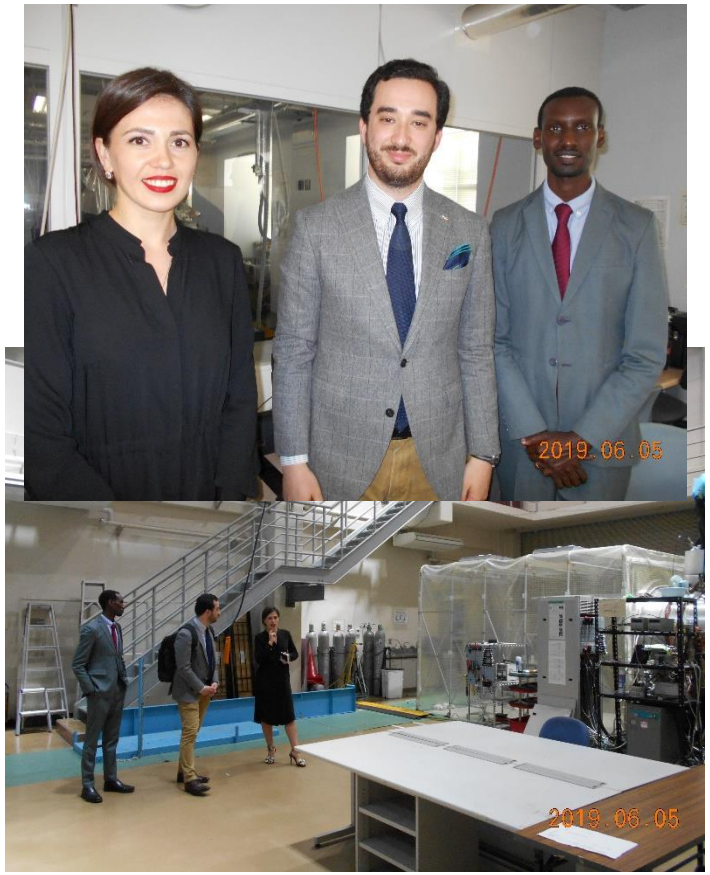
「LPWA」= Low Power Wide Area

ソニーはこのほど、IoT向けに独自開発した通信規格「ELTRES」（エルトレス）に対応する通信モジュール「CXM1501GR」を発表した。IoT機器に同モジュールを組み込むと、ソニーが今秋から提供するELTRESを活用したネットワークを使える。価格は5000円（税込）で、6月からサンプルを出荷する。

See the full article: https://www.itmedia.co.jp/news/articles/1906/03/news123.html
(in Nihongo)

This info is courtesy of Dr Masui of Kyutech

04. Visit to Kyutech by the Project Manager of RWASAT-1 (3U sat of Rwanda)



Kate gave the tour of facilities to them.

Quentin is wearing the blue tie.
Joseph is wearing the red tie.

Date of visit:
5 June 2019

Surname	First name	Position	Affiliation	Nationality
Verspieren	Quentin	Researcher	The University of Tokyo, Intelligent Space Systems Laboratory	France
Abakunda	Joseph	RWASAT-1 Project Manager	Rwanda Utilities Regulatory Authority (RURA)	Rwanda

05. 7th UNISEC-Global Meeting and 6th Mission Idea Contest

Fliers for both are now available by clicking below.

UNISEC GLOBAL
University Space Engineering Consortium

Program

- Regional report from local chapters
- Discussion by groups on various topics
- Presentations by student representatives
- Acknowledgement of new UNISEC-local chapters
- Discussion on "Gender Equalities in the Space Field"
- Exhibition (incl. presentation)
- 6th Mission Idea Contest (MIC6) Dec 2, 2019

MIC6 is organized in cooperation with ICE Cubes and Space BD to utilize the ISS experiment modules, Columbus of ESA and Kibo of JAXA.
Abstract Due: August 8, 2019

Associated events

- December 4-5 / HEPTA-Sat training
- December 4-5 / International Workshop on Lean Satellite - 2019
- December 6 / Space Job Fair in Tokyo

Contact
UNISEC-Global Office
Central Yayoi 2F, 2-3-2, Yayoi, Bunkyo
Tokyo 113-0032, Japan
Tel : +81-3-6826-4008
Fax : +81-3-6826-3988
Email : secretariat@unisec-global.org

http://www.unisec-global.org/meeting7.html

7th UNISEC-Global Meeting
http://www.unisec-global.org/pdf/uniglo7/UNIGLO7_flier.pdf

6th Mission Idea Contest
http://www.spacemic.net/pdf/mic6/MIC6_flier.pdf

OLAYINKA'S WORLD

COLUMN NO 11

OLAYINKA FAGBEMIRO
ASSISTANT CHIEF SCIENTIFIC OFFICER,NATIONAL SPACE RESEARCH & DEVELOPMENT AGENCY(NASRDA), ABUJA. NIGERIA. HEAD, SPACE EDUCATION UNIT
NATIONAL COORDINATOR, ASTRONOMERS WITHOUT BORDERS (AWB) NIGERIA
PUBLIC RELATIONS AND EDUCATION OFFICER, AFRICAN ASTRONOMICAL SOCIETY (AfAS)

2019 GIRLS ASTRONOMY CAMP, LOKOJA, NIGERIA

In pursuit of sustainable development in Nigeria with the use of Astronomy, Astronomers Without Borders Nigeria organized the 2019 Girls Astronomy camp in Lokoja, Kogi State, Nigeria, with the aim of encouraging young school girls to take up STEM (Science, Technology, Engineering & Mathematics) education in School. The two sustainable focus growth problems this camp aimed to make contributions are inequality and quality education. This event held on May 10, 2019 at Salem University campus in Lokoja. This program catered to 200 secondary school girls from different schools within Kogi state.

In attendance was the Commissioner for Education , Kogi State, Mrs. Rosemary Ojochenemi Osikoya; the Director of the Center for Atmospheric Research, Prof. Babatunde Rabiu; the Vice-Chancellor, Salem University, Prof. Dorcas Oluwade and other top government officials.

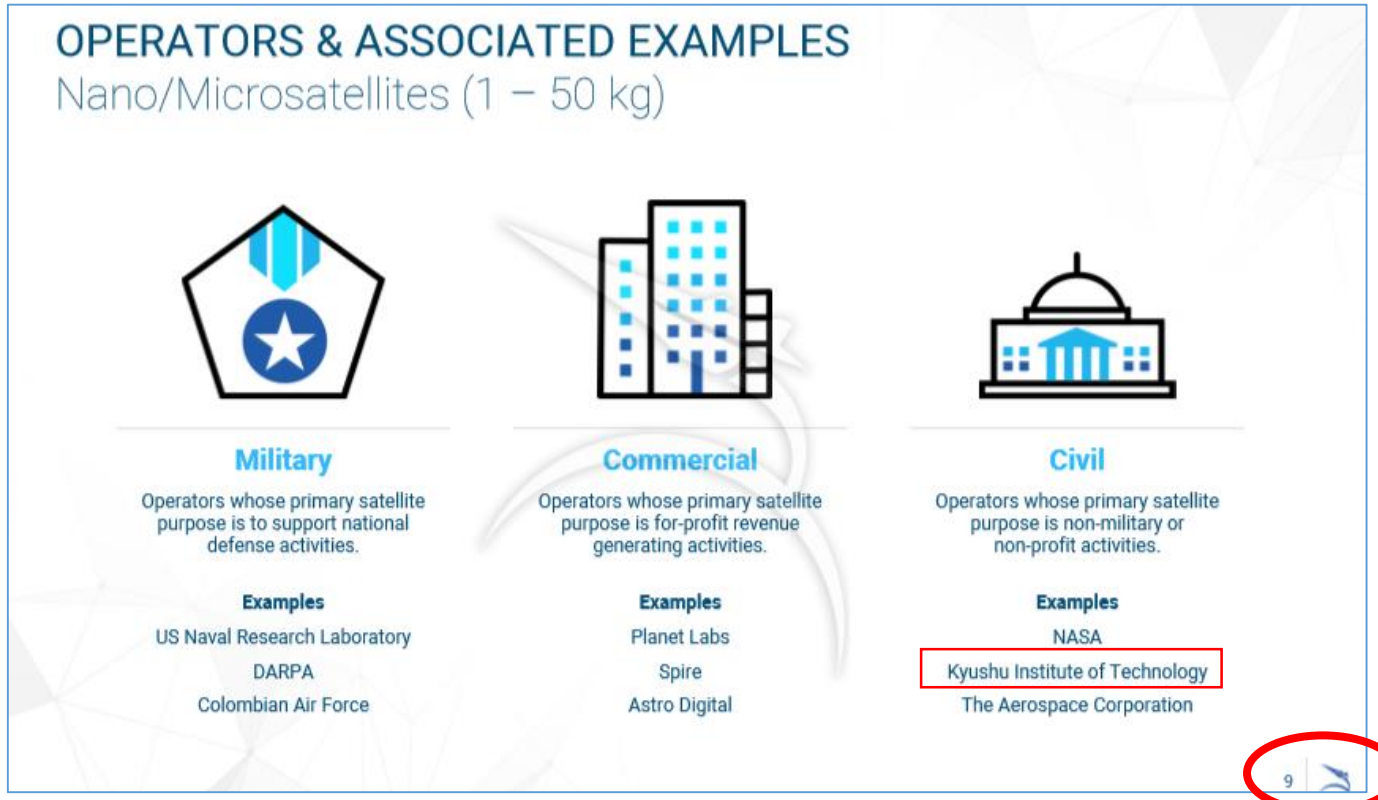
Engr. Yewande & Engr. Ekubo made presentations on Women in Aerospace and AWB Nigeria and its activities respectively. The presentation aimed at inspiring the girls to study STEM and the amazing possibilities that can come from it. They learnt about women's contributions to the space race and science & technology. The girls responded with a lot of questions which were answered. They received a brief about the sun and used solar glasses to look at the sun.

GROUP PHOTO OF CAMP PARTICIPANTS

SOME AWB MEMBERS

HANDS ON ACTIVITIES DURING THE CAMP

07. Kyutech is famous in the nano satellite community



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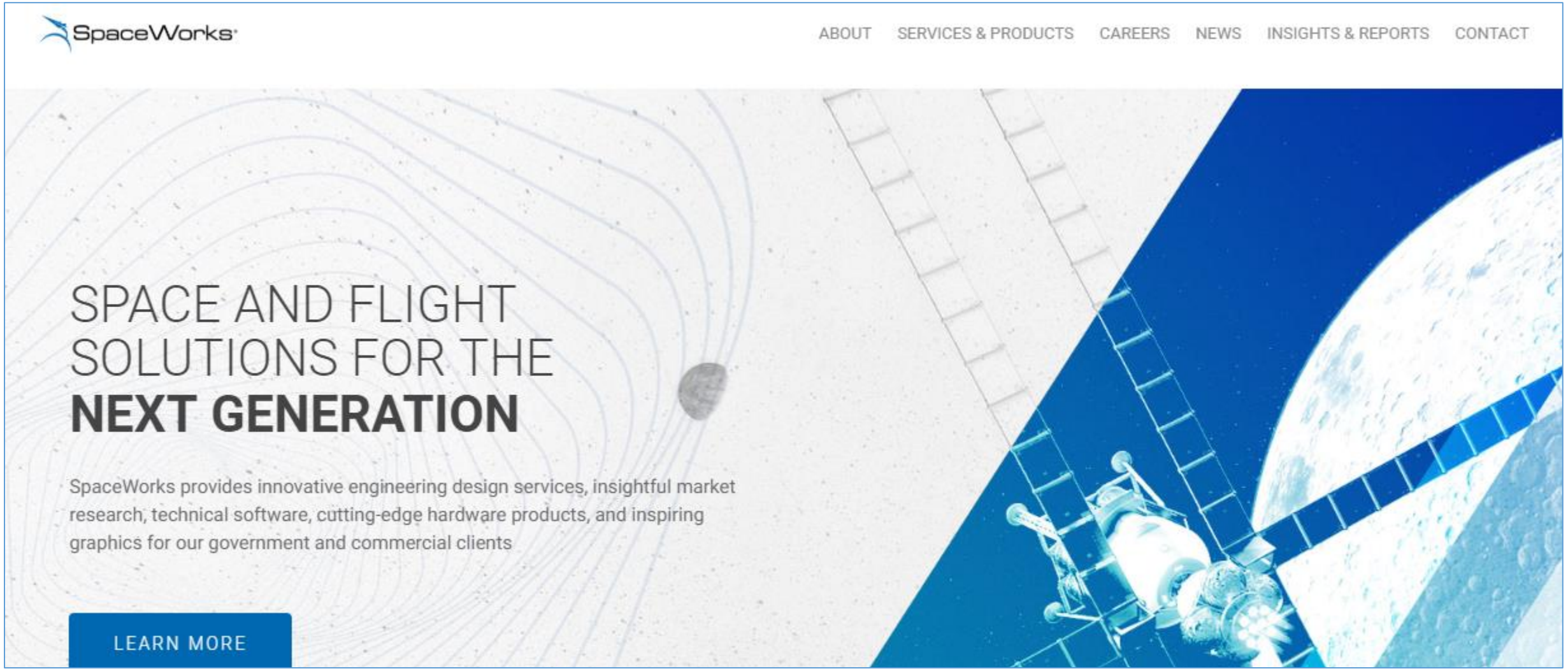
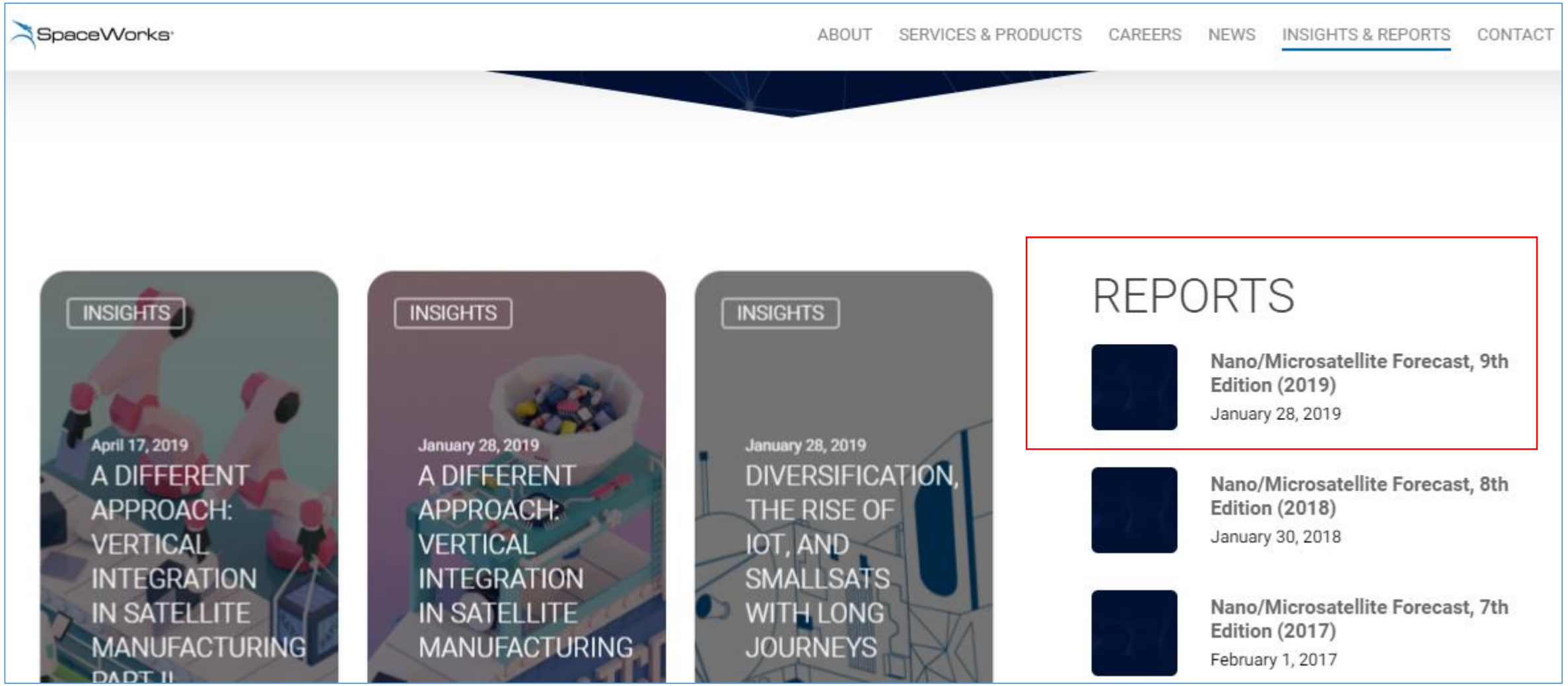
← 2019 report by SpaceWorks

What is SpaceWorks ?

