



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

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

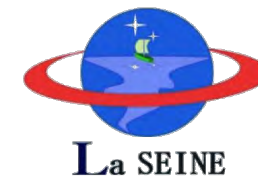
BIRDS Project Newsletter

Issue No. 32
(21 September 2018)

Edited by:

G. Maeda

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



All back issues of this newsletter can be easily downloaded.

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

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From Ghana

The Guest Box



Bonwire Kente - Ghanaians Pride

Kente is a hand loop silk and cotton fabric which is symbolic and unique to Ghanaians culture. Kente comes in numerous colors, sizes and designs with their meanings. Traditionally made for religious ceremonies to express thoughts or feelings. Wearing kente in any special ceremony is the pride of every Ghanaian.

-- Gladys Yaa Saah Oppong, Ghana

01. 32nd ISTS (Int'l Symp. on Space Tech. and Science) and 9th NSAT (Nano-sat Symp.)



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Symposium Site

Call for Papers

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Joint Symposium

32nd ISTS & 9th NSAT

ISTS : International Symposium on Space Technology and Science
NSAT : Nano-Satellite Symposium



June 15 – 21, 2019

AOSSA and Happiring
Fukui, Japan

“Fly like a Phoenix to Space”



Asteroid Explorer Hayabusa2
©KESHITA AKIHIROMAXA

Important Deadlines

- October 31, 2018 : Deadline for Abstract Submission
- End of December, 2018 : Notification of Acceptance for All Authors
- February 1, 2019 : Deadline for Paper Upload for Student Session Only
- March 1, 2019 : Notification of Presentation Schedule for All Authors
- April 15, 2019 : Deadline for Paper Upload
- June 15-21, 2019 : Joint Conference

<https://www.ists.or.jp/>

02. JAXA interviews Prof Cho about the features of Aoba-VELOX 4



革新的衛星技術実証プログラム

1号機プロジェクト

人に聞く～インタビュー



革新的衛星技術実証 1号機 実証テーマ

キューブサットへのスラスタ搭載と高感度カメラへの挑戦

JAXA interviews Prof Cho about the features of Aoba-VELOX 4:

<http://www.kenkai.jaxa.jp/kakushin/interview/01/interview06.html>

Aoba-VELOX 4 is a sister project of BIRDS, here at Kyutech.

03. Check out the Facebook photos and videos of CLTP 9



The 9th session of “CanSat Leader Training Program” took place on the Funabashi Campus of Nihon University during 20-28 August 2018. Trained were 6 foreign students and 6 Japanese students.



The link to Facebook is this:

<https://www.facebook.com/CLTP-333187893370245/>

Marco Alvarez Reyna (Argentina, in the dark blue T shirt) visited Kyutech after CLTP 9 to discuss matters of BIRDS Project.

04. Sixth UNISEC-Global Meeting is on track (see the web link below)



Purpose

Inheriting from the founding vision of creating a world where space science & technology are available by every country for the benefit of humankind in November 2013, and taking note of its Permanent Observer Status to the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS), UNISEC-Global for its 6th Meeting is seeking the following purposes:

- ✓ To evaluate and follow the successful results at the 5th UNISEC-Global Meeting in December 2017 at Sapienza - University of Rome, Rome , Italy,
- ✓ To learn and apply ISU's diversity and dynamism for future UNISEC-Global activities, by taking an opportunity of holding the 6th Meeting at ISU,
- ✓ To identify the 17 Goals for UN Sustainable Development for possible contributions by UNISEC-Global, and to try to find a way of how to connect these identifies goals with UNISEC-Global's programs,
- ✓ In commemoration of the 5th anniversary of UNISEC-Global, to evaluate the past achievements of UNISEC-Global for a future direction,
- ✓ To strengthen the Mission Idea Contest (MIC) with particular emphasis to satisfy Sustainable Development Goals.

Important Dates

July, 2018: Online Registration Open

July, 2018: Exhibition Manual Uploaded

September 30, 2018: Due date of VISA application Submission

November 19-21, 2018: The 6th UNISEC Global Meeting

5th Mission Idea Contest for Micro/Nano Satellite Utilization (Nov 19, 2018)

Abstract due May 17, 2018

Notification July 3, 2018

Final paper due Sept 10, 2018

Venue

International Space University (ISU)

1 Rue Jean-Dominique Cassini, 67400 Illkirch-Graffenstaden, Strasbourg, France

Access to ISU and Accommodation

The nearest hotel is 7Hotel&Fitness.

Please make use of the discounted hotel reservation that runs until the 7th of September. It includes a reduced fee of 85 Euro per night and a reduced buffet breakfast of 8 Euro instead of 15 Euro. Note that this does not cover the city tax per guest per day.

FLASH NEWS: THE DEAD LINE FOR BOOKING 7HOTEL&FITNESS HAS BEEN EXTENDED FROM 7 SEPT TO 24 SEPT.

<http://unisec-global.org/meeting6.html>

05. JAXA makes a 41-minute video about the deployment of BIRDS-2



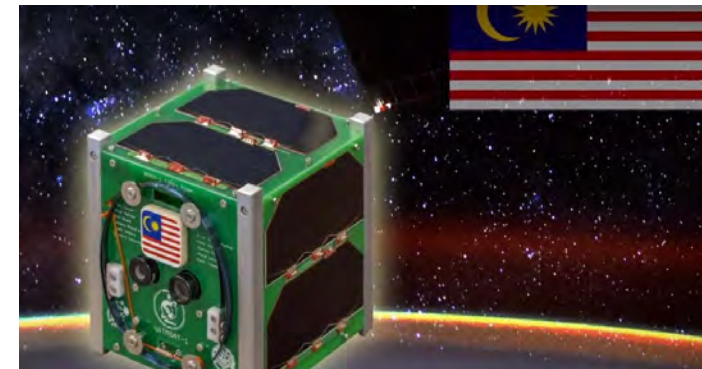
Deployment from the ISS occurred on 10 August 2018, and was viewed from JAXA's Tsukuba Space Center.



