



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.

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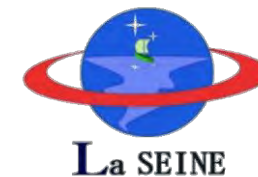
BIRDS Project Newsletter

Issue No. 33
(18 October 2018)

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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 The Philippines

The Guest Box



Sagada is becoming the Philippine's Arabica coffee capital. Situated in the north of the country, the coffee beans are cultivated by local growers in the high altitudes and conducive environment of the Cordillera Region.

Sagada's Civet(local name:Alamid) Coffee is a must try. Locally known as Alamid coffee, the beans go through a peculiar process before it gets served in your cup: it gets digested then defecated by civet cats. The beans are a favorite of these civet cats, and they eat the coffee berries before they get collected by local coffee farmers.

Alamid coffee is similar to the kopi luwak of Indonesia and is considered as one of the most expensive in the world. Both the regular Sagada coffee brew and the Alamid are best to consume during the cold mornings in Sagada, and of course before and after your tours!

Photo credits: SGD Coffee

by Mara Mendoza, Nikki Ignacio and Ericka Picar
from STAMINA4SPACE (formerly PHL-Microsat Program)



01. Tutors (for incoming overseas students) received a training session

Ou-san (王さん) of the Kyutech Student Section leads the training session before the tutors



Tutors of SEIC

On 18 Sept. 2018 in Room C-1C (Tobata Campus classroom) from 13:30 to 14:00, a training session was conducted for the tutors of the School of Engineering. These tutors will assist incoming students from overseas.



Staff

Tsukinari-san, Makino-san, Ou-san, Shinsho-san

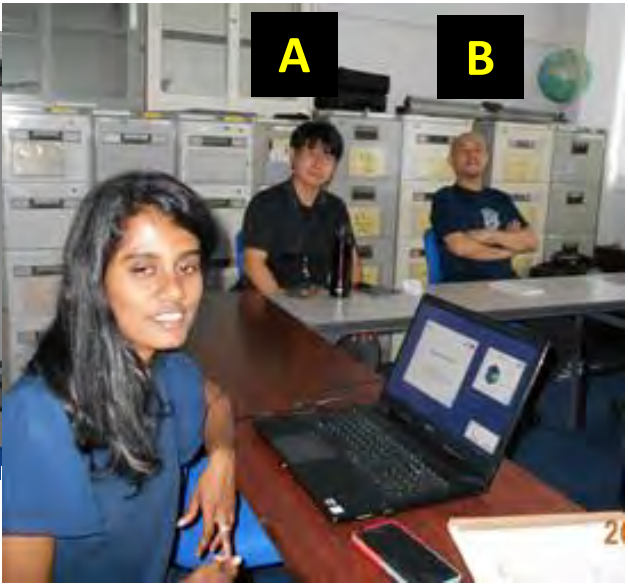
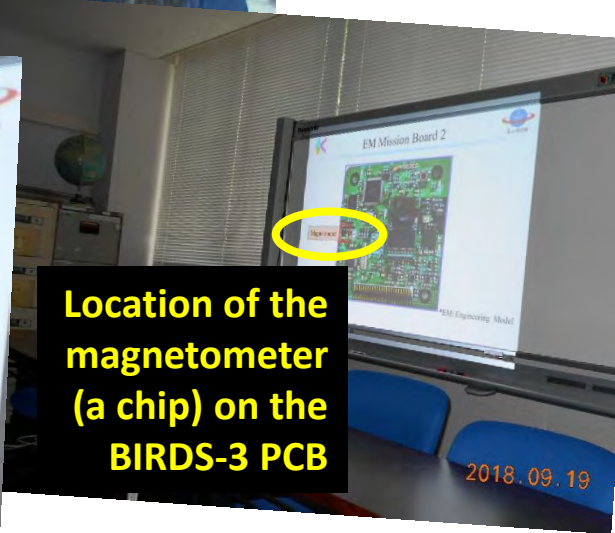
02. A visit to ICSWSE (Kyu Dai@Ito Campus) to consult on matters of BIRDS-3 magnetometer



On 19 Sept 2018, Dulani (BIRDS-3, Sri Lanka) and G.Maeda visited ICSWSE (for the full name in Japanese and English see wall board at the far left) at 4:00 PM. The topic of discussion was about calibrating the magnetometer used by the BIRDS-3 final design. Dulani needed some expert advice of ICSWSE research staff. She learned some important things in this one-hour meeting.