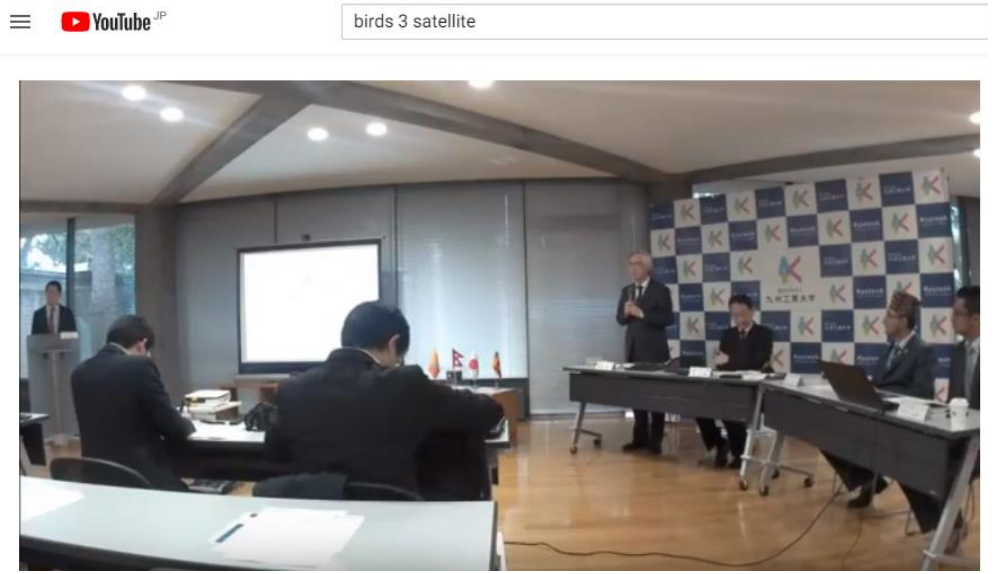


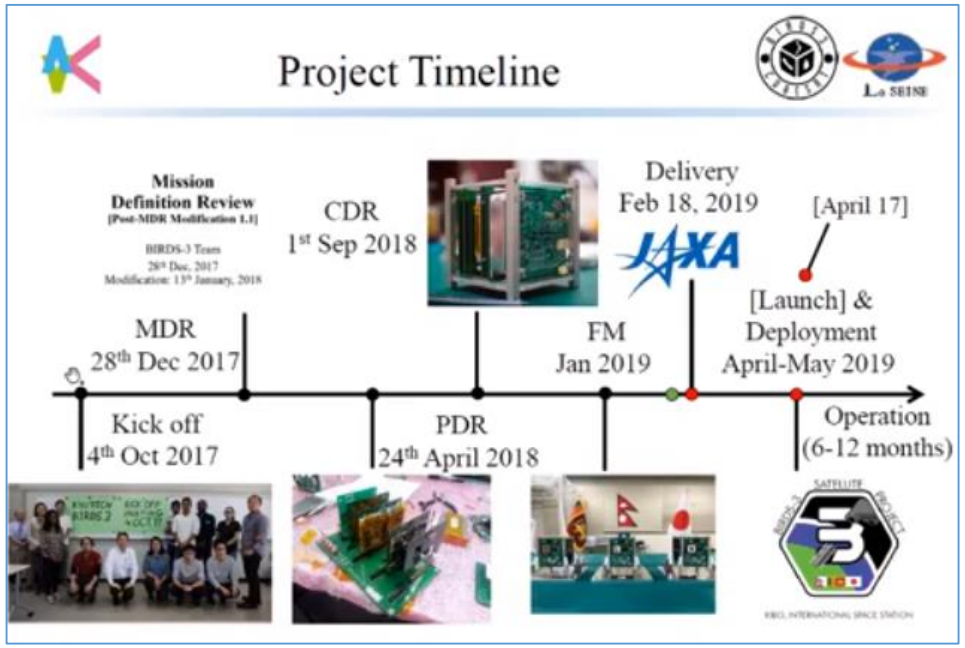
https://www.spaceworks.aero/

One business they have: Make reports **The link for this page is:** https://www.spaceworks.aero/insights/



08. Video of BIRDS-3 press conference of 15 Feb 2019





BIRDS-3 project is thoroughly explained in this 52-min. video by Project Manager Abhas and others.

YouTube link: https://www.youtube.com/watch?v=b2fV7CeOLVI

09. Hind (ABE Fellow, Sudan) attended 2019 annual meeting of Rocinantes in Kokura

【ロシナンテス活動報告会 開催のご案内】

いつもあたたかいご支援をありがとうございます。

30年実権を握ってきた大統領が4月に解任され、スーダンは今大きな転換点を迎えています。現地で激動のスーダンを見守ってきた理事長川原の帰国に合わせ、6月9日(日)、活動報告会を開催します。

市民の力で成し遂げられた大統領解任についてや、一連の動きの中で現地がどんな状況だったのか、今後の見通しなど、最新の情報をお伝えします。

ロシナンテス活動報告会

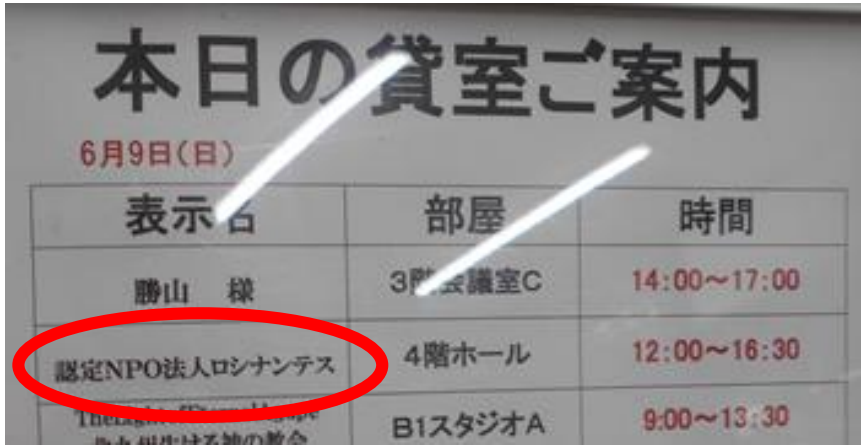
日程：2019年6月9日(日)
時間：13:45 開場 /14:00 開演 /15:30 終演
会場：第一小倉商工会館 4階ホール
(福岡県北九州市小倉北区魚町2丁目6－1)
※ロシナンテス北九州本部の建物とは違いますのでご注意ください。
1階に「資さんうどん」が入っているビルです。
[アクセス]
・JR小倉駅 徒歩5分
・モノレール平和通駅 徒歩1分
登壇者：理事長 川原尚行
定員：100名

ご参加いただける方は、下記までお申し込みください。
皆さまにお会いできますことを心より楽しみにしております！

認定NPO法人ロシナンテス
〒802-0082 福岡県北九州市小倉北区古船場町1番35号
TEL: 093-521-6470 (平日10時～17時) FAX: 093-521-6471

The Invitation Card (postcard)

SEIC Student Hind and Dr Kawahara, at this meeting on 9 June 2019



← 会場のビル

GM and Kawahara sensei at outdoor café

G. Maeda with Dr Kawahara in Khartoum, Sudan, on 7 Oct. 2015.

ABE, Kyutech, BIRDS, Dr Kawahara, Rocinantes, ISRA (Hind's employer), SEIC, and LaSEINE, are all connected in some way.

Continued next page

ロシナンテスとは

https://www.rocinantes.org/about/

スーダンの地域社会の発展を目指していきます。
そのために、日本とスーダンを結びつけ、地域住民の協力を得ながら、既存にない新しき価値ある「もの」「こと」を創出していきます。
それが、スーダンに関係する国々にも広がっていくようにします。
そのプラットフォームとなるのが、ロシナンテスの役割です。

ROCINANTES

Why Sudan?

2002年、川原は大使館の医務官としてスーダンに赴任しました。しかし、日本政府は当時内戦中のスーダンへの援助を停止していたため、目の前で苦しむスーダンの患者さんを救うことが許されなかったのです。 川原は外務省を辞して、スーダンで医療支援を始めました。これが、ロシナンテスの活動のきっかけです。
スーダンの人々は決して裕福ではない生活の中でも明るく懸命に生き、余所から来た人に対してとても親切に振舞ってくれます。こうした人間性に加え、すぐそばには広大な土地やナイル川という資源もあります。つまり、政治状況が安定さえすれば、スーダンは発展していく可能性を秘めているのです。
もちろん、スーダン以外にもさまざまな国や地域が援助を必要としているのは承知しています。ですが、私たちロシナンテスはこのご縁を大切に、スーダンでの活動を続けています。

■プロフィール

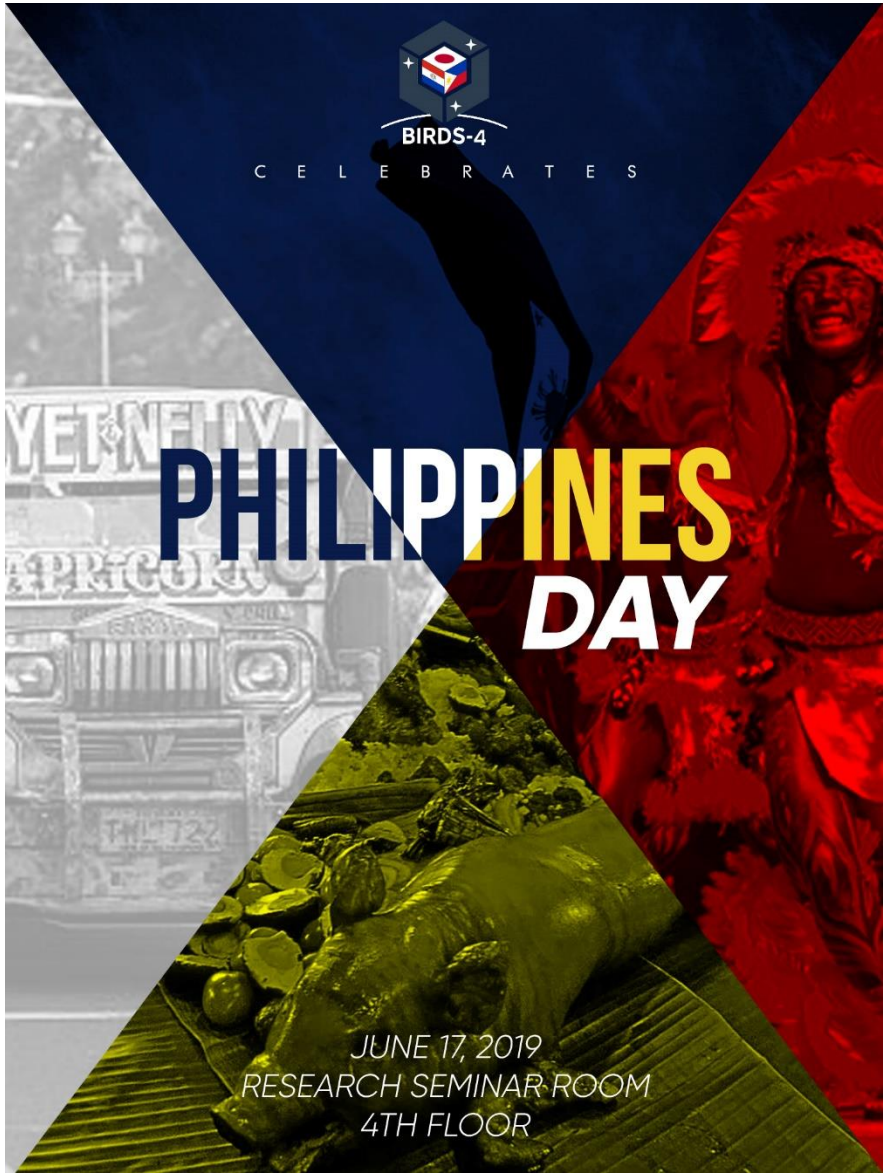
川原　尚行

1965年福岡県北九州市生まれ。1984年福岡県立小倉高等学校卒。
1992年九州大学医学部を卒業後、九州大学第二外科（現：消化器・総合外科）に入局し同外科および広島赤十字・原爆病院で研修を行う。
九州大学大学院修了ののち、1998年外務省入省。在タンザニア日本大使館に二等書記官兼医務官として着任。その後ロンドン大学（イギリス）で熱帯医学を履修し、2002年在スーダン日本大使館に一等書記官兼医務官として着任。
2005年1月、外務省を辞職し同年4月よりスーダン国内での医療活動を開始。翌2006年5月、北九州市に「NPO法人ロシナンテス」を設立。同年8月スーダン共和国政府より国際NGOとして正式に登録される。

10. Philippines Independence Day

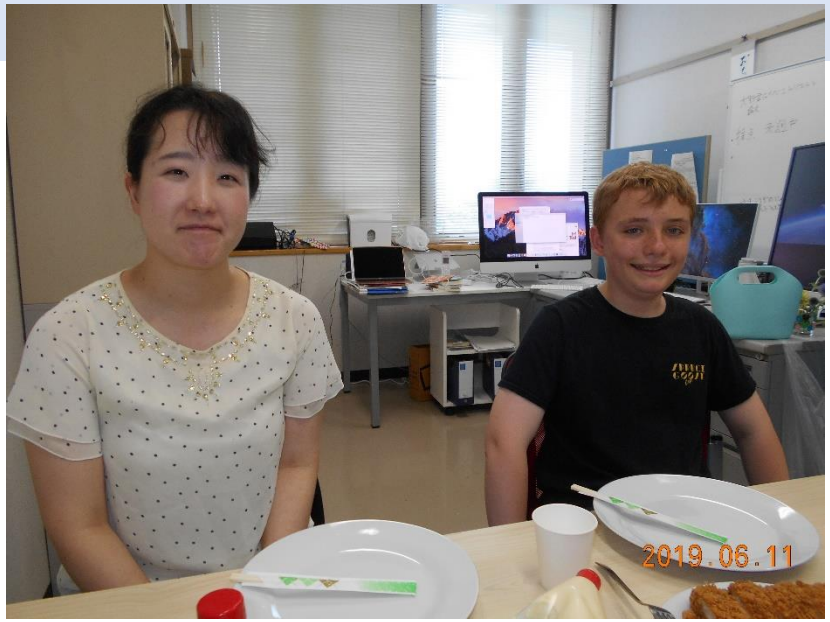
The BIRDS Project celebrated Philippines Independence Day on 17 June with a gala lunch prepared by the Philippine members (Iz, Mark, and Marloun) of BIRDS-4. The report of this event will appear in the next issue of this newsletter.

For more info see:
https://en.wikipedia.org/wiki/Independence_Day_(Philippines)



Announcement for the lunch of 17 June

11. We welcomed Prof. Dianne DeTurris (Cal Poly) who will teach rocket propulsion this summer for SEIC students



From left: Prof. DeTurris, G. Maeda, Dr Teramoto, and Leo (12-yr-old son of Dianne)

DIANNE DETURRIS

PROFESSOR

Dr. Dianne DeTurris is an expert in hypersonic airbreathing propulsion, with degrees in Aerospace Engineering from Georgia Tech, Penn State, and Virginia Tech. She teaches propulsion courses for the Aerospace Engineering Department and does research in hybrid rockets and rocket based combined cycle technology. She is interested in broadening engineering education to include cultural competency and in increasing the participation and advancement of women in STEM.

Above: Dr Teramoto and Maeda cooked "Welcome-to-Kyutech Lunch" for the guests on 11 June 2019.

Purpose of this course [by Prof. DeTurris]

Spacecraft propulsion is essential to all space missions. Large rocket based launch vehicles are required to place any object into orbit, and on-board propulsion systems are required to maintain or change orbit, provide attitude control, or place the spacecraft on interplanetary trajectories. This course presents a wide variety of spacecraft propulsion applications, including chemical rockets, electric propulsion, nuclear concepts, and launch vehicles. The course will also cover trajectory analysis, propulsion system component design, and spacecraft integration of propulsion systems. Basic principles of thrust, energy utilization, thermodynamic processes, combustion and performance are applied to chemical rockets. Course participants will gain a broad understanding of the numerous options for spacecraft propulsion, and the requirements for propulsions system selection and design.

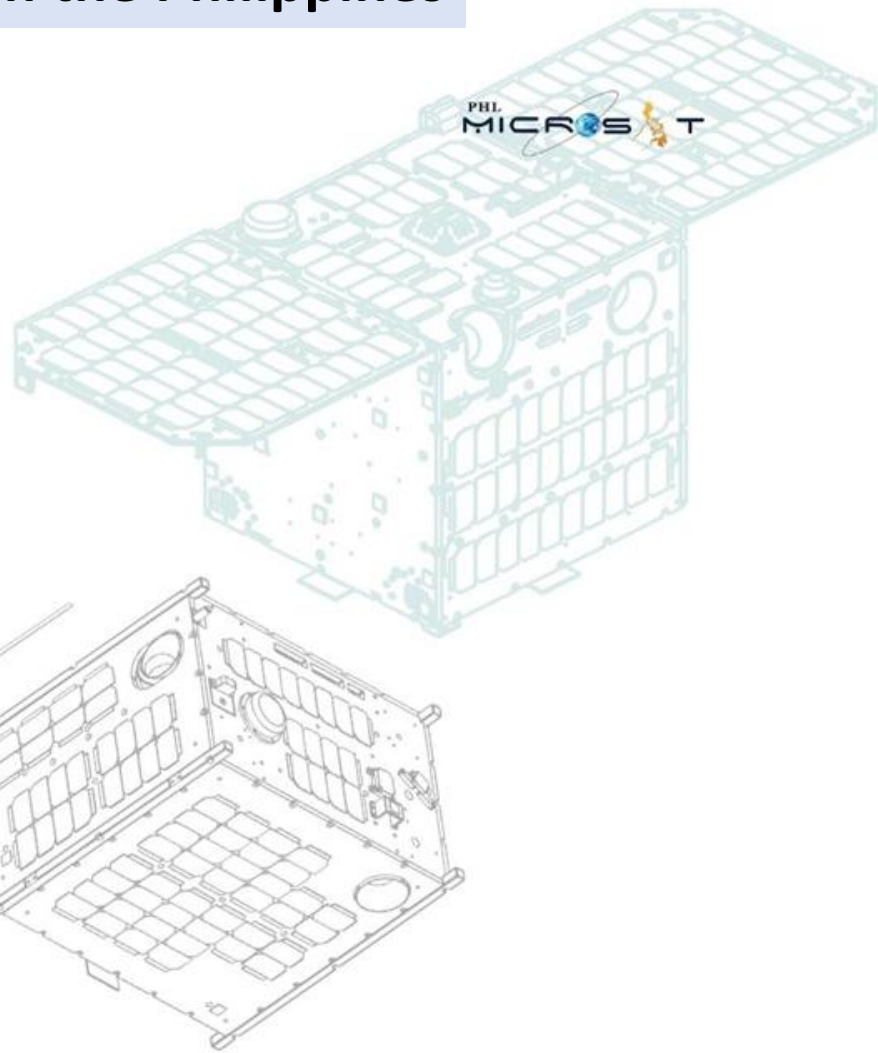
12. Location of the ground stations of the BIRDS GS Network

This map was produced by Apiwat (BIRDS-1, Thailand) in March of 2019. The only major gap of stations is the void between continental Asia and the Americas.

Ground station of FUTA (Nigeria) going up in December of 2018

STAMINA4SPACE

UPDATES FROM THE PHILIPPINES



June 15, 2019
University of the Philippines-Diliman
Quezon City, Philippines

PREPARED BY:

Mae Ericka Jean C. Picar
STAMINA4Space Communications Officer, STeP-UP Project
Graphic Artist and Contributing Writer

Nicole V. Ignacio
STAMINA4Space Communications Officer, PHL-50 Project
Contributing Writer and Editor

F. Mara M. Mendoza
STAMINA4Space Project Manager, STeP-UP Project
Contributing Writer and Editor

UNIVERSITY OF CALIFORNIA, BERKELEY VISITS MANILA

Students from UC Berkeley visited the Philippines on May 20-22, 2019. They got a chance to visit the University Laboratory for Small Satellite and Space Engineering Systems (ULYS^{3}ES) in the Electrical and Electronics Engineering Institute of the University of Philippines-Diliman.

STAMINA SPACE

PHL MICROSAT

The students learning about the other projects implemented in the University of the Philippines

The students visiting the DOST – UP Sustaining Collaboration in Advanced Learning Environment (UPSCALE) Innovation Hub at the National Engineering Center, UP Campus, Diliman, Quezon City

Lorenzo Sabug Jr., University Researcher under S4S presenting about the Amateur Radio Unit payload of Diwata-2

AFRDC's 46th Founding Anniversary

The STAMINA4Space Program was invited to participate in the Research & Development Exhibit in celebration of the Air Force Research and Development Center (AFRDC)'s 46th Founding Anniversary. It was held in the Air Force City Officer's Clubhouse, Clark Air Base, Mabalacat City Pampanga, Philippines.