Bhutan

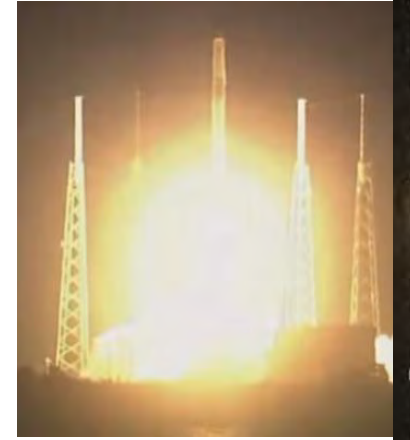


Philippines



Malaysia

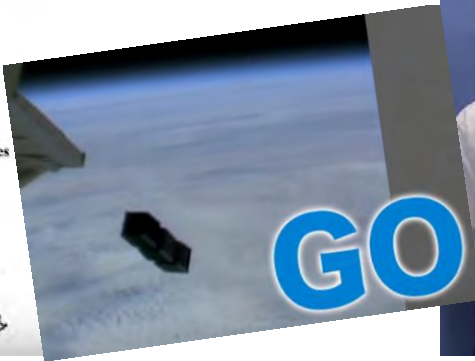
Cont'd
on the
next
page.



June 29, 2018 SpaceX CRS-15 Launch



See the entire video here:
<http://birds2.birds-project.com/2018/08/16/iss-deployment-look-back/>



Reaction of the VIPs right after deployment →

← The representative of Bhutan makes a speech right after deployment



06. BIRDS-2 news from NASA website



JEM Small Satellite Orbital Deployer (J-SSOD) attached to the JEM Airlock Slide Table. Shown here are the BIRDS-2 satellites going into the air lock.

[NASA Image: ISS056E100586]



NASA Image: ISS056E130515 - Three BIRDS-2 CubeSats deploy from the International Space Station on August 10, 2018 and orbit above Earth. The trio — Maya-1 of the Philippines, BHUTAN-1 of Bhutan and UiTMSAT-1 of Malaysia — were produced under the supervision of the second generation of the Joint Global Multi-Nation BIRDS Satellite Project or **BIRDS-2 Project** of the Kyushu Institute of Technology in Japan.



The above is from:

https://www.nasa.gov/mission_pages/station/research/experiments/908.html

07. BIRDS/SPATIUM/AV4 students study and relax at summer camp

The facility is located in Oita Prefecture in Kyushu →



2018 Cho Lab Summer Camp 3-5 September

JOINT TRAINING CENTER



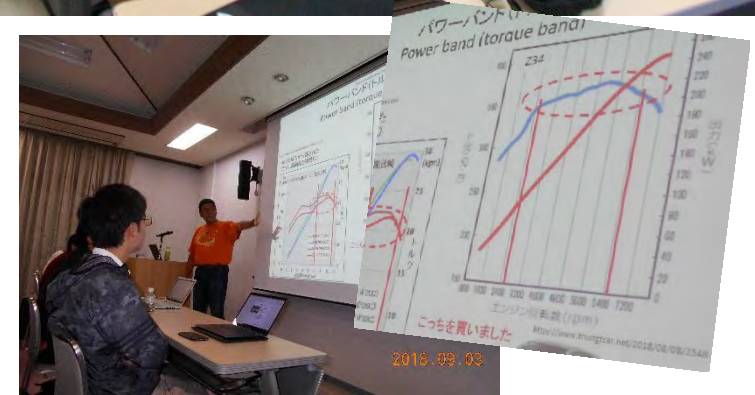
The 3-Day Agenda

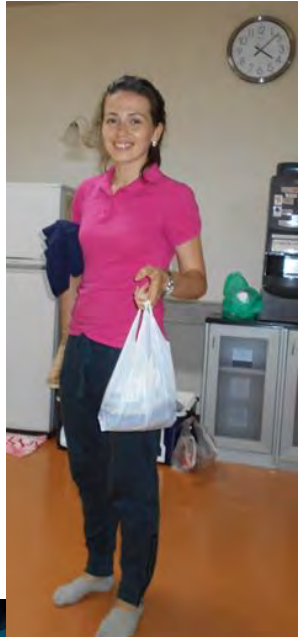
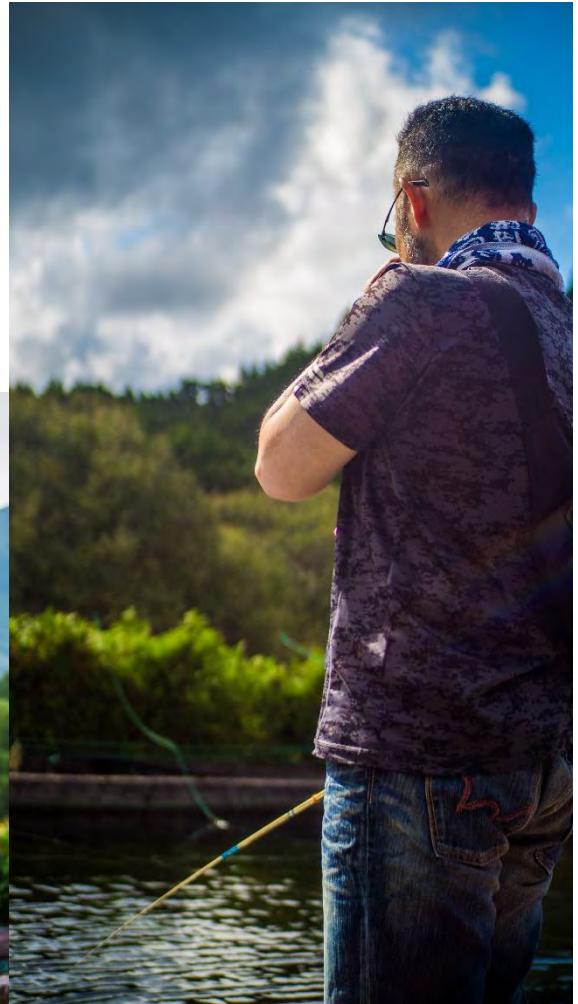
2018/9/3(Monday)		2018/9/4(Tuesday)		2017/9/5(Wednesday)	
8:50	Meeting at Kyutech	7:00	Get up	7:00	Get up
8:50-9:00	Leave for Kyutech	8:00-9:20	Breakfast	8:00-9:20	Breakfast
9:00-13:00	Arrive at Oita after lunch	9:30-10:00	Lecture5(Sri Lanka student)	9:30	Checkout and go back
13:30-14:00	Lecture1(Iwata)	10:00-10:30	Lecture6(Maeda)		
14:00-14:30	Lecture2(Nepal Student)	10:30-10:40	Breaktime		
14:30-14:40	Breaktime	10:40-11:10	Lecture7(Kate)		
14:40-15:10	Lecture3(Yamauchi)	11:10-11:40	Lecture8(Masui)		
15:10-15:40	Lecture4(Cho)	11:40-13:00	Lunch		
15:40-17:20	Breaktime	13:00-13:30	Lecture9(Kim)		
17:30-18:00	Leave for Dinner	13:30-14:00	Lecture10(Toyoda)		
18:00-19:00	Dinner	14:00-17:40	Breaktime		
19:00	Free Time	18:00-20:00	BBQ		
		20:00	Free Time		

幹事さん (kanji san): 平賀 康太郎 (Kotaro Hiraka)
九州工業大学 工学部 電気電子工学科
豊田研究室 学部4年

Many thanks to the kanji san --- it is a huge amount of work.