THANK YOU STAFF OF ICSWSE FOR YOUR WISE ADVICE

Trials	X (mG)	Y (mG)	Z (mG)	Square mean root (mG)
1. Initial position	-850	-1045	661	1500.48
2. (around Y axis flipping)	808	-1038	-631	1458.92
3. (around Z axis flipping)	735.57	949.07	643.09	1358.24
4. (around X axis flipping)	-598.44	847.69	-741.06	1440.46



- A. Dr Uozumi
- B. Dr Abe

Both are members of the technical staff of ICSWSE. Thanks also to Dr Yoshikawa, who is not shown here.

Brief presentation by Dulani



03. Kyutech Open Campus is written up in “Kyutech Journal”



2018 Kyutech Open Camp (Tobata) occurred during 3 and 4 August. It was written up in the **BIRDS Project Newsletter** (see Issue No. 31, pages 42 – 44).

On the next six pages, you can find the write-up of the same event by “Kyutech Journal” No. 896.

九州工業大学 オープンキャンパスが行われました！

明専会 広報部会

工学部

2018年8月3日(金)と4日(土)に九州工業大学戸畑キャンパスでオープンキャンパスが行われました。気温が30℃を超える中で、3、298名の高校生らが来てくれました。学科ツアー、女子カフェ、個別相談コーナー、女子高校生保護者向けコーナーなど設けられ、多くの高校生や父兄の方々にぎわっておりました。今回は、特に学科ごとに85テーマ以上の展示や体験実験、体験授業



入口の様子

This is what you see as you enter the Tobata Campus from the main gate (north side of the campus)

など、展示に工夫がなされています。ここで簡単に学科ごとの様子を概説したいと思います。

●建設社会工学科

「強く美しく豊かな明日の都市デザイン」を統一テーマとして、構造工学研究室では「橋を守る技術」、水環境工学研究室では「魚の特性からみる河川環境」、コンクリート研究室では「史上最速!? 5分で固まるジェットセメント!!」、交通工学研究室では「住みやすいまちをつくる」高齢者の目線で考えるバリアフリー、GISで考える土地利用、地盤工学研究室では「暮らしを支える土台づくり」、建築環境・計画・構造・デザイン研究室では「折り紙で作ろう世界遺産」、環境デザイン研究室では「人と緑を豊かにする環境デザイン」について、社会や実生活と関連付けながら展示を実施しました。大学院生や学部4年生が、高校生と保護者に理解してもらえ、さらに、研究内容をわかりやすく、一

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A new department was born this fiscal year:
 “Department of Space Systems Engineering”
 ... it was introduced to Open Campus visitors (future students)

●宇宙システム工学科
 宇宙システム工学科は今年度から



体験実験（機械知能）

生懸命に説明している姿が印象的でした。

●機械知能工学科
 大学生総出の雰囲気です。担当の実験をそれぞれの研究室で行っていました。学生たちは活気があり、フレンドリーな雰囲気が伝わってきました。実習や実験に関連する機械や、測定装置をうまく展示しており、高度な研究の雰囲気が伝わってきました。特に、研究室ごとの独自性や、学科の研究内容の幅広さを伝えるために、いろいろなデモや体験が行えるように工夫されているようでした。



研究室ブース（宇宙システム工学科）

スタートした学科です。展示会場には「宇宙」を感じさせる有翼ロケット実験機や人工衛星が展示されていて、来場者の目を引いていました。有翼ロケット実験機は、実際に打ち上げた機体と実験の様子を記録した映像を見せながら、また衛星開発プロジェクトでは自分たちで開発した人工衛星の模型を見せながら、研究開発にかかわった学生たちが楽しそうに説明しているのが印象的でした。これらの展示のまわりには宇宙に関連した様々な研究を行っている各研究室の展示ブースが並んでいて、なかなか現実のものとして来場者が想

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開催報告



学科紹介（電気電子）

像しにくい「宇宙」を分かりやすく説明していて、高校生たちが熱心に聞き入っていました。

● 電気電子工学科

MILANSの半分のスペースを使って学科紹介を行い、残り半分とインテラクティブ教育棟1Fを使って、16個の研究紹介ブースが設けられていて、広いスペースに複数の研究室が配置されているので、賑やかで目を引くような感じでした。そこでは、電気エネルギーの発生・制御・応用、雷、超電導、磁気応用、電子顕微鏡、センサ、音響、ネットワーク、人工知能などが実際の研究設備を持ち込んで、教員や研究室学生から熱心に