In photo (L-R): John Paul Almonte, Lorenzo Sabug Jr. and Engr. Leo Almazan explaining the use of Diwata-2 during the exhibit

UTILIZING DIWATA

The De La Salle University Optical Society held an event titled "Utilizing Diwata: A Workshop on How to Work and Use Microsatellites Above Us" on May 30 and 31, 2019, where STAMINA4Space researchers were invited as guest speakers.

In photo : STAMINA4Space Researchers Julius Sempio (left) and RK Aranas (right)

Photo courtesy of: DLSU Optical Society


ARU READY?
Media Event
May 17, 2019
University Laboratory for Small Satellite and Space Engineering Systems (ULyS³ES) Building
University of the Philippines, Diliman
The STAMINA4Space Program successfully held a live demonstration of the Amateur Radio Unit (ARU) on board the Philippines' second microsatellite, Diwata-2, as part of a series of demonstrations of the ARU's capabilities, particularly its voice communication feature. This feature is potentially useful as an alternative means of communication during emergencies and disasters, as the ARU on board satellites are not affected by conditions on the ground.


STAMINA4SPACE
PHL MICROSAT

Dr. Joel Marciano, Jr. opened the event with a welcome message.

Dr. Marc Talampas, PHL-50 Project Leader, wrapped up the event with closing remarks.

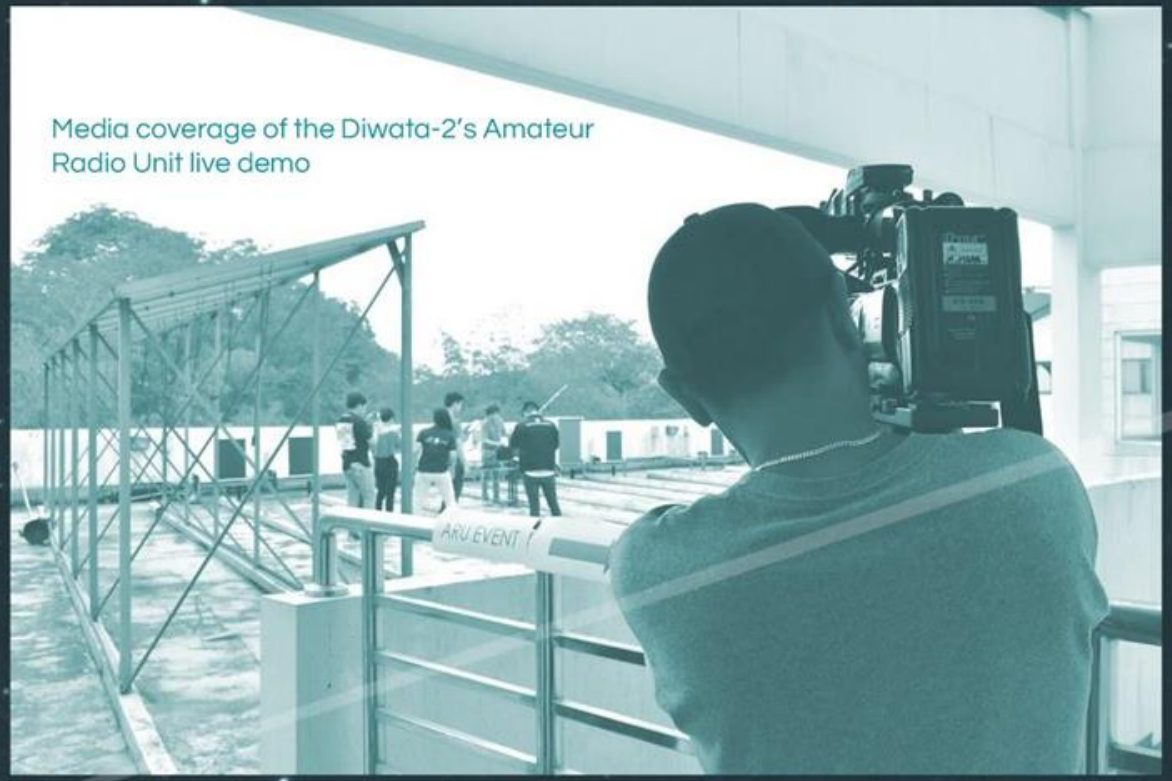
Lorenzo Sabug, Jr. gives a detailed description of the ARU and what to expect during the contact.

Mary Ann Zabanal-Constante, also an S4S University Researcher, discussing the specifics of the ARU

Shielo Namuco, an S4S University Researcher, gave updates on Diwata-1 and Diwata-2.

STAMINA4SPACE

PHL MICROSAT



Media coverage of the Diwata-2's Amateur Radio Unit live demo

Partner ham user Anthony Guiller Urbano during the live demo of Diwata-2's ARU (watch the demo here: https://bit.ly/2IepJSU

ARU READY? Media Event

During the live demo in the University of the Philippines, contact was established among the amateur radio operators in various locations: Anthony Guiller Urbano (4I1AWN, Quezon City), Jharwin Barozzo (DV2JHA, Pangasinan), JP Almonte (4I1DIT, Quezon City), and other stations from Japan such as Iji Yoshitomo (JA6PL, Japan) and JR6DI (Japan).

STAMINA4SPACE

PHL MICROSAT


STAMIN4SPACE
PHL MICROSAT
Updates from BIRDS-2S
"The second step..."
June 15, 2019
University of the Philippines- Diliman
Quezon City, Philippines
Prepared by STeP-UP scholars
Renzo S. Wee
Contributing Writer and Designer
Judiel l. Reyes
Contributing Writer
Bryan R. Custodio
Project Manager
Contributing Writer
Derick B. Canceran
Contributing Writer
Christy A. Raterta
Contributing Writer
Marielle M. Gregorio
Contributing Writer
Lorilyn P. Daquioag
Contributing Writer
Gladys A. Bajaro
Contributing Writer

BIRDS-2S M2DR Presentation

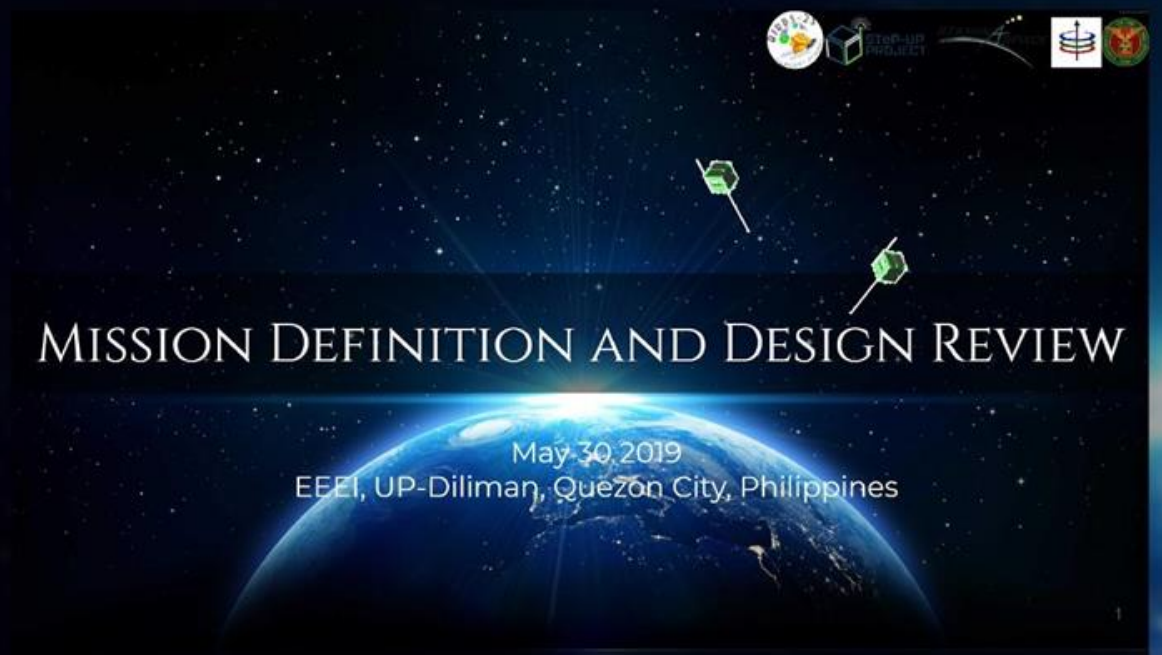
Mission Definition and Design Review of BIRDS 2S Project

By The STeP UP Scholars

1:00 pm to 5:00 pm
May 30, 2019
Room 420, EEEI Bldg.,
University of the Philippines-Diliman

-Bryan Custodio

-Bryan Custodio



"The MDR examines the proposed requirements, the mission architecture, and the flowdown to all functional elements of the mission to ensure that the overall concept is complete, feasible, and consistent with available resources"

Source: NASA Systems Engineering Handbook

BIRDS-2S M2DR Presentation

-Bryan Custodio

The team discussing the subsystems

Derick Canceran for the ADCS

Judiel Reyes for the Mission

Lorilyn Daquioag for the OBC

BIRDS-2S M2DR Presentation

-Bryan Custodio

The team discussing the subsystems

Marielle Gregorio for the EPS

Christy Raterta for the COMMS

Gladys Bajaro for the Ground Station

BIRDS-2S M2DR Presentation

-Bryan Custodio

STeP Up Scholars with the Panel and Technical Mentors

STeP-UP Scholars Practiced for Amateur Radio Satellite Tracking

-Marielle Magbanua-Gregorio

STeP-UP Scholars with groupmates doing the satellite tracking activity at the UP ARSS

The STeP-UP Scholars, together with other graduate students, conducted a series of satellite trackings at the UP Amateur Radio and Satellite Station (ARSS), 5th Floor, EEEI Building.

The objective of the activity is to be able to track and receive a beacon of at least three amature radio satellites. The satellites tracked by the STeP-UP scholars were Diwata 2 (PO-101) of Philippines, PSAT (NO-84) of United States, XW-2B of China, Horyu-4, JAS 2 (FO-29) and Prism (Hitomi) satellites of Japan, and SWISSCUBE of Switzerland.

"Satellite Tracking is simply a way to listen to and monitor the satellites when they pass the horizon!"

STeP-UP Scholars: Now Licensed Radio Amateur Operators!

-Gladys Bajaro & Christy Raterta

On May 15 2019, Wednesday, the Philippine Amateur Radio Association (PARA) Incorporated conducted the examination for Radio Amateur Operator Certificate (RAOC) as scheduled to more than a hundred "hamspirants" in the country at the National Telecommunications Commission (NTC), Quezon City. The Radio Amateur Operator Certificate is one of the Amateur Radio Operator Licensure examination of PARA and NTC that validates an individual's technical capability in radio and station operation, and gears him towards a more responsible radio operator.

The RAO Certification forms part in preparing these students, specifically in tracking and monitoring the projected BIRDS-2S Cube Satellites, MAYA-1.1 and MAYA-1.2, which shall operate in VHF and UHF Amateur Bands.

PARA Chief Operating Officer, Roberto C. Vicencio, DU1VHY awarding the operator certificates of the scholars

STeP-UP Scholars: Licensed Radio Amateur Operators!

-Gladys Bajaro & Christy Raterta

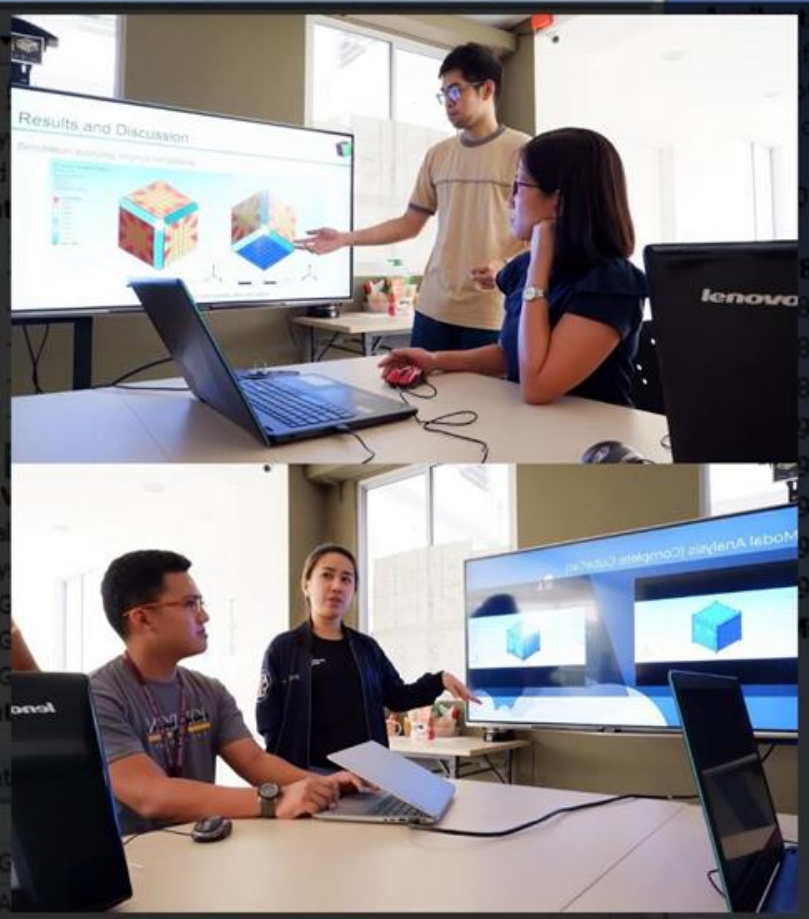
Photo opportunity with the PARA Officers

The scholars taking the different sets of RAOC written examination

The STeP-UP scholars introducing themselves to PARA Director, Thelma Pascua, DU1IVT

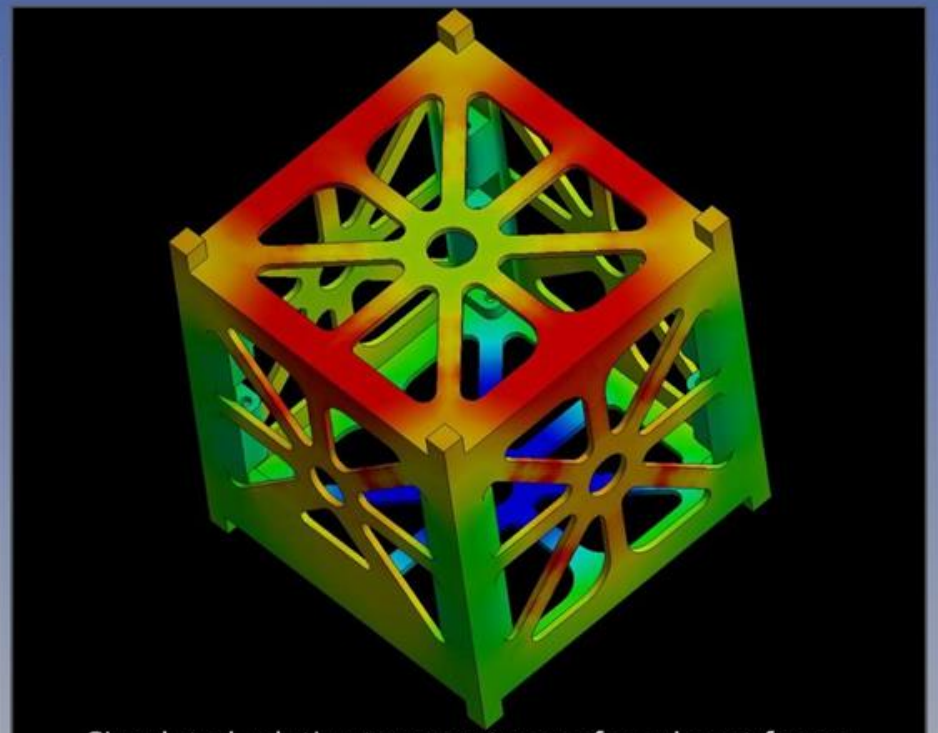
Simulation using ANSYS Student software

-Derick Canceran & Judiel Reyes



Derick and Gladys discussing their simulation results.

"Properly executed simulations evaluate a satellite's performance under space and launch environments."



Simulated relative temperatures of a cubesat frame

The BIRDS-2S team performed thermal and vibration simulations of a simplified 1U cubesat in their Introduction to Satellite Development class. The ANSYS Student software was used to perform finite element analysis on the cubesat. Testing data from BIRDS-2 was used as a reference to validate the simulation results.

Away from the hustle and bustle!

-Renzo S. Wee & Bryan Custodio

The scholars together with Joven at Kaybiang Tunnel, Cavite - the country's longest underground highway tunnel: first stop before hitting the beach!

A day or two to relax and celebrate won't hurt! The STeP-UP scholars opt to spend a weekend at the beach to get away from the hustle and bustle of the city lights, stop worrying, and just sit-back-and-relax. Along with it, the scholars celebrate the just concluded M2DR, prepared themselves for the transition to the next level, and reconnected.

#Sunkissed#Sand#Ocean#Breeze #LayoLayo#Batangas#Bonfire #Duyan#Beach#Gym#Banka#Maya#Goals#Birds#Diwata#HaHatdog#BBQ#Tunnel#Road#Trip# Volleyball #Vumpire#Snorkeling#Island#Hop

Away from the hustle and bustle!

-Renzo S. Wee & Bryan Custodio

Away from the hustle and bustle!

-Renzo S. Wee & Bryan Custodio

Beach fixes everything!

Away from the hustle and bustle!

-Renzo S. Wee & Bryan Custodio

Bonfire and delicious food: Let's call it a day!


Away from the hustle and bustle!
-Renzo S. Wee & Bryan Custodio
As we looked up the sky, we thought...
"Someday we will place a cube up there!"

Hey Jude, happy birthday! 😎

-L.P. Daquioag

"Birthday is celebrated once every year to rebuild and refresh anyone's soul. A day to enjoy and to realize that life is worth living."

Judiel Reyes, one of the STEP-UP scholars who is assigned for the mission payload of the BIRDS-2S cube satellites, has turned 25 years old on June 8, 2019. Judiel graduated from De Lasalle Lipa, Batangas and worked as Design Verification Engineer in ROHM LSI Design Philippines.

Hey Jude, happy birthday! 😎

-L.P. Daquioag

The STEP-UP scholars busy buying stuff for Judiel's birthday.

At last, the food is ready after 4hrs of preparation!!!

Groufie with the celebrant!

Derick and Renzo preparing the food!

Make a great wish Judiel using that e-candle!

Eager to bite into their burgers!