Summer Camp Lectures





← Kate holds her catch
(back at the lodge)



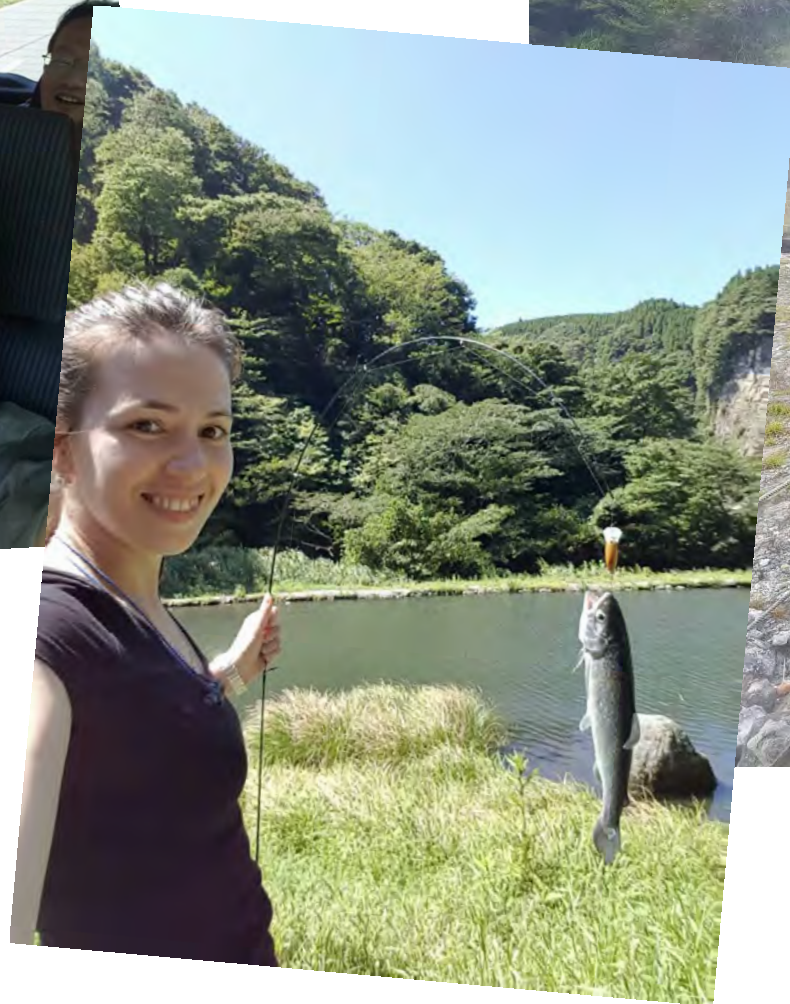
Fishing during summer camp

Many attempts to start the BBQ grills





Random shots



Cooking eggs with natural heat (geothermal)

08. Kyutech's ABE Fellows, Hind and Senior, arrive in Japan for orientation sessions by JICA



Hind
(Sudan)

Senior
(Namibia)



On 5 September 2018, Hind and Senior attended the ABE Initiative Welcome Ceremony at a hotel in Tokyo. The event was hosted by JICA to welcome all incoming ABE Fellows from Africa. ABE stands for “African Business Enterprise”.

ABE is not geared to students. It is geared to African professionals working in industry, government, or academia. By acquiring a masters degree at a Japanese university, it is hoped that they will maintain a long-term relationship with their schools – even after they return to their home countries.

09. JAXA and Tohoku Univ. organize 15th Space Environment Symposium

The event takes place on the campus of Tohoku University during 30-31 October 2018. There is no charge for admission.

第15回宇宙環境シンポジウム事務局
Symposium office

URL :

<http://www.kenkai.jaxa.jp/publication/event/181030.html>

E-mail : sympo-ses2018@ml.jaxa.jp

第15回 宇宙環境シンポジウム
2018年 10月30日(火) - 31日(水)

東北大学理学研究科 合同C棟2階
青葉サイエンスホール
(青葉山北キャンパス)

参加費 無料

講演テーマ

- 宇宙環境計測・宇宙天気
- 太陽風-地球磁気圏シミュレーション
- 帯電・放電実験、およびシミュレーション
- 帯電計測技術、材料物性
- デブリ計測、モデリング
- 小型衛星による宇宙環境計測
- 放射線防護技術

会場アクセス
地下鉄東西線「青葉山駅」北1出入口より徒歩約5分
仙台駅からタクシーで約15分、約2,000円
<https://www.tohoku.ac.jp/japanese/profile/campus/01/aobayama/areah.html>

お問い合わせ先
第15回宇宙環境シンポジウム事務局
URL : <http://www.kenkai.jaxa.jp/publication/event/181030.html>
E-mail : sympo-ses2018@ml.jaxa.jp

Campus Map
東北大学理学研究科合同C棟2階
青葉サイエンスホール

主催 国立研究開発法人 宇宙航空研究開発機構
共催 国立大学法人 東北大学

10. BIRDS PI attends ICeSSAT in Malaysia



On 7th – 9th August 2018, Center for Satellite Communication (UiTMSAT), Faculty of Electrical Engineering, Universiti Teknologi MARA, Malaysia organized the International Conference on Space Weather and Satellite Application (ICeSSAT 2018), in conjunction with the deployment of UiTM's 1st nanosatellite, UiTMSAT-1.