ブース紹介（電気電子）

説明されていました。持ち込めない大型の研究設備（電波無響室、プログラミング室、レーザー、ダイヤモンド、電気エネルギー装置）は、別の建屋の5か所の実験室で、実物を見せながらわかりやすく研究紹介され、高校生のみならず父兄の関心も集めていました。

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● 応用化学科

化学の面白さを体験してもらえようように、様々な体験実験やデモ等のコーナーを設けていました。内容は、光エネルギーによる水素の製造や、燃料電池、DNAや細胞などのバイオ・医療のデモや体験実験コーナーなどです。また、大学の授業を経験



ラボツアー（応用化学）



大学の体験授業（応用化学）

する模擬授業や、大学の研究室を見
てみようといったラボツアーが行わ
れていました。高校生を中心に、様々
な体験に興味深く参加しているよう
でした。

●マテリアル工学科

入口に様々な金属製品が展示され
ていました。電子顕微鏡の見学、ス
ポット溶接機での溶接デモ、CAD
を使った応力解析などの体験があ
りました。ZnO以外の色々な結晶
構造や、鉄の変態の様子、 C_{60} の結
晶構造による誕生石の結晶構造の
投影などを見て、盛り上がりしていま
した。学科の特徴を具体的に示し、
それに沿って各種のデモや体験がで
きるような仕掛けになっており、す
べてのデモや体験で、社会や実生活
との関連がわかるように工夫されて
いました。

●女子カフェ

各学科の女子学生が高校生の相談
ののつていました。2日間で15名の
女子高校生の参加がありました。主
に高校1、2年の女子高校生が、大
学受験のことやキャンパスライフ、
就職について、大学院のことについ
て、様々な質問をしていました。本
学の学生たちも、自分たちの経験を

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開催報告

もとに、懇切丁寧に質問に答えていました。学生達も和やかな雰囲気でした。



女子カフェ

工学部ではスタンプラリーも開催され、3つのスタンプとアンケートを提出すると記念品がもらえるイベントもやっていました。学生達もスタンプラリーを楽しんでいたようで、暑さの中、オープンキャンパスは大盛況に終わりました。



スタンプラリーの景品

情報工学部

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平成30年7月14日(土曜)と15日(日曜)に九州工業大学情報工学部(飯塚キャンパス)において、平成30年度オープンキャンパスが開催されました。当日は、キャンパス最寄り駅である新飯塚駅から大学構内まで無料バスが運行され、多くの高校生を含む来場者が訪れました。2日間で、1970人(うち、高校生が1145人)で、昨年度よりも多くの訪問がありました(昨年度は1856人)。



公開講義の様子

平成31年度入試から、AO入試が始まります。オープンキャンパスの企画の一つとして、AO入試の解説とグループワークも実施されました。AO入試への高校生の関心は高いようで、多くの高校生、保護者、学校関係者が参加し、AO入試の概要説明、実際のAO入試を模擬した体験ができる機会となりました。



AO入試デモ体験の様子

また、「女子カフェ」という女子学生相談コーナーが設けられました。これは、女子高校生を対象とした進路相談コーナーで、情報工学部の女子学生が対応しています。多くの女

子高校生がほぼ途切れることなく相談に来ていました。



女子学生相談コーナー「女子カフェ」の様子

参加者からのアンケートでは、「施設や設備が充実していて、研究内容も面白そう。実際に体験してみてもらに興味があった」「学生が生き生きと楽しそうだった。とても親切だった。」「大学の雰囲気がとても明るく、早く大学に行きたい。」などの感想が寄せられました。

本記事を作成するにあたり、情報をご提供いただいた各キャンパスの関係の皆様には、この場を借りて厚く御礼申し上げます。

End of the *Kyutech Journal*
article about
2018 Open Campus at Kyutech.

04. Kyutech Fall Commencement Ceremony for Graduate Students ... 21 Sept. 2018



Kyutech President Y. Oie delivers address (in English)



Very international (13 countries)



Joven (Philippines) and Azami (Malaysia) – both BIRDS-2



Joven (Project Manager of BIRDS-2) holds his Kyutech diploma



Dean Serikawa with the graduates

卒業
Graduation



Azami receives diploma from Dean Serikawa

CLASS of 2018



05. BIRDS-2 mentioned in “CQ Ham Radio” magazine

In the October 2018 issue of “**CQ Ham Radio**” [published in Japan], there is an article about BIRDS-2 and its recent deployment from the ISS. See the next page for that article.