14. Big Sri Lankan event in Fukuoka

Sri Lankan Night

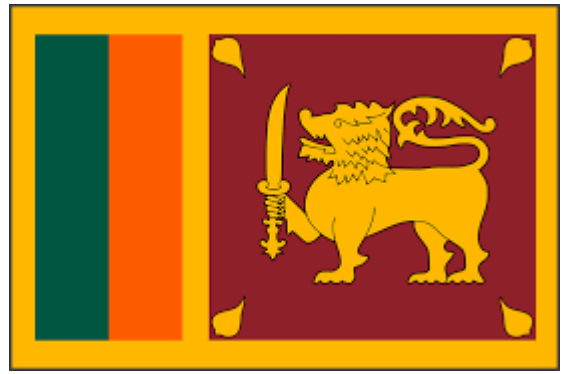
By Dulani Chamika

We were invited to event called “Kyushu Sri Young Star Night”. It was a musical night. It was organized by Kyushu Sri Lankans Association. Prof Maeda, Me(Dulani), Tharindu and Pooja attended this event. Famous singers from Sri Lanka came to this event. This event was on 26th May 2019 at the **Hakata Civic Center.**

At the beginning of this event, Prof Maeda, Me (Dulani) and Tharindu were invited to the stage. And they gave me and Tharindu a gift. Some amount of money which was collected from this concert was given to the victims of 21 April Terrorist bomb attack.

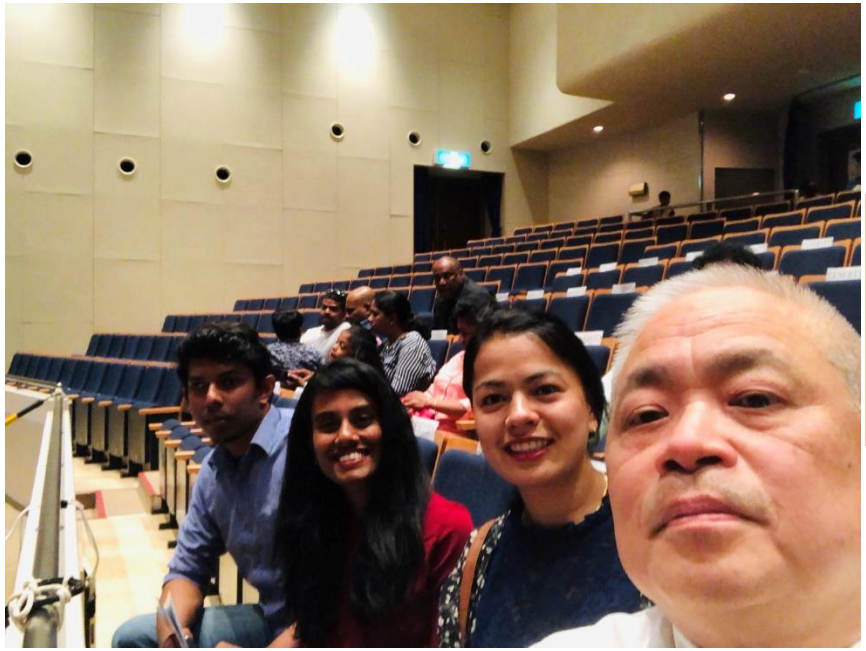
The moment we got the gift

What we got



Flag of Sri Lanka

Continued on the next page



We took a selfie before the event

The first song was tribute to Sri Lanka Armed forces

During the event.
She is a famous singer in Sri Lanka.Her name is Shashika Nisansala

After the event we had dinner near Hakata station.

15. Public viewing of BIRDS-3 at JAXA's Tsukuba Space Center on 17 June 2019

THE FLOW OF EVENTS

	Time	Items	At
#	16:25-16:55	➢ TKSC Facility Tour # For Guests who visit TKSC for the first time.	SPACE DOME (Exhibition Hall)
1	16:55	➢ Arrival at JAXA TKSC gate JAXA will give delegations "security badge" at the gate of JAXA Tsukuba Space Center.	Gate of JAXA Tsukuba Space Center (Address) 2-1-1 Sengen, Tsukuba-shi, Ibaraki 305-8505
2	17:10-17:30	➢ Greetings ➢ Deployment Event Briefing	Large Conference room 1 on 2nd FL in ISS Experiment Build.
3	17:35-18:50	➢ Dinner Reception	Large Conference room 2 on 2nd FL in ISS Experiment Build.
4	18:55-19:35	➢ Deployment Monitoring YouTube (https://youtu.be/rrw3cMw10nQ)	VIP room of Mission Control Room (MCR)
5	19:35-19:45	➢ Group Photo	In front of VIP room of MCR
	19:45	➢ Adjourn	

Viewing the deployment from the VIP Viewing Room

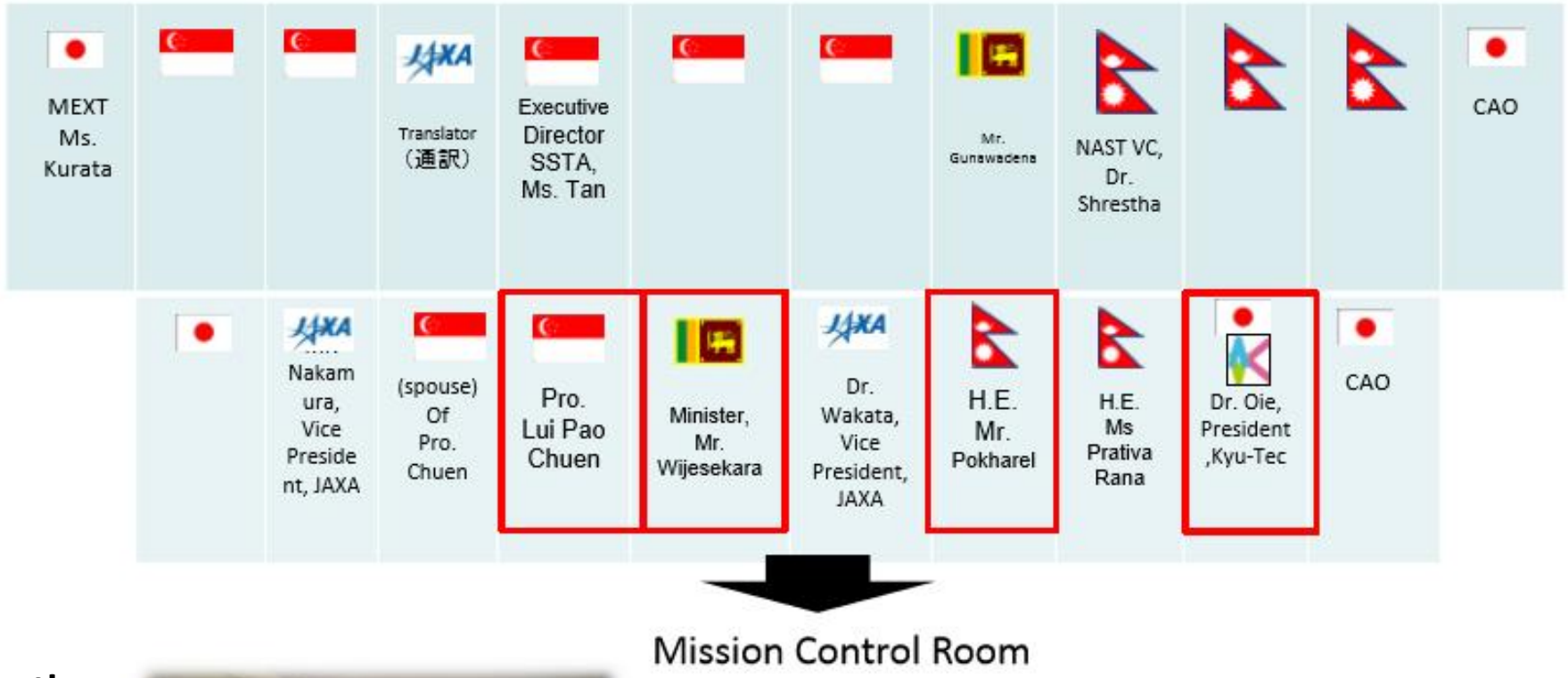


Photo: VIPs viewing the deployment of BIRDS-1 satellites. *Room: ISS Ops Building.* Same as for BIRDS 2 and 3.

JAXA Astronaut Kanai (MC)

19:00-19:35 YouTube Broadcasting

H.E. Mr. Pokharel and Prof. Oie

Conference room of ISS Experiment Building

Representatives of Singapore, Sri Lanka, and Nepal

Prof. Oie with the delegation from Nepal

THE GREETING SESSION FROM 5:10 PM TIL 5:30 PM

Greeting message from each BIRDS-3 member

H.E. Mr. Pokharel

Minister of Education, Nepal

Minister Wijesekara

Embassy of Sri Lanka, Tokyo

Prof. Oie

President of Kyutech

They called this "refreshments"

Reception before deployment

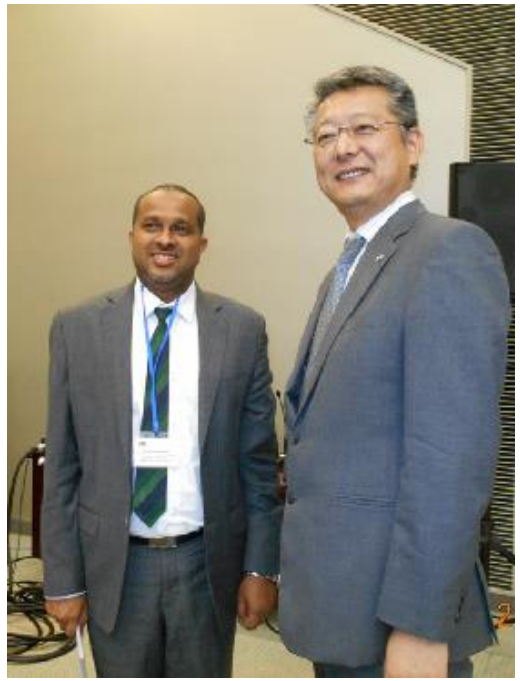
Prof Oie & Dr Wakata

Rep of Nepal & rep of Sri Lanka

Prof Oie having discussions with the staff of the Sri Lanka Embassy

Minister (Embassy of Sri Lanka) with Prof Oie

Thank you, JAXA, for a wonderful evening and a chance for networking



Deployment of BIRDS-3 occurred at 19:15 on 17 June 2019 (JST)

Nepal

Sri Lanka

Kyutech

Speech by each BIRDS-3 member after the successful deployment of all three BIRDS-3 CubeSats

Deployment and the speeches were broadcast live via JAXA YouTube channel

Group photos after deployment – and time to say Good Bye

16. Public viewing of BIRDS-3 at Nepal on 17 June 2019

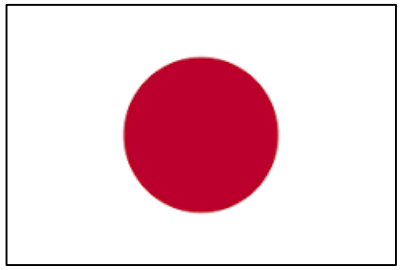
First Satellite| NepaliSat-1| Space Era| Deployment from ISS| June 17| 2019

BIRDS-3 deployment *public viewing* at Nepal

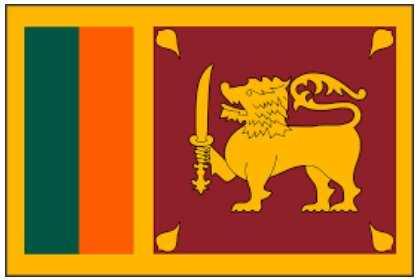
12-min. YouTube video

The link: https://www.youtube.com/watch?v=9c8aNgGB4ak

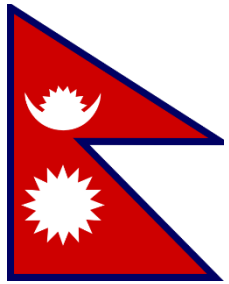
Explanation of the names of BIRDS-3 satellites



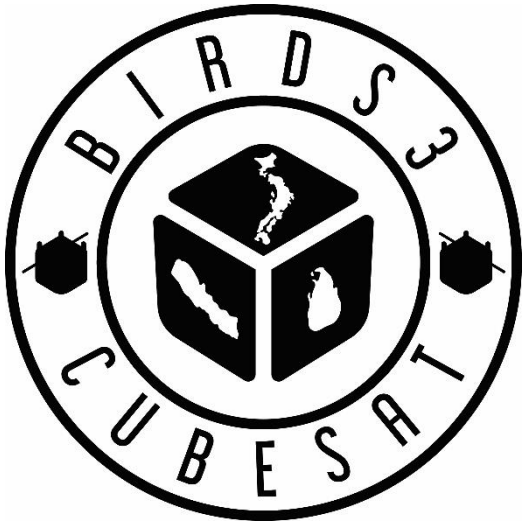
JAPAN



SRI LANKA



NEPAL



The Origin of name “UGUISU”

By Yuta Kakimoto

The name “UGUISU”, which is Japanese satellite name of BIRDS-3, came from Japanese actual bird name.
The body length of this bird is around 15cm and their way of crying is very famous among we Japanese.

In Japan, there are 47 prefectures and each of them have the symbol bird. Ordinary, this concept is started for spreading of bird protection thought and uguisu is the symbol of Fukuoka where is Kyushu Institute of Technology.

Also, in BIRDS-1 case, their national satellite name was “Toki”, which is the special bird for Japan (now Japanese Toki has been already become extinct). We wanted to choose one of the Japanese bird name for our own satellite and finally decided “UGUISU”, symbol bird in Fukuoka prefecture.

Uguisu, symbol bird in Fukuoka

Toki

The Origin of name “RAAVANA-1”

By Dulani Chamika

King Raavana lived nearly 7000 years ago in Sri Lanka. We believe that , he was the first king flew over the world with his aero plane, known as Dandumonaraya, Vimaanaya or Ahasthara. Some evidence of Dandumonaraya, the aero plane is found in Rock inscription.
He was a great Scholar in Ayurvedic medicine too. Moreover there is a cave called “Raavana cave”. It is a secret passageways that lead to various places which are said to have provided quick transport through hills those days.

So since he is the first King to use a aircraft Sri Lanka’s first satellite was named as Raavana-1. But currently stories about king Raavana has changed.

King Raavana’s Dhadu Monara

Airports which King Raavana used in Sri Lanka

The Origin of name “NepaliSat-1”

By Abhas

The name NepaliSat-1 was selected such that it reflects the satellite is of the people, for the people and by the people. The funding came from Nepalese taxpayer’s pockets and was built by Nepalese in dedication to the people of Nepal.

Nepalese have, for a past two decades, gone through a tumultuous time. The royal massacre in 2001, the end of royals and formation of new democratic republic in 2007 and the 7.8 scale earthquake in 2015 have etched a strong mark on everyone’s memory.

But the period has also been a time of hope, a time for resetting and rebuilding, a time for a new beginning. With the launch of NepaliSat-1, we hope to inspire the younger generations of Nepalese that we can rub shoulders and compete with the best in the most challenging circumstances.

Reception of CW Beacons from NepaliSat-1

20 June, 2019

ORION Space, Nepal

Introduction

- NepaliSat-1 was successfully deployed from ISS on 17th June, 2019.
- After deployment, the CW beacon signals were successfully received by the engineers from ORION Space at around 5 P.M Nepali time.
- SatNOGS Based ground station was used to receive the signals.
  - SatNOGS is an open source hardware and software platform aimed to create network of satellite ground stations.

Setup

- Location of Ground Station: Kausaltar, Bhaktapur, Nepal (27.673, 85.363)
- Similar setup as shown in the picture
- Antenna: 12 dBi Helical Antenna
- Rotator: SatNOGS based Rotator
- 20 dB LNA