Organizer:

Center for Satellite Communication



Co-organizer:

National Space Agency (ANGKASA)



Report prepared by:

Siti Amalina Enche Ab Rahim & **Farah Adilah Mohd Kasran**

Research Coordinator

Postgraduate student

Center for Satellite Communication

Faculty of Electrical Engineering, Universiti Teknologi MARA (UiTM)

11.September.2018



ICeSSAT 2018 was held at Faculty of Electrical Engineering, Menara 2, Kompleks Kejuruteraan, Universiti Teknolodi MARA (UiTM) Shah Alam, Malaysia (picture above).

It welcomed 35 participants which are not only Malaysians, but also from other countries, such as Japan, Russia, Bangladesh, Indonesia and Nigeria.

The main objectives of this conference are to disseminate knowledge, and to share experiences and expertise in space science and satellite technology.

7 August 2018 – Tutorial Sessions



Tutorial session 1: *IUGONET System: MetaData System for Space Weather and Earth Observation Data Analysis* by Dr. Shuji Abe from International Center for Space Weather and Science Education (ICSWSE) of Kyushu University



7 August 2018 - Tutorial Sessions

Tutorial session 2: Amateur Satellite Ground Station: Setup and Operation by Assoc. Prof. Dr. Nafizah Goriman Khan from University of Nottingham Malaysia, a prominent expert in satellite technology in Malaysia.



8 August 2018 - Launching Ceremony

The launching ceremony of ICeSSAT 2018 was officiated by Prof. Ir. Ts. Mohd. Nasir Taib, the Dean of Faculty of Electrical Engineering, UiTM.



8 August 2018 - Keynote Speakers

Five prominent keynote speakers in space science and satellite technology were invited to deliver their talk.



Keynote Speaker 1: Prof. Ir. Dr. Mardina Abdullah, Director Space Science Center, Universiti Kebangsaan Malaysia on *Development of Space Weather Research in Malaysia*.

Keynote Speaker 2: Ir. Norhizam Hamzah, Senior Vice President Astronautic Technology (M) Sdn Bhd on *Industrial Involvement in Space Industry in Malaysia*.

8 August 2018 - Keynote Speakers



Keynote Speaker 3: Sholehah Ismail, Senior Researcher National Space Agency on *National Space Policies on Space Program in Malaysia.*

Keynote Speaker 4: Prof. Mengu Cho, Principal Investigator of BIRDS Project, Kyushu Institute of Technology on *the success story of the BIRDS Project.*

Keynote Speaker 5: Prof. Akimasa Yoshikawa, Principal Investigator of MAGDAS project, Kyushu University on *the success story of MAGDAS Project*



8 August 2018 - ICeSSAT 2018 social dinner

In the evening, all the ICeSSAT 2018 participants were celebrated with a dinner at a dining restaurant, Al Rawsha, as an appreciation of their involvements in this conference. They were served with Arab cuisine. The food was delicious, and everyone enjoyed the dinner and had a good time in this social event.



9 August 2018 - Technical Parallel Sessions

On the 3rd day, all the participants presented their research work in the Technical Parallel Sessions. They received their certificate at the end of the presentation.



It was a success! There were definitely technical knowledge exchanges during these 3 days conference, and also cultural exchanges.



The participants had the opportunity to know different people from different countries and build the network.

See you at the next ICESSAT!



OLAYINKA'S WORLD

3 August 2018, Column #3

OLAYINKA FAGBEMIRO

PRINCIPAL SCIENTIFIC OFFICER, HEAD, SPACE EDUCATION UNIT
NATIONAL SPACE RESEARCH & DEVELOPMENT AGENCY (NASRDA),
ABUJA. NIGERIA

11. Olayinka's World – Column #3



Interview with
Professor A. Babatunde Rabi
Director, Centre for Atmospheric Research (CAR)
Anyigba, Kogi State, Nigeria

Professor A. Babatunde Rabi, arguably Africa's leading space physicist, specializes in Space Weather and is founding Director of the Centre for Atmospheric Research (CAR), Anyigba, Kogi State. In this interview, Prof Rabi unravels the complex dynamics of the upper and lower atmospheres—prime investigative domains, of the National Space Research and Development Agency's (NASRDA's) newest subunit. According to Prof Rabi, over the past six years, CAR has been collecting data on the physical processes at work in the Earth-Sun vicinity from the seabed.

Give me an overview, of the Centre for Atmospheric Research (CAR):

Rabi: CAR is engaged in every kind of investigation, that has to do with the atmosphere including the lower and upper atmosphere, the space environment and even the ocean. Our physical domain, starts from the seabed and continues through the atmosphere, to the space environment where Nigeria has orbiting satellites onward to the centre of the Sun.

But you don't have an oceanographer, on staff?

Rabi: No. We're not involved in oceanographic studies, yet. The closest we've come, is to look at the chemical composition of water, in some riverine areas. Our priority, is research that will impact contemporary Nigerian society. So, we study both the lower and upper atmospheres. Through a project we call the "Tropospheric Data Acquisition Network" (TODAN), CAR has automatic weather stations, at about 18 locations, within Nigeria. These stations measure various parameters in the lower atmosphere, wind-speed, solar radiation, temperature, pressure and other properties. We hope to deploy 72, nationally. But, as I've said, CAR is also interested in monitoring the upper atmosphere which starts, from an altitude of 40 to 50 km. This environment interests us, because 160 km and upward, is where you have orbiting satellites. Our satellites, are domiciled in this region. Hence, we need a continuous flow of data, denoting conditions in the upper atmosphere. Are Nigerian satellites safe? What happens to radio waves, propagated through this medium? Disturbances in the ionosphere, for instance, can cause loss of radio signal, due to wave absorption. It behoves us, therefore, to understand the upper atmosphere. Accordingly, Nigeria is involved in a global study. We have installed magnetometers and GPS stations, at different places, to monitor space weather parameters. Is there a coordinating agency, for this worldwide study? No, not as such. But we do collaborate with the International Space Weather Initiative, a United Nations project, to which CAR belongs. In fact, I am the African Coordinator. Incidentally, three of the magnetometers we've deployed, to record fluctuations in Earth's magnetic field, came from the Japanese government. We set up the first one in Lakoja, last year, and later installed another in Abuja, with U.S. government support.

I think the sum total of these conditions, and movements, is what you call “space weather”?

Rabiu: Well, not exactly. “Space Weather” is a term that only applies to the space environment. This does not include the lower atmosphere, where you and I are now. Up to about 40 to 50 km, is still the lower atmosphere... “Tropospheric” weather the weather that meteorologists predict occurs below 40 km.

