



According to Bryce Space & Technology Co., among academic operators, Kyutech is No. 1 in number of 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

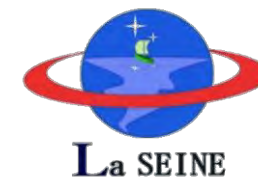
BIRDS Project Newsletter

Issue No. 51
(24 April 2020)

Edited by:

G. Maeda

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



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

Table of Sections

1. UNISEC-Global receives major space award from Japan's Ministry of Foreign Affairs
2. The merits of being bi-lingual
3. Cultural message from the Gov't of Japan
4. Graduation event of 25 March 2020
5. Congratulations to Marco and Adriana for getting married
6. Kyutech celebrates its 111th anniversary
7. Sending status of BIRDS-3 QSL cards
8. Information about ground stations
9. Arrival of three Zimbabwe engineers to join the BIRDS-5 Project
10. All the back issues of the APRSAF Newsletter
11. A modest cooking idea from Sri Lanka
12. Lacuna Space — Transmission of a LoRaWAN Message over Satellite
13. Report from Nepal: Reaction-wheel-based CubeSat ADCS
14. BIRDS-4: Life in Kyutech dormitories
15. BIRDS-4: Anechoic chamber test of Paraguay's satellite
16. BIRDS-4: Results of FM long duration test
17. BIRDS-4: *BIRDS publication archive*

Continued on the next page

From Japan

The Guest Box

四季 長谷川 權

ぬはたまの髪こそあはれ減りたるを朝なさな結
ふ菩薩に倣ひ
大友清子

仙台大観音

2020. 3. 20 読売新聞

仏(如来)となるべく努める人が菩薩。つまり人間は誰でも菩薩の芽を秘めている。毎朝、髪を束ねるのも菩薩の修行というのだ。地藏菩薩は頭を丸めているので、髪豊かな観音菩薩だろうか。前登志夫門下。歌集『すみひろがり』から。

Sendai Daikannon (仙台 大観音) is a large statue of the gem-bearing Nyoirin Kannon (如意輪 観音) form of Kannon (観音), located in Sendai, Japan.

https://en.wikipedia.org/wiki/Sendai_Daikannon

Table of Sections (cont'd from the previous page)

18. BIRDS-4: A visit to the heart of Japan: Kansai region
19. BIRDS-4: Report from AEP (Paraguay)
20. BIRDS-3: Recent images from the satellites
21. BIRDS-3: COVID-19 situation in Sri Lanka
22. BIRDS-5: ZINGSA engineers travel from Zimbabwe to Japan, taking 5 days
23. Report from the Philippines
24. Column #4 from Malaysia
25. BIRDS-3: Okinawa Trip Photo Report
26. Report from Paraguay
27. BIRDS-related publications during Fiscal Year 2019
28. Important article about the Ground Station Terminal (GST) for the interest of all BIRDS members
29. Timeline of Bhutan's Response Strategy to combat COVID-19

End of Table



JSPS Reminder

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

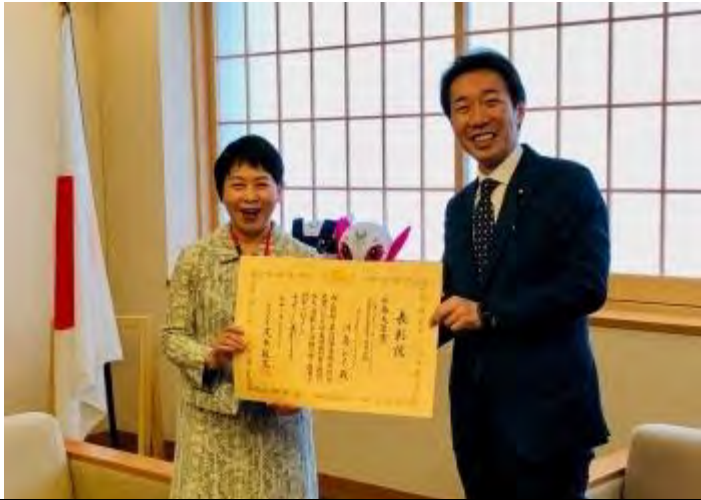
This work was supported by JSPS Core-to-Core Program, B. Asia-Africa Science Platforms.

*Our
111th
Anniversary*



国立大学法人
九州工業大学

01. UNISEC-Global receives major space award from Japan's Ministry of Foreign Affairs



Rei Kawashima receives MOFA award

The Foreign Minister's Award: 4th Space Development and Utilization Award



Big congratulations to Secretary General Rei Kawashima and to UNISEC-Global for securing this prestigious award from MOFA, the Ministry of Foreign Affairs of Japan.

It is a well deserved honor!

BPN Editor, George Maeda



MOFA 日本語 press release: https://www.mofa.go.jp/mofaj/press/release/press4_008385.html

THE PRESS RELEASE IN NIHONGO – ENGLISH TRANSLATION ON THE NEXT PAGE

- 1 3月24日、外務省において、「UNISEC－Globalによる国際的宇宙教育・啓発活動」に関し、中山展宏外務大臣政務官から、川島レイUNISEC－Global事務局長に対し、第4回宇宙開発利用大賞外務大臣賞の表彰を行いました。
- 2 UNISEC－Globalは、シンポジウムやコンテスト等による宇宙科学技術の新興国・地域への啓発、衛星開発技術のトレーニングなど幅広い教育・普及・啓蒙活動を国際的にを行い、54の国・地域の大学における宇宙工学教育と大学衛星開発の発展に寄与してきました。また、2017年には、国連宇宙空間平和利用委員会(COPUOS)において常任オブザーバーとして承認され、宇宙分野における日本の国際的地位向上にも貢献しています。このような活動を評価し、今回、外務大臣賞に選考されました。
- 3 外務大臣賞の表彰の後、中山政務官は、UNISEC－Globalの活動を通じて、若い世代の人材育成が促進され、日本を中心とした国際的な連携が進められていることは大きな成果であり、これまでのご尽力に敬意を表する旨述べました。これに対して、川島レイ事務局長は、コスタリカの学生がバナナ疾病予防のための創薬実験を国際宇宙ステーションで行う提案等を紹介しつつ、政府とは異なるアプローチで新興国・地域の宇宙開発を補完する活動を展開し、今後も若い世代の夢の実現に向けたサポートを継続していきたい旨述べられました。

[参考]宇宙開発利用大賞について

本表彰制度は、宇宙開発利用の推進において大きな成果を収める、先導的な取組を行う等、宇宙開発利用の推進に多大な貢献をした優れた成功事例に関し、その功績をたたえることにより、我が国の宇宙開発利用の更なる進展や宇宙開発利用に対する国民の認識と理解の醸成に寄与することを目的としています。本年度が4回目となります。

4th Space Development and Utilization Award

① At the Ministry of Foreign Affairs on 24 March 2020, the *4th Space Exploration and Utilization Award* was given from Foreign Minister Nobuhiro Nakayama to the secretary-general of UNISEC-Global, Ms. Rei Kawashima, for “International Space Education and Awareness Activities by UNISEC-Global” at the Ministry of Foreign Affairs.

② UNISEC-Global conducts a wide range of education, dissemination and enlightenment activities internationally, such as enlightening emerging countries and regions in space science and technology through symposiums and contests, and training in satellite development technology. UNISEC-Global has contributed to the development of space engineering education and university satellite development. In 2017, she was approved as a standing observer by the United Nations Commission on Peaceful Use of Space (COPUOS) <https://www.mofa.go.jp/mofaj/gaiko/technology/universe/copuos.html> , and has contributed to Japan's international stature in space. In recognition of such activities, she was selected for the Foreign Minister's Award this time.

The Japanese-language press release was kindly translated into English by:

Mansur ÇELEBİ, PhD
[Graduate of CLTP-1]
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34906 Pendik /İSTANBUL

Continued on the next page

③ Following the award of the Foreign Minister's Award, Mr. Nakayama mentioned that UNISEC-Global has a great achievement in promoting the development of human resources for the younger generation and promoting international cooperation centered on Japan through the activities of UNISEC-Global. He said that she paid tribute to the efforts. In response, Secretary-General Rei Kawashima introduced proposals for Costa Rican students to conduct drug discovery experiments at the International Space Station to prevent banana disease, and also used a different approach to space development in emerging countries and regions. She stated that she would like to develop activities that complement the program and continue to support young people's dreams in the future.

[Reference] Regarding the Space Development and Utilization Award

This award system is based on excellent examples of successful achievements that have made great contributions to the promotion of space development and utilization, such as making significant achievements in promoting space development and utilization.

The purpose of this achievement is to contribute to the further development of Japan's space exploitation and utilization, and to fostering public awareness and understanding of space exploitation and utilization.

SUMMARY OF THE WINNERS OF THE MOFA SPACE DEV. AND UTILIZATION AWARD

第4回

<http://www.uchuriyo.space/taishou/>

UNISEC-Global

第3回

<http://www.uchuriyo.space/taishou/pdf/awardrecipient.pdf>

Kyutech

第2回

<http://www.uchuriyo.space/taishou/pdf/3-3-2.pdf>

JAXA

第1回

<http://www.uchuriyo.space/taishou/pdf/3-3-1.pdf>

[MOFA did not award one]



外務大臣賞



外務省

Ministry of Foreign Affairs of Japan

事例名 UNISEC-Globalによる国際的宇宙教育・啓発活動

受賞者 UNISEC-Global 川島レイ

事例の概要

受賞者は、日本の大学における宇宙工学教育と大学衛星の発展を生んだUNISEC(大学宇宙工学コンソーシアム)と同様の大学連携を各国に作ることをエンカレッジする国際組織UNISEC-Globalを2013年に設立し、シンポジウム・ミッションアイデアコンテストの開催、デブリ除去コンテスト等によるCode of Conductの新興国への啓発、CanSatやHEPTA-Satのトレーニングなど幅広い教育・普及啓蒙活動を国際的にを行い、54か国・地域の加盟を得るなどの成果から、UNCOPUOSのPermanent Observerのステータスを2017年に獲得した。

選考委員会講評／受賞のポイント

シンポジウムやコンテスト等による新興国への啓発、衛星開発技術のトレーニングなど幅広い教育・普及啓蒙活動を国際的にを行い、日本及び54か国の大学における宇宙工学教育と大学衛星開発の発展に寄与した。その成果により、2017年、国連宇宙空間平和利用委員会(COPUOS)において常任オブザーバーの地位を得ており、宇宙分野における日本の国際的地位向上に貢献した。



UNISEC-Globalのビジョンと4つの主要活動



HEPTA-Sat Training (2019年1月、オーストラリア・アデレードで開催された国際宇宙大学の南半球短期コースにて)



第5回ミッションアイデアコンテスト(MIC5)の表彰式 (2018年11月、フランス・ストラスブールの国際宇宙大学で開催された第6回UNISEC世界大会において)



国際連合宇宙空間平和利用委員会(COPUOS)での川島氏のステートメント発表(2018年6月ウィーンで開催されたUNISPACE+50にて)



UNISEC Local Chapter(UNISEC-TurkeyなどUNISEC設立済みの19か国・地域)およびUNISEC Point of Contact(設立準備中の36か国;下図)

1. 宇宙開発利用の新たな領域創造への貢献

UNISEC-Globalの原型は2010年にほどよしプロジェクトの中における国際連携・教育・普及啓蒙活動として川島氏のリーダーシップで造られ、2013年に、日本のNPO法人UNISECが国内の大学の実践的な宇宙工学教育に貢献し、大学衛星がアメリカに次ぐ50機以上打ち上げられ、人材育成にも顕著な効果をもたらした成果や経験を国際的に展開し、2020年までに世界100カ国以上で大学生が宇宙開発活動に参加できる世界を作ることを目指して設立された。その後、国連の“No one will be left behind”のコンセプトを受けて、世界のすべての国での学生による宇宙開発活動参加にビジョンを変えてさらに拡大した。現在54カ国に連絡担当者があり、その中で19の国と地域ですでにUNISECが設立されている。

2. 宇宙開発利用市場の拡大への貢献

UNISEC-Globalの活動では、常に日本の超小型衛星を中心とした宇宙技術を見せ、CanSatなどの日本の得意技術を教育する活動を続けることで、そのような意識を高める結果となっている。2013年の会議では世界から47カ国260名の参加があり、その多くが日本の教育支援を求めたことはその表れである。これは、UNISEC-Global活動の副産物として、今後の日本の宇宙開発利用市場の拡大に大きく貢献するだろう。実際、政府が海外連携を進め市場を広げようとする海外展開タスクフォース活動においても、UNISEC-Globalのもたらす情報や人的ネットワークが活用されている。

3. 産業、生活、行政の高度化及び効率化への貢献

UNISEC-Global会議の中で、各国の活動報告、宇宙工学教育や宇宙利用の現状の情報交換をおこない、新興国における生の声を獲得することに大きな効果があった。2011年から開始したミッションアイデアコンテストでは、地上インフラがまだ不十分な国における衛星利用の可能性に関する情報を多数獲得することに貢献した。

また2016年からスタートした国際共同プロジェクト活動では、地上においた水位、水質、土壌水分量などの各種のセンサー情報を地上インフラのな

いところで集めるには衛星がもっとも効果的な方法であるとのコンセンサスを得て、地上のセンサー情報を弱電波で集めるIoT衛星を各国で開発打ち上げして、連携して使おうという共同研究プロジェクトが生まれ、日本でもベンチャー会社の開発につながっている。

4. 技術への貢献

2011年からスタートしたミッションアイデアコンテストでは、さまざまな超小型衛星の利用アイデアと技術を生み、たとえば、2011年に準優勝したMIT学生の系外惑星探査の計画はすでにアメリカで予算がついて打ち上げられた。さらに2015年と2017年に行ったデブリミティゲーションコンペティションでは、自身がデブリにならない装置のアイデアが多数提案され、一部はその国で政府予算がついてさらに実用に近づく研究開発につながっている。

5. 普及啓蒙への貢献

UNISEC-Globalの最大の貢献は、これから宇宙開発活動を始めようとする新興国やまだ初歩的段階の国に対し、大学中心の草の根的な宇宙開発活動の経験を伝授し、必要な初歩的技術のいろはを教え、国際連携の意識を持たせるとともに、デブリ化防止の意識“Code of Conduct”を早い段階から刷り込む啓蒙活動を継続して行ってきた点である。2019年には、デブリ教育の一環として「A Handbook for Post-Mission Disposal of Satellites Less Than 100 kg」を国際宇宙航行アカデミー(IAA)の協力を得て、無料ダウンロードできる形で刊行してもらい、普及活動に努めている。

技術教育に関しては、2011年から行ったCanSat Leader Training Program (CLTP)はこれまでに45カ国、96名の「先生レベル」の人を招いてCanSat教育の仕方を伝授し、それらの国ではすでに自国でCanSat教育がスタートし、日本発のCanSat技術は世界における宇宙教育のデファクトスタンダードになりつつある。2017年からは、新教材のHEPTA-Satを使った衛星トレーニングを提供している。また、この活動に参加させた日本の大学学生に対しても、国際連携・交渉の進め方、人的ネットワークの構築など重要な体験の場を提供しているといえる。

02. The merits of being bi-lingual

JUST A FEW generations ago, speaking two languages was supposed to be bad for you. Tests in America found that bilingual people had lower IQs, which seemed evidence enough. Later it became clear that those surveys were really measuring the material poverty of immigrants; members of such families were more likely to be undernourished and understimulated, not to mention the obvious fact that they often sat the tests in a language that was not their best.

How things have changed. In the past decade it has become almost common knowledge that bilingualism is good for you—witness articles such “Why Bilinguals are Smarter” and “The Amazing Benefits of Being Bilingual” by the *New York Times* and the BBC. Stacks of research papers have suggested that two-tongued people enjoy a variety of non-linguistic advantages. Most notably, they have shown that bilinguals get dementia on average four years later than monolinguals, and that they have an edge in “executive control”—a basket of abilities that aid people doing complex tasks, including focusing attention, ignoring irrelevant information and updating working memory.

The Economist February 29th 2020

Why bilingualism would enhance these capabilities is unclear. Researchers hypothesise that having two languages means suppressing one when speaking the other, a kind of constant mental exercise that makes the brain healthier. This in particular is thought to be behind the finding of a later onset of dementia.

But as intellectual pendulums do, this one has begun to swing again, against the “bilingual advantage”. Though many papers have identified such a bonus, many more have tried and failed to replicate those studies. Roberto Filippi of University College London and his col-



https://www.google.co.jp/url?sa=i&url=https%3A%2F%2Fideasandsociety.ucr.edu%2Fconferences%2Fbilingualism%2F&psig=AOvVaw21qhL8g1_ZBLohmjWOrLwq&ust=1584682513043000&source=images&cd=vfe&ved=0CAIQRqFwoTCLjfls7opgCFQAAAAAdAAAAABAD

Johnson Double-take

It helps to speak more than one language—even if the benefits are unquantifiable

leagues have spent five years testing more than 600 people, from seven to 80 years old and including some who oscillate between two languages. They could find no statistically significant advantage in any age cohort.

In response to the scepticism, researchers who believe in the advantage have refined their studies—now acknowledging that, beneath their common trait, bilingual people use their languages in varying ways that may account for the incongruent previous results. Does speaking two very distinct languages have a different effect from speaking two very similar ones? What about two dialects? Does speaking more than two provide any additional benefit? Does it matter if subjects live among people who speak their first language or their second?

A recent study by four researchers at the University of the Balearic Islands is a good example. They studied 112 bilinguals using three criteria: the age they acquired a second language; fluency in their two languages (most are not equally adept in both); and the frequency with which they

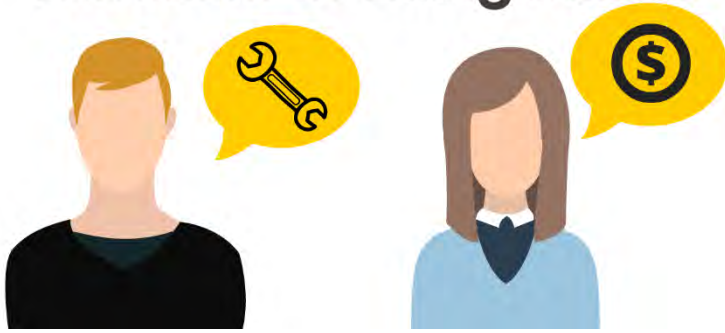


The Economist

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switch between the two options. Frequency of switching, it turned out, was the variable that correlated best with improved executive control. Unlike Mr Filippi's, other studies have hinted that frequent switching may be a good predictor of the bilingual advantage.

Benefits of Bilingualism



https://www.google.co.jp/url?sa=i&url=https%3A%2F%2Fblog.virtualwritingtutor.com%2Fthe-economic-advantages-of-bilingualism%2F&psig=AOvVaw21qhL8g1_ZBlohmjWOrLwq&ust=1584682513043000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCLjfls7opegCFQAA AAAdAAAAABAP

On balance, it seems that if the dividend is real, it is subtle and affected by many other factors. Though wealthy parents have been taken by the notional leg-up, hiring foreign nannies for their offspring and so on, it may be poorer individuals who get the biggest benefit. A study in Hyderabad, for instance, reproduced the finding of a four-year delay in the onset of dementia among bilinguals—except that the gap was six years for those test cases who were illiterate. If switching languages is healthy mental exercise, other highly skilled, cognitively demanding kinds of labour are likely to provide good work-outs, too. People who do other forms of mental multitasking all the time may not get such a big lift from bilingualism, if they get any at all.

The bottom line is that learning another language (or teaching a child one) sometimes confers an intellectual boost, though not always. But that has never been the main reason to do it. A second language expands the number of people you can talk to. It adds to the ways you can say things, and so offers a second point of view on the whole business of expression. Bilingualism may help you understand other people; one study found that bilingual children are better at grasping other perspectives, perhaps because they are always keeping track of who speaks what, a regular reminder that everyone is different. Finally, speaking a second language less well than your first supplies another kind of useful practice: it is a constant exercise in humility.

It pays to be multi-lingual

End of this section

03. Cultural messages from the Gov't of Japan



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The online magazine HIGHLIGHTING JAPAN is published once a month by the Japanese government to help readers better understand Japan today.

もっと知りたい、伝えたい。日本の'今'をアップデート ~ オンライン・マガジン HIGHLIGHTING JAPAN

#142 March 2020

WASHI: STRENGTH, BEAUTY & ENDLESS POTENTIAL

The oldest examples of Japanese handmade paper, or washi, were made in 702 and are preserved in the Shosoin repository in Nara Prefecture. Being made from natural fibers and chemical free, washi is not only strong and long lasting, but also flexible, intrinsically beautiful, even translucent. For these reasons and more, washi paper continues to find use in an everexpanding range of products and applications.

https://dwl.gov-online.go.jp/video/cao/dl/public_html/gov/book/hlj/20200301/html5.html#page=1



← Go to the web site

See the next page for April issue

April 2020

LIVING IN HARMONY
WITH NATURE



<https://www.gov-online.go.jp/eng/publicity/book/hlj/20200401.html>

← Go to
the web
site



PUBLIC RELATIONS OFFICE
GOVERNMENT OF JAPAN



[Home](#) > [Highlighting JAPAN](#) > [Highlighting JAPAN April 2020](#)



THEME FOR APRIL LIVING IN HARMONY WITH NATURE

At the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10) held in Nagoya, Aichi Prefecture in 2010, the Parties agreed a global vision of biological diversity, a world of “Living in Harmony with Nature.” We take a look at some examples of Japan’s rich biodiversity and at ways in which people in Japan have interacted with nature to conserve it, helping to achieve that global vision.

[E-book](#) | [PDF\(265KB\)](#)

FEATURES



Coexistence with Biological Diversity

An interview with Torii Toshio, Director General of the Nature Conservation Bureau, Ministry of the Environment.

[E-book](#) | [PDF\(100KB\)](#) | [HTML English](#) | [Japanese](#)

04. Graduation event of 25 March 2020



On 25 March 2020, we (Cho Lab of Kyutech) had a small ceremony to recognize the graduation of many of our students.

Normally, we have a big food and drink party, but this cannot be done under coronavirus conditions.

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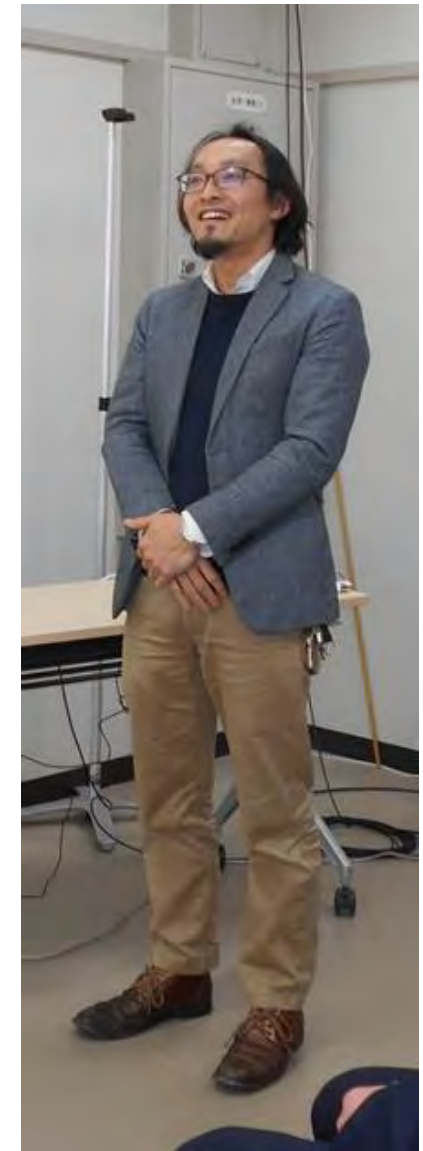


Prof Cho gave words of advice



One by one, each graduate received a gift

← We watched a video of nostalgic photos



Dr Masui gave words of advice

05. Congratulations to Marco and Adriana for getting married

Congratulations to Marco and Adriana who got married on **7 March 2020** in a ceremony in Guanacaste, Costa Rica. Both at one time were involved in the Irazu Project. Later, Marco attended the **2nd BIRDS International Workshop (2BIW)** in Ghana in 2017. Marco stays in touch with the BIRDS Project.



Above: Marco Gomez and Adriana Chavarría when GM visited Costa Rica in November of 2015.



06. Kyutech celebrates its 111th anniversary

To celebrate its 111th anniversary of founding, Kyutech has issued this commemorative logo



07. Sending status of BIRDS-3 QSL cards

As you can see with the table at the right, the BIRDS-3 Team has so far sent out QSL cards to 28 individuals around the world.

For more info about these cards, please see:

<https://birds3.birds-project.com/2019/06/17/qsl-cards/>

(The BIRDS-3 QSL cards are roughly reproduced on the next page.)

The BIRDS-3 team at Kyutech will acknowledge your CW reception from BIRDS-3 satellites with original QSL cards. Please send decoded data to the URL link below for getting these beautiful QSL cards – surely to be collector items in the future.