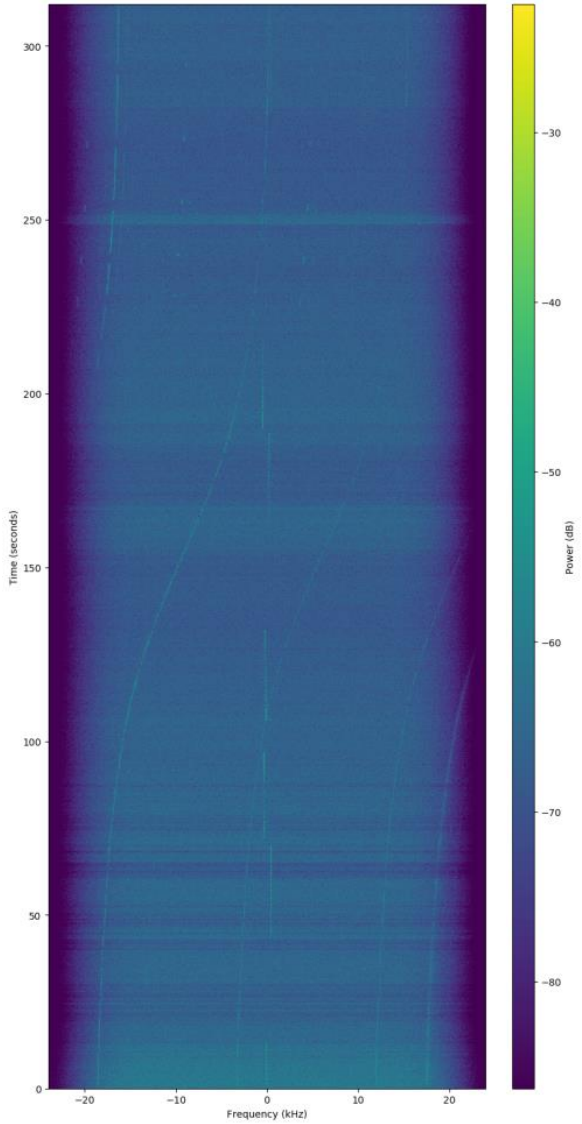
Waterfall Plot

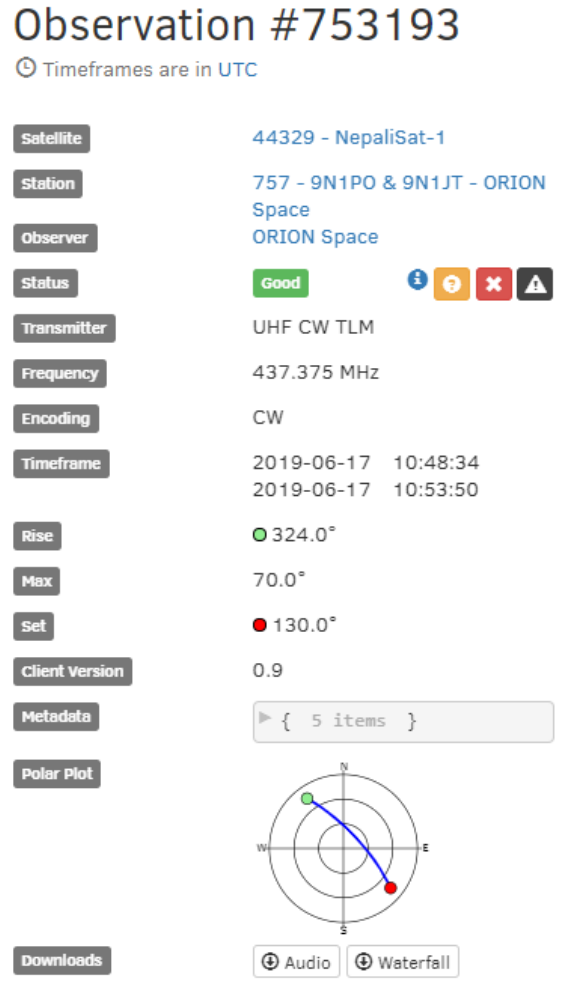
Waterfall plot on Left

SatNOGS profile on Right

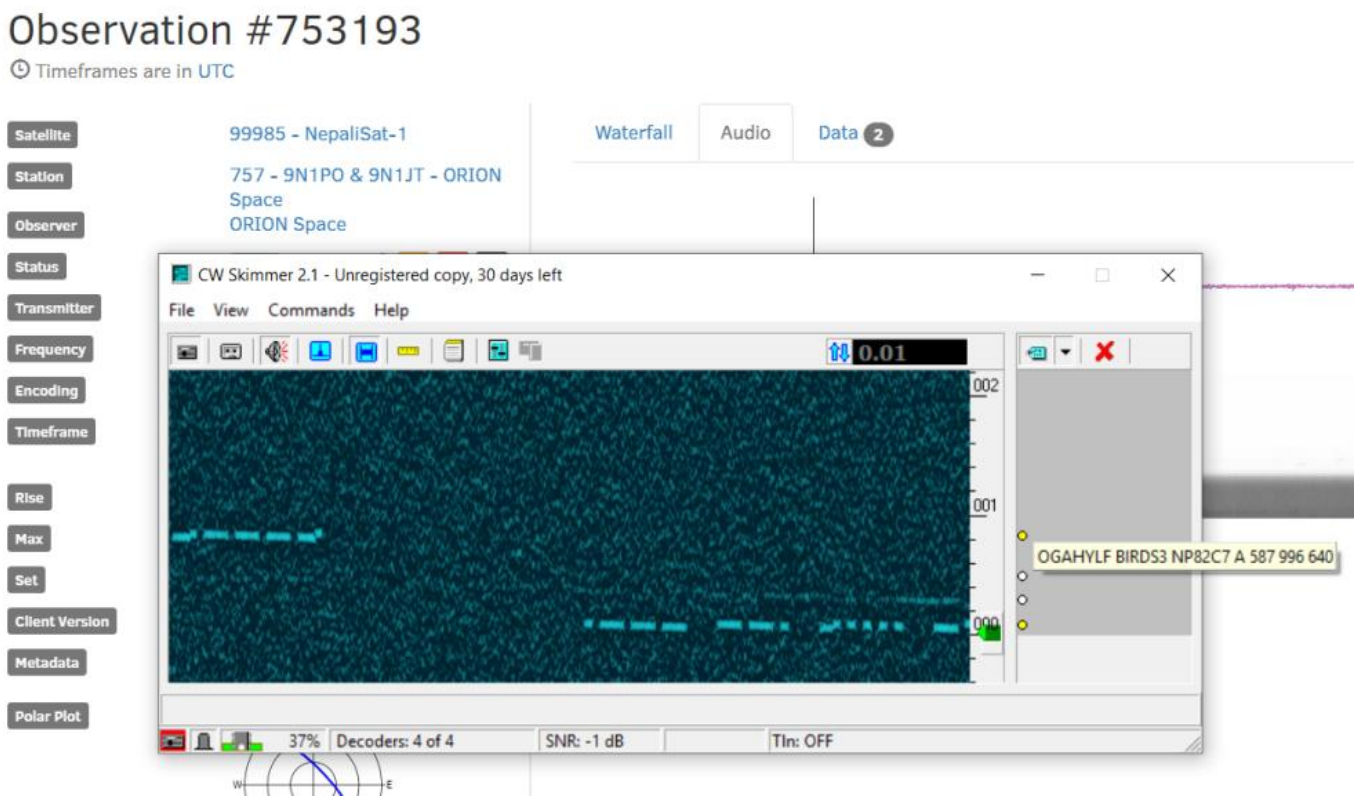
https://network.satnogs.org/observations/753193/?fbclid=IwAR3xDGVaDXzGrc9kVWsrUQZwOIr_-LTwiPHkqK-msybNU9qGeh2hrNsiLpQ

https://www.facebook.com/ORIONSpaceNepal/



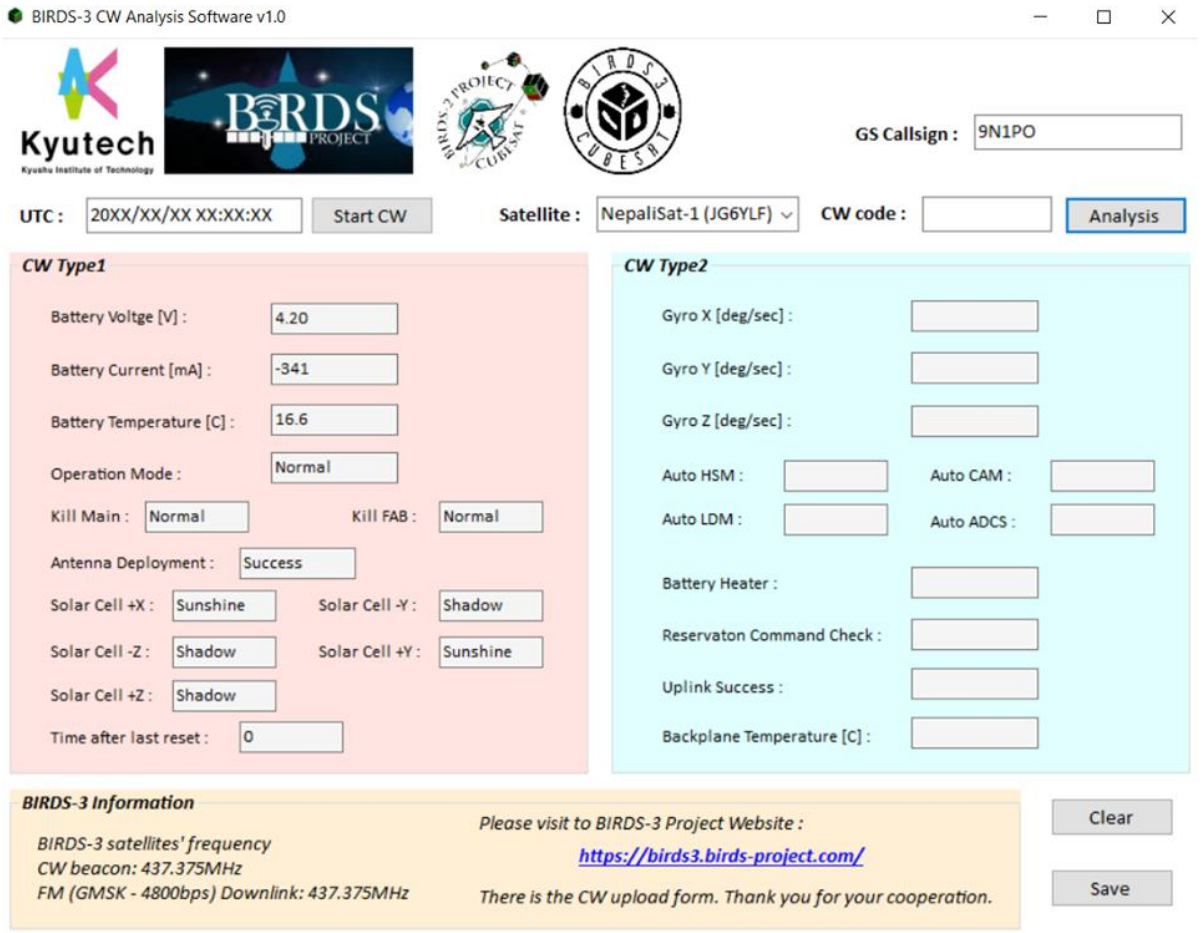


Decoding



CW beacons recorded on SatNOGS server was decoded using **CW skimmer** software

Analyzing



- The decoded Morse was analyzed using **BIRDS-3 CW Analysis software** as shown in the figure.
- It shows that the antenna was successfully deployed, the battery voltage is 4.2 V, battery current is -341 mA, and battery temperature is 16.6°C.

BIRDS-3 Deployment Featured in Nepali Media

Hari Ram SHRESTHA

BIRDS-3/4

June 20, 2019

17th June 2019: *NepaliSat-1 enter in to the space*

Written By : Hari Ram Shrestha

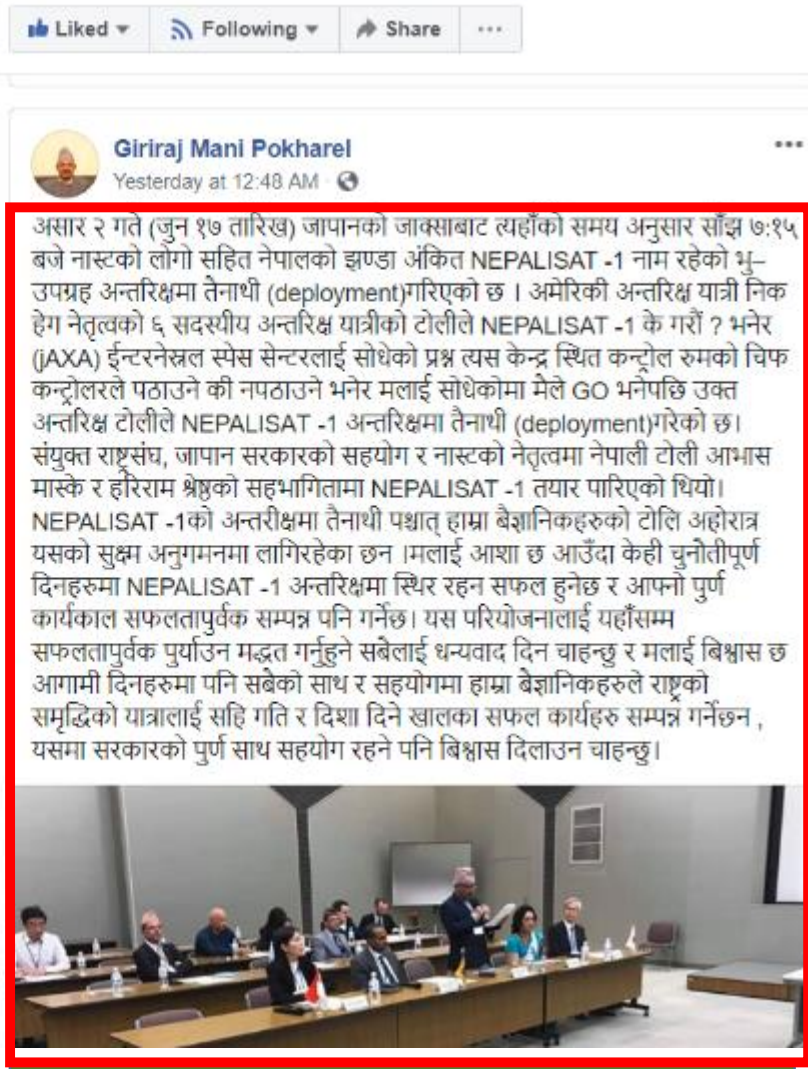
The BIRDS-3 Nanosatellites has been successfully deployed from the International Space station on the 17th June 2019. Some Nepali media has covered the NepaliSat-1(Nepal), Raavana–1(Sri lanka) and Uguisu(Japan) deployment from the International Space Station (ISS) in to their orbit.

The media has reported that this is a historical moment for Nepal and to all Nepalese people to have the first Nepali satellite reach its orbit. It held a high priority because a team of two Nepali students involved in the making of the Nanosatellite which is funded by Nepal Government in cooperation with Kyushu Institute of Technology.

Hon. Minster Giriraj Mani Pokharel ,Ministry of Education science and Technology(MoEST) has expressed his gratitude and vote of thanks to the BIRDS-3 countries, NAST, JAXA, KyuTech in his Facebook post from Tokyo. Moreover, he congratulated Professor Mengu Cho and the Nepali students Abhas Maskey and Hari Ram Shrestha.

Giriraj Mani Pokharel

Hon. Minister Giriraj Mani Pokharel has also Congratulated to all the BIRDS-3 team members, NAST, KyuTech, JAXA, UN and Japan Government by his official Facebook page.



Hon. Minister gave his speech in Press conference in JAXA.

In Media: NepaliSat-1

Written By: Hari Ram Shrestha

गृहपृष्ठ समाचार विचार जीवन-रङ्ग मल्टिमिडिया ट्राभल

NepalNews.
NEPAL'S FIRST ONLINE NEWS PORTAL नेपालको दृष्टि

विज्ञान–प्रविधि

ट्रेन्डिङ सन्दर्भ : अन्तर्राष्ट्रिय शरणार्थी दिवस सेटिङमा अमिक तस्करी

बिहीबार, असार ५ २०७६ / Jun 20, 2019

अन्तरिक्ष पुग्यो पहिलो नेपाली भूउपग्रह

छत्र कार्की असार २, २०७६ | सोमबार | काठमाडौं

पहिलो नेपाली भूउपग्रह अन्तरिक्षमा छाडिँदै, नास्मा सार्वजनिक अवलोकन

असार २ ,काठमाडौं - नेपालको पहिलो भूउपग्रह नेपाली स्याट-१ (नानो स्याटेलाइट) आजदेखि पृथ्वीको वरिपरि घुम्ने कक्ष (अर्बिट) मा छाडिने भएको छ।

रुसमा ३२ हजार वर्ष अगाडिको ब्वाँसोको टाउको भेटियो

असार १ - रुसको उत्तरध्रुवी क्षेत्रमा झण्डै ३२ हजार वर्ष अगाडि मरेको

Professor Mengu Cho with Hari and Abhas

[Link: NepalNews.]

नेपालको पहिलो भूउपग्रह नेपाली स्याट-१ (नानो स्याटेलाइट) अन्तरिक्षमा छाडिएको छ।

नेपाली समयअनुसार सोमबार अपराह्न चार बजे अन्तर्राष्ट्रिय अन्तरिक्ष स्टेसन (आइएसएस) 'किबो मोड्युल'बाट स्याटेलाइट अन्तरिक्षमा छाडिएको बर्ड–३ स्याटेलाइट परियोजनाका नेपा इन्जिनियर हरिराम श्रेष्ठले बताए।

जापान एरोस्पेस एक्सप्लोरेसन एजेन्सी (जाक्सा) मा एक कार्यक्रम गरी भूउपग्रह 'डिप्लोयमेन्ट' जाक्साकै युट्युब च्यानलमार्फत् लाइभ गरिएको थियो। जाक्सामा बर्ड–३ स्याटेला परियोजनाबारे विद्यार्थीले पावर प्वाइन्टमार्फत् प्रकाश पारेका थिए।

जाक्साको कार्यक्रममा जापान, नेपाल र श्रीलंकाका प्रतिनिधि उपस्थिति रहेका थिए। नेपालब शिक्षा तथा विज्ञान-प्रविधि मन्त्री गिरिराजमणि पोखरेल र नेपाल विज्ञान तथा प्रविधि प्रज्ञा प्रतिष्ठ (नास्ट) का उपकुलपति डा. सुनिलबाबु श्रेष्ठ कार्यक्रममा उपस्थित थिए।

नास्टले शुक्रबार अपराह्न आफ्नै सभाहलमा आयोजना गरेको कार्यक्रममा नेपाली स्याट 'डिप्लोइमेन्ट'को लाइभ स्ट्रिम हेरिएको थियो। यसअघि जाक्साका प्रविधि विज्ञ फुमिय तानिगाकीले किबो मोड्युल र बर्ड्स-३ भूउपग्रह परियोजनाबारे जानकारी दिएका थिए।

गत वैशाख ४ गते अमेरिका भर्जिनियास्थित स्पेसपोर्टबाट नेपाली स्याट-१ लाई सफलतासाथ अन्तर्राष्ट्रिय अन्तरिक्ष स्टेसन (आइएसएस) पुऱ्याइएको थियो। त्यसको करिब दुई महिनापछि बर्ड्स-३ परियोजनाअन्तर्गत डेढ वर्ष लगाएर तयार पारिएका नेपाली स्याट-१, श्रीलंकाको रावना र

नेपाली समयअनुसार सोमबार अपराह्न चार बजे अन्तर्राष्ट्रिय अन्तरिक्ष स्टेसन (आइएसएस)

After deployment at JAXA

काठमाडौं - नेपालको पहिलो भू–उपग्रह 'नेपाली स्याट–१' ले सोमबार देखि अन्तरिक्षको परिक्रमा शुरु गरेको छ । गत बैशाख ५ गते राती देखि उक्त भू–उपग्रहलाई अन्तरिक्षमा छाड्नका लागि अमेरिकाको फ्लोरिडा स्थित अन्तराष्ट्रिय प्रक्षेपण केन्द्र (आईएसएस) मा तयारी अवस्थामा

[Link: Annapurnapost](#)

[Link: Edu.khabar](#)

After Deployment: Group Photo in JAXA
Professor Yuji Oie , President of KyuTech, Hon.Minister Giriraj Mani Pokharel (MoEST,Nepal),H.E. Ms. **Prativa RANA ,** Ambassador (Nepalese Embassy in Japan), VC of NAST sunil Banu shrestha and JAXA team.

Covered by Media and social pages

[link: kantipur](#)

At NASO Facebook page in Nepal.

At NAST: Public Viewing Program on deployment of Nepalisat-1

Group Photo at NAST

Guests: #H.E Mr. Masamichi Saigo, Ambassador, Japanese Embassy in Nepal # Mr. Fumiaki TANIGAKI, Technical Expert, JAXA, Mr. Krishna Raj B.C, Secretary, MOEST # Mr. Krishna Raj B.C, Secretary, MOEST # Dr. Mahesh Kumar Adhikari, Secretary #Dr.Chirnjibi Regmi ,chief, service with all seniors officers.