So, your discipline touches on, meteorology?

Rabiu: Yes. Initially before CAR was created the Tropospheric Data Acquisition Network was a joint venture, between NASRDA and the Nigerian Meteorological Agency (NIMET). “Weather station,” is the generic term for instruments that measure the atmospheric parameters we study. But CAR doesn’t predict weather. That’s NIMET’s mandate.

Has any new light been shed, on what happened to NigComSat-1, Nigeria’s lost communications satellite?

Rabiu: Well, all I know, is that the satellite developed a fault, while still in the observation stage. It had a power problem and went out of control. NigComSat-1 was then being managed by our collaborators, the Chinese and had not been handed over to Nigeria. But the lost satellite has long been replaced, with “NigComSat-1r” (the “r” stands for “replacement”). This was, it needs to be stressed at no cost to Nigeria.

Is it true, that solar flares explosions on the Sun’s surface cannot only affect the electrical systems of orbiting satellites, but also oil pipelines?

Rabiu: Yes. Solar flares emit charged particles, which move through the solar system at great speed bathing planets, moons, artificial satellites and everything else, in electricity. These particles can short circuit satellites systems and produce surface currents that overload powerlines as happened in Quebec, Canada, and the northern U.S.A., in 1989. The electrons and protons involved, don’t reach us. Rather, it is the effect of these ions on Earth’s magnetic field, that wreaks the havoc. Variations in the magnetic field, generates a secondary field of intense electrical energy which, during flare activity, extends to the surface and passes through conducting matter. Physicists refer to this phenomenon, as “geomagnetically induced currents” (GIC). It affects electric cables and transformers, sometimes causing explosions.

How though, does GIC damage oil pipelines?

Rabiu: Geomagnetic induction exacerbates and expedites corrosion. That, in simple terms, is the explanation. Cracks occur. Before you know it, oil starts oozing out, and vandals come. But if scientists monitor the pipelines, the problem can be averted.

We learnt CAR was conducting some radiation studies in the Niger Delta and in Kogi State. What did you find?

Rabiu: Yes. CAR tested samples from Kogi and Delta States, for uranium, thorium and radioactive potassium, and obtained some very interesting results. We found exceptionally high levels of radiation in some Local Government Areas (LGA’s) of Kogi State, then made recommendations to the state government. Igaliwo, has the highest concentrations of uranium and thorium nuclides. We’ve presented our results at conferences, and also published some. This should be a warning to policymakers. Samples from all the LGA’s showed high concentrations of radioactive potassium. The exception, was Ajaokuta, where the steel industry is based. Our analysis indicated that the absorbent dose-rate and the annual effective dose-rate, as well as the gamma ray exposure level, were higher than the recommended limits. This was the case in Odogbe, Okaba, Salem University, Geregu, Igaliwo (again), Edeke, Bagana and Abejukolo. We suggested imposing a levy on culpable companies, hosted in these communities as motivation, for them to protect the environment.

Are you going to expand this research, to other states?

Rabiu: This was our intention. The 40 sites tested in Kogi State, was seen as a pilot project, a model, to guide us, in testing elsewhere. But our handicap is resources, funds and equipment. What about the Niger Delta? We tested at more than 50 locations, there. In the riverine areas, we took fish from the sea and the rivers. Then, working with our Canadian collaborators, we sampled the water. Analysis showed, that some oil producing regions are at risk i.e., people have a higher than normal chance of getting unacceptable doses of radiation, from their surroundings.

Is your research in the Niger Delta suspended as well, because of money?

Rabiu: We completed the pilot stage. But, again, our intention, was to encompass the region which proved unfeasible. Do you use balloons or sounding rockets, in your study of the atmosphere? We plan to send up balloons. There’s a radiosonde system, on one of our buildings. But it has not been possible to acquire the helium gas generator, that is needed to inflate the crafts.

Is NIMET involved, in your atmospheric research?

Rabiu: Only in the lower atmosphere. Otherwise, we're working with the Office of the Surveyor General of the Federation (OSGOF). They use GPS stations for land mapping, to know the coordinates, for land allocation. OSGOF has 12 monitors, in various locations. So, we use their data for space weather studies...

How does OSGOF data benefit you?

Rabiu: They have antennae, GPS receivers, which sight satellites, orbiting some 22,000 km away, and take information from them. This information, consists of "latitude," "longitude," "altitude" and "time" which are important, for navigation and map-making purposes. CAR uses the same generic parameters that generates those four coordinates, but in a different way. In space weather research, GPS data is needed to compute the total electron content of the upper atmosphere, at a given time. The electron content, is a key space weather indicator.

How does CAR's research, fit into the national development agenda?

Rabiu: It fits in many ways. Keep in mind, that the "atmosphere" is a natural resource, to be exploited! But first, we must understand, it know its content, and behaviour. There is no communication gadget, for example, that does not have its own specification for operating in the atmospheric medium. The upper atmosphere, impacts very high frequency signals. The lower atmosphere, also affects certain frequencies. Then, rainfall, must be factored in. These parameters vary, both with the time of the day and the seasons. So, continuous monitoring of the atmosphere, is vitally important to radio transmission. Another aspect, is atmospheric chemistry. This is where we get into monitoring air quality, at the tropospheric level, for microscopic particles. If you keep close tabs on this area, you'll know when danger lurks. Toxic substances can find their way into an unguarded atmosphere.

What causes the chemical and physical properties of the atmosphere to vary?

Rabiu: There are numerous contributing factors. First, the atmosphere contains a mixture of natural gases, oxygen, hydrogen, nitrogen etc. And you have them in different proportions. Now, humans also generate gases. We run power plants. Our vehicles release dangerous carbon dioxide fumes. These gases too, come in different proportions and affect air quality. Another thing, is that the Sun beams infrared, visible and ultraviolet radiation onto Earth's surface. This energy drives the wind system and moves these gases around and stirs them up. The intensity of sunlight of solar radiation varies with passing hours of the day, causing the temperature to fluctuate. Wind speeds, in turn, vary, due to energy fluctuations.

Your Japanese collaborators, brought an Optical Imager to NASRDA, sometime ago. What kind of data, are you getting from the Imager?

Rabiu: The Imager, covers a roughly 500 km radial and altitudinal swathe of the upper atmosphere. It makes the space environment visible, after dark, at a certain wavelength. Using the Optical Imager, we can detect plasma bubbles, in the ionosphere, and thus anticipate disruptions, in communication.