<https://birds3.birds-project.com/document/birds-3-satellite-data-collection/>

	<i>QSL card destination</i>	Nepal	Sri Lanka	Japan
1	Saurav Paudel (9N1PO), Nepal	x		
2	Vladimir Chorney (EU1SAT), Belarus	x	x	x
3	Matjaz Zibert (S59MZ), Slovenia	x	x	x
4	Scott (K4KDR), USA	x	x	x
5	Nick (KE8AKW), Ohio	x	x	x
6	Tetsuro Satou (JA0CAW), Japan	x	x	x
7	Iji (JA6PL), Japan		x	x
8	Fatchul Mubin (YB3MBN/1), Indonesia	x		x
9	Mike Rupprecht (DK3WN), Germany	x	x	x
10	Supichan Salee (HS3LSE), Thailand	x	x	x
11	Toshio Kasei (JA1GDE), Japan	x	x	x
12	Wanlop Tadsri (HS6MYW), Thailand	x	x	x
13	K.C Sarang, Sri Lanka		x	
14	Charles Swiger (KB4NEW), USA	x	x	x
15	Colin Hurst (VK5HI), Australia	x		x
16	David Gent (W5QZ), USA	x	x	x
17	Nolhier (F5MDY), France		x	
18	Sadeepa Sepala (NJ06AR), Sri Lanka	x	x	x
19	Jean Claude (F6HDW), France	x	x	x
20	Sonny Dwi Harsono (YD1SCC), Indonesia	x	x	x
21	Sergey Zakharov (R6DIU), Russia	x	x	x
22	Julian Stanko (KN18EP), Ukraine			x
23	Chicarella Francesco (IZ6WLW), Italy	x		x
24	Miloslav (YT2CQ), Serbia	x	x	x
25	Miguel Angel Martin(EA4GSX), Spain	x		
26	David Hingos (KD2LXR), USA		x	x
27	Bob Mattaliano	x	x	x
28	Daisuke Nakayama	x	x	x



Arthur C. Clarke Institute for Modern Technologies

Moratuwa – Sri Lanka

www.accimt.ac.lk



Dear Mr/Mrs

We are pleased to confirm your reception from our Raavana-1 satellite
 On:
 Time:UTC
 Frequency:MHz
 TX power:mW
 TX type:

Ref:
 To:

Thank you very much for your reception report

ACCIMT Ground station manager
 (4S7AC)
 Date:

BIRDS-3 QSL CARD FOR SRI LANKA



KYUSHU INSTITUTE OF TECHNOLOGY

laplace.ele.kyutech.ac.jp/



Dear Mr/Mrs

We are pleased to confirm your reception from our Uguisu satellite
 On:
 Time:UTC
 Frequency:MHz
 TX power:mW
 TX type:

Ref:
 To:

Thank you very much for your reception report

KIT Ground station manager
 ()
 Date:

BIRDS-3 QSL CARD FOR JAPAN



Nepal Academy of Science and Technology

<http://www.nast.gov.np/>



Dear Mr/Mrs

We are pleased to confirm your reception from our Nepalisat-1 satellite
 On:
 Time:UTC
 Frequency:MHz
 TX power:mW
 TX type:

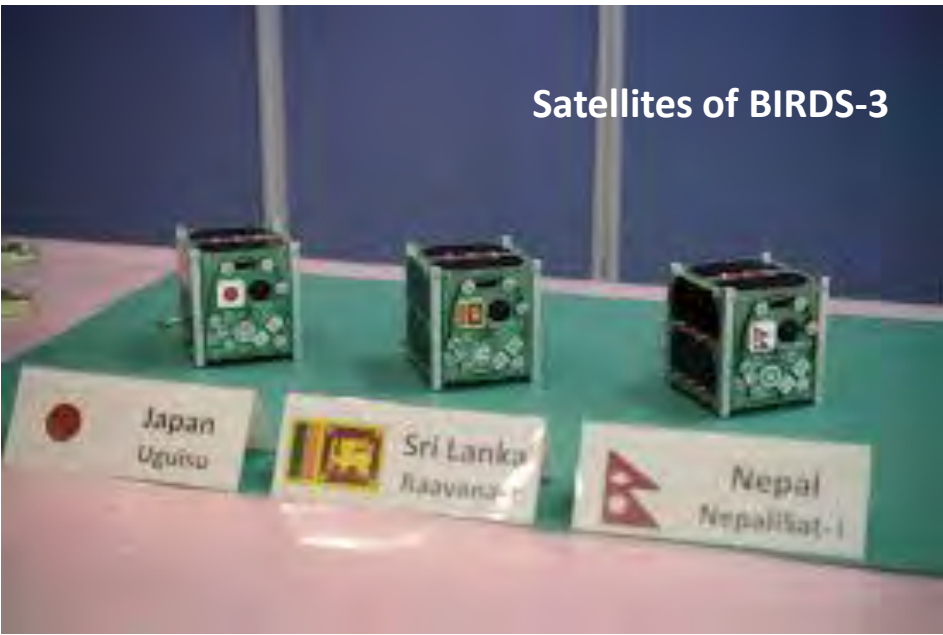
Ref:
 To:

Thank you very much for your reception report

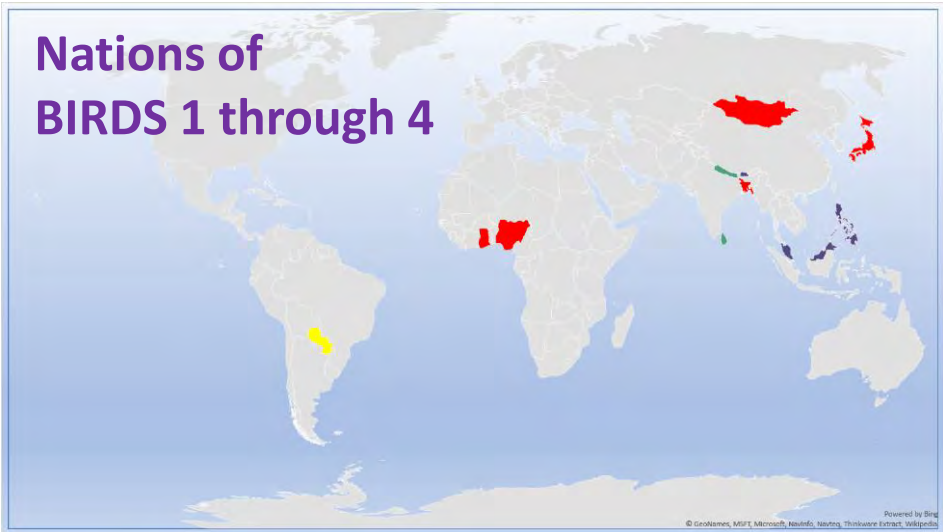
Nepal Ground station manager
 ()
 Date:

BIRDS-3 QSL CARD FOR NEPAL

Satellites of BIRDS-3



Nations of BIRDS 1 through 4



08. Information about ground stations

Many of you are building ground stations or will soon build ground stations for BIRDS satellites.

There is information that you should be aware of. The following two pages were prepared by Apiwat (Thailand, BIRDS-1) , who is our main expert of BIRDS ground stations. Please review this material before you start work on your ground station for BIRDS constellations.

Ground station-related articles in **BIRDS Project Newsletter**

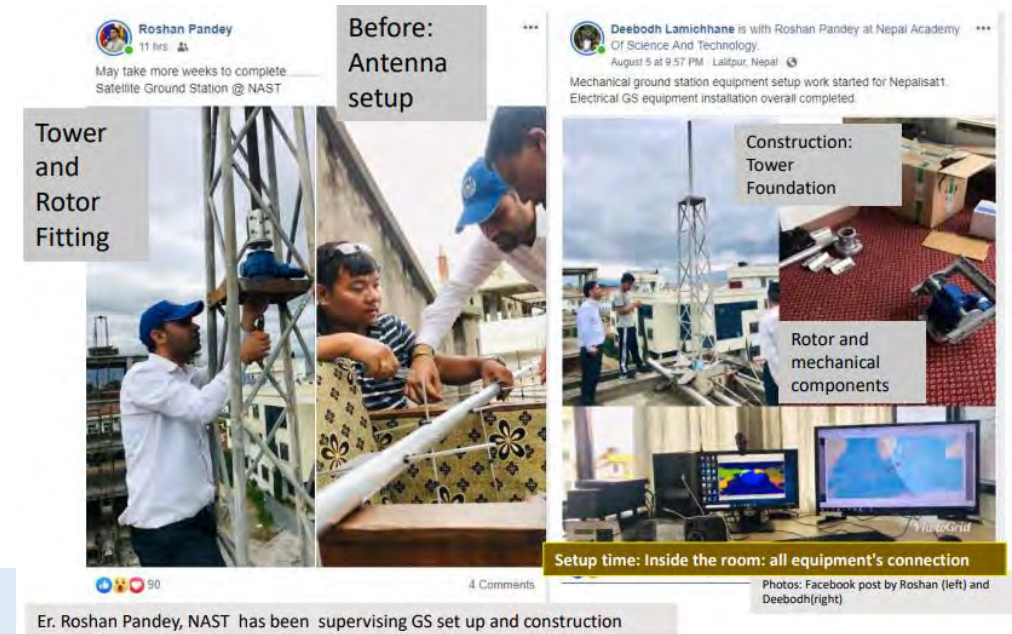
By: Apiwat Jirawattanaphol

There are 40 articles related to the ground stations (GS) in the *BIRDS Project Newsletter*. Many articles were written by BIRDS partners– and published in the newsletter. Please check the *BIRDS Project Newsletter* for more GS information.

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

Below are some of the recommended GS articles:

- Ground station installation in Ghana and Thailand, Issue 3, page 20-35 [Issue No.3](#)
- Communication Subsystem and Ground Station Network (BIRDS-2), Issue 15, page 49-55 [Issue No. 15](#)
- Kyutech Ground Station (GS) Operation Report for BIRDS-2, Issue 35, page 60-76 [Issue No.35](#)
- BIRDS-3: Update on the ground stations of BIRDS, Issue 43, page 43-47 [Issue No.43](#)
- Report on the ground station in the Philippines, Issue 18, page 64-69 [Issue No.18](#)



Nepal GS
report

Good to read article in the **AMSAT Journal**

Recommended by: Apiwat Jirawattanaphol, HS4SCI/JE5RJA

“Getting Started” on the amateur radio satellites

Explain from the beginning

Most of small satellites are using amateur radio frequency. The tools and techniques of small satellite outline are applicable to operate current and future satellites.

The “getting started” articles written by Keith Baker, KB1SF/VA3KSF. These articles appeared over the several editions of The AMSAT Journal from 2010 to 2011.

“The article will be to provide you with a general introduction to the basic concepts of tracking, operation and customs currently in use on the satellites and to give you some practical, hands on tips on how, you too, can get started in this wonderful aspect of ham radio.”

Keith Baker, KB1SF/VA3KSF



The author uses a Kenwood TH-78A dual-band HT and a lightweight Arrow Antenna to make a contact through AO-51 from the shores of Lake Huron in Michigan. When used with a 5 watt, full-duplex handheld in an open location free of foliage, such as a beach or a field, the antenna provides enough uplink and downlink gain to successfully work the FM birds, even on passes close to the horizon. (KB1OGF Photo)

Image: AMSAT Journal

Free to download

Getting Started part 1-10

<https://www.amsat.org/introduction-to-working-amateur-satellites/>

09. Arrival of three Zimbabwe engineers to join the BIRDS-5 Project

変更時刻	出発地	便名	備考
8:53	東京	FDA FDA301 JAL JAL4401	コードシェア便
9:01	成田	JAL JAL305	手荷物引渡中
9:01	成田	Jetstar GK503 JAL JAL6045	早着予定
9:05	東京	ANA ANA241	早着予定
	静岡	FDA FDA141 JAL JAL3810	コードシェア便
	東京	SKY SKY3	
9:34	関西	peach APJ153	早着予定
10:00	名古屋/小牧	FDA FDA303 JAL JAL4403	おくれ
10:00	名古屋/小牧	Jetstar GK581 JAL JAL6207	早着予定
9:55	名古屋/中部	ANA ANA3184	早着予定
	新潟	IBEX IBX84	

They arrived on **JetStar Flight GK503** from Narita (Tokyo). It touched down at Fukuoka Airport at 9:01 AM on Thursday, 2 April 2020.



Timothy Ramson Victor

North Exit of Domestic Terminal of Fukuoka Airport – after a 5-day journey from Harare, *they are happy to be in Kyushu!*



Breakfast at Fukuoka Airport
(うどん、Hot Udon)



Using the subway to get from the
airport to Hakata Station



ZINGSA engineers view Hakata Station
for the first time



GM's commuting suitcase (black one) is
larger than their transcontinental
suitcases

福岡市博多区

City of Fukuoka, Ward of Hakata

100 Yen Shop, Hakata Eki



URGENT PERSONAL NEEDS





DEAD TIRED FROM A 5-DAY JOURNEY

Taking express **JR** train (特急) from Hakata Eki to Tobata (11:20 AM to Noon)



Lunch at Tobata Station (AEON) Shopping Center



Yappari Steak (from Okinawa)



Baskin Robbins (from the USA)

ENERGY RESTORED!



**Just arrived ZIM engineers:
Meeting some staff of Kyutech on a beautiful sunny day**





Receiving some homework

First Meeting with Prof Cho [15:30, 6 April 2020]



COOKING IN THE INT'L DORM OF KYUTECH

Saturday 11/04/2020
International Dormitory

- Macaroni
- Boiled egg
- Coleslaw salad
- Vegetable stew made with shallots onion, garlic, tomatoes, onion and garlic.

By Ramson
Nyamukondiwa



Tuesday 14/04/2020
International Dormitory

- Pasta
- Okra
- Potato salad
- Beef stew made with carrots, green paper, garlic, tomatoes, onion and curry.

By Victor
Mukungunugwa



Saturday 11/04/2020
International Dormitory

- Rice
- Barbeque Goat ribs
- Potato salad
- Vegetable stew made with shallots onion, green paper, garlic, tomatoes, onion and curry.

By Timothy Kuhamba



Saturday 11/04/2020
International Dormitory

- Rice
- lamb
- Stew made with onion, garlic, ginger, tomatoes and tinned maize.

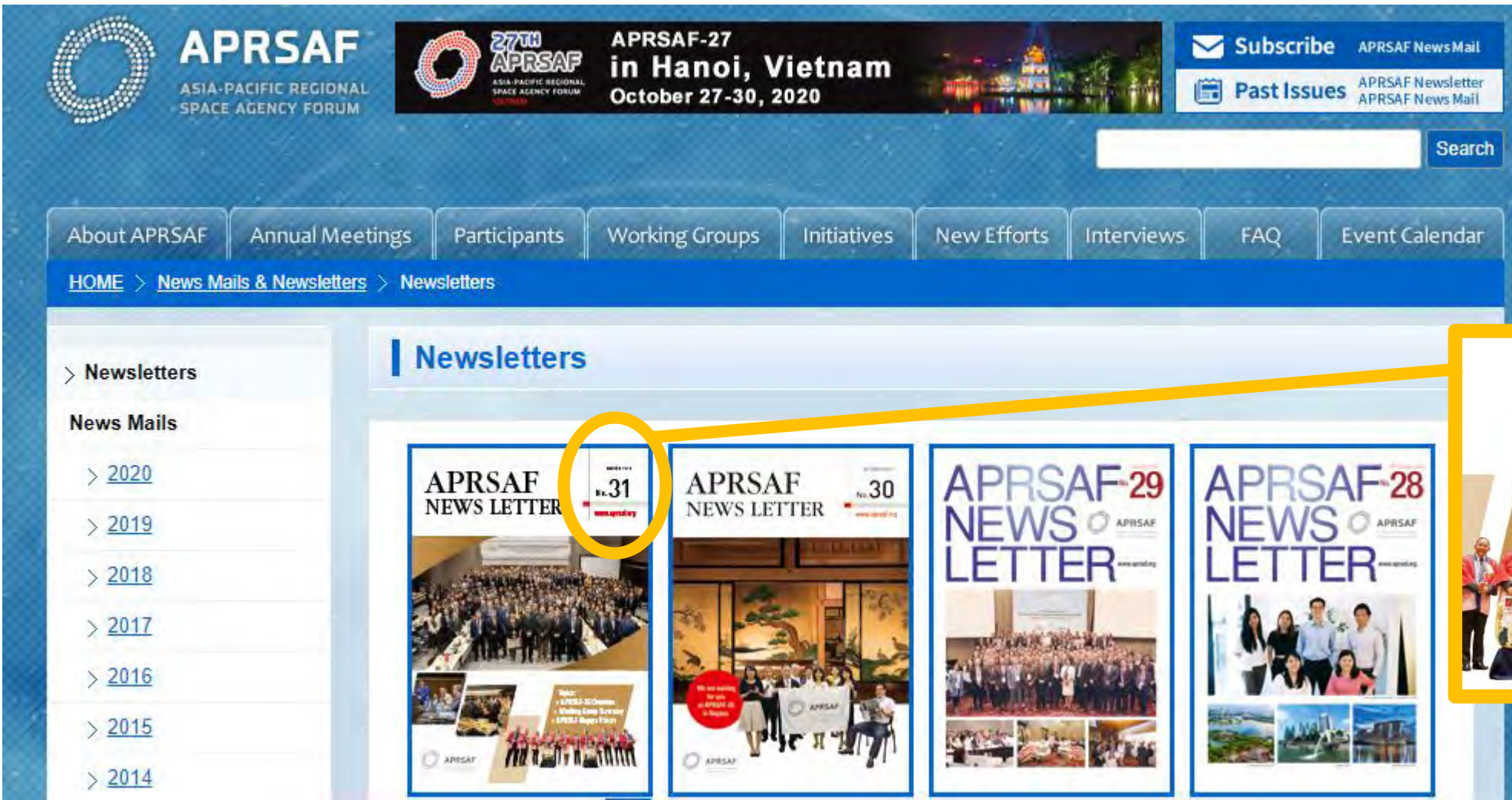
By Ramson Nyamukondiwa



END OF THIS SECTION

10. All the back issues of the APRSAF Newsletter

You can easily view any back issue of the **APRSAF Newsletter** of JAXA



Topics:

- APRSAF-26 Overview
- Working Group Summary
- APRSAF Nagoya Vision

Issue 31 covers the APRSAF held in Nagoya last year

THE PLACE TO GO: https://www.aprsaf.org/newsletters_letters.php

11. A modest cooking idea from Sri Lanka



BIRDS-3 team with their flight models

Tharindu

Sardine Sambol & Deep Fried Shrimp

by Tharindu (BIRDS-3, Sri Lanka)
2020-03-27

**A cooking idea from Sri Lanka
(suitable for quarantine survival)**

Sardines Sambol

Ingredients



Sardines



Bell Pepper



Black pepper & Salt



Onions



Deep Fried Shrimp

Ingredients



Shrimp



Garlic



Black pepper & Salt



Olive oil





Final Result

Eat with bread or rice



END OF THIS SECTION

12. Lacuna Space — Transmission of a LoRaWAN Message over Satellite



Lacuna Space — Transmission of a LoRaWAN Message over Satellite

January 2020

Article on the next page

<http://interactive.satellitetoday.com/via/march-2020/the-2019-nominees-for-satellite-technology-of-the-year/>

Lacuna Space is a company developing small, low-cost, battery-powered sensors to power the Internet of Things (IoT). Its main technological achievement in 2019 was directly transmitting a LoRa Wide Area Network (LoRaWAN) message over satellite. LoRa, owned by Semtech Corporation, is the IoT standard.

This low-power transmission used the same power levels as battery-powered devices on the ground, meaning that battery-powered sensor and satcom terminal can last for years in remote regions without needing to be recharged. Lacuna Space says that LoRa-to-satellite transmission has been experimented on by others in the past. But, Lacuna claims their work was the first time it was adopted so it can scale to a large number of sensors in the field of view. That was made possible by a collaboration with Semtech, which produced a high volume of low-cost radio chips to build into devices.

The use of low-cost terrestrial technology from a battery powered low-cost device takes IoT to a new price point. The company says this opens an opportunity for satellite communications to offer a service at comparable cost to terrestrial IoT and not at a premium. In addition, Lacuna Space uses open standards so users can freely develop their own low-cost ground terminals, and publishes its open source designs and software.

In 2019, Lacuna Space also launched its first small satellite for field trials. The 6U cubesat includes the company's LoRa gateway payload, which was developed and built in-house. The gateway payload is highly sensitive receiver that detects terrestrial levels of battery powered signal in space. By July 2020, the company plans to have five payloads on orbit.

END

13. Report from Nepal: Reaction-wheel-based CubeSat ADCS



REACTION WHEEL BASED CUBESAT ADCS

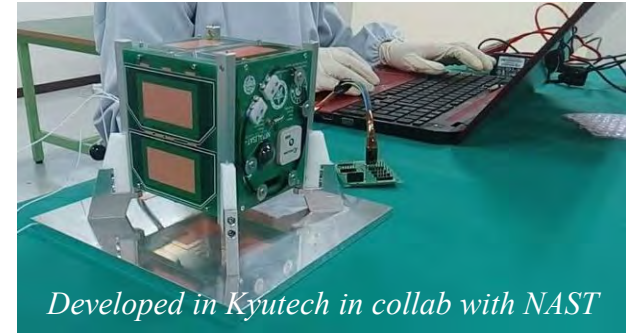


A report from Nepal - 7 April 2020

Note: In this report, “IOE” is mentioned. It is “Institute of Engineering”, Tribhuvan University (TU), Nepal. NAST (Nepal Academy of Science and Technology) collaborates with IOE to foster the next generation of scientists and engineers for the benefit of Nepal. This report was secured by Hari (BIRDS-3, Nepal).



REACTION WHEEL BASED CUBESAT ADCS



Developed in Kyutech in collab with NAST

Fig1. NepaliSat-1 (Courtesy: Kyutech)

Rishav Mani Sharma, Rohit Kawari, Sagar Bhandari, Shishir Panta
Faculty advisor : Associate Prof. Nanda Bikram Adhikari

I. Introduction

Reaction Wheel Based CubeSat ADCS is project brought forth with the intention of implementing orientation control of 1U CubeSat into OBC (On Board Computer). The ADCS here focuses on ensuring that the sensors in the satellite orients towards the desired direction on the Earth when the satellite passes over the location of interest. This project is being carried out as the final year project of Bachelors in Electronics and Communication at IOE, Pulchowk Campus, Nepal. It is a two-semester project conducted under the supervision of faculty advisor and technical support of **ORION space**.

II. Background

NepaliSat-1 was launched on April 2019 from USA. This is kickstart of Nepal's expedition to space-tech and an aspiration to Nepalese youths and space enthusiasts. Being a developing country with very minimum budget invested towards space tech, CubeSat seems like an economically viable option. Tremendous geographic and climatic diversity makes Nepal an open book that can best be read by aids of satellites. Operating a CubeSat in the study of avalanches, floods, weather, atmosphere can play enormous role in uplifting the scope of scientific research as well as disaster management. The ADCS implemented in the CubeSat would enable us to scan geographical areas with great accuracy. Those data are valuable for analysis as well as scientific forecast. Contribution to Nepal's space-tech research trend, which is in its rudimentary stage, is the driving force behind this project.

III. Objectives

- Implement the **attitude estimation** and **attitude control** under the standard **1U** size-mass constraints.
- Simulate **EPS** and the **orbital characteristics** by using design and orbital parameters of our satellite.

IV. Methodology - Short Review

The ADCS hardware consists of three **brushless motors** with **reaction wheels** and **encoder** feedback each, **MEMS gyroscope**, **magnetometer**, **Sun sensor**, **microcontroller** and **power supply**.

The attitude of the satellite is estimated using **Unscented KF (UKF)** proposed by **Julier** and **Uhlman**. We use measurements of **MEMS gyroscope**, **magnetometer** and **Sun sensor** to implement the UKF. Estimation is formulated with **quaternion** as attitude parameter.

We are implementing **IDM (Inverse Dynamics Model)** based control approach. IDM is the mathematical model that accepts present orientation of satellite as input. It computes **torques** to be exerted by each reaction wheel so that the satellite can point to the desired location (i.e. gain desired attitude) [Omar (2015)].

Finally, we compute required **angular velocities** for motor to achieve above computed torques. We ensure that the motors reach their respective desired angular velocities using **PID-control**.