Public Viewing Program on deployment of NepaliSat-1

Ashad 2, 2076 (17 June, 2019)
NAST, Khumaltar

Schedule

Date	Time (Nepalese Standard Time)	Activities
17 June (Monday)	12:30-13:00	Registration and Arrival of Guests
	13:00-13:20	Welcome Address and Highlight of program: Er. Roshan Pandey, Acting Chief, Faculty of Technology, NAST
	13:20-14:00	Technical presentation of the space utilization in Kibo by Mr. Fumiaki TANIGAKI, Technical Expert, JAXA
	14:00-14:30	Demonstration of NepaliSat-1 Dummy
	14:30-15:30	**Lunch**
	15:30-16:30	Projection of JAXA Live broadcast on deployment 1) Movie of History of ISS, Kibo and small satellites deployment program 2) Movie of Mission introduction and Interview of developers of BIRDS-3 and SpooQy-1. 2) Count Down for "BIRDS-3 (NepaliSat-1, Raavana-1, Uguisu)" deployment 3) Deployment of BIRDS-3 4) Count Down for deployment of "SpooQy-1" of Singapore. 5) Message from Astronaut in ISS (1min) 6) Message from each Rep from Nepal/Sri Lanka/Japan/Singapore at JAXA TKSC. (1min for each)
	16:30-16:45	Question answer session
	16:45-16:55	Remarks by H.E Mr. Masamichi Saigo, Ambassador, Japanese Embassy in Nepal
	16:55-17:05	Remarks by the Chief Guest, Mr. Krishna Raj B.C, Secretary, MOEST
	17:05-17:15	Concluding Remarks by the Chair Person, Dr. Mahesh Kumar Adhikari, Secretary, NAST
	17:15	**Group Photo & Tea/Coffee**

***

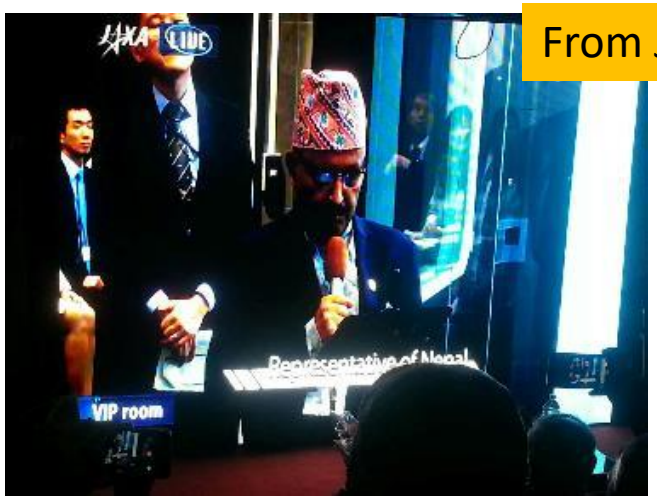
MC: Mr. Milan Neupane

Program schedule of PV

3, 2, 1, Go! ….. NepaliSat-1

@NAST hall

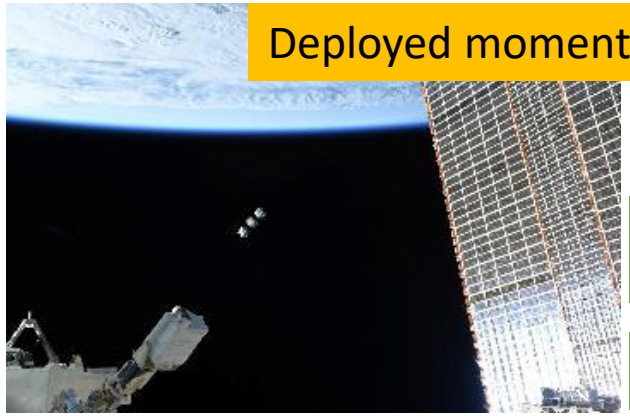
Watching LIVE deployment of NepaliSat-1 in the NAST



From JAXA

@ ISS

At NAST : Watching deployment of BIRDS-3 NanoSatellite



Deployed moment

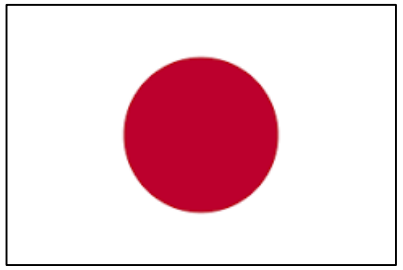
PC:NASA Astronaut Nick Hague

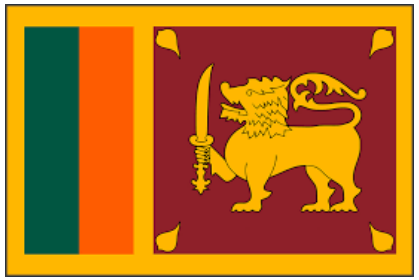
From JAXA

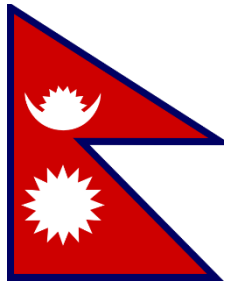
PC: Ramila Raut and Kabita

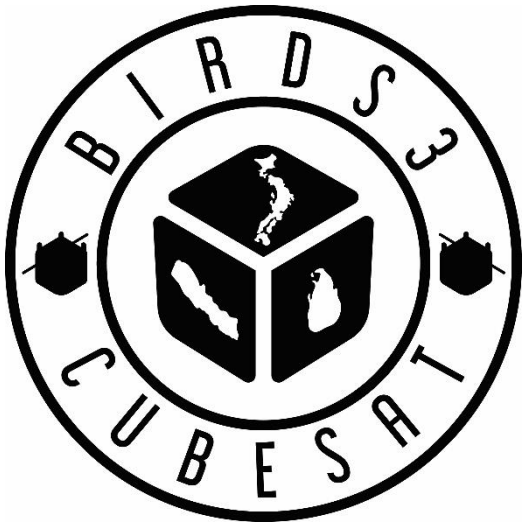
BIRDS-3 Deployment and Satellite Operation

by Dulani





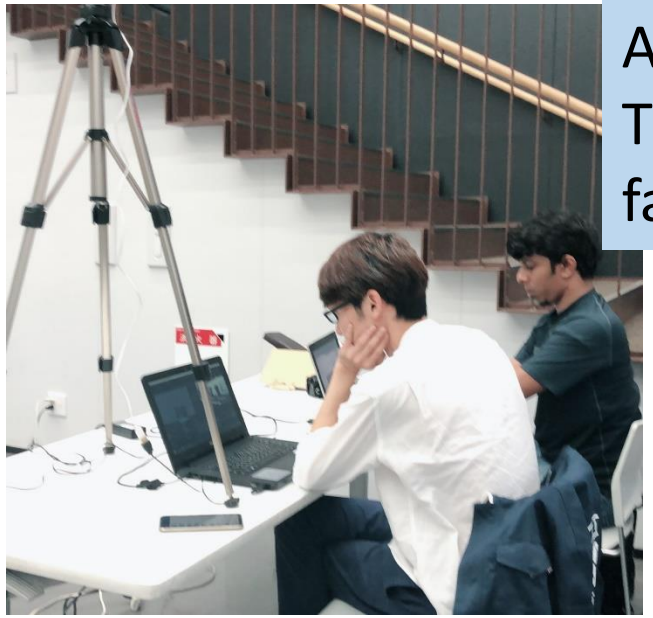




BIRDS-3 Deployment event in Kyutech

Kyutech organized a public viewing event to watch the deployment of BIRDS 3 satellites from International Space Station.

In the beginning of the event we took a BIRDS-3 group picture



Apiwat(BIRDS-1) and Tharindu preparing for facebook live streaming

BIRDS-3 Deployment event in Kyutech

Students from other projects also came to watch the deployment

Prof Cho gave a speech after the deployment

Trying to connect with the ground station network to hear the first beacon

Ground Station Operation

- All three satellites are ok (Everyday we received CW so far)
- Two way communication was successful(Uplink and Downlink)
- Missions are successful in varying degrees

  LORA mission : Full success

  CPLD mission : Full success

- Countries in BIRDS ground station network also track the satellite and get CW data.
- BIRDS-4 members and Apiwat from BIRDS-1 also joined our operations.

Picture of Nakayama from Birds 4 and Apiwat from Birds 1 helping us with operations

This is the moment that we succeeded our first uplink

21. BIRDS-3 news by Houston office of JAXA

BIRDS-3 News on JAXA Facebook

JAXA Houston Office
June 19 at 3:06 AM ·

「きぼう」から超小型衛星4機放出に成功！
Successful Deployment of four CubeSats from Kibo!

6月17日に「きぼう」日本実験棟から日本・ネパール・スリランカ・シンガポールの超小型衛星4機が放出されました。
放出時には各国関係者の皆様がJAXA筑波宇宙センターにて、その瞬間を見守りました。ネパールとスリランカにとっては国として初めての人工衛星となりました。

「きぼう」はISSで唯一、独自のエアロックシステムとロボットアームを併せ持ち、その機能を駆使することにより、超小型衛星を宇宙空間へ放出するユニークな能力を有しています。JAXAは「きぼう」の持つ優れた能力を生かし、超小型衛星放出の利用機会の提供を通じて、アジア・発展途上国等の宇宙関連技術向上への貢献等を目指した国際協力を推進しています。

（詳細情報）
http://iss.jaxa.jp/kiboexp/news/190617_jssod11.html

See Translation

A super small satellite has been released from " when
Successful Deployment of four CubeSats from Kibo!

On June 17th, a super small satellite of Japan, Nepal, Sri Lanka, and Singapore was released from the Japan experiment building.
At the time of release, everyone involved in the jaxa tsukuba space center has watched the moment. For Nepal and Sri Lanka, it has become the first artificial satellite as a country.

"when" is the only iss that has a unique ability to emit a super small satellite into space space by using its function to bìngse chíchi its own air lock system and robot arm. Jaxa is promoting international cooperation to improve space-related technology in Asia developing countries, including the great ability of "when" and the opportunity to use ultra-small satellite emission.

BIRDS post: https://www.facebook.com/pg/jaxaHouston/posts/?ref=page_internal

22. Check out the work of NSLComm – it is a friend of Kyutech

NSLComm has links with Kyutech that go back many years. Their satellite goes up soon: It offers 1 Gb/s transmission possibilities from a CubeSat.
Check out their 2-min. video at their main website – link below.

Our friend is Daniel Rockberger, who is Co-Founder and Chief Engineer.

Their homepage: https://www.nslcomm.com/

From the website: "NSLComm is revolutionizing satellite communications with a fabric-like, expandable antenna that may boost performance by up to 100x to 500x. By launching small and unfolding once in space, NSL's antenna opens a wide array of new applications in the $300B/year space market"

23. SPACETIDE2019 occurs on 9 July 2019 in Tokyo

See: https://spacetide.jp/en/

Solar Cells Arrive

Tomoaki MURASE

BIRDS-4

June, 7, 2019

Solar Cells Arrive

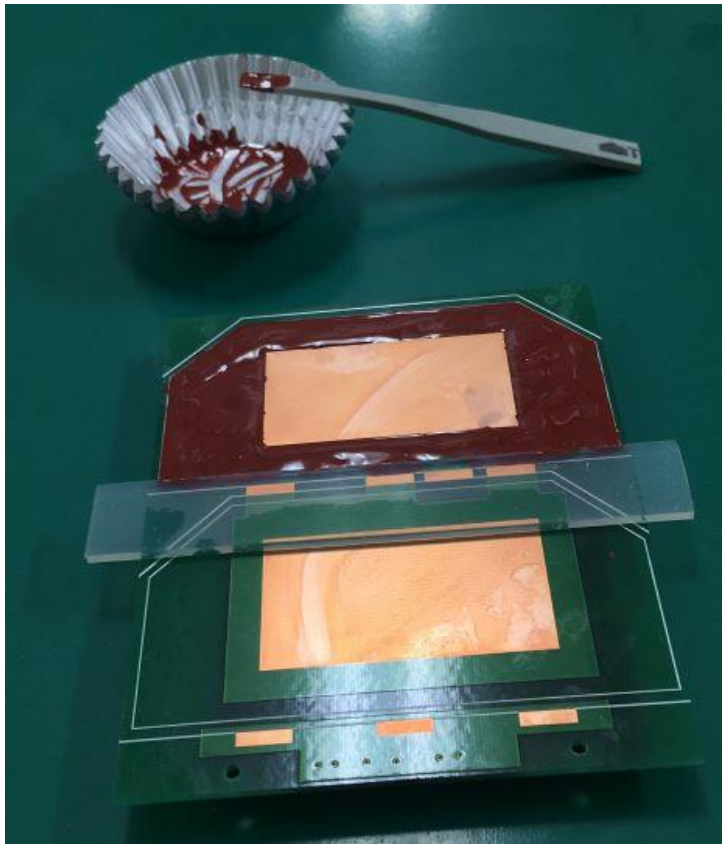
Written By: Tomoaki MURASE

Finally, we got solar panels on 29th May! We bought them from AZUR SPACE Solar Power GmbH. This company is in Germany and as one of the global leaders with more than 50 years' experience in high-efficiency solar space cell technology. These solar panels are going to be used in BIRDS-4 and BIRDS-2S satellites.

The solar panels are with Hari who is in charge of electrical power system and solar panel assembly

Currently, we are making solar panels assembly practice sessions. We are learning how we should mix the glues and apply them on outside panels.

Mixing glues to before attaching the practice glasses



We applied glue around the solar sell because the center is soldering part requiring a conductive glue.

How to Fix BIRDS Ground Station Antenna’s Rotator

Daisuke Nakayama

BIRDS-4

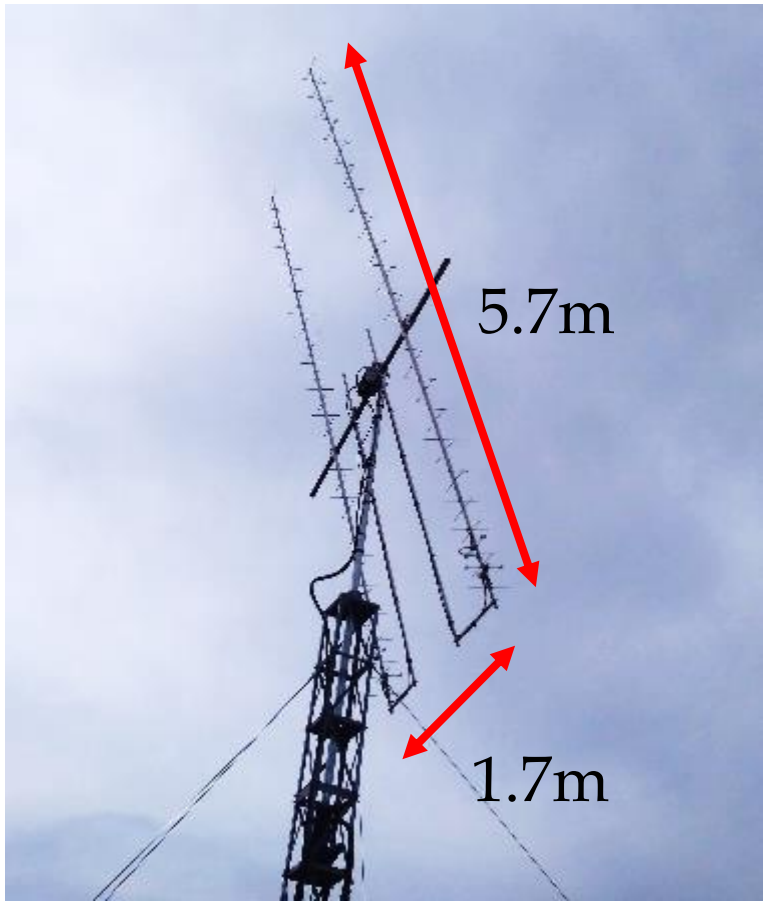
June 09, 2019

How to fix BIRDS Rotator?

Written By: Daisuke Nakayama

We use 2 cross Yagi antenna and 2 rotators. Beginning of April, suddenly the rotator moved its direction by breaking itself. After that rotator created the motor sound and the controller showed the rotator was moving, actually it wasn't the case. We got upset because it's made in Italy and might had had to be sent back to the manufacturing company. It had to be fixed before the deployment of BIRDS-3 satellites for the initial operations.

The elevation rotator head seemed to hit the vertical pole



The BIRDS GS antenna
Amateur band UHF, 2 cross Yagi antenna
(Circular polarization, Gain:22dBi)

We asked a manufacturing company manufactured the rotator and they sent a document for fixing it. Its design had a shared pin for protecting the motor and gear, meaning we could fix by ourselves!

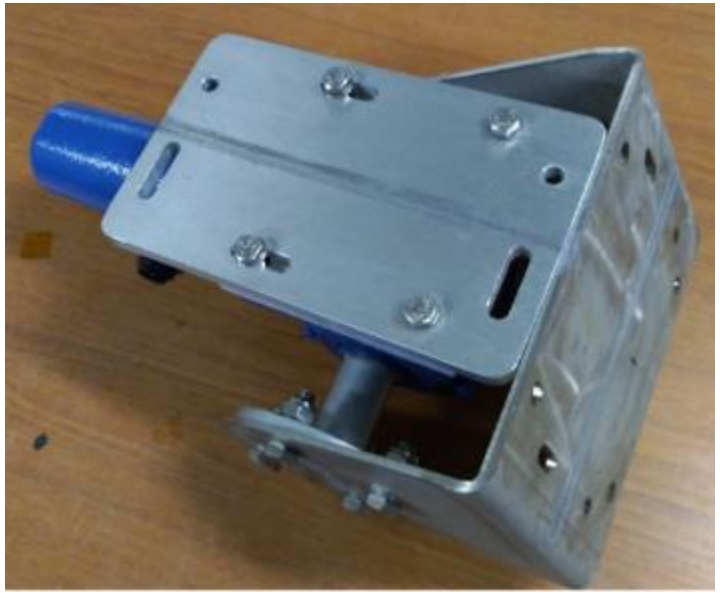
Mechanical fuse fixing/restoring
Credit: Pro.Sis.Tel.

How to fix BIRDS Rotator?

Written By: Daisuke Nakayama

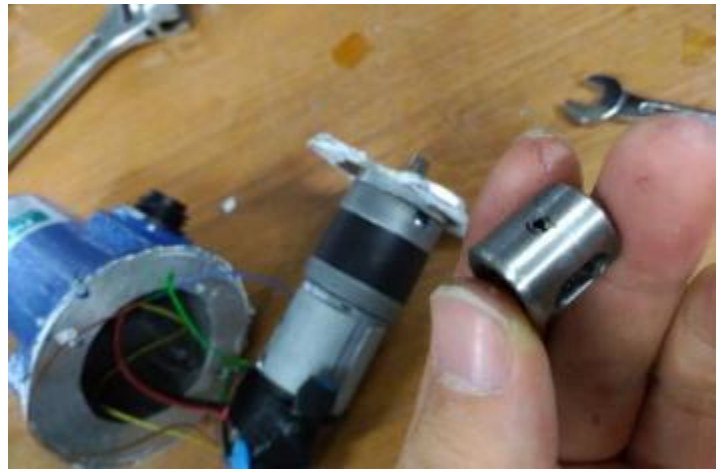
After getting the document, we ordered some parts for fixing. At the same time, we contacted the construction company to remove the elevation rotator.

We investigated the removed rotator and the shared pin was broken as mentioned in the document.