This would, it seems, make CAR a very attractive partner, for foreign collaborators?

Rabiu: Yes. That's why scientists, from so many countries, bring equipment here. In fact, it's only in Africa and South America, that you have the magnetic equator passing inland. This is what makes Abuja so important, for our research. It is about 0.5 degrees south of the geomagnetic equator.

Prof. Rabiu, Thank you for your time.

12. BIRDS-3: Activities on Aug-Sept 2018 (Abhas)



Vibration Testing



Critical Design Review



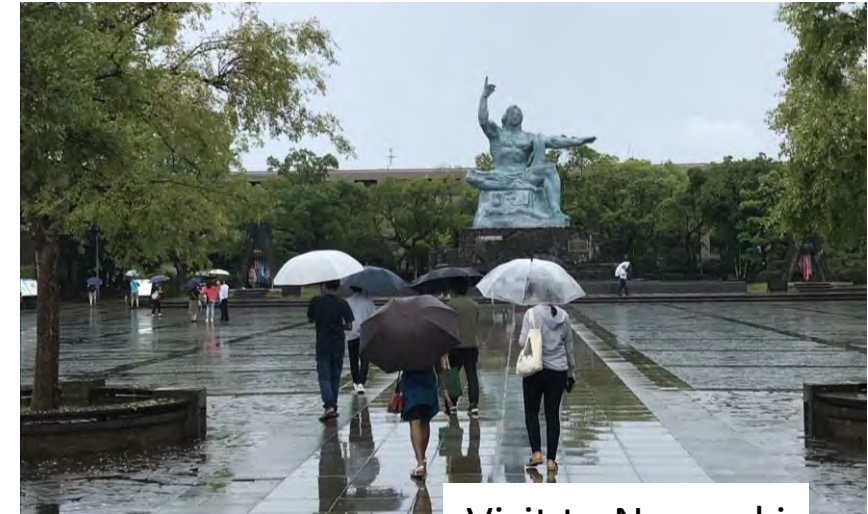
Weekly Meeting



Antenna Tying Session by Makiko



Anechoic Chamber Test II



Visit to Nagasaki

13. BIRDS-3: Critical Design Review (CDR)



BIRDS-3 CDR

Report by
Dulani Chamika

BIRDS-3 Critical Design Review (CDR)

BIRDS-3 was held on 1st September 2018 in Nakamura Centenary Memorial Hall at 1pm

Charge de Affairs, Mr. Krishna Chandra Aryal of Nepalese Embassy of Japan participated as a guest



Mr. Krishna Chandra Aryal making comments



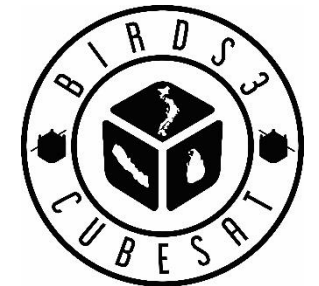
Professors listening to the presentations



During the CDR



During the CDR



BIRDS-3 Critical Design Review (CDR)



Beginning of the CDR



Sasaki listening to the presentation carefully



Makiko presenting antenna subsystem



A group picture was taken at the end

BIRDS-3 Critical Design Review (CDR) at NAST in Nepal



1. Krishna Raj BC

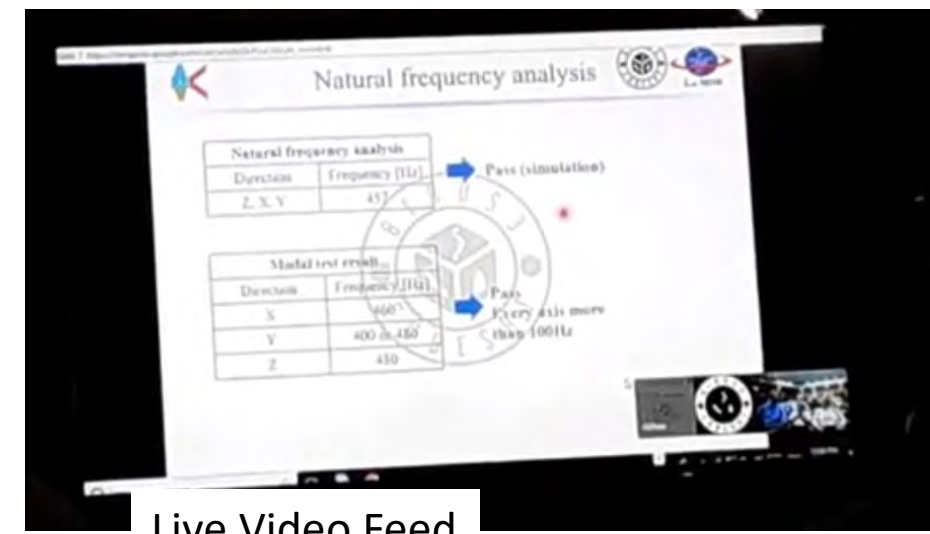
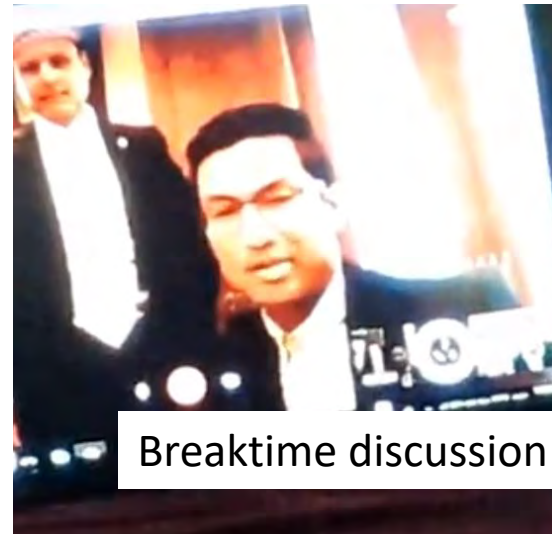
Secretary of Science and Technology,
Ministry of Education, Science and Tech.

2. Dr. Rabindra Prasad Dhakal

Chief of Technology,
Nepal Academy of Science and Tech.

3. Dr. Buddhi Ratna Khadge

Secretary,
Nepal Academy of Science and Tech.