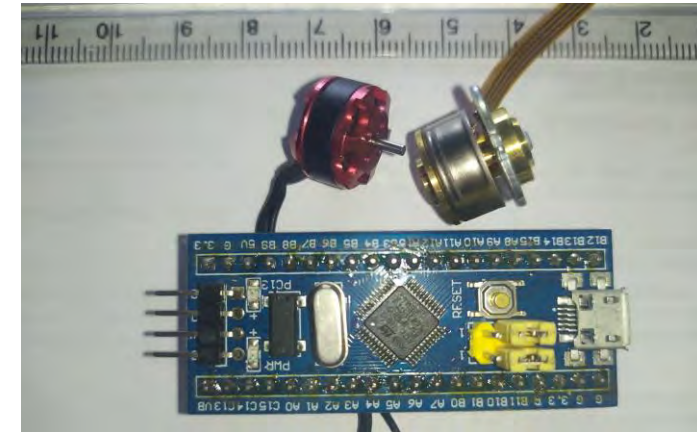


Fig2. Motors and μ controller that we used for tests

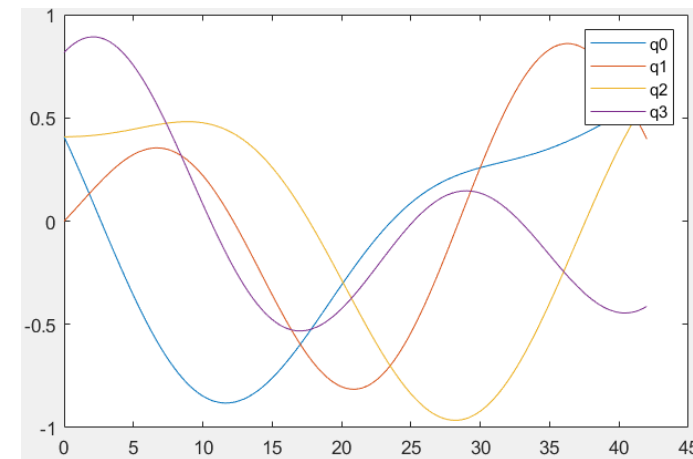


Fig3. CubeSat Quaternion Kinematics Simulation

V. Testing

The testing of the ADCS hardware will be done using 3D printed **spherical air bearing** testbed. Air bearing provides closest approximation to the space environment in terms of friction. We have modified the design of testbed that was presented by González (2015) to fit our design criteria. However, we still have the effect of gravity when we use this simulator. We would like to acknowledge Subin for his help in mechanical fabrication of testbed.

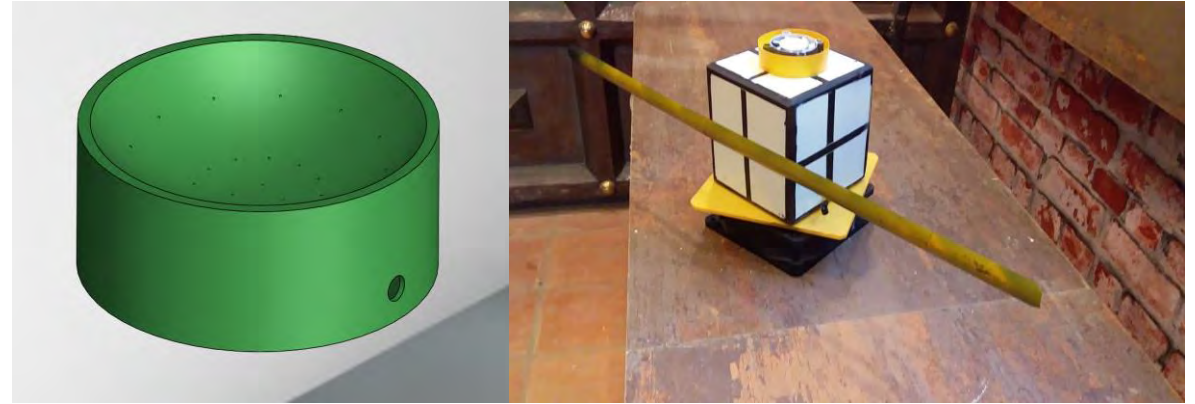


Fig4. Left: CAD model of spherical testbed. Right: Using computer fan for our 1D simulator test (Magnets of the fan removed)

VI. Progress

We have completed the simulations of satellite dynamics, EPS and orbital mechanics using **MATLAB** till date. We are now coding for the embedded system. The validation of code are done by comparing our results with those published on researched papers. Next step would be **PCB design** of **OBC** and the hardware implementation.

VII. Conclusions

This project focuses on implementation of ADCS and test bench only. We are using UKF as attitude estimation technique and IDM based attitude control approach. MEMS gyroscope, compass and sun sensor are used for attitude feedback and encoders for motor angular speed feedback.

VIII. Contact us

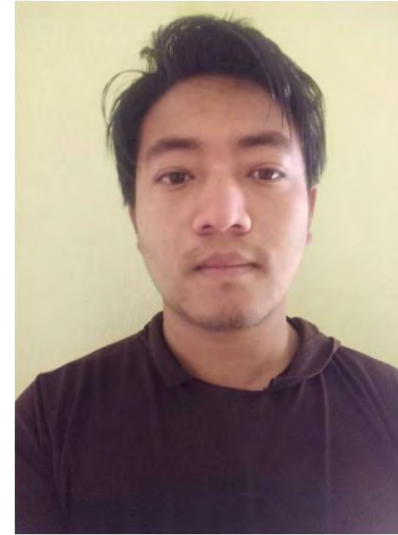
Sharma: 073bex433.rishav@pcampus.edu.np
Bhandari: 073bex435.sagar@pcampus.edu.np
Adhikari: adhikari@ioe.edu.np

Kawari : 073bex434.rohit@pcampus.edu.np
Panta: 073bex441.shishir@pcampus.edu.np
ORION Space: <http://orionspace.com.np/>

PROJECT TEAM MEMBERS



*Rishav Mani
Sharma*



Rohit Kawari



Sagar Bhandari



Shishir Panta

END OF REPORT

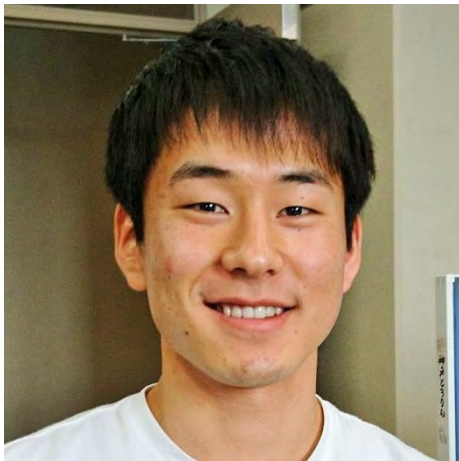
**BIRDS-4 reports for
April 2020 are on the
following pages**



Life In G C C

Global Cultivation Center

<https://www.kyutech.ac.jp/english/campuslife/gcct.html>



Tomoaki MURASE

April 8, 2020



Life In GCC

Written By: Tomoaki Murase

There is the **Global Cultivation Center (GCC)** on Tobata Campus. It is usually referred to as GCC and is a mixed-use training facility for Japanese and international students. It is open to students of all genders, including second to fourth-year students and graduate students.

International students who are staying at Kyutech under the International Student Exchange Support Program implemented by Kyutech or international exchange programs with international exchange partners can also use this facility.

Students are able to acquire language skills, cross-cultural understanding, international sensibility, communication skills, and autonomous learning skills through collaborative...

learning – by living with Japanese and international students.

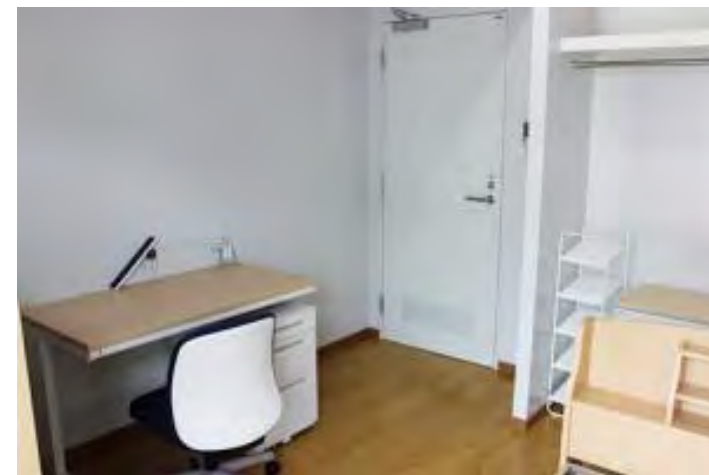
I am living at GCC now. I'm learning about different things, like cross-cultural understanding and diversity. It is good for Japanese students to learn how foreigners are. Moreover, it is also good for foreign students to know Japanese customs.



In front of the building



For 3 students, the shared spaces are kitchen (above), shower room and toilet



Personal space (below)

Anechoic Chamber Test of GuaraniSat-1



Marloun P. Sejera

April 5, 2020

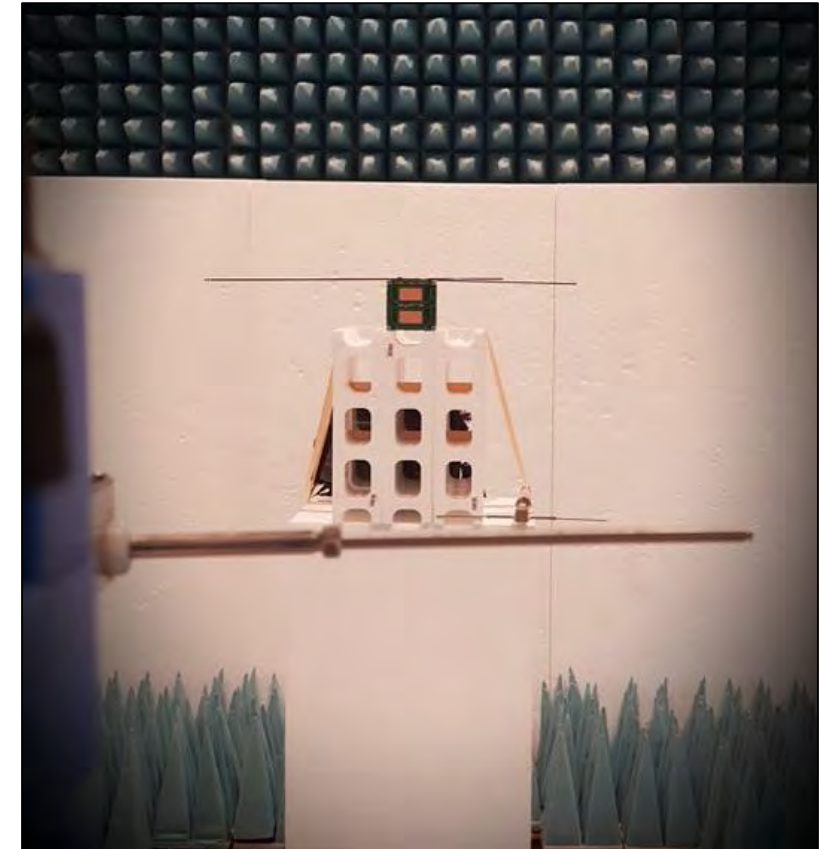


Anechoic Chamber Test of GuaraniSat-1

Written By: Marloun P. SEJERA

It was in December of last year when all flight model (FM) satellites - Japan's Tsuru, Philippines' Maya-2, and Paraguay's GuaraniSat-1, were placed inside Kyutech's anechoic chamber for tests. The tests include antenna S11 measurement, radiation pattern analysis, and end-to-end connectivity test to determine the satellite transceiver's uplink sensitivity. Results were fairly consistent on all three satellites except Paraguay's UHF antenna radiation pattern. It was later found out that its [balun](#) was damaged. Balun was replaced but a follow-up test should be done.

As the satellites were next scheduled for the thermal vacuum test (TVT) and vibration test in January, the team decided to defer the conduct of the radiation pattern analysis. The anechoic chamber was fully booked in February as graduating students were conducting experiments for their thesis research. The next available slot was March so the team reserved the chamber from March 2 to 5. BIRDS-4 shared the slot to Kyutech's other satellite project. After the test was done to GuaraniSat-1, they also conducted antenna radiation pattern analysis.

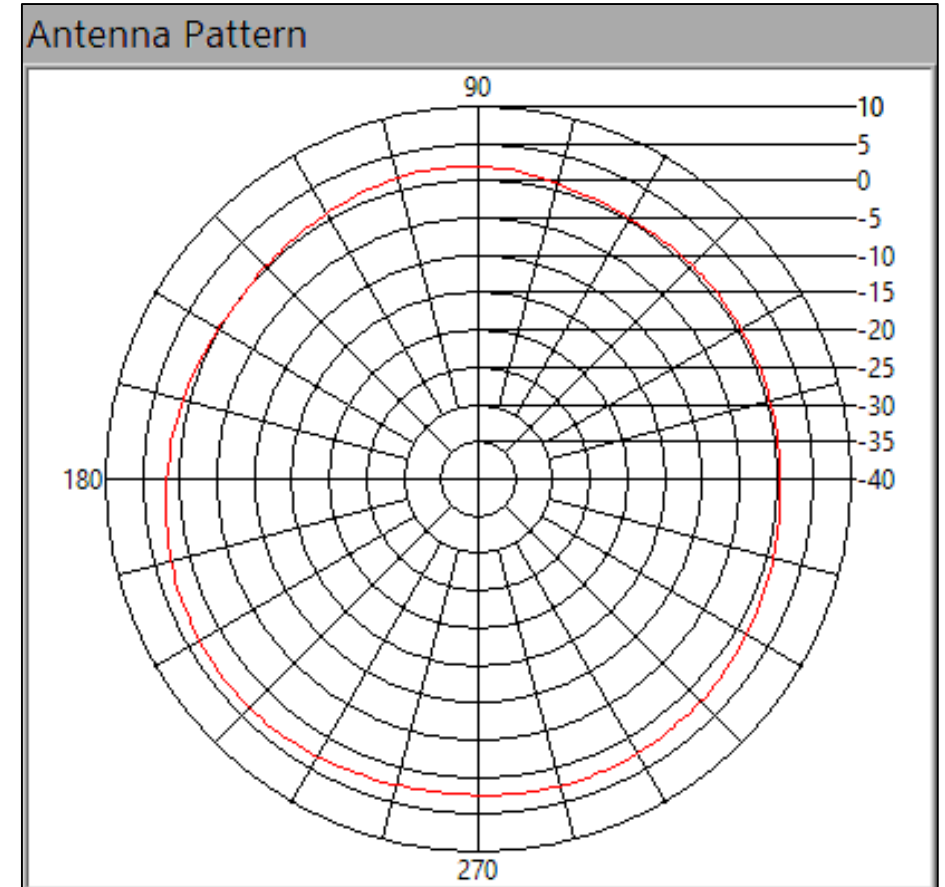
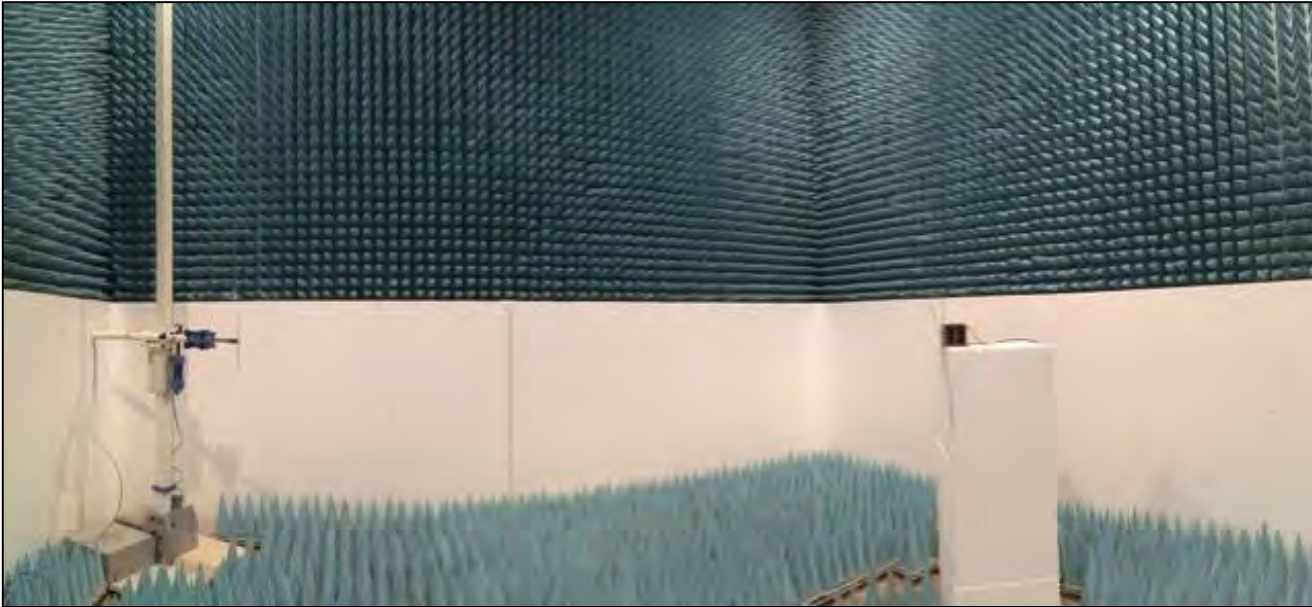


One of the FM satellites under test inside the anechoic chamber in December 2019. Solar cells were not attached at that time.

Anechoic Chamber Test of GuaraniSat-1

Written By: Marloun P. SEJERA

The second test was more challenging as extra care must be exercised so as not to damage the solar cells that were already attached to the panels. We made sure that the platform where the satellite is placed was stable when it is rotated. Results of the antenna radiation pattern analysis are at par with the two FM satellites. The team is more assured that GuaraniSat-1 operates the same as Maya-2 and Tsuru.



Left: GuaraniSat-1 inside anechoic chamber, March 2020

Top: GuaraniSat-1 radiation pattern

Flight Model Long Duration Test Results



Izrael Zenar Bautista
April 7, 2020



Flight Model Long Duration Test Results

Written By: Izrael Zenar Bautista

The long duration test or LDT is done to simulate the actual operation of the satellites once they are deployed in space. The goal is to see latent defects in the three satellites, especially on the software. During the long duration test, power is supplied to the satellites similar to their power cycle in space. In the case of BIRDS-4 satellites, we allow them to be charged for 1 hour and stop charging for 30 minutes. This would also help to show us if the satellite batteries are enough to execute the missions and which missions should not be executed continuously because of the risk of fully discharging the satellite during the eclipse phase.

At the beginning of the LDT, we simulate actual satellite deployment and wait for 30 minutes for the CW signal transmission of the satellites. Each satellite has a unique set of CW beacon identifier to allow us to distinguish between them once they are in space.

After this, we begin sending commands and downloading data from each satellite, simulating the initial length of each pass which is around 10 minutes. This helps us determine how many commands and how much data we can download from each pass. From the flight simulations, we would be able to communicate with the satellite four times a day with varying elevations.



Flight models of the three BIRDS-4 satellites

Flight Model Long Duration Test Results

Written By: Izrael Zenar Bautista

Aside from simulating the satellite’s performance, the long duration test also allowed the operators, BIRDS-4 members of the BIRDS-4 project, to get a “feel” once we start operating the satellites. It helps us practice using the ground station software and analyzing the commands and data that we send and receive from the satellites.

The Flight model LDT was set to end on April 9. Even though we initially did a 1-week LDT with our EM, the FM LDT revealed some minor problems with our software. These problems have been fixed and tested with our EM. This means that we would most likely repeat our long duration test.

Time Slot	Task	Satellite	Status/Notes	Operator	
10:00 - 10:10	Decode CW	JP, PH, PY			
10:00 - 10:10	HSSC download	JP, PH, PY	01/2/3 00 35 06 67 00 00 01 00 00 32	Izrael	
	Reserve CAM A0	jp.ph.py	01/2/3 00 A0 C0 01 A0 00 00 00 00 00		
	Activate NTU mission	JP	03 00 A0 D3 00 A1 00 00 00 00 00		
11:30 - 11:40	Decode CW	JP, PH, PY			
11:30 - 11:40	APRS for each satellite for 1 minute	JP, PH, PY	01/2/3 00 A0 D6 00 A1 00 01 00 00 00	Izrael	
	HNT for 2 comparisons	py.ph	01/2 00 A0 D5 00 A2 02 00 00 00 00		
16:00 - 16:10	Decode CW of JP	JP	0100 A0 D5 00 A2 02 00 00 00 00		
	HNT for 2 comparisons	JP	01 00 A0 D2 00 A1 00 00 00 00 00		
	Activate TMCR mode 1 for PY	PY	02 00 A0 D1 00 A1 02 D0 00 00 00	Hari	
	Activate PSC every 12 hours for PH	PH	02 00 A0 D1 00 A1 02 D0 00 00 00		
17:30 - 17:40	Check addr info	PY	01 00 35 00 00 30 00 01 00 00 01		
	Download image for PY	PY	01 00 35 00 0D 00 00 01 00 00 32		
	Decode CW		01 00 35 00 0D 00 0F d3 00 00 32		
	Download image for PH	PH	02 00 35 00 0D 00 00 01 00 00 32		
10:00 - 10:10	Download image for JP	JP	02 00 35 00 0D 00 0A 20 00 00 32	Hari	
	Download image for JP	JP	03 00 35 00 0D 00 00 01 00 00 32		
	Download image for JP	JP	03 00 35 00 0D 00 0A 20 00 00 32		
	Download image for JP	JP	03 00 35 00 0D 00 0A 20 00 00 32		
10:00 - 10:10	Decode CW	PH	--		
	Turn off PSC	PH	02 00 A0 D1 00 A0 00 00 00 00 00		
	Transfer PSC data	PH	02 00 A0 D0 00 00 00 10 00 00 0F		
	Download PSC data	PH	02 00 35 06 66 00 00 01 00 00 0F	Yigit	
	Activate PSC every 12 hours for PH	PH	02 00 A0 D1 00 A1 02 D0 00 00 00		
	Simulate latchup by touching copper parts together in the +X panel	JP	--	Number of times: Done 6 times for each pair of cables with 10 sec intervals	
	Try reserve command again A0 cam	PH	02 00 A0 C0 01 A0 00 00 00 00 00	OK	

Screenshot of Long Duration Test operation schedule

BIRDS Publication Archive



Yiğit Çay
March 30, 2020



BIRDS Publication Archive

Written By: Yiğit Çay

Joint Global Multi-Nation Birds Program, as known as the BIRDS Project, helped many countries to send their first satellite into space by teaching their citizens how to do it from the first hands for 4 generations already. As the 5th generation in Kyutech is about to kick-off in April, we decided to organize the publications made in the name of BIRDS.

Each BIRDS team has its cloud or local sharing accounts for the files needed in the development phase. As this project is being done at the university level, professors leverage the freedom of different management techniques. Therefore, the way of preserving files was different from team to team. Through these differences, each new team identified what was the most suitable for the new generation.

How the files were ordered and how well they're documented were different even among the team members. Hence, one should expect this different style of data preservation in each generation. In BIRDS-4, we first learned this fact in one of the knowledge transfer meetings we've done with BIRDS-3 and previous BIRDS members. What I recognized was the publications haven't been accumulated in a single platform for BIRDS members since this level had been overseen due to the laboratory's archive collection system. Each semester of the KyuTech, our laboratory was asking us to submit our publications through an email to the laboratory secretaries. Then, each individual submits his/her papers and presentation files to them. For the students in the laboratory, the way to...



*The logos of the BIRDS projects so far to represent the technology transfer in years (2015-2020 onwards)
- BIRDS-5 logo is yet to be determined, so I made a simple one for them here :) -*



BIRDS Publication Archive

Written By: Yiğit Çay

...find these is simply to ask each author/member to provide their files, if they cannot find time to teach what it is face-to-face. The laboratory has a dynamic environment where the people enrolls and graduate every 6 months and you may not find the correct person to talk to. For this manner, I found it crucial to have an archive to gather BIRDS related articles and their raw materials.

This archive aims to provide easy access to the BIRDS members when they wish to reach the written documents. BIRDS satellites rely on the heritage they have to be completed in a short time, hence the using time is always tricky. If we go through the publications first, then talk to previous team members about specific concerns, I thought it could be a much more efficient way to transfer...

...the technology. I started to collect the publication materials almost a year ago, actually, around February 2019. After we completed flight model assemblies and most of the safety document preparations in January, I found the spare time to accelerate article gathering process so that it'd be beneficial for the old BIRDS members who are going to make new publications or thesis studies, and for the BIRDS-5 members who'll soon initiate their journey to build their countries' first satellites! So far, 43 different publication materials are enlisted and given open access to the BIRDS members if they wish to check the source. Most of the papers could be found on the internet in pdf form but I gathered them in BIRDS-4 storage to provide BIRDS members who wish to access.