Thanks to BIRDS-2 member Mr. Nakayama (Kyutech student) for providing this article.

You can buy the issue from Amazon for about 1000 yen
<https://www.amazon.co.jp/CQ-ham-radio-2018年10月号/dp/B07G1WXT1N>



衛星通信情報

アマチュア無線用に運用されている「人工衛星」についてのホットな話題と最新情報をお伝えする連載ページです。

JN1GKZ 新井 雅裕 Masahiro Arai

BIRDS-2 ISSから放出される

BIRDS-2の3機の衛星 BHUTAN-1, MAYA-1, UiTMSAT-1は、8月10日に国際宇宙ステーション (ISS) から放出され、順調に運用されています。

●衛星3機からのCWビーコンを受信

放出直後の衛星はISSとはほぼ同じ軌道なので、ISSの軌道要素で追尾できます。軌道を確認すると、放出から約35分後に日本上空を通過することが分かりました。衛星は放出から30分後にアンテナを展開し、32分後からCWビーコンの送信を開始する予定でしたので、産声を上げた直後の信号を受信できるはずですが、

衛星を待ち構えていると、無事に3機のCWビーコンが受信できました。同じ周波数での運用のため、送信が重ならないように順番で送信していることも確認できました。送信機の周波数誤差や温度の違いのためか、同じ周波数でもCW信号は、衛星によって違って聞こえました。

●APRSのビーコンも送信中

8月末現在、APRSの運用はビーコンを送信しています。APRS動作時は45秒間隔での送信です。デジビート用のコールサインは衛星のIDが使われます。alias (別名) はAPRSATとARISSです。

APRSをモニタしていると、衛星からの信号がアコ

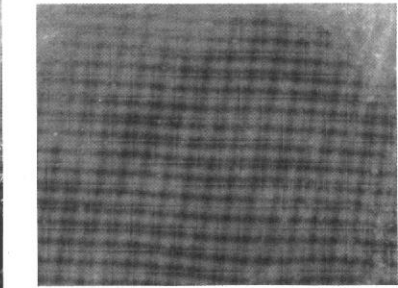


図1 DSLWP-Bが撮影した初めての月の画像
8月12日の運用で得られた画像。クレータがたくさん写っており、月の特徴をうまく捉えている
(出典:ハルビン技術研究所)

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ードできることもあるでしょう。QSLが発行されているので、衛星からの信号を受信した局は、BIRDS-2のWebサイト <http://birds2.birds-project.com/data-submission> から受信報告を行い、QSLを申請してみてください。

●衛星放出の様子をYouTubeでチェック

ISSからの放出の様子は、宇宙航空研究開発機構 (JAXA) がYouTubeでライブ中継を行いました。ライブ中継された動画は、<https://www.youtube.com/watch?v=wp0bV2LMQJE> で見る事ができます。放出の場面だけではなく、衛星や放出機構の解説が行われているので、ぜひご覧ください。

DSLWP-B 月の画像を送信

DSLWP-A/Bにオスカナンバーが付与されました。DSLWP-AはLunar-OSCAR 93 (LO-93)、DSLWP-BはLunar-OSCAR 94 (LO-94)です。

LO-94は運用されていますが、LO-93は軌道修正時に不具合が生じたようで信号が途絶えています。DSLWP-Bの運用は不定期ですが、8月3日から画像データの送信を始めました。640×480画素のJPEG画像をJY1-SATでも採用されたSSDV (Slow Scan Digital Video) のフレームにし、GMSK 250bpsで送信しています。8月12日には図1に示す月の画像取得に成功しています。

ISS パケット運用再開

ISSからのパケットの運用は、2017年後半から機器の故障のため休止しています。運用再開のために、JVCケンウッドの144/430MHz帯 FMデュアルバンドター TM-D710GAをベースとした新しい無線設備 IORS (Interoperable Radio System) の準備を進めています。TM-D710GAはTNC (Terminal Node Controller) を内蔵し、パケット運用もできます。しかし、今年初めの温度試験で電源ユニットに問題が見つかり、熱設計を見直す必要が生じました。このため、目指していた年内の運用再開には間に合わず、2019年にずれ込む予定です。