The group selfie



Kakimoto posing before cutting the cake



After the long CDR we celebrated Sasaki's and Kakimoto's birthdays which were in August



The Babies of August



Sasaki posing before cutting the cake

BIRTHDAY CELEBRATION

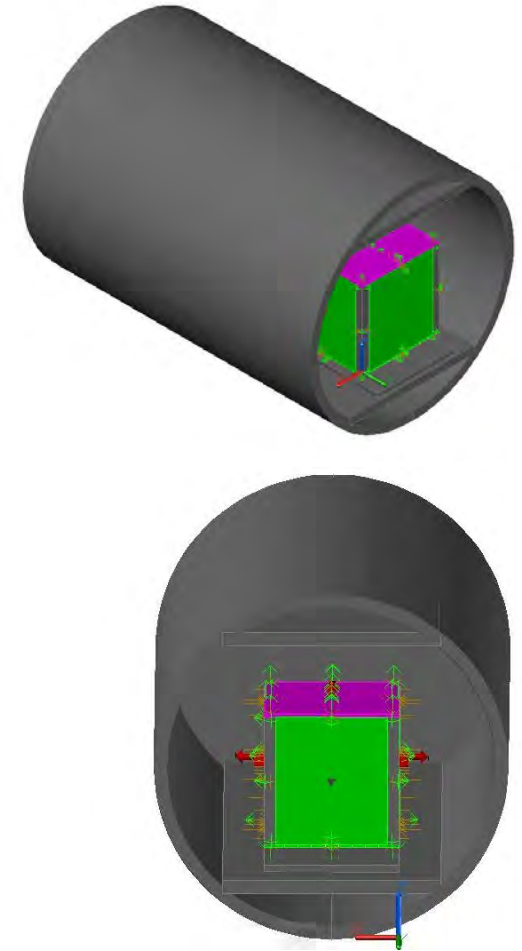


今回はBIRDS-3の熱解析についてです。

先月BIRDS-3の熱真空試験を行ったため、その温度データを基に、熱数学モデルの較正を行いました。宇宙空間では、接触部分における伝導と非接触面同士での輻射によって熱が移動します。そして今回のモデル較正の目的は、伝導に関するパラメータである接触熱伝導率の決定です。外面パネルを実際の試験結果に合わせ、内部の温度を解析した結果が実際の試験結果に合うように接触熱伝導率の値を決定します。

今後は完成したモデルを用いて実際の宇宙軌道上の環境を模擬した軌道上熱解析を行う予定です。

I have calibrated the thermal mathematical model of BIRDS-3. Orbital analysis will be done next.



試験機の中に搭載されたBIRDS-3のEM

15. BIRDS-3: Trip to Nagasaki by team members

Report by Makiko

Transport: Car rental
Lodging: Airbnb

HERE >



https://japandeluxetours.com/uploads/2015/08/20150811124759_55ca435fea60e.jpg



http://www.japan-kyushu-tourist.com/wp-content/uploads/0316_kyushu_map5-3-1.jpg



Chinatown Lunch



Sara Udon
皿うどん



Peace Statue



Atomic Bomb Museum

After CDR, BIRDS-3 members went to Nagasaki for our vacation from 7 to 9 September. We went to Chinatown, Atomic Bomb Museum, Dejima and Glover garden. For Abhas, Tharindu, Dulani, Pooja, Nagasaki was the first time, and we thought about peace and learned about Japanese history. We also enjoyed the scenery.



Dejima



Night view from Glover Garden

3rd day, we went to Huis Ten Bosch. It is a famous theme park in Japan and it is modeled the streets of the Netherlands. The scenery was very beautiful and BIRDS-3 members had a good time there.



FIRST SUMMER CAMP EXPERIENCE

Pooja Lepcha

Summer camp had always sounded so much fancy and fun and we were all excited to go.

Day 1

We left the campus at 9am in the morning and arrived in the venue at 13:30 with a brief lunch break in between. As soon as we arrived, we were directed towards the lecture room. It wasn't any boring lecture, it was about each person's interest and that garnered everyone's interests.

We had two lectures for the day and went to our respective rooms. Ours was only ladies room and we had cozy bunk beds.

We went to local restaurant afterwards.



The highlight of the dinner was a local fish 'Yamamae'. It was the best ever fish I had.



Day 2

Day 2 started with the lectures getting more interesting before we broke for a bento box lunch.



We got fishing trips with a fishing rod.



We had break time after 6 lectures and we decided to conquer a mountain.



The day ended with Barbeque, dance session and sports.



The hike was tough but it was worth the view from there.



Day 3

We checked out of the room and BIRDS-3 decided to explore around before heading back to campus.



The first stop was Oita bridge. It was a beautiful day.

The next stop was a waterfall spot nearby.



We had lunch in the local restaurant there, soba noodles with duck meat was recommended and it was delicious.

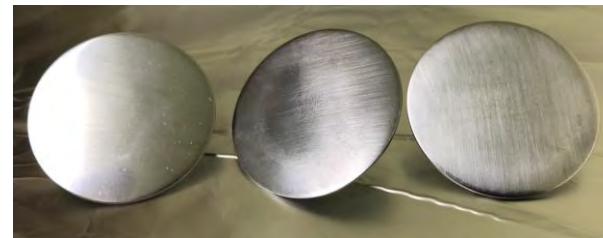
It was a very refreshing and revitalizing getaway to the mountains. I look forward to the next summer camp in 2019.

アウトガス試験

今回は前回のアウトガスをより詳しく説明します。アウトガスの規格はASTM E 595に従っています。

サンプルを2~3mmに刻んで恒温恒湿室に24時間放置します。放置したサンプルを装置の中に入れます。装置内を真空にした後、加熱してサンプルに含まれるコンタミネーションや水分を出します。コンタミネーションを採取するためにプレートを一定の温度に冷やしておきます。このようにすることでプレートにコンタミネーションを凝縮させて集めることができます。