#	Article Reference (APA Style)	Year	Project	First Author	Conference/Journal
30	S. M. B. Zaki, A. C. Salces, S. Kim, H. Masui and M. Cho, "Design, Analysis and Testing of Monopole Antenna Deployment Mechanism for BIRDS-2 CubeSat Applications," in <i>International Conference on Space Weather and Satellite Applications, Selangor, 2018</i> .	2018	BIRDS-2	Syazana Basyirah M. Zaki	ICeSSAT
31	A. C. Salces, B.-2. M. a. Partners, P. Faure, G. Maeda, S. Kim, K. Masui and M. Cho, "BIRDS-2 1U CubeSat Constellation Missions and Initial Flight Operation Results," in <i>Conference by The Japan Society of Aeronautical and Space Science, 2018</i> .	2018	BIRDS-2	Adrian C. Salces	UKAREN (JSASS)
32	G. Maeda and M. Cho, "Working with the UN to do space engineering capacity building at Kyutech," <i>Institute of Industrial Science, The University of Tokyo, Tokyo, 2018</i> .	2018	BIRDS	George Maeda	University of Tokyo
33	A. Maskey, B. Partners, P. Faure, G. Maeda, S. Kim, H. Masui and M. Cho, "Overview of BIRDS-3 Satellite Project involving Sri Lanka, Nepal and Japan," in <i>Conference by The Japan Society for Aeronautical and Space Sciences, Tokyo, 2018</i> .	2018	BIRDS-3	Abhas Maskey	UKAREN (JSASS)

Screenshot of the BIRDS publication enlisting in Google Spreadsheet



BIRDS Publication Archive

Written By: Yiğit Çay

<p>Publication </p> <p><i>BIRDS Members</i></p> <p>Go BIRDS! BIRDS! Go BIRDS!</p>	<p>Publication </p> <p><i>BIRDS Members</i></p> <p>BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! S! Go BIRDS!</p>	<p>Publication </p> <p><i>BIRDS Members</i></p> <p>BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! BIRDS! Go BIRDS!</p>	<p>Publication </p> <p><i>BIRDS Members</i></p> <p>BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! Go BIRDS! BIRDS! Go BIRDS!</p>
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We'd like to underline hereby that this publication archive is not yet to be set online through our websites. Although BIRDS-1's website provides a list of articles [[link](#)], this is not the updated one. What I did was simply gathering the resources in a cloud account as of now to share with BIRDS project members when they need them. I also aimed to make a proper list of publications for ease of addressing for us. Some of them are already available through the conference website, actually (i.e. [the ISTS papers](#)), and some of them are required to be held offline only by the requests from its authors. We'd like to investigate carefully what is to be made public or not and that'll require some more time for us to make this archive public. Once professors agree on the terms of public sharing, we're going to announce through this newsletter and the BIRDS websites for everyone. For BIRDS members, please reach me out through my e-mail or LINE if you need these any of these and share your publication materials if you didn't see yours in the list. Thank you for reading!



Osaka & Kyoto Trip via Ferry and Night Bus



Mark Angelo C. Purio
April 7, 2020



Osaka & Kyoto Trip via Ferry and Night Bus

Written by: Mark Angelo C. Purio

[The Ferry Trip](#)



[Image Source](#)

Japan offers a wide array of places to visit for leisure and sightseeing. Being in Japan allows one to have an opportunity to take advantage of visiting the wonderful places it has to offer. With this advantage at hand, one can't deny the fact that even travelling within Japan is expensive. As a student, there's no better way to enjoy such trips but to do it thriftily.

Most of us know that the easiest way to cross from one prefecture to another is through the Shinkansen (Japanese Bullet Train), but for me, travelling through this is a bit expensive.

As a student with not a lot of financial resource, I rejected travelling using Shinkansen but tried to use the ferry and night bus, instead. This article accounts my recent trip to Osaka and Kyoto via ferry and night bus. Snippets of the recommended places will also be shown. As we discourage travelling due to COVID-19 pandemic, it should be noted that I went to Osaka / Kyoto before the outbreak and when the lockdown is not yet imposed.

Travelling alone, this my second time to City Line Meimon Taiyo Ferry. Described in their page as inexpensive but luxurious and comfortable, I can attest to this as I was able to experience comfortable travel, good rest, and relaxing experience.

Osaka & Kyoto Trip via Ferry and Night Bus

Written By: Mark Angelo C. Purio

The Ferry Trip cont.

I happened to be able to book 2 days before my trip, they will confirm if your desired schedule is available through e-mail. Once confirmed, you are to pay at the cashier at the port while showing your confirmation e-mail.



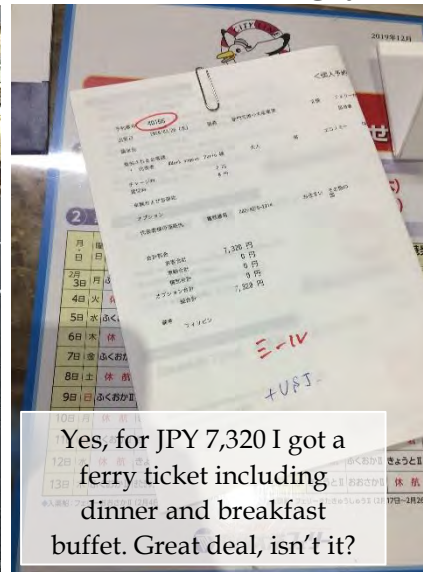
Sailing Route

TIME TABLE

Current time table

Kita Kyushu (Shin Moji Port)	Osaka (Osaka Nanko Port)	Osaka (Osaka Nanko Port)	Kita Kyushu (Shin Moji Port)
1st sailing	17:00 ⇒ 05:30 (Next Day)	1st sailing	*17:00 ⇒ *05:30 (Next Day)
2nd sailing	19:50 ⇒ 08:30 (Next Day)	2nd sailing	19:50 ⇒ 08:30 (Next Day)

*As of Jan. 1 & 2, departure time is 18:30 and arrival time is 07:00 next day.
 *Above schedule is subject to change without notice due to adverse weather conditions, etc.
 *Sailing schedule for May & June 2020 has been changed. If you plan to board on ship, please check attached sheet.



This information was taken from their website. For more info, visit: <https://www.cityline.co.jp/english/>.

If you are coming from Kokura, there is a service bus that will bring you directly to the port on a schedule basis.

Pros

- Affordable
- Good Food
- Grand Bath
- Relaxed Travel

Cons

- Poor WiFi
- Longer Travel Time

Icons are taken from IconFinder.com

Osaka & Kyoto Trip via Ferry and Night Bus

Written By: Mark Angelo C. Purio

Osaka Highlights – Universal Studios Japan (USJ)



Do you want good photos even when travelling alone?

In Japan, I say to random people, “Shashin o totte kudasai”, which means “Please take a picture”.

Works like magic for me!



RECOMMENDATION

As featured in the photos, I highly recommend that you experience the rides of “The Wizarding World of Harry Potter” and “Minion Park” which I enjoyed a lot.



As a birthday gift for myself, I visited USJ alone. I realized going here alone is not a bad thing since I don't to be in queue for a long time. As if I have an express pass ticket. Also, do not go on weekends to avoid a lot of visitors.



Wait until the evening to be amazed with the spectacular Parade of Lights featuring popular Universal Studios attractions



Osaka & Kyoto Trip via Ferry and Night Bus

Written By: Mark Angelo C. Purio

Osaka Highlights - My 3rd time in Osaka Castle

Since It was my 3rd time, I just went here to play Pokémon Go Community Day. During that time, the rain was non-stop, so I was playing in the rain protected by my waterproof jacket and an umbrella. I happen to still take some nice shots of the castle after the rain.



Still playing Pokémon Go even under the rain!



When there's no one to take your pictures anymore, strike a selfie for memories' sake.



Always have a small umbrella or a foldable raincoat handy in your bag. Wet clothes is annoying while sightseeing.



Photo of Osaka Castle after the rain. Just like what I see in a postcard.



Osaka & Kyoto Trip via Ferry and Night Bus

Written By: Mark Angelo C. Purio

Osaka Highlights - Meeting with friends!

What I also like about traveling is I get to meet some of my friends around the area and meet new ones along the way!

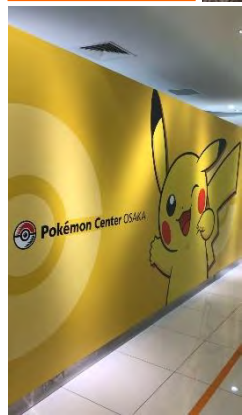
Met my high school friends for a quick catch-up and exchange of souvenirs. Better way to do it is over lunch while sipping the hot ramen broth.



FOOD CORNER

Fortunate to be hosted by my Japanese friend, Taka during my stay in Osaka.

In order to save and if you are not a picky traveller, you may do Coachsurfing. There is an app that allows you to ask to stay in a local's residence for a certain period. Don't be afraid to explore and gain new friends along the way.



An avid Pokémon fanatic has the Pokémon Center in his bucket list!



Osaka & Kyoto Trip via Ferry and Night Bus

Written By: Mark Angelo C. Purio

[Kyoto Highlight – Fushimi Inari Taisha](#)



Wrapping-up my trip by visiting Mt. Inari. Fushimi Inari-taisha is the head shrine of the kami Inari, located in Fushimi-ku, Kyoto, Kyoto Prefecture, Japan. The shrine sits at the base of a mountain also named Inari which is 233 meters above sea level and includes trails up the mountain to many smaller shrines which span 4 kilometers and take approximately 2 hours to walk up ([source](#)). And yes, it was a tiring but a fun hike!



Aside from bright-orange colored gates, fox statues (Kitsune in Japanese) are found near Inari gates which were believed as messengers.



If you happen to lose internet data service during your travel, the best place to have internet connection are convenience stores situated all over Japan



Do not forget your omiyage!

[Going home by bus](#)

Traveling via night bus is the cheapest means next to hitchhiking. I manage to book a last-minute ticket online for just JPY 4000. Of course traveling while sitting for long hours is a bit troublesome: trade-off of paying less. I was able to return home safely but I don't recommend it fully if you are after comfort. Nevertheless, the entire trip was obviously great!

In this time of the pandemic, traveling is not an option. It is recommended to stay at home and keep yourself healthy. But when we overcome this predicament and our lives return back to normal, better treat yourself in an inexpensive travel experience here in Japan. For now, stay at home, wash your hands often, and practice social distancing!

BIRDS-4 Activities at Paraguay



Adolfo Jara & Anibal Mendoza

April 7, 2020



BIRDS-4 Activities at Paraguay

Written By: Adolfo Jara & Anibal Mendoza

As an effort to advertise the progress in the development of the first Paraguayan satellite "GuaraniSat-01" developed within the BIRDS-4 Project, the Paraguayan Space Agency has created the possibility to reveal our presence in Paraguay to coincide with the 3rd anniversary of the AEP.



Showing some equipment of the AEP office [1]



Press conference at the AEP office [1]



Press conference broadcast on ABC TV [2]

The first activity in which we participated was a press conference held at the AEP, where several members of the media participated in the conference. This conference was useful to explain the progress of the project and give journalists the opportunity to ask several questions.

The most common questions asked were what are the missions, how does it work, how big is it, how much did it cost, when is it going to be available and how does it benefit Paraguay. Questions that were answered and explained in detail to the media and local newspapers that day.

BIRDS-4 Activities at Paraguay

Written By: Adolfo Jara & Anibal Mendoza

An interesting news article was published in a local newspaper where, in addition to explaining the details of the project, it analyzed why an investment like this is important when there are other pressing needs in the health and education sector in our country.

GuaraniSat-01

Marta Escurra
mescurra@abc.com.py

En la carrera científica espacial, el Paraguay ha estado por mucho tiempo rezagado. Pero toda carrera comienza siempre con un primer paso y este se ha dado desde una oficina ubicada en un edificio estatal erigido en la Avda. Mariscal López y 22 de Setiembre. En el bloque B, séptimo piso ascensor, mano derecha, en la oficina de la Agencia Espacial del Paraguay (AEP). Atestada de pantallas led, cableños escritorios y computadoras, en una de las dependencias emerge como una promesa un pequeño cubito azul de 10x10x10 cm. Se trata de réplica del prototipo del primer satélite paraguayo, **GuaraniSat-01**, cuyo lanzamiento y puesta en órbita, Estación Espacial Internacional mediante, se daría a finales de este año. Los encargados de ejecutar el proyecto fueron dos jóvenes ingenieros paraguayos (**Adolfo Jara** y **Anibal Mendoza**), quienes viajaron becados al Japón

para realizar el diseño, programación, ensamble y sellado del nanosatélite que cumplirá diez misiones en el espacio sideral. Una de esas misiones será monitorear los vectores del mal de Chagas en la zona del Chaco paraguayo. En tiempo real enviará datos a la Universidad Nacional de Asunción para su procesamiento. Con dichos datos se podrán diseñar mejores políticas de combate a este mal. Las otras misiones tienen que ver con aplicaciones tecnológicas de última generación que podrán optimizar el uso de futuros nanosatélites. Con una inversión de US\$ 250 mil, según reveló **Liduvino Vielman**, presidente de la AEP, Paraguay hará historia.

Ahora bien, para quien se pregunta por qué es importante una inversión como esta cuando hoy otras necesidades acuciantes en el sector salud y educación de nuestro país, la respuesta está implícita dentro de la pregunta. En medio de todas las precariedades, existen personas que ven la forma de abrirse camino para posicionar a nuestro país dentro del concierto de naciones que buscan lograr so-

beranía aeroespacial y a través de ella abordar de manera innovadora problemas que tienen que ver con la salud y la educación.

Jara y Mendoza también probarán una nueva forma de transmitir informaciones desde el espacio sin necesidad de las clásicas antenas que van adosadas a los satélites. Su propuesta es utilizar la propia estructura del satélite como antena. Al periodismo siempre le reclaman la falta de "buenas noticias". Sin embargo, cuando se tira una como esta, por desconocimiento o por otra razón, pasan desapercibidas. La incipiente carrera espacial del Paraguay es una prueba de que si podemos soñarlo, podemos lograrlo. Lo que ha empezado años atrás como "una locura", hoy está brindando sus primeros frutos y mañana, quién sabe.

Decía **Arthur C. Clarke**, que lo que hoy ha empezado como novela de ciencia ficción, mañana será terminado como reportaje.

El único detalle que falta en esta auspiciosa experiencia científica paraguaya son protagonistas femeninas. Por lo demás, pues vamos bien en la conquista del espacio.

Newspaper article published by a local newspaper [3]



Interview conducted on a local radio station

We also participated in an interview with two well-known journalists in Paraguay. The interview was mainly focused on explaining the importance of the satellite project for Paraguay.

BIRDS-4 Activities at Paraguay

Written By: Adolfo Jara & Anibal Mendoza

The president and director of the AEP were invited for an interview in a local TV program, to let more people know about the agency and projects in development, focusing on the details of the 1st Paraguayan Satellite, “GuaraniSat-1”.



Interview with the president of the AEP in ParaguayTV [4]

References:

[1] <https://www.facebook.com/agenciaespacialpy/video/s/661683587936227/>

[2] https://youtu.be/4bPxvs_qNRI



Interview with the president of the AEP in ParaguayTV [4]



Interview with the Director of the AEP in educanal [4]



Meeting with students in the AEP office

We had a little meeting with students of the National University of Asunción, to share our overall experience in Japan, details of the project, and think about new ideas for future projects in the university.

References:

[3] [https://www.abc.com.py/edicion-impresa/suplementos/abc-](https://www.abc.com.py/edicion-impresa/suplementos/abc-revista/2020/03/15/paraguay-al-espacio/)

[revista/2020/03/15/paraguay-al-espacio/](https://www.abc.com.py/edicion-impresa/suplementos/abc-revista/2020/03/15/paraguay-al-espacio/)

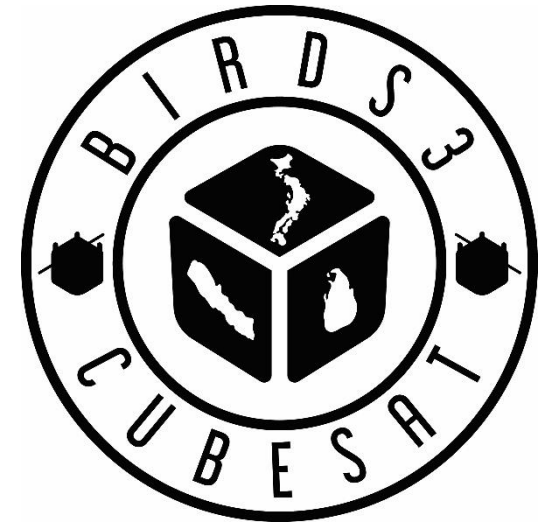
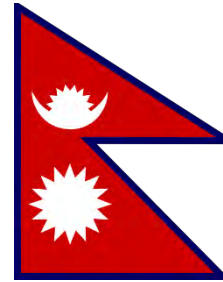
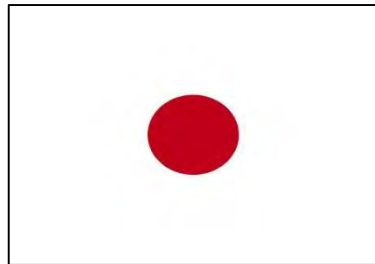
[4] <https://youtu.be/Bb28dUtzo9w>

[5] <https://youtu.be/pktVd4Nmbdg>

End of BIRDS-4 reports for this month

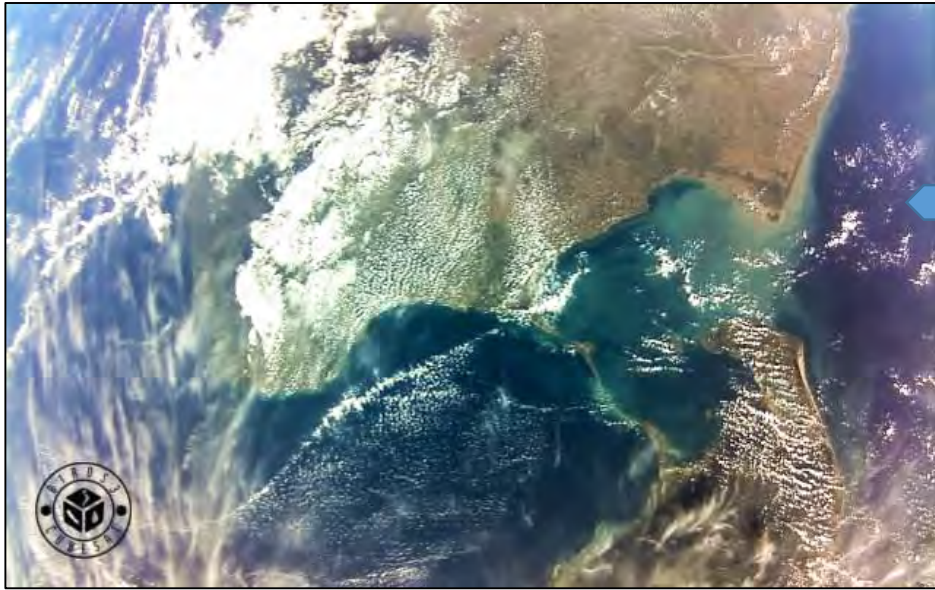


Images taken by BIRDS-3 Satellites



<https://birds3.birds-project.com/>

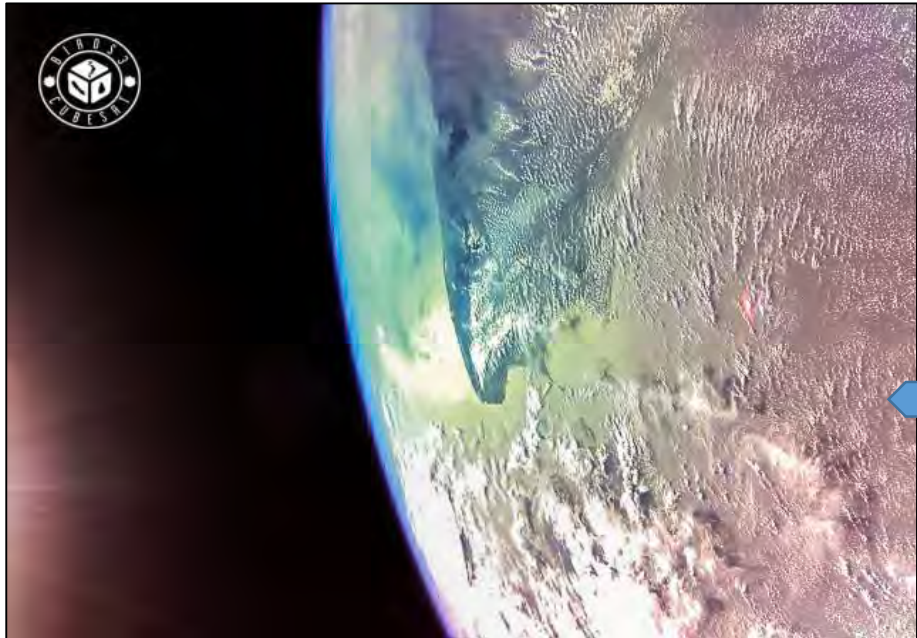
By Dulani Chamika



Raavana-1 was able to capture “The Palk Strait” (Tamil: பாக்கு நீரிணை, Sinhala: පොක් සමුද්‍ර සන්ධිය) between Sri Lanka and India. In the picture, the ancient Adam’s bridge (also known as Rama’s Bridge or Rama Setu) is visible. It is a chain of shoals between Mannar Island (North west coast of Sri Lanka) and Rameswaram Island (South-eastern coast of Tamil Nadu, India).

Some says this is a natural bridge. But this bridge was mentioned in Ramayana. According to Ramayana, it says Rama’s Varana army constructed this bridge to reach Sri Lanka.

For more information : Science channel Documentary
<https://www.youtube.com/watch?v=odUtqDz4IEk>

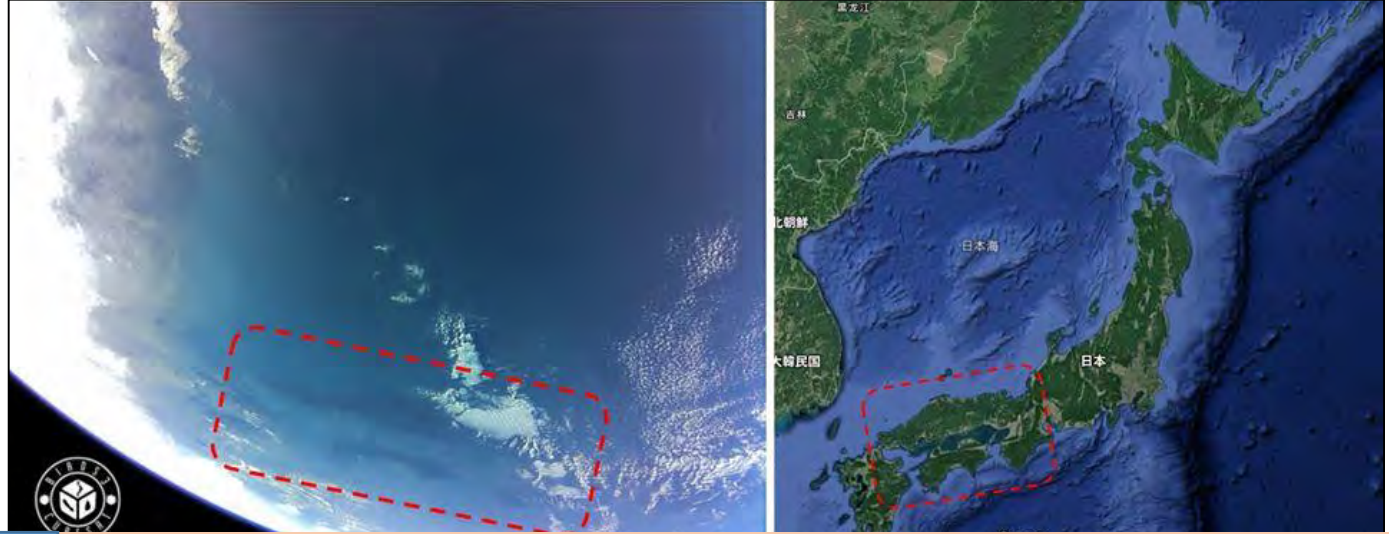


This image shows the southern coastal part of India. On the west coast, Kerala and Goa and on the east Tamil Nadu can be seen.



Raavana-1 was able to capture Japan. This image shows Kyushu and the parts of Honshu and Shikoku. “Kanmon Straits” is located between Honshu and Kyushu.

In 1185, the battle of Dan-no-Ura occurred at Kanmon Straits. This battle was between Heike and Genji. Please see this website for the details: Yamaguchi JAPAN Travel Guide (<http://www.visit-jy.com/en/spots/15266>) Position of Kyushu Institute of Technology (Kyutech) is marked in red in the picture on the right side.



The Sea of Japan (Nihonkai) were captured by Raavana-1. Below the Nihonkai, we can see the part of Japan. The red dotted frames which is in the photo and Google map are same area.