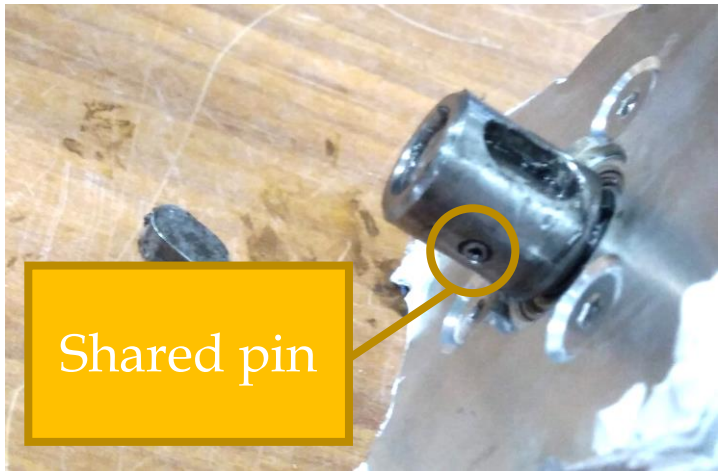


The removed rotator on the table

Opening the motor cover



Removing the coupler from the motor
The shared pin was broken.



Removing the motor from the gearbox

The motor shaft
Some parts of the pin was damaged.

How to fix BIRDS Rotator?

Written By: Daisuke Nakayama

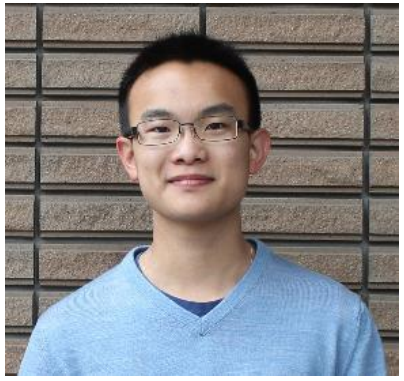
We confirmed the pin was broken and we procured new pins. It is a commonly used machine part, so it was readily available. We inserted the new pin instead of the broken pin and we built the rotator in the reverse procedure. The rotator was calibrated with parallel and vertical alignment.

The new pin (upper) and the broken pin(lower)
The gear and motor of rotator is protected from this.

The calibration using the digital angle meter
The rotator was connected at the controller and set 0 and 90 degrees. Based on the calibration, the controller converts the pulse from the rotary encoder into an angle.

When we disassembled it, we removed the silicon sealant for the waterproof. So we applied silicon sealant and painted it blue. After that, we called the construction company again and asked to attach the rotator. Currently, the attached rotator is working well and can receive strong signals from BIRDS 2 satellite.

After fixing and installing the rotator
May 20, 2019



Paraguay National Independence Day Celebration

Anibal Mendoza & Timothy Ivan Leong

June 07, 2019

Getting Ready

Written By: Anibal MENDOZA

The independence of Paraguay was the historical process by which the current Republic of Paraguay became independent from Spain.

Every year Paraguayans celebrate that event on May 14 and 15, and in commemoration, we celebrated at KyuTech on May 20 with a small presentation to introduce the country and serve some of its traditional dishes.

To prepare these dishes, we had a long afternoon the day before, going to the supermarket to buy the ingredients and to cook the food later.

The traditional dishes that were prepared were the Chipa Guasu, Chipitas, and the Paraguayan Marinera. We also include spagetti, salads and pizza to have a greater variety of foods.

Dishes variety on the celebration

Cooking Paraguayan Marineras

Celebration Day

Written By: Anibal MENDOZA

We started this event giving a brief presentation about Paraguay, showing a informative video about it's population, economy, industry, and telling some highlights of the country, like the "Tereré", Paraguayan flag and Danza paraguaya.

Traditional "Tereré" refresh drink.

Souvenirs

"Danza Paraguaya"
[source]

Our friend Murase dressed with traditional Paraguayan costume

Paraguay National's Day

Written By: Timothy Ivan LEONG

Paraguay National's day is celebrated on May 15th in Paraguay but we celebrated it at KyuTech on May 20th. Anibal Mendoza and Adolfo Javier JARA organized the event. For this occasion food and souvenir were prepared along with a presentation of Paraguay.

I personally didn't know a lot about Paraguay so it was nice to discover more about this country and its culture.

Anibal explained how they obtained national independence and what was the country current situation.

Anibal and Adolfo explaining the flag symbolism and showing the two different symbols on each side of the flag

The country's main activity is agriculture and that the population is very young and dynamic. The country is thus currently developing really quickly.

Paraguay National's day

Written By: Timothy Ivan LEONG

The food they prepared was also really good and varied. It gave a good hindsight on the typical Paraguayan food. There was also a typical drink from Paraguay that you had to drink from a special straw in order to filter out the plant from which the drink was made from.

Overall, it was a really good and interesting experience. Anibal and Adolfo really outdid themselves to prepare this event. Congratulation for preparing a successful Paraguay National's day in KyuTech!

On the right, there are several photos from the event

First Aspects to Select a Microcontroller

Yasir ABBAS

BIRDS-4

June, 7, 2019

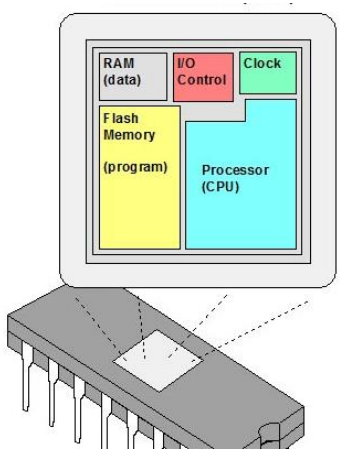
Aspects to Select a Microcontroller

Written By: Yasir ABBAS

Suitable Memory:

There are different memories in the chip. One needs to make sure that each one is enough for the application.

The Flash Memory is where the code is saved. EEPROM is ROM memory; data saved here won't be removed by losing power. SRAM is the RAM memory where the variables of the code are saved. It is reset with the chip every time.



Availability of development kits:

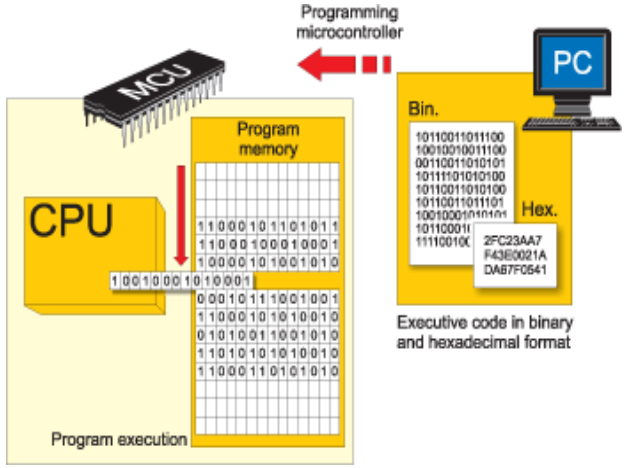
A development board is a printed circuit board with circuitry and hardware designed to facilitate experimentation with a certain microcontroller. The fastest and most efficient way for new projects is to start with a development kit.

Aspects to Select a Microcontroller

Written By: Yasir ABBAS

Available development software programs:

The hardware won't work without a software program. For the project, select a hardware that could be developed using a programing language that you are familiar with. Originally, MCUs programmed using Assembly language. There are high level languages like C, Python and JavaScript to consider using.



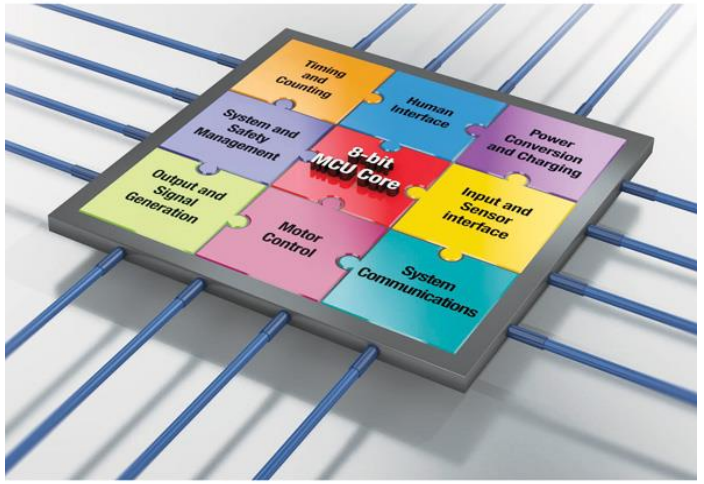
Popularity:

In the beginning of a new project, it is better to select a hardware that is widely used in similar projects. This would ensure getting the needed support whenever issues get difficult. There will be a great community helping you troubleshooting your code's bugs.

Hardware features:

The MCU has to be suitable for the mission in terms of the availability of the communication protocols and the GPIO ports.

The project might need one or more of these communication protocols: UART, SPI, I2C,… etc.



Antenna Tuning in Anechoic Chamber

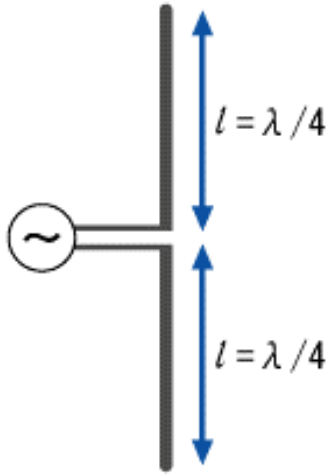
Yuma Nozaki

June 7, 2019

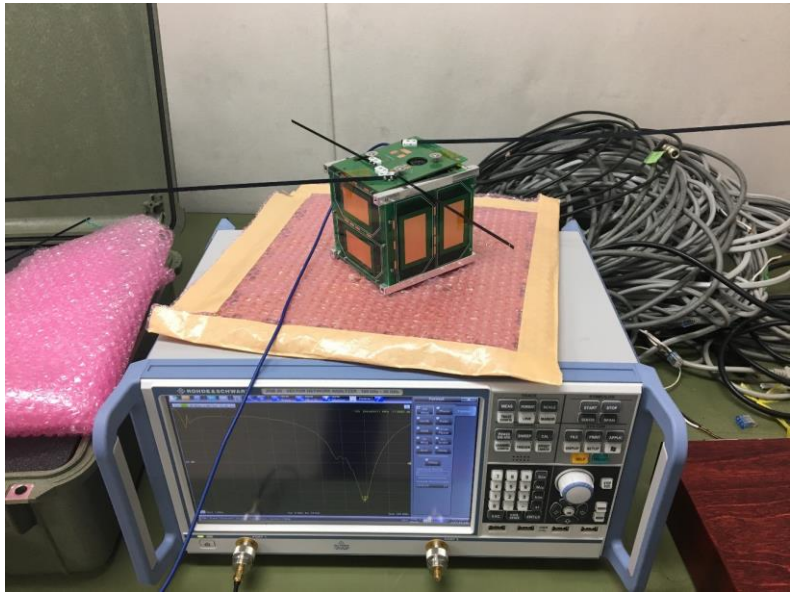
What is Antenna tuning?

Written By: Yuma Nozaki

- The purpose of antenna tuning is to find the optimum length of antennas for the used frequency. For example, we will communicate with a UHF antenna which has a frequency of 435 MHz. We calculate the length of dipole antenna from the frequency. In figure below, the dipole antenna model is given.



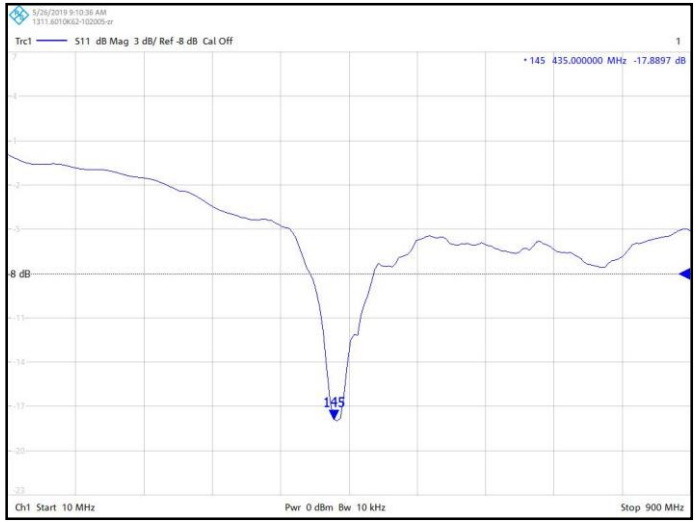
The figure of a dipole antenna model [source]



The VNA and the structure

A length of the antenna is $l = \lambda/4$ where l stands for the antenna length and λ is the wavelength of the frequency. Also, $\lambda = c/f$ where c is velocity of light, and f is taken as 435 MHz. From these information, we calculated the length of antenna as approximately 17 cm.

In figure below, the result of the antenna tuning is shown. We successfully tuned the UHF antenna. We measured S11 parameter using VNA (Vector Network Analyzer). This parameter helps us to know the input impedance of the antenna.

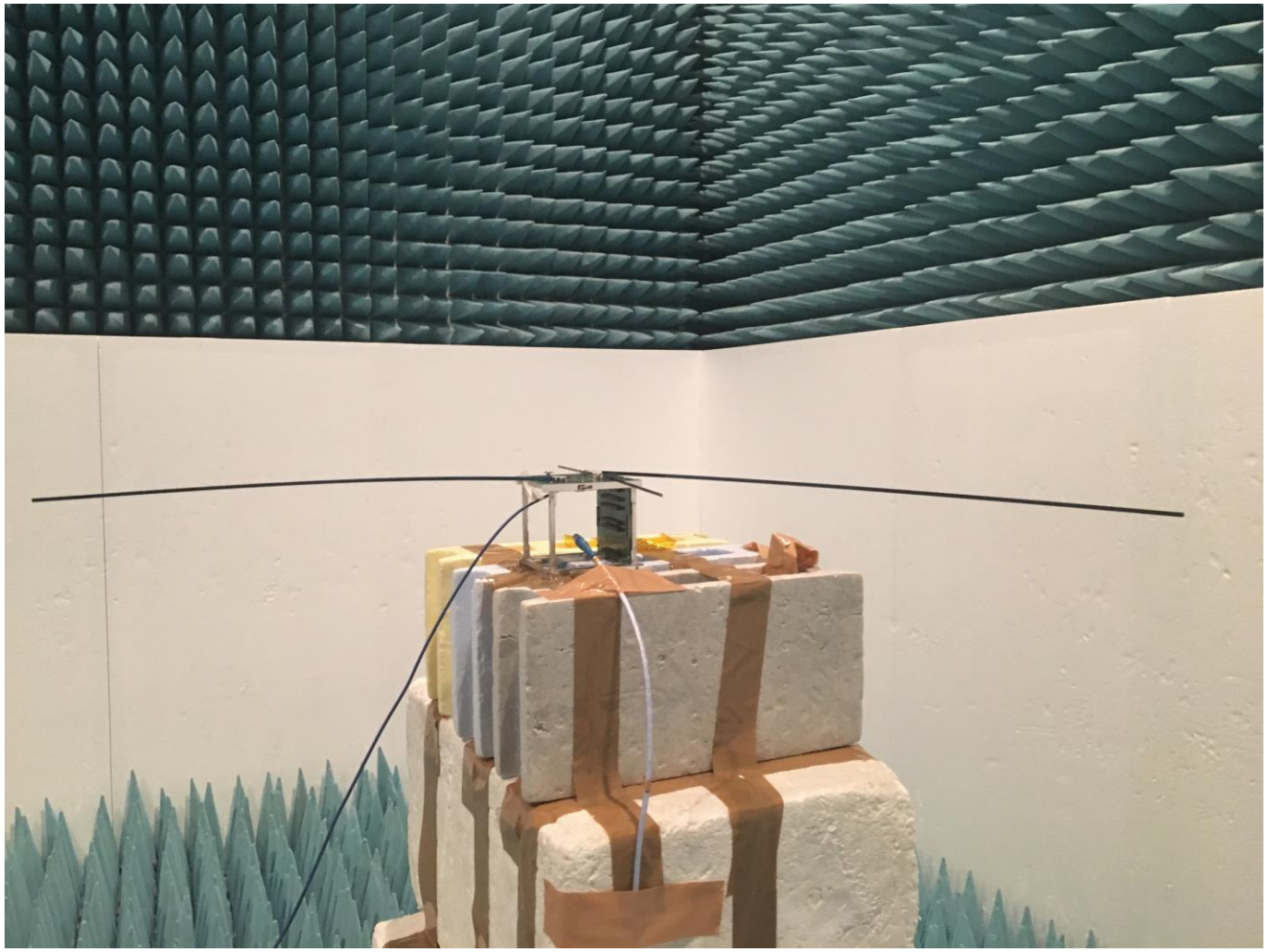


The result of antenna tuning

What is Anechoic Chamber Test?