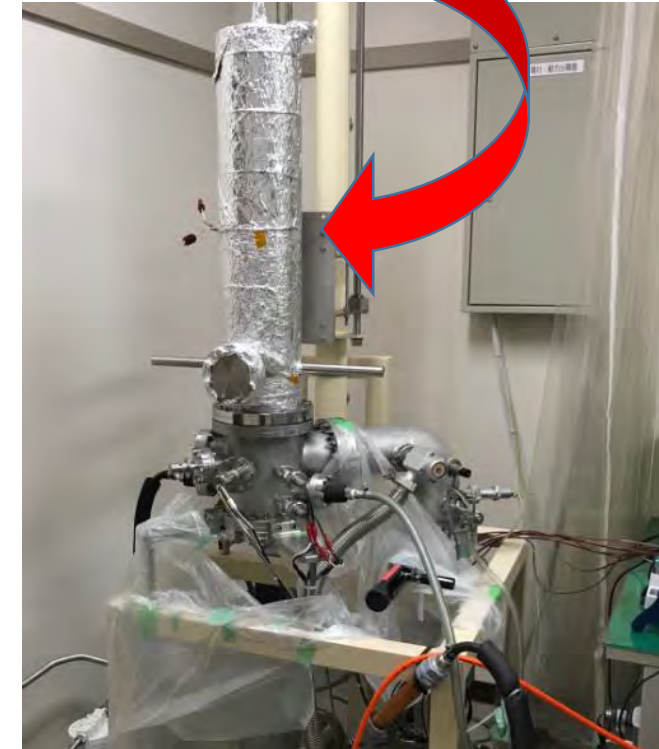
このコンタミネーションの量や試験前と試験後の質量を計算して宇宙に適している材料かどうかを見定める基準として使われます。



Plates



Sample

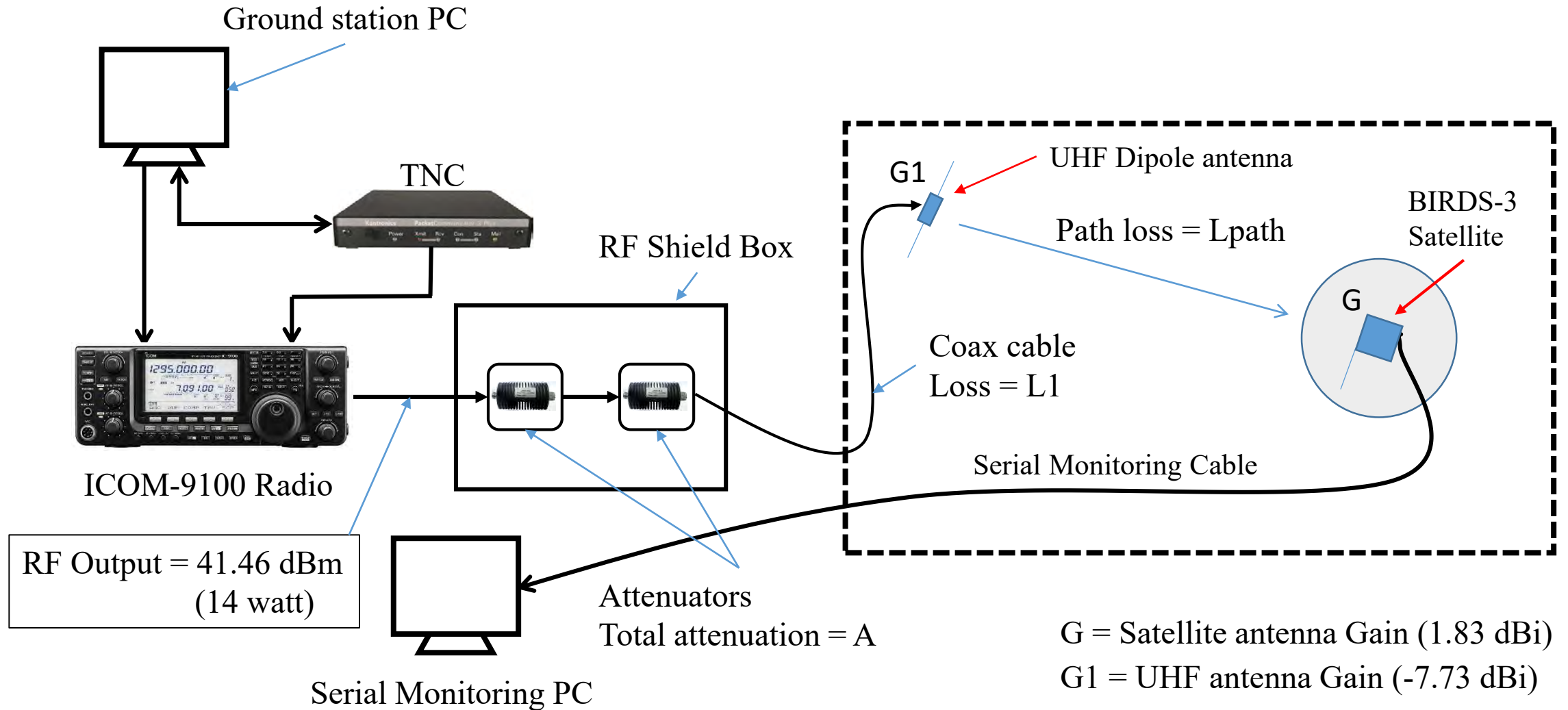


A more detailed explanation of outgas testing and its importance

BIRDS-3 Anechoic Chamber Test Plan Summary (Phase-2)

By: Tharindu Dayarathna

BIRDS-3 Anechoic Chamber Test Setup (Phase-2)



➤ Why this anechoic chamber test is going to be done ?

Main aim of this test is to find uplink packet receiving rate for different receiving powers at satellite. We can then get an idea about receiver's sensitivity of BIRDS-3 satellite.

➤ What is the procedure of this test ?

1. First setup is prepared and then we can write satellite received power using below equation (in dB scale)

$$P_{received} = 41.46 - A - L_1 + G_1 - L_{path} + G$$

$$P_{received} = 41.46 - A - L_1 + (-7.73) - L_{path} + 1.83$$

$$P_{received} = 35.56 - A - L_1 - L_{path} \quad (dBm)$$

2. L_1 is the coaxial cable loss and L_{path} is path the loss, they are known values. the attenuation value (A) is changed to send different power to the satellite ($P_{received}$)
3. At different attenuation values (A) hundred uplink commands (packets) are send to satellite and get the uplink packet success rate.
4. Finally, received powers at satellite and corresponding packet success rates are plotted to determine the receiver sensitivity of BIRDS-3 satellite.

19. BIRDS students celebrate the wedding of Dr Masui

15 September 2018

After the main wedding ceremony in Fukuoka City, students and alumni got together for an informal celebration at a pub in Kokura.



End of this **BIRDS Project Newsletter**

(ISSN 2433-8818)

– Issue Number Thirty-Two

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

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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.