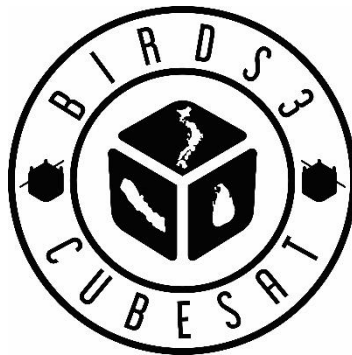


Okinawa Island
Amami-Oshima, Tokunoshima, Yoronjima Island, Okinoerabu Island and Okinawa (under the clouds) in Japan taken by Uguisu. Japanese people call these islands as Nansei Islands; islands south of Kyushu, north of Taiwan.



This image shows the sun and the Earth. We can see the light of the sun falling on the Earth.

END OF THIS SECTION



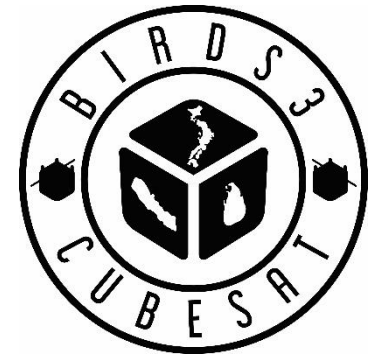
BIRDS-3 took image of South Korea alongside the island of Jeju. The country has been one the most successful countries in curbing the spread of Covid-19 with active measures taken to target infected populations, developing faster, secure covid-19 testing and now making strides towards vaccines.

COVID - 19 SITUATION IN SRI LANKA



#StayHome #StaySafe

By Dulani Chamika
(BIRDS-3, Sri Lanka)
15 Apr 2020



Current Situation

- By today (2020-04-15) 10:30 am, the total confirmed cases are reported as 233 in Sri Lanka. 7 deaths were reported. 61 recovered. After the first COVID-19 infected case of a female Chinese tourist (totally recovered after treatments in Sri Lanka) was reported in the country on 27 January, the first Sri Lankan patient, a tour guide, was reported on 11th March.

To prevent the spread Sri Lankan Government took necessary steps. On 16th March government gave a special holiday for all private and public sectors. School and Universities and closed too. Then whole island curfew was started.

The Chinese tourist with the hospital staff after recovering completely



- The people who came from foreign countries were taken to quarantine centers. The people who hung out with Covid-19 patients were quarantined too. Those people were monitored by PHI(Public Health Inspector). All these services were done with the help of Sri Lanka Armed Forces (Army, Navy, Air Force) and Sri Lankan Police.
- Some villages and small towns were totally locked down. Sri Lanka forces and Police are taking care of them. Sri Lanka forces were taking care of the quarantine centers too. All the food , tea, necessary items were given to people in quarantine centers by Sri Lanka Forces. Sri Lanka forces and Sri Lankan Police are really putting a lot of effort to protect Sri Lanka.

- To keep people home and to check the people who are going outside during the curfew period, police, army check points were created.
- Food and necessary items are being to delivered to our houses. We just send a message to the near grocery shop, and then they deliver the items to houses. And also we have mobile apps to order food too. Moreover, Sri Lanka forces are helping to package the food (necessary items) to distribute. Pharmacies are also doing home delivery. Government gave some money and other voluntary services gave free food to low-income families.



These pictures show some of the quarantine centers in Sri Lanka



My sister working from home on Covid 19 campaign. She is designing artworks to deliver food during Covid 19 pandemic.

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#StayHome #StaySafe

In our country the we use gas cookers mainly. So they stared delivering it to our door step.



Distributing food to low income families. (Photo taken from ManusathDerana page)



We have now conquered Kandy!
#LetsDoOurBit

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- Peradeniya

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11.04.2020

LOCATIONS

Mattegoda Scheme	- 9.30AM
Nilupul Uyana Scheme, Homagama	- 9.30AM
Rukmalgama	- 11.00AM
Millenium City, Athurugiriya	- 1.30PM



Due to curfew people can't go out to take money So here they started mobile ATMs

some of food delivery advertisement to inform the public



Air Force is working to prevent Covid 19 Spread [These pictures are taken from Google images]



Cleaning luggage in quarantine centers



Sri Lanka Navy working to prevent Covid 19 spread



THEM [The people who work day and night to prevent spread to protect the country.]

- A Sri Lankan aboard the MSC Magnifica Cruise Ship who sought to return to the country has been retrieved from the vessel. He was working in the ship. This ship was heading to Italy. The ship came to Colombo Port for re-fueling on 6th of April. The Sri Lankan who was on board requested to Sri Lanka to bring him back to the country. A team of Navy officers had been dispatched to bring back the person to the country (taken from Newsfirst)

- To watch the video of rescuing click on the following link [Link here](#)



Some of the pictures while taking the person on MSC Magnifica Cruise Ship to Sri Lanka

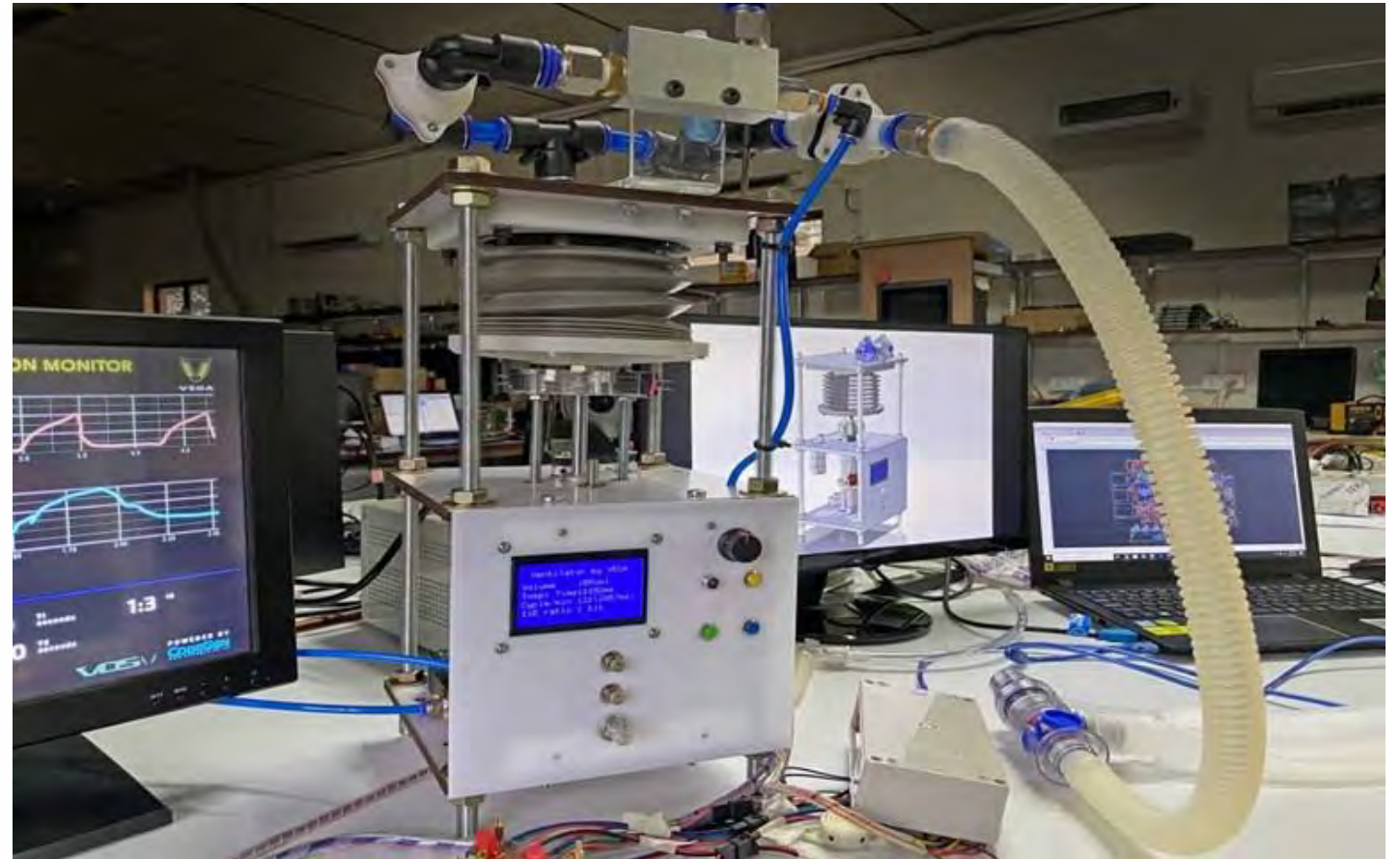


There was a Filipino (Ryan Magan, 36 years old) in MSC TARANTO cargo ship who was showing symptoms of Covid -19. Sri Lankan local agent has requested Covid 19 Operation Centre in Sri Lanka to take him inside Sri Lanka for treatments. So Sri Lanka accepted that request. Sri Lankan NAVY went to that ship and brought him to Sri Lanka for treatments.

Due to this pandemic Sri Lankans started to design the health equipment by themselves and to gift them to hospitals



This is a medical robot was developed by Sri Lanka Navy



Low-cost Medical Ventilator Manufactured by Vega Innovations



Sri Lanka's symbolic landmark, **Lotus Tower** was lit up Saturday (April 11th) night to honor and pay tribute to the Healthcare, Armed Forces, Police and all supporting personnel, who are leading the battle against COVID-19. [Text is taken from Colombopage.com] Tower is currently the tallest self-supported structure in South Asia



To keep the good mental health in the people who specially live in apartments, the Sri Lankan Forces and Police is holding musical shows. This picture shows Sri Lanka Navy conducting a musical programme.

END OF REPORT BY DULANI, CURRENTLY IN SRI LANKA



Special report by

- ◆ NYAMUKONDIWA / RAMSON M.
- ◆ MUKUNGUNUGWA / VICTOR
- ◆ KUHAMBA / TIMOTHY K.

15 April 2020

5-DAY JOURNEY FROM ZIMBABWE TO JAPAN



Jacaranda trees in Zimbabwe



Cherry Blossoms in Japan



INITIAL FLIGHT BOOKINGS

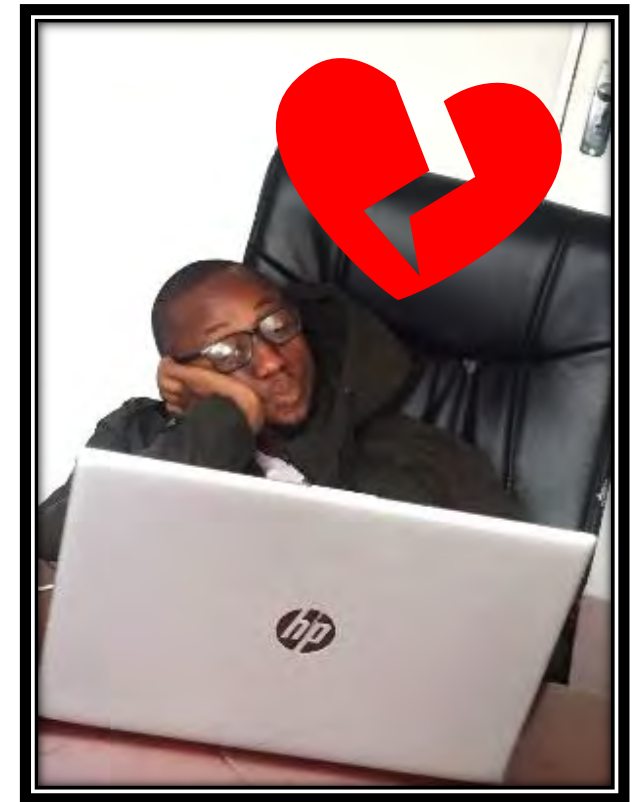
Zimbabwe team received visas and bought tickets to travel on the 25th March 2020

MARCH 2020						
SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

BOOKING



THAI
RESTRICTION



Timothy's reaction after receiving the Thailand Travel Advisory news

TIMOTHY HEART
BROKEN

COVID 19 TEST



The team was tested for COVID-19 to fulfil Thailand travel restrictions

ZINGSA ENGINEERS JOURNEY TO JAPAN



Waiting to meet Honourable Prof A Murwira for Official send off

ZIMBABWEAN TEAM OFFICIAL SEND OFF



②

①

③

The Zimbabwean BIRDS-5 team sent off by:

- ① Hon Minister of Higher and Tertiary Education Innovation Development Prof A. Murwira
- ② Director Innovation Dr W. Ganda
- ③ Director Zimbabwe National Geo-Spatial and Space Agency (ZINGSA) P. Gweme.

DATE OF THIS PHOTO:
23 MARCH 2020

The Team leaving R.G Mugabe International Airport



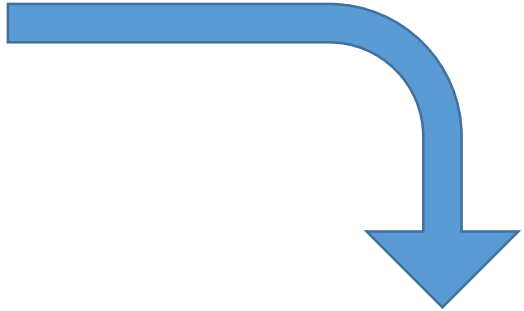
Timothy



Victor



Ramson

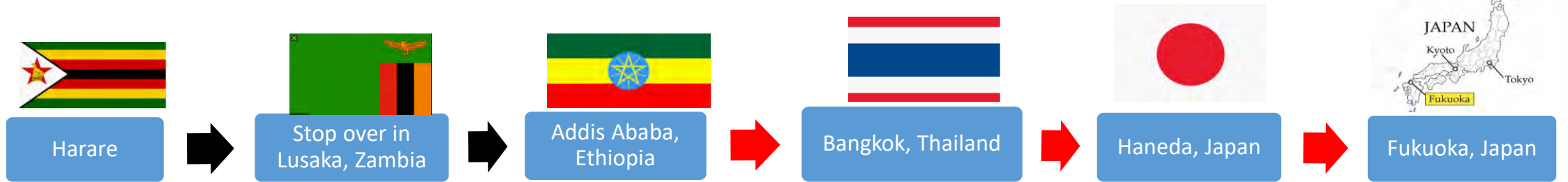


MARCH 2020						
SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

The team left Harare on the 29 March 2020



ZIMBABWE INITIAL ITINERARY



Final route





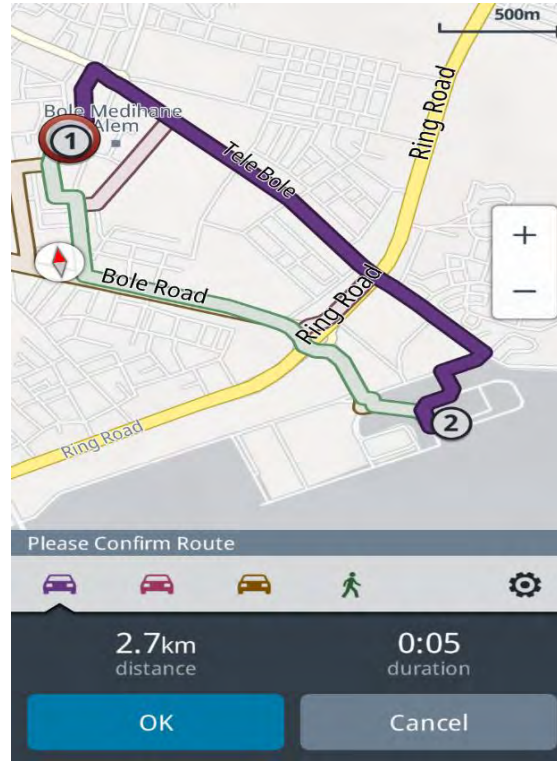
ETHIOPIAN EXPERIENCE



Upon arrival in Ethiopia the team learnt that their flight from **Ethiopia** to **Bangkok** was **cancelled** and was to stay in a hotel for 72 hours layover till their flight had been scheduled



Waiting for the BUS to Mosaic hotel



Hotel is 2.7 km from the Bole International Airport



Arrival at Mosaic Hotel for 72 hours layover



ETHIOPIAN EXPERIENCE



The hotel experience eating same meal thrice a day, for 2 days and 2 nights



Social Distancing between Victor and Ramson

NO CHANGING OF CLOTHES AS LUGGAGE WAS CHECKED IN

WHILE IN TRANSIT

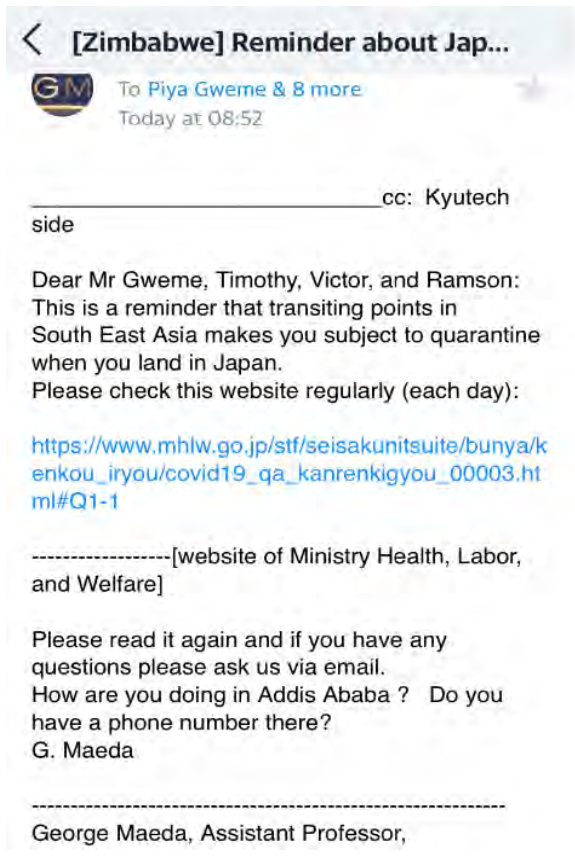
12:38
✉ Prof Maeda emailed stating that 14 day quarantine will be affected upon arrival

12:38
✉ Thailand increased transiting restrictions while Zimbabwean team was in Ethiopia transit

12:38
✉ Air lines grounding their aircraft

12:38
✉ Zimbabwe locked down and close all boarders and no longer possible to make a U turn

MONITORING INTERNATIONAL NEWS ON COVID-19



Advise on areas to transit



Checking online news latest on Japan



Checking latest news on TV about Covid-19 at Hotel in Ethiopia

2ND CANCELLATION OF TICKETS



Flight from Addis to Bangkok Cancelled



Reroute of flight Addis to Narita

FLIGHT FROM ADDIS TO NARITA VIA SEOUL



Finally **Yes** We are on our way to Japan



The team was sited next to the emergency exit the flight was full



Route from Addis to Seoul



Selfie picture at Incheon Airport



Hooray

THE TEAM WAS NOT SURE OF THEIR FATE OF ENTERING JAPAN. THEIR PRAYER WAS FOR JAPAN NOT TO IMPOSE LOCKDOWN WHILST IN TRANSIT .

ARRIVAL AT NARITA



APRIL 2020						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2



Sleep over at Narita Airport Terminal 3



Ramson's first meal at Narita Airport Terminal #3

FLIGHT FROM NARITA TO FUKUOKA



Waiting for departure



APRIL 2020						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2

ARRIVAL AT FUKUOKA

APRIL 2020						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2

Arrival on the 2 April 2020 to end the 5-day journey

Arrival at Fukuoka Airport →



Happy faces for the safe arrival in Fukuoka



← Hot Meal (breakfast) at Fukuoka Airport, courtesy of Prof Maeda

END OF THIS SECTION BY THE ZIM ENGINEERS



UPDATES FROM THE PHILIPPINES

April 15, 2020

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 Information Officer, PHL-50 Project
Contributing Writer and Editor

F. Mara M. Mendoza

STAMINA4Space Project Manager, STeP-UP Project
Contributing Writer and Editor



Women's Month

March 31, 2020

While we promote gender balance all year round in the workplace, we end Women's Month by featuring the other tasks that some of our team's female members do.

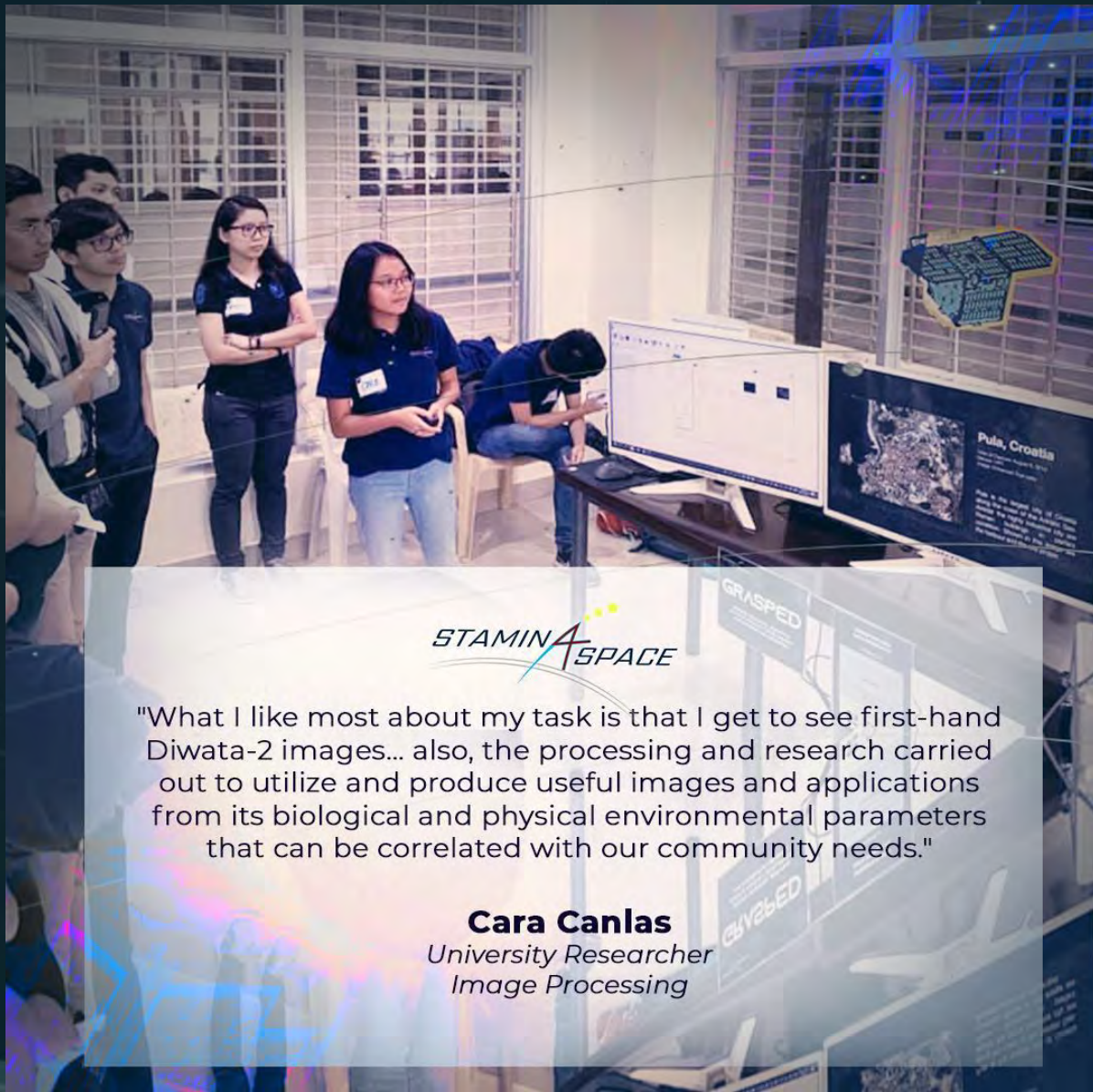
Looking forward to seeing more young girls and women get involved in STEM initiatives!



"The thing that always excites me is learning ways on how space technology can benefit our people. Diwata-1 opened the doors for this, and it's our job to follow through and make the most of it."