Written By: Yuma Nozaki

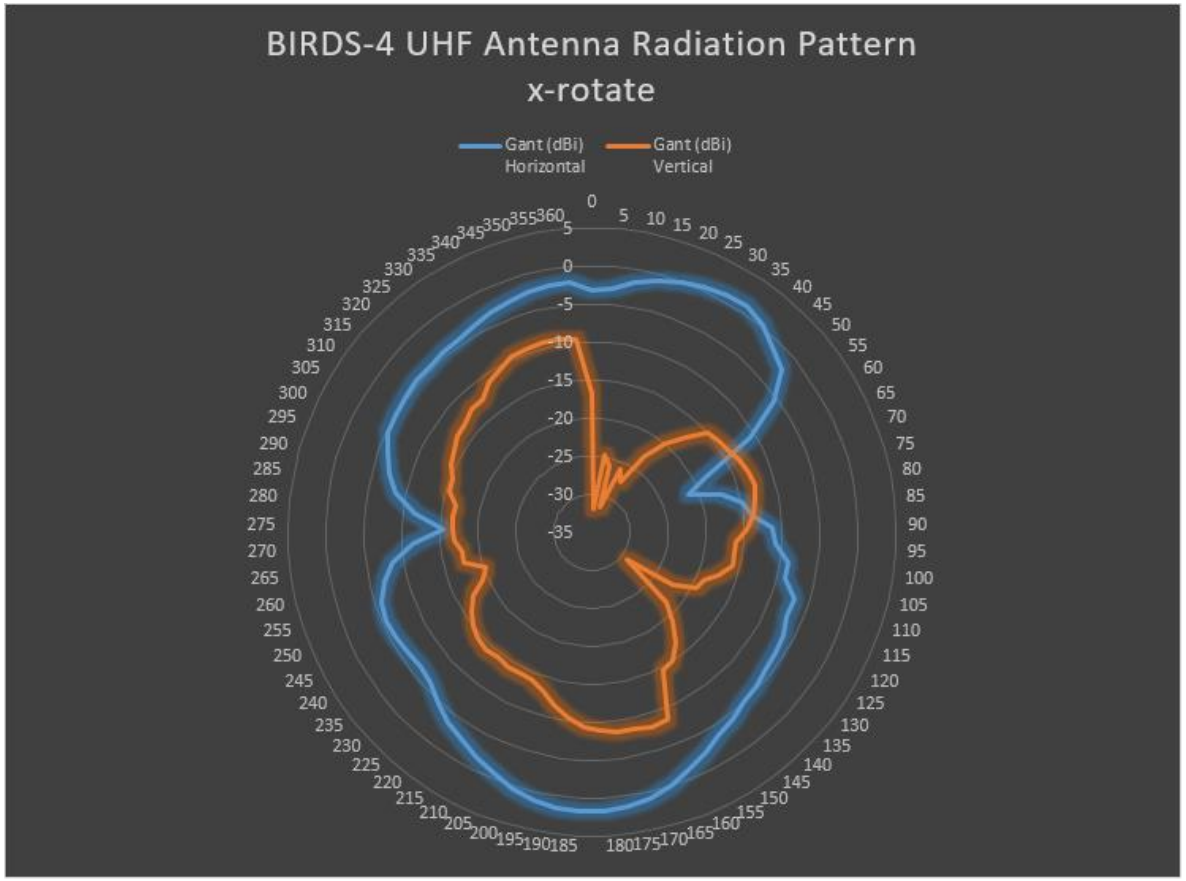
- The purpose of this experiment is to confirm the radiation pattern of our antennas. We can analyze the 3D radiation pattern of the antenna from the measurements as the platform is rotating when the satellite's X, Y, and Z axes were pointing the same direction in each axis case.
- We used the anechoic chamber room in KyuTech campus. There were many wave absorbers. You could see the pyramid shape structures around the chamber in the photo. These are made from foamed polyurethane and Ferrite. When radio waves pass through these substances, they are converted to heat by the electrical resistance (ohmic loss) or dielectric loss of the material.
- In the figure, one could see how we measured the experiment rotating the structure and the antenna attached on it. We rotated it in every 10 degrees to complete a circle. We show the result of anechoic chamber test in next page.



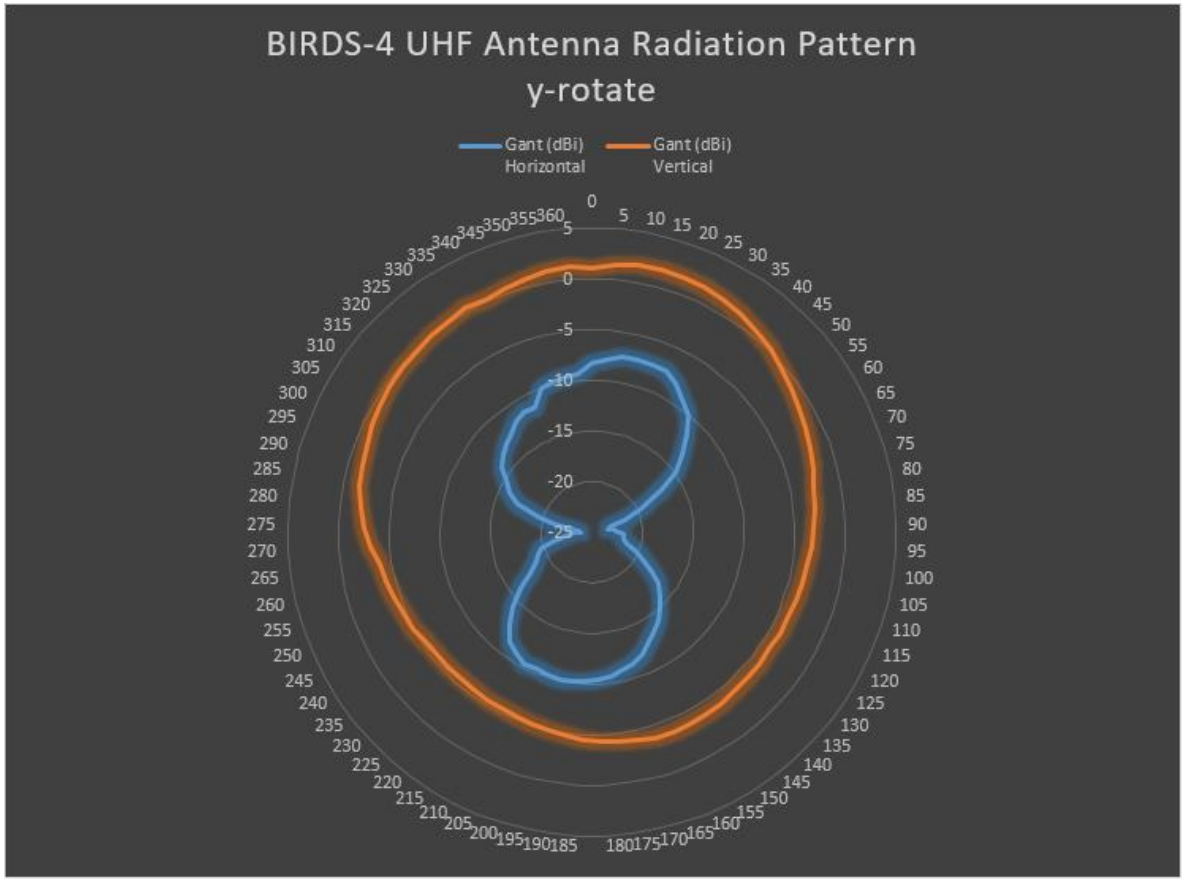
Our experiment set-up inside the anechoic chamber

The Radiation Patterns from Anechoic Chamber Test

Written By: Yuma Nozaki



Radiation pattern around X-axis



Radiation pattern around Y-axis

KyuTech and NEC Joint Workshop

Hoda El-Megharbel

June 09, 2019

Space Potentials in Developing Countries

Written By: Hoda Awny El-Megharbel

Kyushu Institute of Technology Laboratory of Spacecraft Environment Interaction Engineering provides its students the opportunity to engage in the space activities in their own countries and interact with the space industry in general, searching for opportunities and building networks.

NEC has been engaged in the development of about 70 satellites, including communications, broadcast, Earth observation, astronomical observation, engineering testing and interplanetary exploration satellites. NEC's space-related business began in 1956 when it delivered a rocket telemetry transmitter-receiver system to the Production Engineering Laboratory of the University of Tokyo. NEC is Planning for a solution business based on space technology targeting global market.

On May 28, Kyutech students from ten different countries including Mexico, Egypt, Ghana, Kenya, Turkey, Sri Lanka, Malaysia, Indonesia, Philippine presented about the space potentials in their countries and discussed related ideas and points with NEC team introducing current activities and opportunities in each country.

Yigit Cay presenting about Turkey

Izrael Bautista presenting about Philippines

Objectives

The company is one of major Japanese electronics giants, discussions between the team and staff members were very informative and encourage students to discover new opportunities of space application in their country and their future career as well.

The main objectives of KyuTech and NEC joint workshop is to cover the needs for space applications in developing countries, the possible organizations or points of contact for collaboration and also what could be expected from a country like Japan in terms of collaboration in space application.

KyuTech Staff and NEC Team

We hope to see you again!

BIRDS-4 Golden Week Activities

Mark Angelo C. Purio

Member, BIRDS-4

June 13, 2019

BIRDS-4 Golden Week Activities

Written By: Mark Angelo C. Purio

In Japan, many Japanese workers look forward for the Golden Week. They get about a week off around the end of April and the beginning of May due to a cluster of national holidays during this period.

This year, the golden week celebration was special because Japan celebrated the Imperial succession and the start of a new era lasted in May 1 with a festive extra-long 10-day Golden Week from April 27 through May 6.

As they say, all work and no play is not good for the soul. Despite of their busy schedule, BIRDS-4 team members were able to use this long holiday take a break from their work and enjoy the time by visiting several places here in Japan or in their own countries. This article summarizes the activities we had and places we've been to during this period.

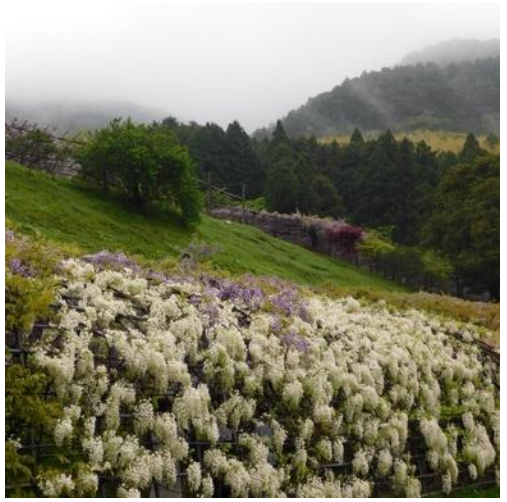
Kawachi Wisteria Garden (河内藤園, Kawachi Fujien)

This is a private garden in the wooded hills south of central Kitakyushu, famous for its spectacularly presented, large numbers of wisteria flowers. The garden is opened to the public seasonally during the wisteria season which usually peaks around late April to early May and during the maple leaf season in autumn (japan-guide.com). BIRDS-4 members together with other Cho Lab students went in two groups on April 30 and May 1, respectively.

BIRDS-4 Golden Week Activities

Written By: Mark Angelo C. Purio

Kawachi Wisteria Garden (河内藤園, Kawachi Fujien)



BIRDS-4 members together with other lab members enjoying their time experiencing nature through wisteria flowers in a nice climate

BIRDS-4 Golden Week Activities

Written By: Mark Angelo C. Purio

Nanzoin Temple and Reclining Buddha (Sasaguri, Fukuoka)

Situated in Fukuoka Prefecture, this houses one of the world's biggest bronze structure. This is open for tourists but it is really suppose to be a place to pray and find divine enlightenment.

The Reclining Buddha's dimensions are impressive, 41 meters in length, 11 meters in height, and weighing in at 300 tons (about the weight of a jumbo jet), it dwarfs the famous giant bronze Buddha statues of Kamakura and Nara, (13m high, 93 tons, and 15m high, 250 tons, respectively), though it is much younger than those venerable, older statues, being completed in 1995. (japan-guide.com).

Again, we went in 2 groups to visit the place on May 2 and 3 respectively. Warning: Buddha pictures ahead.

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As promised, a lot of photos with the Reclining Buddha in the background. Truly remarkable!

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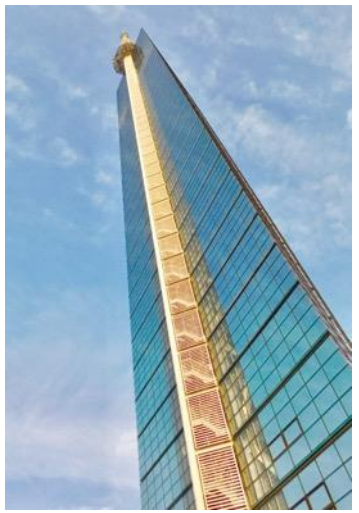
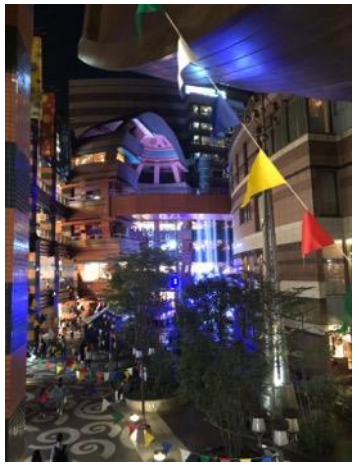
Fukuoka 福岡 Area

Fukuoka is the biggest city in the southern island of Kyushu. Located on the northern coast of Kyushu, Fukuoka is a port city split by the Nakagawa River between what was once the the castle town of Fukuoka to the west and the merchant quarter of Hakata to the east, Fukuoka is one of Japan's most dynamic and livable cities with many attractions for visitors. (japanvisitor.com)

Since we are in Kitakyushu, it is easy to go here by train. Travel time may be long but the visit is worthwhile. This area is a little busy than Kitakyushu with more modern architectural landscape while still preserving its Japanese heritage. During this time, we were also able to witness the Craft Beer Festival.





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Fukuoka 福岡 Area

Some photos from the Fukuoka Tower and the beach right next to it. Isn't the sunset amazing? Kyushu Craft Beer festival photo is also featured.

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Vacation Highlight: Mt. Yufu (由布岳)

Often called the Mt. Fuji of Oita because of its appearance, Mt. Yufu is the landmark of the area and a popular spot for locals and tourists alike. (japan.travel)

Despite a 1500 m elevation, climbing this mountain is friendly for the beginners. From Kitakyushu, we rented a car to go to its foot and started climbing. The good thing about its trail is that it is already cleaned and setup so all you have to do is wear your best climbing clothes and be patient in traversing. Plus factor is that those Japanese people to come across with never fail to greet and cheer you while climbing. I observed that our group has one of the few who has foreigners climbing. This is one for the books and the view from the top is breath-taking.

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Some members are first-time climbers so the best way to immortalize the moments is through these pictures.

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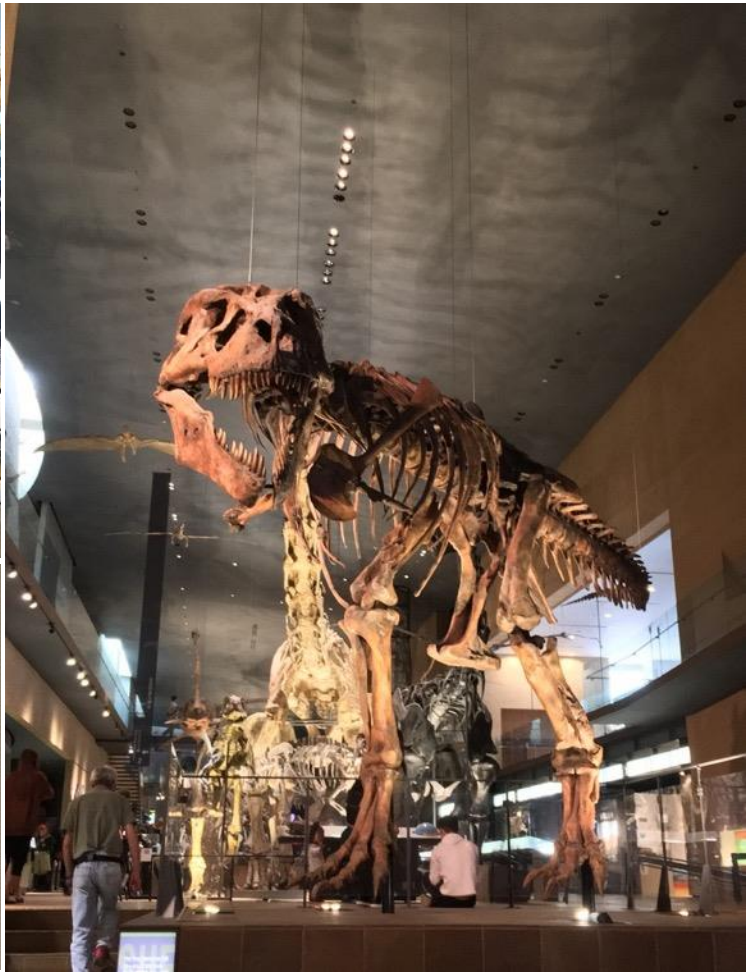
Bonus Feature: Kitakyushu Museum of Natural History & Human History 北九州市立いのちのたび博物館

All BIRDS-4 members may have not visited this place but this is a must-see for those who are fascinated with dinosaurs, fossils and animals in general.



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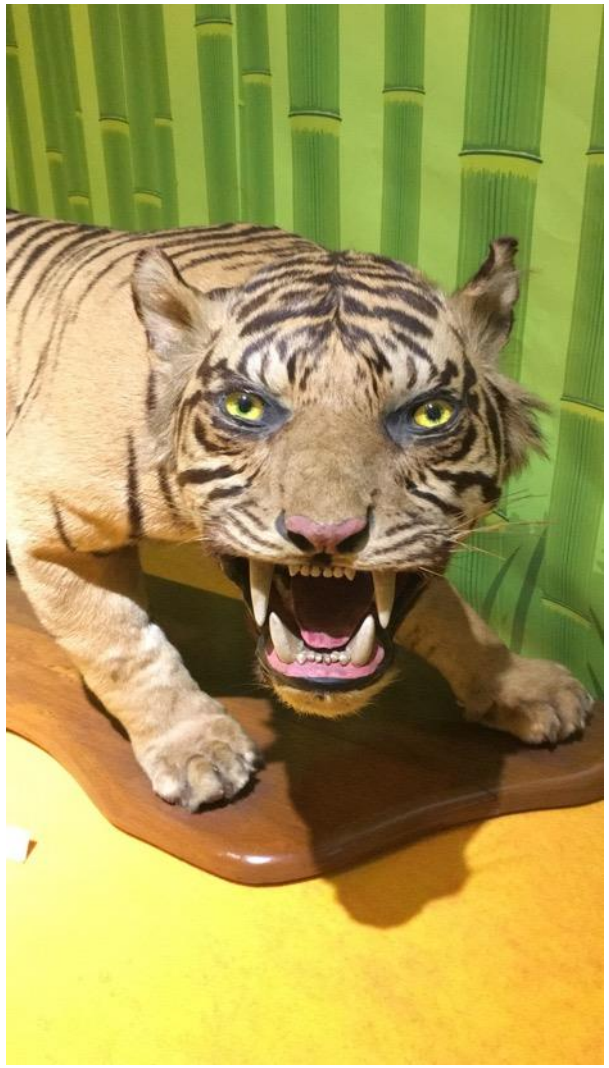

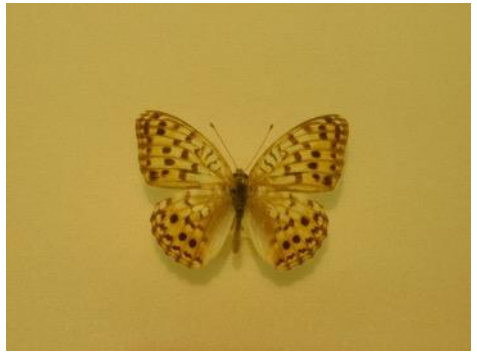

It's been a month since Golden Week has passed but the happiness brought about by this occasion through the activities we had is still fresh. Such experiences made me want to experience Golden Week once again but in a lot more beautiful places here in Japan.

And as I would rephrase it, "All play and no work is also not good for the soul", so this time BIRDS-4 members will continue their respective tasks to build their satellite.

All the best for Japan's New Era!!!

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End of this **BIRDS Project Newsletter**

(ISSN 2433-8818)

Issue Number Forty-One

This newsletter is archived at the BIRDS Project website:
http://birds1.birds-project.com/newsletter.html

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.