Mary Ann Zabanal-Constante

*Technical Team Lead
STeP-UP Project*

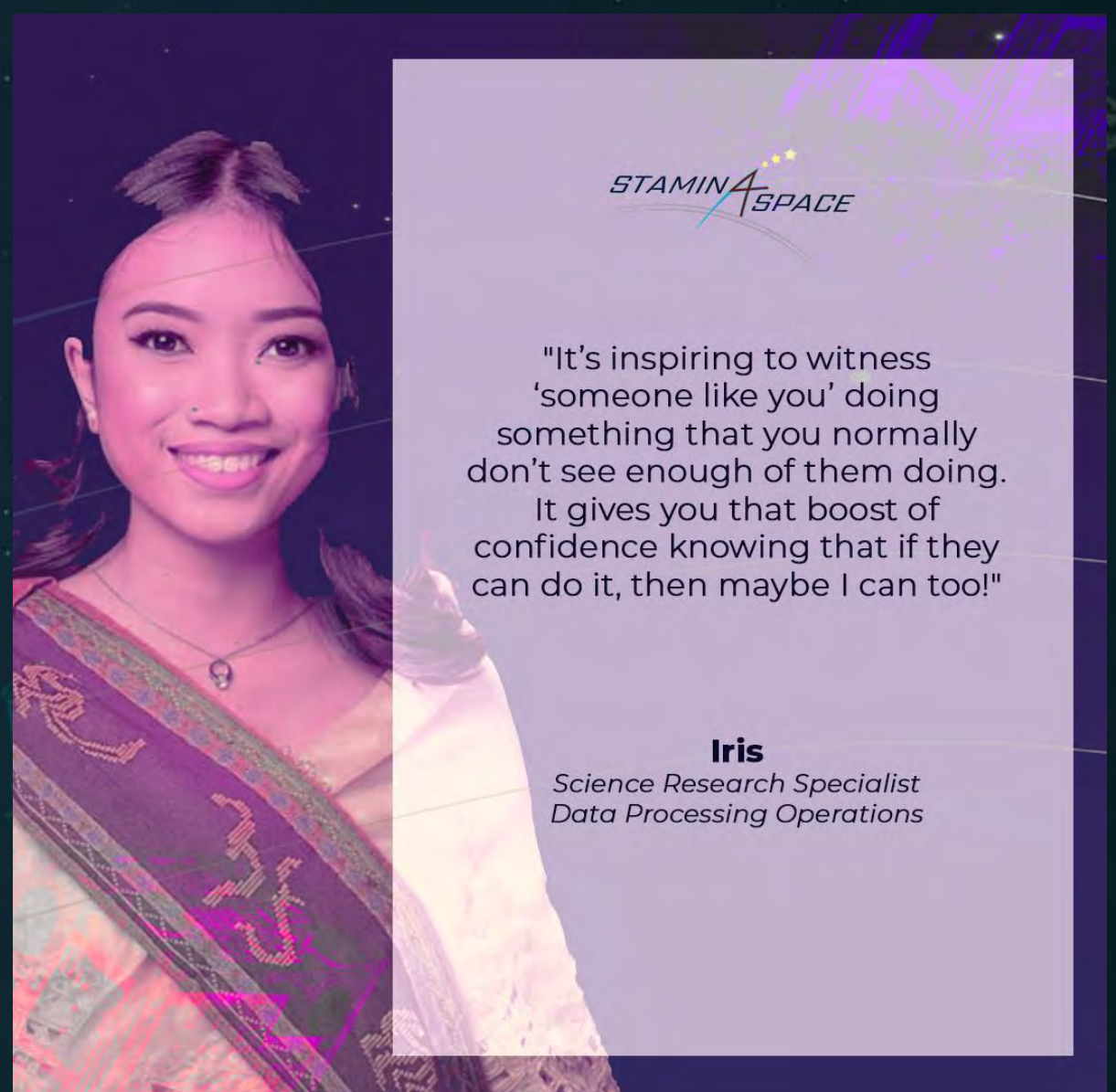


STAMIN SPACE

"What I like most about my task is that I get to see first-hand Diwata-2 images... also, the processing and research carried out to utilize and produce useful images and applications from its biological and physical environmental parameters that can be correlated with our community needs."

Cara Canlas

*University Researcher
Image Processing*



STAMIN SPACE

"It's inspiring to witness 'someone like you' doing something that you normally don't see enough of them doing. It gives you that boost of confidence knowing that if they can do it, then maybe I can too!"

Iris

*Science Research Specialist
Data Processing Operations*



STAMINA SPACE

"Gender must not be a hindrance to what you want to pursue in life or what you want to be. Believe in your strength and capabilities."

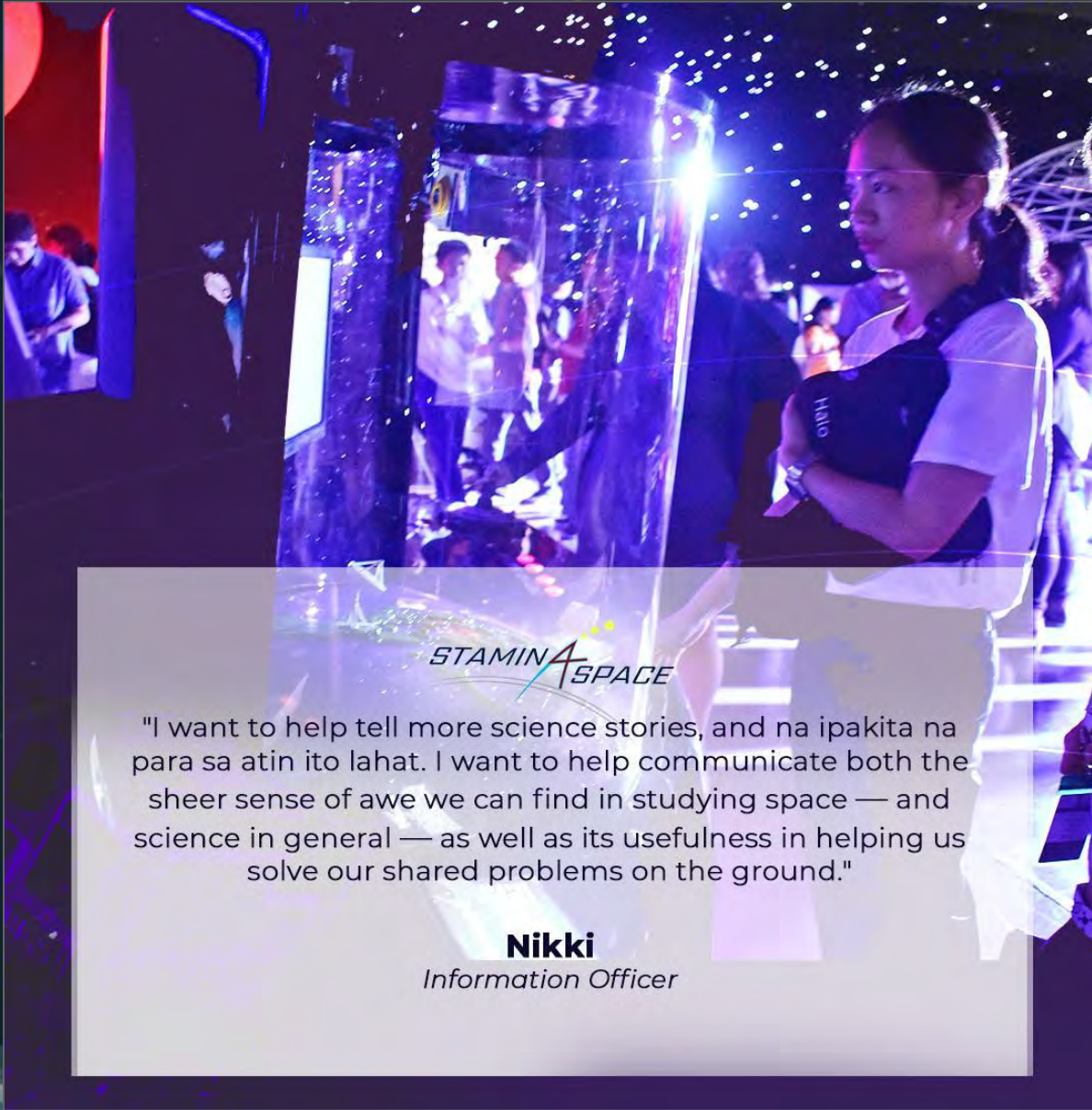
Anne Vera Candelaria
*Science Research Specialist
Amateur Radio and Satellite Station*



STAMINA SPACE

"Like in basketball, I can play any position — Like a guard, I move the ball around for proper coordination; Like a forward, I drive into the basket to enable execution; Like a center, I hustle for the ball to turn challenges into solutions."

Paula Cansino
Senior Project Officer



STAMINA SPACE

"I want to help tell more science stories, and na ipakita na para sa atin ito lahat. I want to help communicate both the sheer sense of awe we can find in studying space — and science in general — as well as its usefulness in helping us solve our shared problems on the ground."

Nikki
Information Officer



STAMINA SPACE

"As Diwata-1 nears its end, it has given us not only data and information to understand the things around us — It also gave us four years of learning experience, capacity and inspiration to sustain those efforts as the Philippines leaps forward into space science and technology."

Shielo Namuco-Muta
University Researcher
Mission Planning Lead

Diwata-1 Anniversary

4th year since launch

March 23, 2020

Today, March 23rd, marks the 4th year since Diwata-1 was launched to the International Space Station. While it has outlived its initially projected lifespan of 18 months, its gradual decrease in altitude signals the approaching end of its #EarthObservation mission. 🍷





DIWATA-1'S 4-YEAR SPACE JOURNEY

A summary of the first Philippine microsatellite's Earth Observation mission since its launch to the International Space Station (ISS) on March 23, 2016 and release into orbit on April 27, 2016



IMAGES CAPTURED

17,271

No. of images captured in the Philippines
as of February 2, 2020

45,572

Total number of images captured
as of February 2, 2020





ALTITUDE

242.22 km

March 23, 2020

The satellite is now **below critical altitude** and will eventually burn up in our atmosphere.

Sept. 2018 : 358 km
June 2016 : 400 km

Average velocity and altitude calculated from Aug 19, 2018 to Sept. 19, 2018 and from June 1, 2016 - July 1, 2016 respectively.



VELOCITY

7.76 km/s

March 23, 2020

As the satellite descends in altitude, an **increase in velocity** is expected.

Sept. 2018 : 7.69 km/s
June 2016 : 7.67 km/s

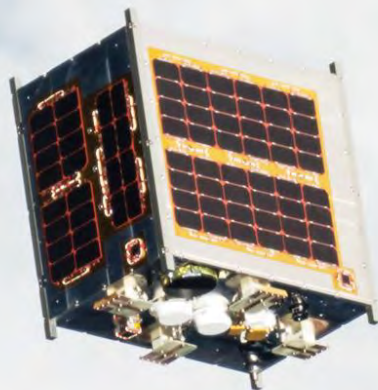
Average velocity and altitude calculated from Aug 19, 2018 to Sept. 19, 2018 and from June 1, 2016 - July 1, 2016 respectively.

tively.



DIWATA-1

HAS FINALLY RE-ENTERED EARTH



The last signal was received today, 6 April 2020,
at 04:49 AM Philippine Standard Time.

*Welcome home, Diwata-1!
Thank you for your almost 4 years of service.*

Photo courtesy of JAXA/NASA

Diwata-1 has finally re-entered Earth

April 6, 2020

We confirm that today, 6 April 2020 at 04:49 a.m. Philippine Standard Time (PST), Diwata-1 was at an altitude of approximately 114km based on telemetry data received from the satellite. This altitude is very close to the Karman line, or the widely accepted boundary between outer space and the Earth's atmosphere. It is expected that beyond this altitude, the chances of successfully establishing contact with Diwata-1 are extremely low.

This, therefore, marks the official end of the mission lifetime of Diwata-1

Read to know more about Diwata-1's final stages: <https://bit.ly/2V2rFTm>

Message for Diwata-1

April 6, 2020



Welcome back, home!

You will always be remembered for opening the horizons of space to the Philippines. You have, in many ways, exceeded our expectations in your four years of service. We shall honor your legacy as we continue to explore new frontiers and forge ahead with the Philippine space program.

Thank you.

Domo arigato.

Salamat po.

END OF APRIL-2020 REPORT FROM PHILIPPINES

Mabuhay ka at Mabuhay ang Pilipinas!

Photo courtesy of JAXA/NASA



UiTMSAT COLUMN

Column No. 4



24. Column #4 from Malaysia

Editor: FATIMAH ZAHARAH BINTI ALI
PhD CANDIDATE, LABORATORY OF SPACE WEATHER AND SATELLITE SYSTEM
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA (UiTM), SELANGOR, MALAYSIA



UNIVERSITI
TEKNOLOGI
MARA

*UiTM Sentiasa Di Hatiku
"UiTM Always in My Heart"*

HOW DOES MALAYSIA HANDLE THE NOVEL CORONAVIRUS?

On 17th February 2020, Malaysia has confirmed 22 cases of COVID-19 infection and this number is substantially increasing since 28th February until now (source from Ministry of Health of Malaysia, MOH). There was no death recorded on that early period until 17th March 2020 where the first death of 2 COVID-19 patients were reported.

As an effort to control the transmission of the pandemic, Prime Minister (PM) of Malaysia has announced a nationwide Movement Control Order (MCO) that commenced on 18th March 2020 for 2 weeks.

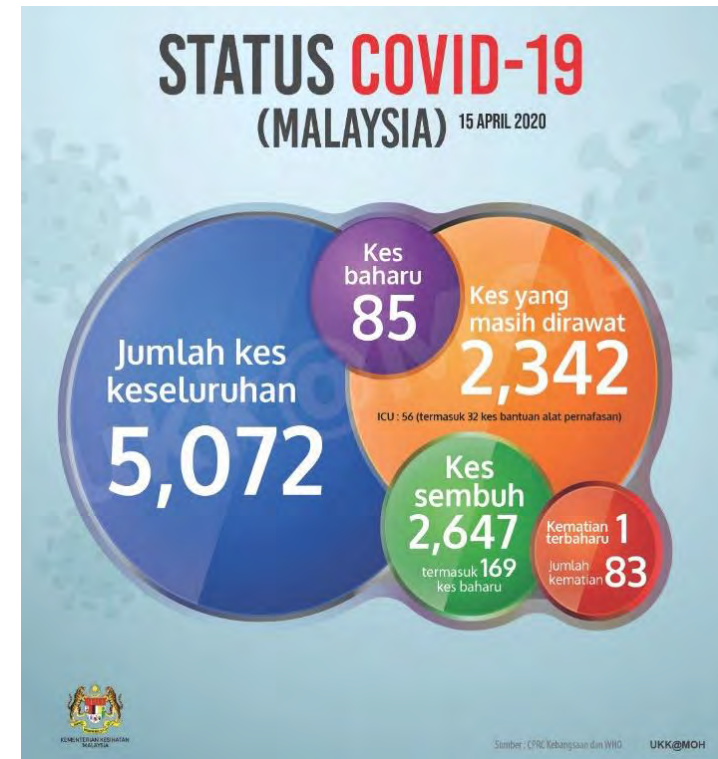


Fig. 1: COVID-19 status in Malaysia as for 15/4/2020 stating in Bahasa Melayu. This infographic shows that there are 2,342 patients under treatment excluding 85 new cases, 2,647 patients are fully discharged, 83 + 1 new deaths are recorded, and overall cases are 5,072. Source MOH

MCO implementation in Malaysia isn't literally a complete lockdown. Below is the summary of how the movement restriction is imposed:

- Any group movement and assembly nationwide such as sports pursuits, social and cultural events, and religious activities are prohibited.
- All travel activities to or from overseas are forbad.
- All public and private schools of all grades including institution of higher learning are completely closed.
- The working activities in government and private premises are halted except those involved in essential services such as groceries, electricity, water, telecommunication, postage, fuel, and such.



Fig. 5: Police officers spread the awareness of COVID-19 during the road block. Source from Malaysiakini.com



Fig. 3: PM of Malaysia was giving a speech following the issue of COVID-19. MCO started on 18th March 2020. Source from BH.com.

Fig. 4: Panic-buying in Malaysia should not happen as PM has guaranteed enough food supply for everyone in the country. Source from rojakdaily.com



Fig. 6: After PM's speech, huge number of people including university students rush to their hometown, neglecting the effect of COVID-19 transmission. Source from thestar.com

Some of the people take advantage of the MCO assuming it is a holiday and being inconsiderate and negligence about the pandemic. Even though PM, Minister of Defence, and Director-General of MOH have occasionally made speeches about the importance of obeying the MCO, there were always violations to it.



Fig. 7: MCO offenders were arrested by police officers. They were brought to lockup for detainment and will be charged in court. Based on Section 24 of Prevention and Control of Infectious Diseases Act, the flouter will face 2 to 5 years' prison or compound or both.

**All pictures: Source from Bernama, Minda Rakyat, NST.*



Fig. 8: Police officer performs a thorough inspection in order to avoid unnecessary outing. People are required to present document to prove where they stay and why they have to go out. Only one person representing a family can go out to buy necessities. If more than one person are found going out, they will be fined for RM1k per person.



Fig. 9: Military force was requested to assist the police in controlling the persistent people during MCO

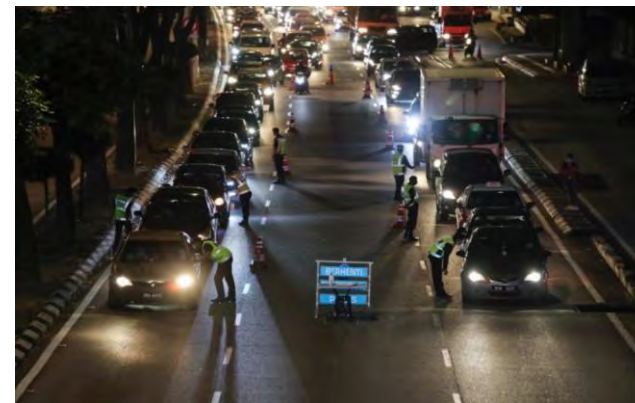


Fig. 10: Traffic congestion during MCO proves there was a negligence in understanding MCO and its essentialities.

Malaysia's MCO has been extended from 1st April to 14th April 2020 as second phase and the third phase continued from 15th April until 28th April 2020. During these periods, several speeches on Economic Stimulus Packages named as PRIHATIN (means concern) as been delivered by PM to support those affected in financial due to the movement restriction such as students, vulnerable groups, borrowers, low and intermediate income families, SMEs, and many more. Among the government initiatives is free internet to all subscribers. This allows academicians and students to conduct classes through online. Ministry of Education (MOE) is aware about students who have no internet access and thus teachers are recommended to request students to carry out learning activities using textbooks and workbooks without having to leave home.



Fig. 11: A teacher used online platform to teach the students. Source from NST.



Fig. 12: Medical practitioner is performing COVID-19 test to a kid outside the hospital building as a step to avoid infection at the premise if the kid is identified as negative.

Source from Bernama.



Fig. 13: The city is being cleaned and disinfected by city council. This is also assisted by firemen. Source from MOH.

On 15th April 2020, MOE has informed there will be no major examinations for primary and secondary school students except special examination for form 5 that will be postponed as it will be used for university entry application. Since all mass gatherings are prohibited until the end of 2020, all conferences are either postponed or performed virtually using real-time online platform. This includes ICeSSAT 2020 which will be carried out through online on 7th July 2020.



Fig. 14: Groceries stores practice social distancing and temperature checking to all shoppers. They also provide gloves and sanitizer. Source from Malay Mail.



Fig. 15: An infographic from MOH to teach people on how to prevent the transmission of COVID-19:

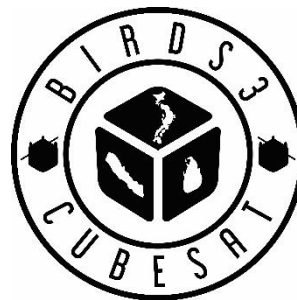
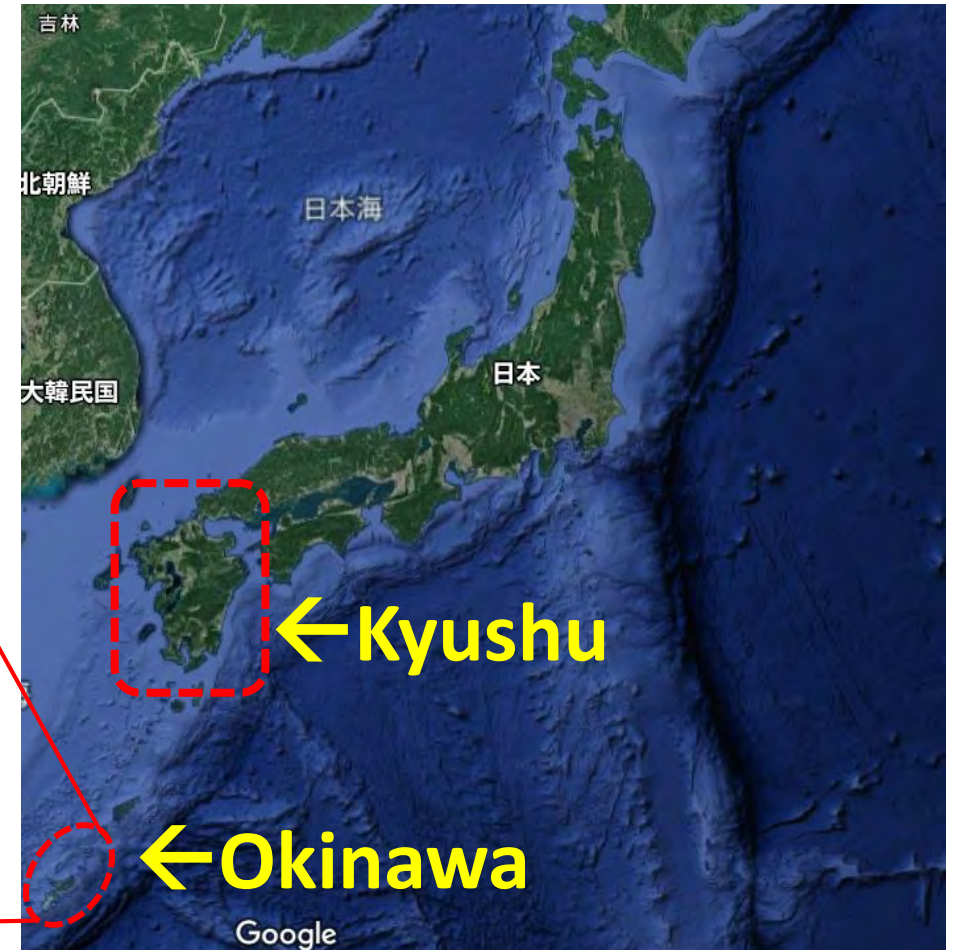
- If you have symptoms, get early treatment and tell your travel history to the attending physician.
- Avoid visiting public places.
- Wash your hand frequently with soaps and sanitizer.
- Distance yourself at least 1-m away from people especially the one who has symptoms.
- Keep yourself clean all the times.
- Wear face mask when interact with other people.

Last but not least, I, representing Malaysia, hope this pandemic will end soon and we will together enjoy the sun again. For the time being, please stay home and stay safe. Let us together fight the outbreaks by staying home, washing hands and restricting the movement.

END OF #4 COLUMN FROM MALAYISA

Trip dates:

19 – 23 March 2020 (5 days)



Our House in Okinawa

BIRDS-3 members and special guest from our lab; Aekjira (she is from Thailand) went to Okinawa for the farewell trip. Kakimoto-san and Sasaki-san are Japanese members of BIRDS-3 project. They graduated Kyutech at the end of March this year.



The house we stayed is two-storey house. The upper floor has living and kitchen, and the lower floor has bed rooms. It is a very big house and we could relax there.

[BELOW] There was a wonderful view in front of our house. The great point of this house is we can see this nice view during cooking and meals. The weather was much warmer than Kyushu.



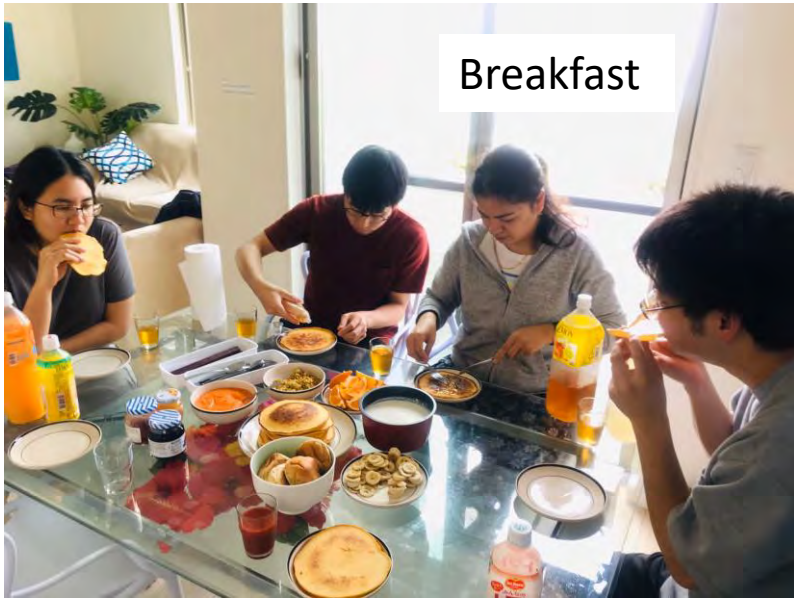
Cooking in our house



Cooking Mono



Thai Food



Breakfast



Eating Out



Mozuku Soba

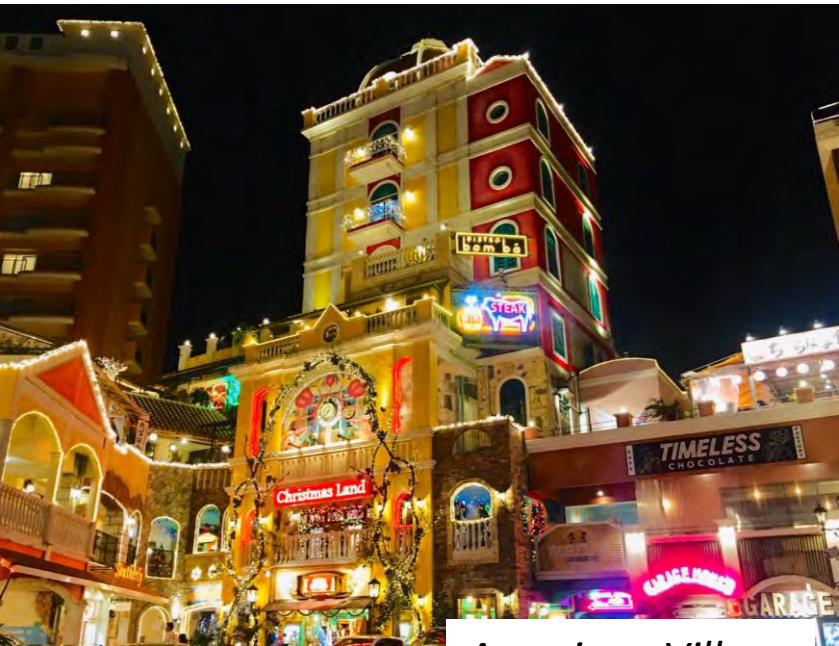


Okinawa Soba



A sunset dinner

Craft Beer in American village



American Village



Craft Beer lecture by Abhas Sensei



Craft Beers



Sightseeing Part 1



Waterfall of GIIZA-BANTA



Shikinaen Garden



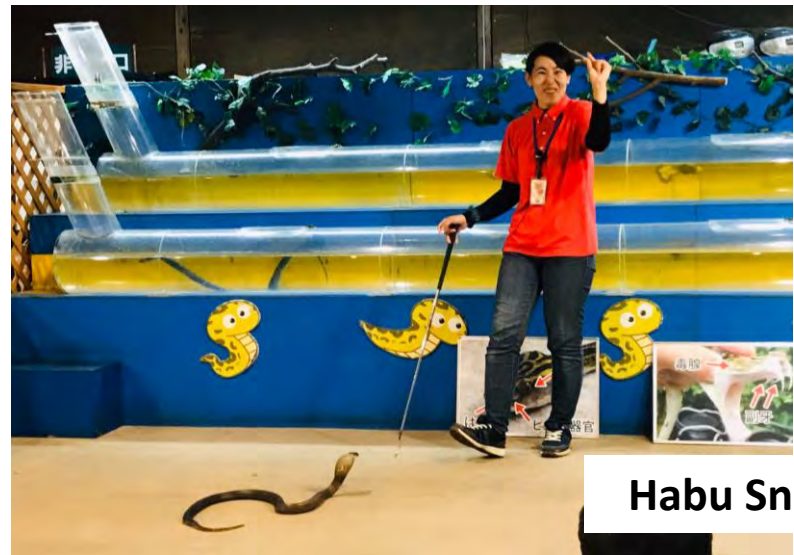
GIIZA-BANTA



Sightseeing Part 2



Okinawa World



Habu Snake Show



Gyokusendo Caves



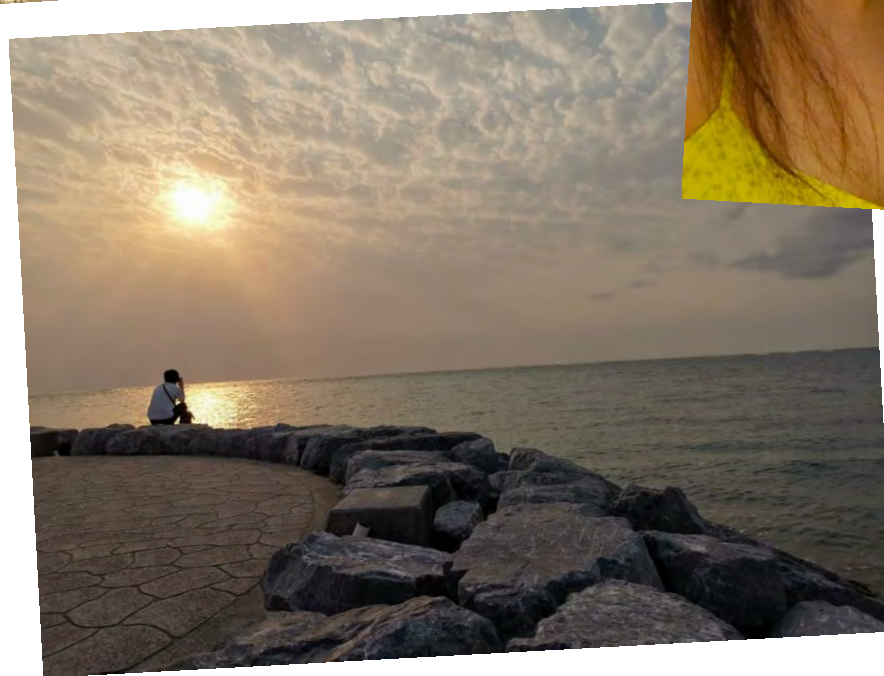
Shuri Castle



Beach in Okinawa



THE END OF THE OKINAWA TRIP REPORT





Capacity **B**uilding in **R**esearch & Innovation

For **S**pace

The “**CABURE+I 4S**” Project

Newsletter

News from Paraguay

16 April 2020

Contributors:

Members of

The CABURE+I 4S Project Team

Edited by:

Cristhian Coronel



FIUNA



FPUNA



UNG



Paraguay Space Agency

The “CABURE+I 4S” Project Newsletter

News from Paraguay

COVID-19 Pandemic : Quarantine days in Paraguay

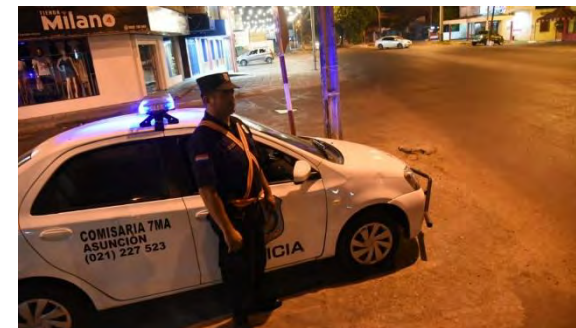
The novel virus that shocks the world, a new type of corona virus that causes a respiratory disease known today as COVID-19, has an amazing spread speed. Starting in Wuhan, China, it took only around three months to reach Paraguay.

The health minister of Paraguay, with the support of health professionals, developed a very complete countermeasure guidance, to minimize the virus spread. This has allowed a low number of cases, compared with other South American countries.

Local people strictly followed new sanitary protocols, which was a quarantine. Only people who works for the very basic and necessary areas where allowed to be on the streets, police made a good job helping to maintain order in every community, and health system started to get ready for a worst situation.



A normally concurred avenue in Asunción. It looks very empty during the quarantine. This shows the commitment of the citizens. (source: ultimahora online newspaper. March 17, 2020)



A police officer next to a patrol car unit during a control zone in Asunción. (source: ultimahora online newspaper. March 17, 2020)

The “CABURE+I 4S” Project Newsletter

News from Paraguay

COVID-19 Pandemic Quarantine days in Paraguay

This outbreak happened at the time Paraguay was recovering from another sanitary epidemic, i. e. Dengue. Therefore, the biggest hospitals were barely starting to resupply their medical equipment as well as increasing the number of workers in areas such as maintenance and technical assistance.

Paraguay officially started the quarantine on March 10th, three days after the first confirmed positive COVID-19 case detected in the country. This, at that moment, sounded too rush, but now everyone cheers the decision made by the authorities and says it was crucial to help prevent the virus spread too fast.

During the first week, a group of university professors along with students and scientists from all over the country have been gathering and talking about what can be done to help.

This was encouraged by Dr. Diego Stalder, a researcher from Universidad Nacional de Asunción, and advisor at the CABURE+I 4S team. He coordinated a task force. This allowed to build an amazing team of volunteers, talented students, outstanding faculties from different universities, and other professionals contributing with ideas, providing equipments, tools and everything that could be useful.

See more at: <http://www.ing.una.py/?p=42122>



Some equipment that the health services have been getting ready. The authorities have been receiving help from all around the world. The top priority is to have at least a decent amount of equipment in case there is a large number of positive cases that may need special cares.

(source: healthcare ministry official web page. April 9, 2020)

Dr. Stalder during a live TV interview, talking about the work carried out by the group he is coordinating.



Here is a screen capture of one of the many on-line video conferences held via social media apps.

All of them are members of the group of scientist from Paraguay

The “CABURE+I 4S” Project Newsletter

News from Paraguay

COVID-19 Pandemic Quarantine days in Paraguay

Most recently, this task force was divided in different groups, in order to work in a more effective way. One group worked on the development of a fast and easy to build pulmonary ventilator machine, that is based on automatically activating a paramedic respirator, known as Ambu Bag. Concept great ideas went to realization of many prototypes.

The other group is working on personal protection equipment, such as facial protectors, hygiene and cleaning systems. Some of them use clever and ingenious ways to develop their projects in a fast and easy way.

Like this one
https://youtu.be/svhOdP_dpd0



A walk trough automatic disinfectant irrigator.
<https://youtu.be/yQ0-N6Y6elk>



Hand washing stations made with recycled containers.
<https://youtu.be/jgGH2hqSQuM>

Or this other one
<https://youtu.be/Ripa7TgBuBY>

3D printed facial protectors.
<https://youtu.be/yHcVdXpcJtY>



José Ishibashi

The “CABURE+I 4S” Project Newsletter

News from Paraguay

COVID-19 Pandemic Quarantine days in Paraguay

It is great to see how people got involved, and came up with innovative solutions, all joined together with one goal, which is helping to fight against the propagation of this virus. On this date, Paraguay is having close to 200 positive cases of COVID-19.

Notes from AEP:

As the pandemic is reaching out to our nation, we, as a government agency, could not be standing still. So, we have decided to collaborate on this ventilator project. It was in this context we acknowledged, this pandemic gave us a unique opportunity to expedite the construction, or at least the conceptualization, of our Satellite Integration and Testing Facility. Instead of integrating and testing satellite subsystem components, we are now testing ventilators made from volunteers nationwide. Equipment made for such a delicate application requires a strict validation process.

Similarly, a satellite, a ventilator cannot fail during operation. Due to the current restrictions from this quarantine regime, the only basic test that can be conducted as a more sophisticated test would require a more robust test setup. More updates will be posted on the following newsletter issues.

The “CABURE+I 4S” Project Newsletter News from Paraguay

COVID-19 Pandemic Quarantine days in Paraguay

During equipment validation at AEP’s Cabure’i4S lab.



Cristhian D. Coronel A., Electromechanical Engineering student from the Nihon Gakko University (UNG)
April 2020

**END OF
REPORT
FROM
PARAGUAY**

27. BIRDS-related publications during Fiscal Year 2019

Each month in this newsletter, on Page 2 or 3, this reminder appears:



JSPS 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.

In support of the **BIRDS International Workshops** and the **Ground Station Workshops**, we receive funds from JSPS. JSPS is required to monitor the effectiveness of our spending. One parameter that they look at is the volume of BIRDS-related publications. But these publications are only counted if they contain the acknowledgement shown above. On the next two pages you will see the publications that we submitted in a report to JSPS for FY 2019 (Apr2019 through March2020). *Many thanks to all publication contributors.*

FY 2019 BIRDS-related Publications with JSPS Acknowledgement

[1]
Dahunsi F. M., Agbolade O., Akinyede J. and Dahunsi O. A.;
"SPACE SCIENCE AND TECHNOLOGY RESEARCH IN NIGERIAN : THE WAY TO GO AND CASE OF THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE";
Proceedings of 2019 Annual Conf. of the School of Engineering, FUTA,
Nigeria; 25-27 Aug 2019.

[2]
Pooja LEPCHA, BIRDS MEMBERS, Sankyun KIM, Hirokazu MASUI, Mengu CHO;
"Application of Small Satellites for Low-Cost Remote Data Collection using LoRa Transmitters"; 2019 ISTS, Fukui, Japan; 15-21 June 2019.

[3]
Tharindu DAYARATHNA, Pooja LEPCHA, Mengu CHO, Sangkyun KIM;
"Study of LoRa modulation long distance communication capability for 1U cube satellites"; 2019 ISTS, Fukui, Japan; 15-21 June 2019.

[4]
Izrael Zenar C. Bautista, Yang Shuzhang, Tingli Ma, Mengu Cho;
"Perovskite Solar Cell for Space Application"; 2019 IAC, Washington DC, USA; 21-25 Oct 2019.

[5]
George Maeda, Mengu Cho, Hirokazu Masui, Sangkyun Kim, Takashi Yamauchi;
"How seven emerging nations entered the space age via BIRDS Projects 1 through 4"; 2019 IAC, Washington DC, USA; 21-25 Oct 2019.

[6]
Withanage Dulani Chamika, Mengu Cho, George Maeda, Sangkyun Kim, Hirokazu Masui, Takashi Yamauchi, Sanath Panawannege, Sunil Babu Shrestha, BIRDS Partners; "BIRDS-3 Satellite Project Including the First Satellites of Sri Lanka and Nepal"; 2019 IAC, Washington DC, USA; 21-25 Oct 2019.

[7]
Mary Ann CONSTANTE, Frances Mara MENDOZA, Charleston Dale AMBATALI, Izrael Zenar BAUTISTA, Paul Jason CO, and Joel Joseph MARCIANO JR.; "Space Science and Technology Proliferation in the Philippines through Nationwide University Partnerships"; 2019 ISTS, Fukui, Japan; 15-21 June 2019.

[8]
R.A.D.K. Sampath, J.K. Jayawardena, Y.G.C. Jayalath, S. Vigneshan;
"Implementation of a Robust Ground-Station for Low Earth Orbit (LEO) Satellite Communication"; 26th Annual Technical Conference of IET Sri Lanka Network; 24th Aug 2019.



FY 2019 BIRDS-related Publications with JSPS Acknowledgement

[9]

Siti Amalina Enche Ab Rahim, M. F. Sapuri, S. M. A. Syaikh Abdullah, M. A. F. Megat Khairuddin, F. S. Suhaimi, I. Mohd Rafiee, S. N. K. Mustafa, S. N. Mohamad Rahim, M. N. Muhamad Zamil, M. H. Azami, and M. H. Jusoh; "Evaluation of Ground Sensor Terminal (GST) Transceiver System for UiTMSAT-1 Store & Forward Mission"; Proceeding of the 2019 6th International Conference on Space Science and Communication (IconSpace) Malaysia; 28-30 July 2019.

[10]

M. H. Azami, S. B. M. Zaki, S. N. K. Mustafa, BIRDS-2 Project Members, S. A. Enche Ab Rahim, and M. H. Jusoh; "Housekeeping Data Analysis of UiTMSAT-1 Nano-satellite by Observation from UiTM Ground Station"; Proceeding of the 2019 6th International Conference on Space Science and Communication (IconSpace) Malaysia; 28-30 July 2019.

[11]

S.N. Mohamad Rahim, S.N.K. Mustafa, M.H. Azami, S.B.M. Zaki, S.A. Enche Ab Rahim, M.H. Jusoh, M. Cho, and BIRDS-2 Members; "Development of UiTMSAT-1: An Approach to Lean Satellite Concept"; ASM Sc. J., 12, Special Issue 2, 2019 for Malaysia in Space, 62-71; 1 Aug 2019.



[12]

Adrian SALCES, Tharindu DAYARATHNA, Syazana Basyirah MOHAMMAD ZAKI, Makiko KISHIMOTO, Kiran Kumar PRADHAN, Abhas MASKEY, Apiwat JIRAWATTANAPHOL, Sangkyun KIM, George MAEDA, Hirokazu MASUI and Mengyu CHO; "BIRDS-2 Project CubeSat Development Overview, On-orbit Operation Results and Recent Progress of BIRDS-3 Project"; 2019 ISTS, Fukui, Japan; 15-21 June 2019.

[13]

Apiwat Jirawattanaphol, BIRDS Partners, and Mengyu Cho; "LESSONS LEARNED AND INITIAL RESULTS FROM BIRDS GROUND STATION NETWORK"; 5th IAA Conference on University Satellite Missions and CubeSat Workshop, Rome, Italy; 28-31 Jan 2020.

[14]

O Hari Ram SHRESTHA, Juan J. ROJAS, Takashi YAMAUCHI, and Mengyu CHO; "Study of the Capacity Degradation of NiMH Cells at Different Temperatures in Space Environment"; JSASS-2019-S036 日本航空宇宙学会西部支部講演会(2019); 30 Nov 2019.

[15]

Pooja Lepcha; "Development of Robust and Compact Low Cost Sensor Station for Remote Data Collection"; International Workshop on Lean Satellites (2019), Tokyo, Japan; 5 Dec 2019.

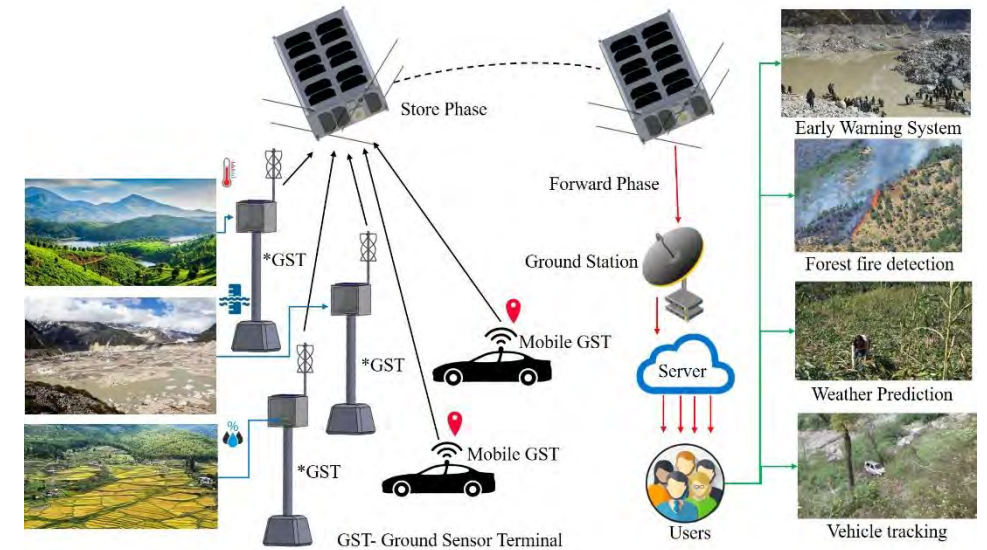
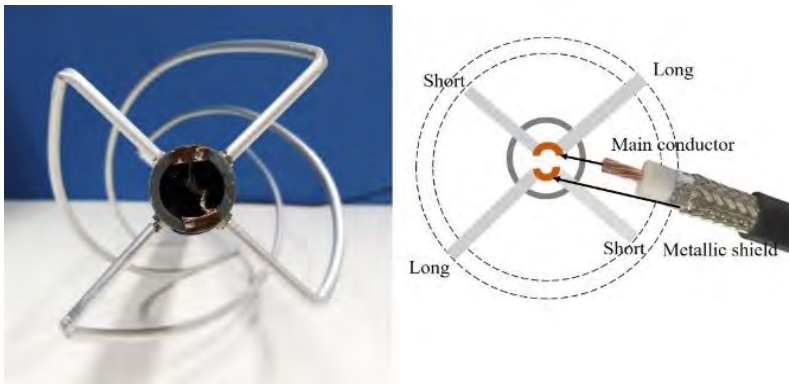
END OF THIS SECTION



28. Important article about the Ground Station Terminal (GST) for the interest of all BIRDS members

As presented at **4BIW** (4th BIRDS Int'l Workshop; Bangladesh) and at **3GSWS** (3rd Ground Station Workshop; Kyutech), GST offers a great research and education opportunity for all members of the BIRDS community.

If you are a scientist, GST offers a fantastic way to collect low-volume data in remote areas of your country – where there is no telephone service and no Internet service.



If you are a student, constructing GST is a superb chance to master the hardware and software in support of the science mentioned in the previous sentence. Please check out this GST article written by Pooja, our Phd student from Bhutan.

- G. Maeda, BPN Editor

FAQs about GST

- Pooja Lepcha, 18 April 2020

What is GST?

GST is an acronym for Ground Sensor Terminal. It is the ground segment of remote data collection system. It houses sensors that collect data and transmits it to the satellite. Any satellite configured to receive the data can receive the sensor data and forward it to a ground station.

What is a GST composed of?

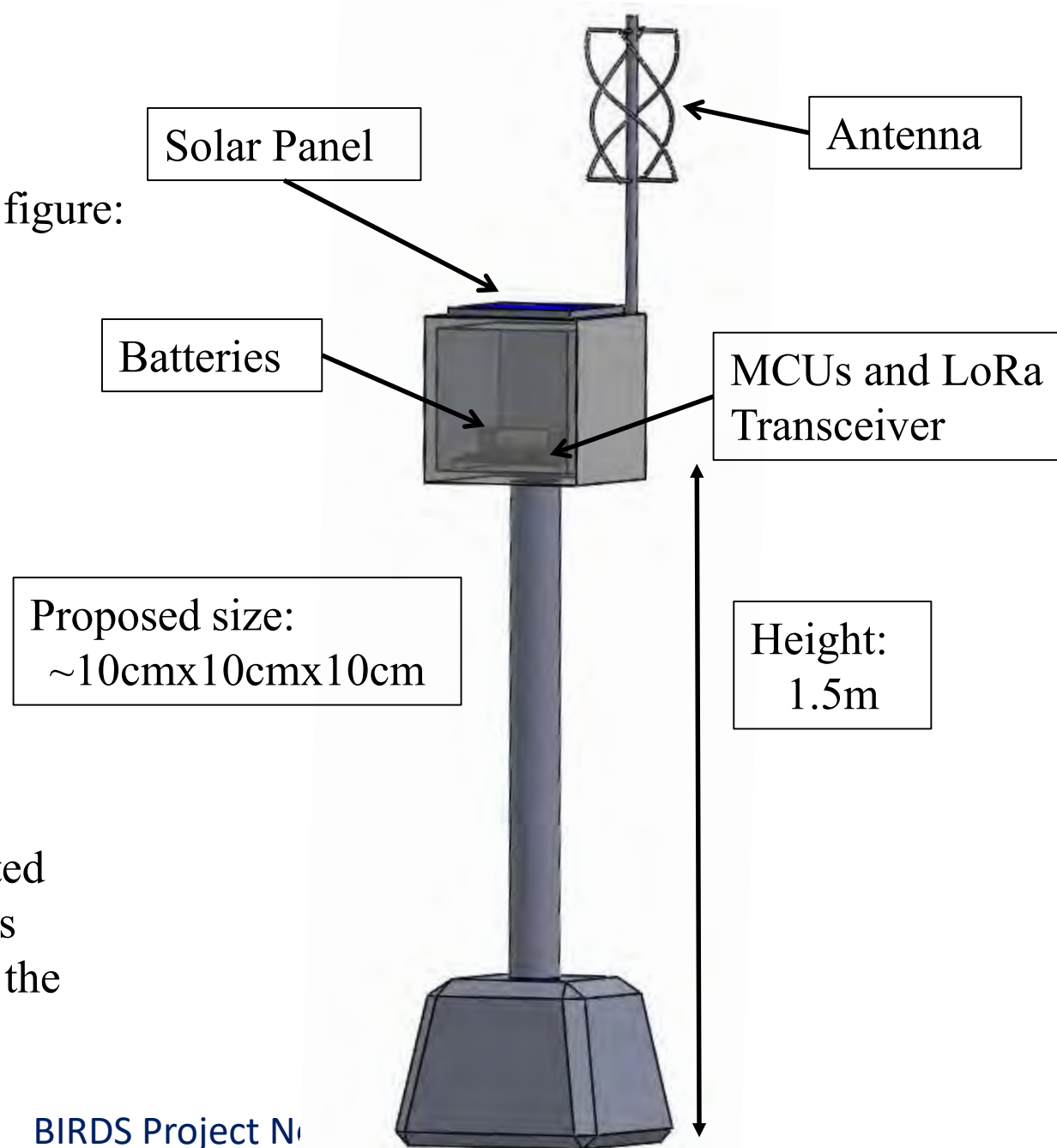
It is equipped with a processor, self-sustaining power supply, LoRa transmitters, antenna and sensors. It can house any kind of sensors, communicating to the main microcontroller using any of the basic three serial communication protocols (SPI, I2C and UART). In the later stages, the sensors could also communicate using USB.

How many kinds of GST are there?

There are currently two kinds, fixed GST and mobile GST

How does a fixed GST look like?

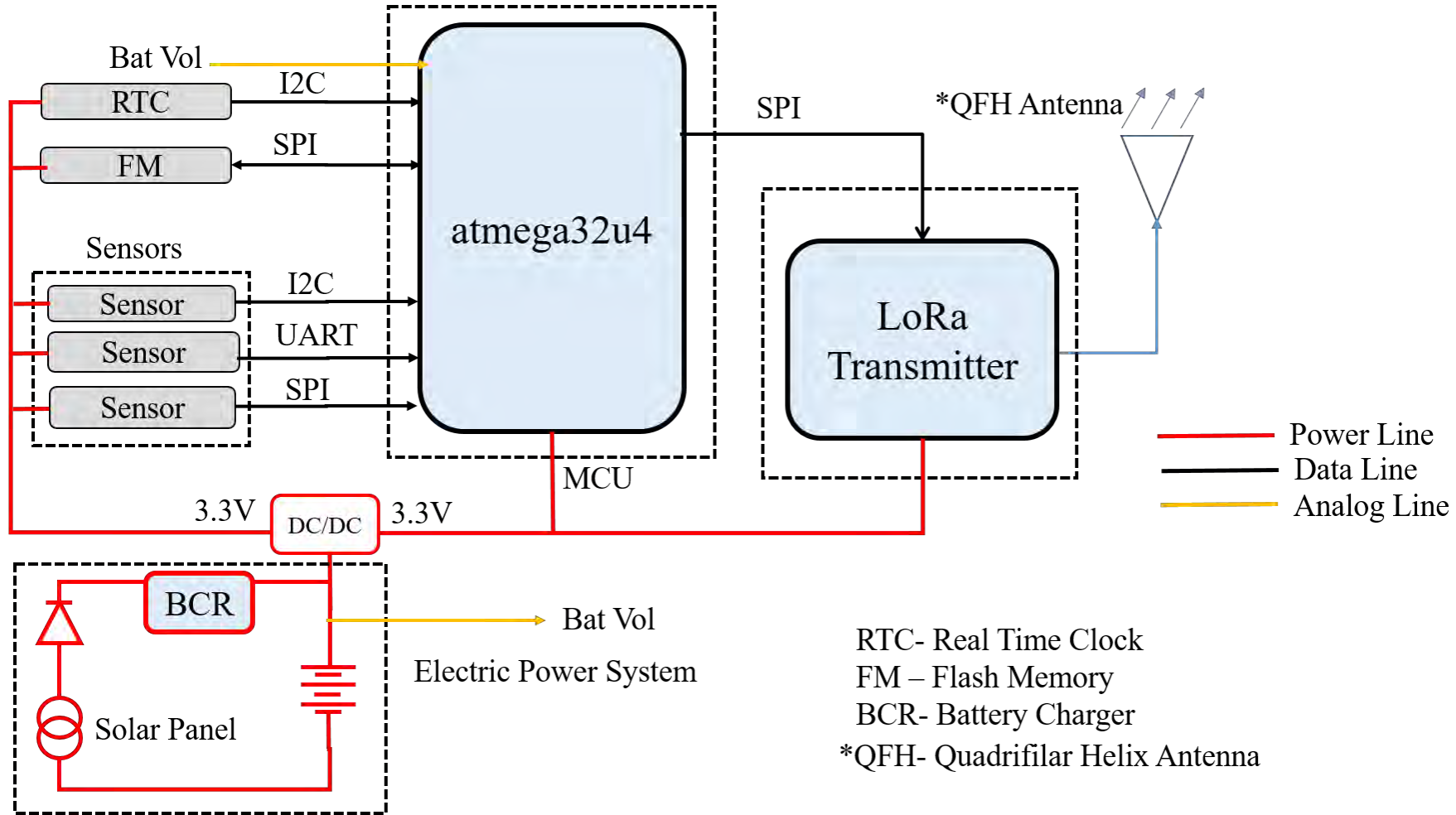
A fully integrated GST looks like the figure:



All the components of GST are selected based on their ease of availability. It is compact, easy to build and robust for the purpose.

How are the MCUs inside fixed GST connected?

The block diagram of the fixed GST is shown in the figure below:

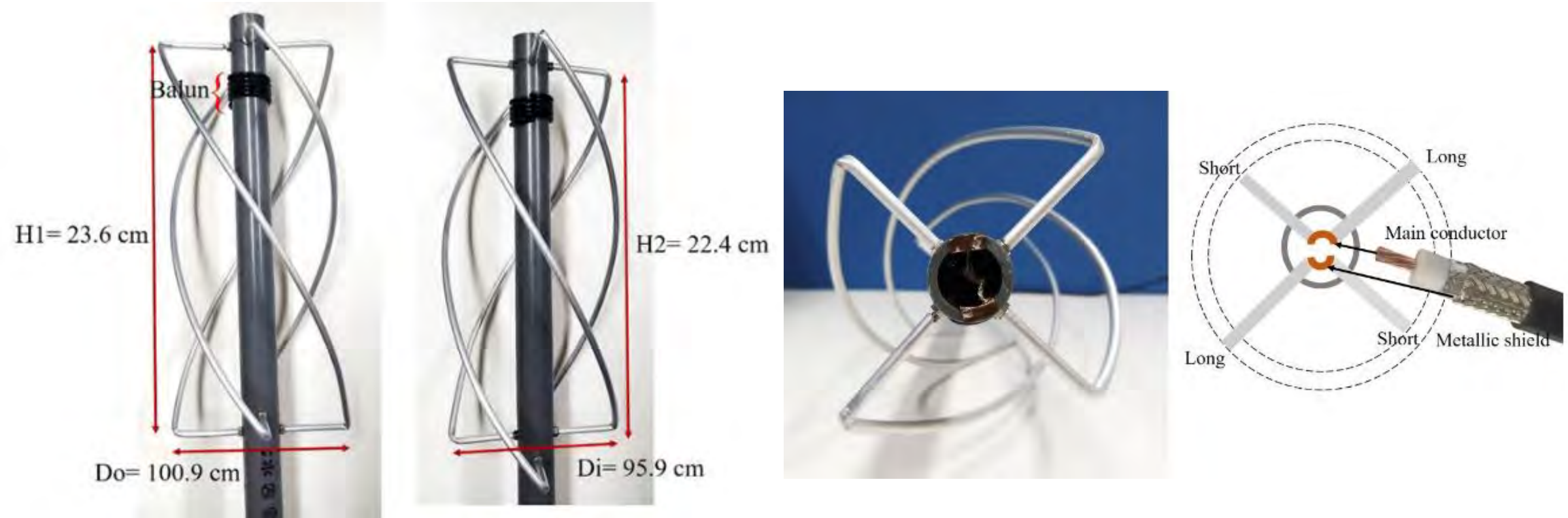


The block diagram is implemented on a printed circuit board as shown in the figure below:



On the top side the MCUs, battery charger, DC/DC converter and connection interfaces are soldered. On the bottom side of the PCB, 3 battery holders for AA size nickel metal hydride batteries and real time clock is soldered.

What kind of antenna is used for fixed GST? How is it constructed?



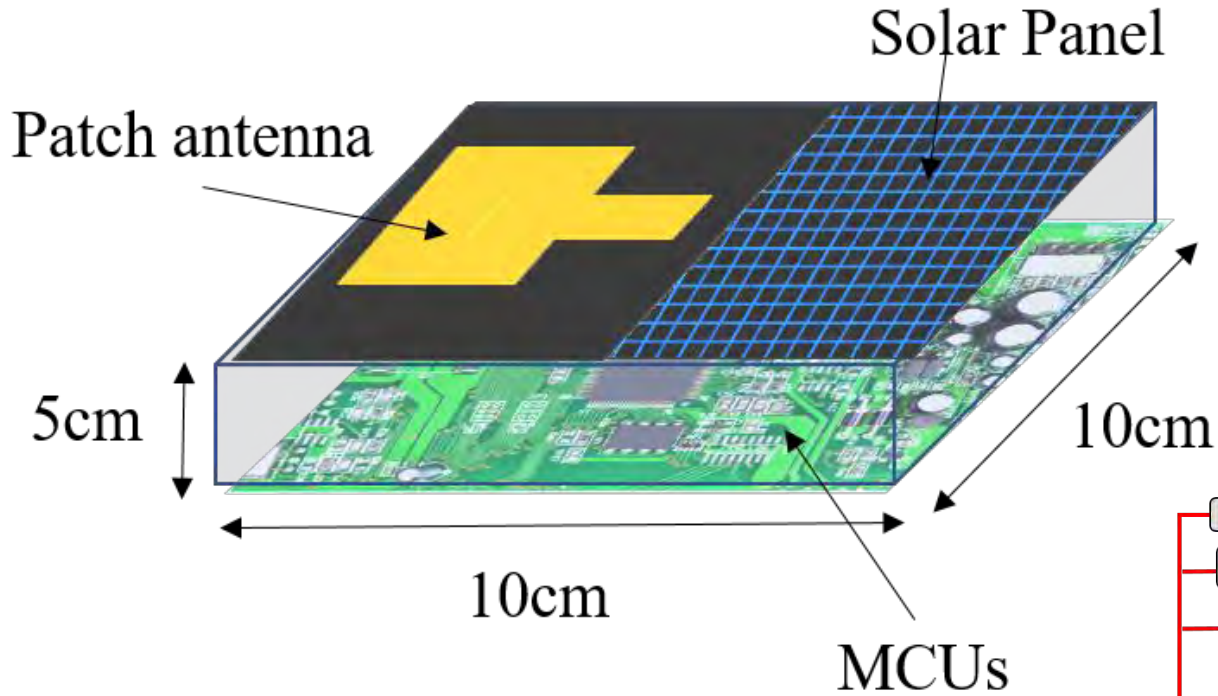
Quadrifilar helix antenna (QFH) is used for GST. It is right hand circularly polarized antenna. The antenna can be constructed using easily available materials like PVC pipes and aluminum rods. The guide for construction of antenna is referred from: <http://jcoppens.com/ant/qfh/calc.en.php>

How much does it cost to build a fixed GST?

Component	Quantity	*Price (Yen)
Solar Panels	1	700
Batteries	3	1200
Battery Holder	3	750
PCB Fabrication	1	700
LoRa Module	1	1800
Atmega32u	2	1000
Antenna Material	2m	200
SMA connector	1	400
Temperature sensor	1	800
IP66 standard Enclosure	1	2500
Stand for the enclosure	1.5m	2000
PVC pipe	0.5m	200
RF174 Cable	2m	1500
LTC3119 Battery Charger	1	1800
TOTAL		15550 yen ~ \$140

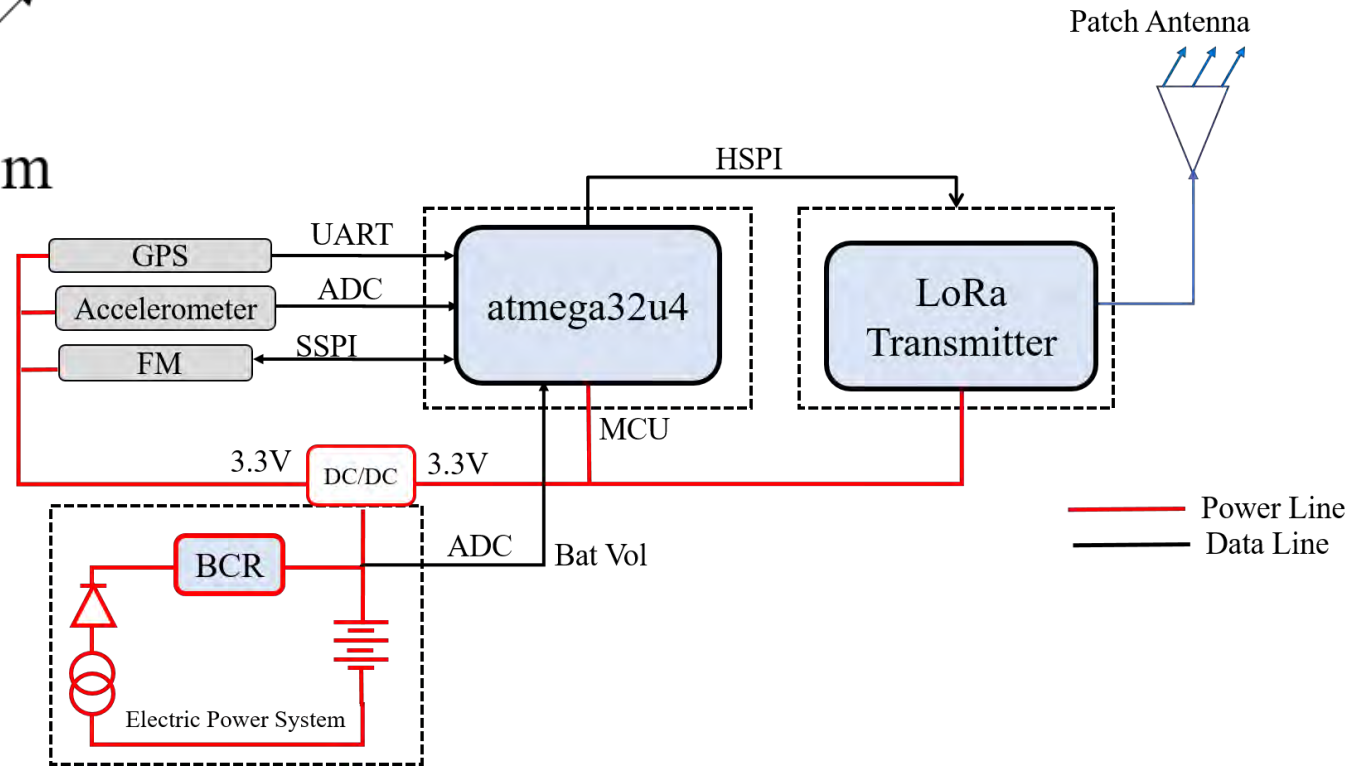
*Component prices are in Japan, in other countries it depends on their availability.

How does a mobile GST look like?

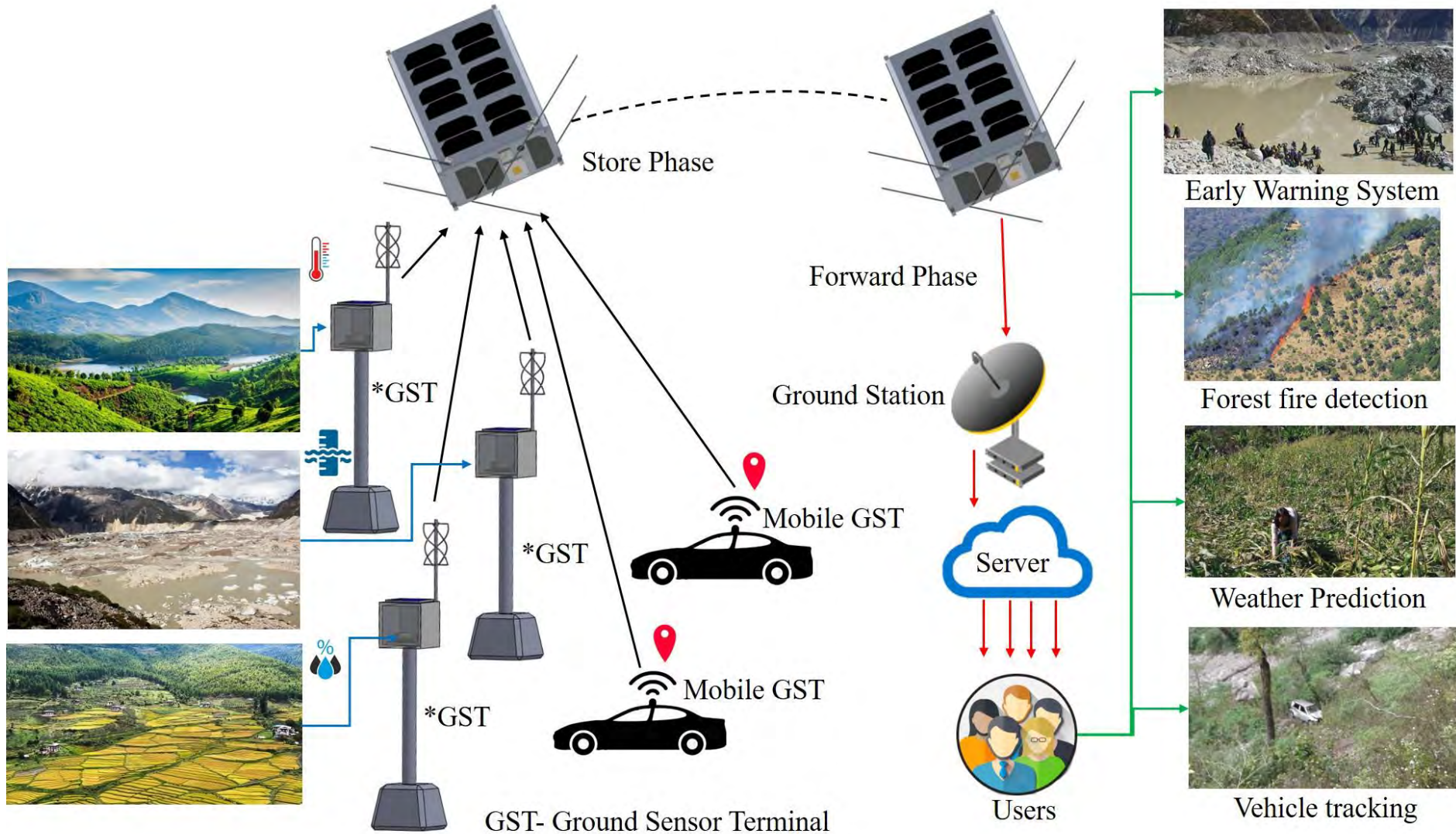


Though the mobile GST design hasn't been fixed yet, it would look something like figure on the left.

The mobile GST would be used to track vehicles and monitor accidents. It would have GPS and accelerometer. It would be implemented as shown in the block diagram on the right.



How can the use of Fixed GST and mobile GST help solve problems in developing countries?



As illustrated in the figure, fixed GST could be used to collect temperature data, humidity data for better weather prediction for agriculture. It can collect water level in rivers and reservoirs for early warning systems in case of floods. It can also collect data from sensors that can help monitor forest fire, air pollution. The mobile GST can be used for vehicle tracking and accident detection.

How is the use of GST a better approach than deploying other terrestrial sensors?

Since satellite networks have global broadband coverage, it allows data collection in remote locations (terrain, sea, air or unconnected locations) and satellite communications are resilient to terrestrial disasters at all times

What is the gateway for collection of sensor data from GSTs?

Currently, a 6U satellite, KITSUNE is being developed at Kyutech. It has LoRa receivers as one of the payload. It can receive data from GST anywhere in the world when it passes over it and forward the data later to a ground station which can be shared among users.

Who all are currently participating in remote data collection mission KITSUNE?

Bhutan, Nepal, Philippines, Malaysia, Sri Lanka, Paraguay, Costa Rica and Taiwan are working on it.

Who can participate in the remote data collection system mission of KITSUNE?

Anyone can participate in the mission provided they follow the correct data packet format for transmission to the satellite. The overall architecture can be customized any sensors for your requirement can be chosen. Please send your inquiries to lepcha.pooja586@mail.kyutech.jp if you wish to be a part of this network.



**This is a
6U satellite
project
(it means “fox”)**

END OF THIS SECTION

29. Timeline of Bhutan's Response Strategy to combat COVID-19

By Pooja Lepcha
17 April 2020

MoH cautions people from travelling to COVID-19 affected countries

February 27, 2020

Ministry of Health cautioned Bhutanese to avoid unnecessarily travel to affected countries. 23 suspected cases tested negative. Two infrared thermal scanners procured by the World Health Organization set up at Paro International Airport and the Phuentsholing point of entry (POE).

No plans to ban tourists amid heightened COVID-19 scare

March 5, 2020

The government doesn't ban tourists or Bhutanese travelling out of the country, focuses on enhancing its surveillance

First confirmed Coronavirus case in Bhutan

March 6, 2020

76-year-old American tourist tested positive. His Majesty The King personally oversaw implementation of the response strategy with Ministry of Health. Contact tracings launched as per the patient's itinerary. Bhutan steps into "Orange" zone. Government announces closure of schools and institutes in Thimphu, Paro and Punakha for two weeks. The government imposes restriction on all incoming tourists.



Panic buying starts in Bhutan. Prime Minister held press conference on national television and social media to update the nation of the COVID-19 positive case and the measures being taken.

Bhutan comes together to battle COVID-19

March 7, 2020

No permits issued for tourists and foreign workers. All mass gatherings deferred by Home ministry.



No entry from Phuentsholing

March 7, 2020

No mass gathering says home ministry

All the articles are from KuenselOnline, it's a national newspaper of Bhutan

Handling the COVID-19 situation

March 9, 2020

Government distributes free hand sanitizers and formed a multi-sectoral task force to develop economic response plan. Agriculture ministry to ensure adequate food reserve.

Public advised to avoid visiting entertainment centres

March 10, 2020

Teachers come together to offer voluntary service

March 10, 2020

More than 1,000 teachers volunteers to serve for any emergency calls



Tackling COVID-19

March 10, 2020

Flu clinics were setup to ease the number of patients going for routine checkups in Hospitals

MPs pledge support

March 10, 2020

Members of the Parliament (MP), including the Prime Minister committed to donate their one month's salary to the government for COVID-19 response efforts of about Nu 5.4 million.



Bhutan's only COVID-19 patient flies home

March 14, 2020



Hand washing facility to encourage people wash hands

March 17, 2020

All travellers entering Bhutan will be quarantined

March 17, 2020

All travelers, including Bhutanese, entering Bhutan to be quarantined in a designated quarantine facility for two weeks



Quarantine is for everyone irrespective of status: PM

March 19, 2020

Bhutanese all around the world were asked if they wished to return home. If they wanted, a chartered flight would be arranged by the government.



Cabbies maintain passenger logbook to help trace people

March 19, 2020

Colleges go for online learning

March 21, 2020

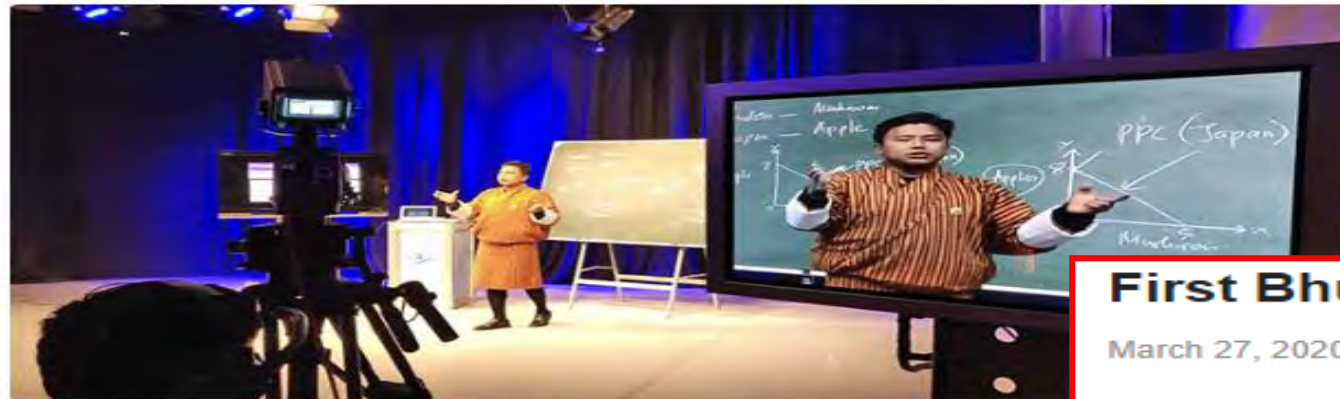
His Majesty addresses the nation on Covid-19

March 23, 2020

Border gates to close from today

March 23, 2020

All the border gates across the country will remain closed: Prime Minister



Tele-education in the wake of Covid-19 threat

March 26, 2020

Govt. urges farmers to ramp up production

March 26, 2020

First Bhutanese to test positive for Covid-19

March 27, 2020

The female student had returned from Europe this week

DHI offers free electricity and data for quarantine centres

March 28, 2020

Second Bhutanese tests positive to Covid-19

March 30, 2020

Businessman waives off rent worth Nu 2.6M

April 2, 2020

The first two Covid-19 patients recover

April 4, 2020

...all three Bhutanese patients are in stable condition: Health Minister

Government ready with additional quarantine facility

April 9, 2020

Quarantine period extended for 21 days. Hotels come up as quarantine facilities with free internet and food. Currently Bhutan has **5 cases** of infection, all of which were discovered at Quarantine facilities. There is no infiltration to the general public.



Farmer's group contribute vegetables

March 30, 2020

Author's personal note:

Bhutan seems to be one of the safest places on earth. I am blessed to be born in a country that takes care of its people. I am tremendously proud of how my country and its people has handled the whole situation.

END OF THIS SECTION

End of this **BIRDS Project Newsletter**

(ISSN 2433-8818)

Issue Number Fifty-One

This newsletter is archived at the BIRDS Project website:

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

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

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