パケット運用の早期再開のため、パケット・モジュ

ham radio

ールの予備機をISSで稼働させる案が浮上しました。倉庫の奥に眠っていた予備機は、正常に動作することが確認できました。ISS内で稼働させるためのNASAの審査は書類審査のみでパスしました。予備機は10月31日に打ち上げが予定されているロシアの補給船プログレス 71PでISSに運搬するよう調整が行われています。順調にいけば、11月末からパケットの再開が期待できます。

この朗報が伝えられたのは8月1日でした。ところが、8月下旬から、突然パケットの運用が再開されました。故障していたパケット・モジュールが自然に復旧したようです。今後、何があるか分からないので、予備機の運搬計画は進められています。

衛星の打ち上げ情報

●ロシアの衛星4機 ISSから放出

予定どおり8月15日、ISSの船外活動時に宇宙飛行士の手からTanusha SWSU-3 (RS-8)、Tanusha SWSU-4 (RS-9)、SiriusSat-1 (RS-13S)、SiriusSat-2 (RS-14S) が放出されました。Tanusha SWSU-4は受信報告がないようですが、他の3機については信号が受信されています。

ISSから放出直後は、ISS内のリピーター・システムを稼働させ、Tanusha SWSU-3/4の信号をISSで受信

し、145.800MHzで再送信していました。
Tanusha SWSU-3/4の姉妹機と思われるTanusha SWSU-5 (RS-10)とTanusha SWSU-6 (RS-11)が、2019年にISSから放出される計画があるようです。

●中国 CAS-5A/5B、CAS-6の打ち上げ

9月に打ち上げられるとの情報があります。CAS-5AとCAS-5Bは親子衛星で、軌道上でCAS-5AからCAS-5Bを放出します。CAS-5Aは3UのCubeSat、CAS-5Bは9×8×5cm、重さ500gの小型衛星です。CAS-5AはK/T、K/U、V/U (Tは21MHz帯、Kは29MHz帯のこと)のリニアトランスポンダとV/UのFMリピータを搭載しています。JARLのバンドプランでは、21MHz帯は衛星にアサインされていないため、日本からはモードK/Tの運用はできません。

CAS-6は49×50×43cm、重さ50kgと大型の衛星です。モードU/Vのリニアトランスポンダを搭載しています。

●こうのとりの7号機でISSにCubeSatを運搬

9月11日に打ち上げが予定されている宇宙ステーション補給機 こうのとりの7号機 (HTV-7) で、3機のCubeSatがISSに運搬されます。このうち、RSP-00 (一般社団法人 リーマンサットスペース) とSTARS-Me (静岡大学) がアマチュアバンドで運用を行います。ISSからの放出は10月が見込まれます。 @Q

表1 紹介した衛星の運用周波数

衛星名の後ろのカッコ内はコールサインまたはID。CAS-5A/5Bは親子衛星で軌道上で分離。STARS-Meは親子衛星で2機はテザーでつながる。リニアトランスポンダ周波数のカッコ内は帯域

衛星名	開発	周波数、モード
Tanusha SWSU-3/4 (RS8/9)	ロシア サウスウエスタン州立大学	FSK 9600bps, 音声メッセージ 437.050MHz
SiriusSat-1 (RS-13S)	ロシア	GMSK 4800bps 435.570MHz
SiriusSat-2 (RS-14S)	ロシア シリウス教員区センター他	GMSK 4800bps 435.670MHz
BHUTAN-1 (BIRDBT)	ブータン	
MAYA-1 (BIRDPH)	フィリピン	APRS デジビート 145.825MHz CW 437.375MHz
UiTMSAT-1 (BIRDMY)	マレーシア	
CAS-5A	中国	リニアトランスポンダ K/T: 日本からの運用不可 K/U: up 29.490MHz, down 435.505MHz (15kHz) V/U: up 145.820MHz, down 435.540MHz (30kHz) FMリピータ V/U: up 145.925MHz, down 435.600MHz CW 29.465MHz, 435.570MHz GMSK 4800/9600bps 435.650MHz
CAS-5B		CW 435.720MHz
CAS-6		リニアトランスポンダ U/V: up 435.280MHz, 145.925MHz (20kHz) CW, GMSK 4800bps 145.910MHz
RSP-00	リーマンサットスペース	デジタル CW, AFSK 1200bps 145.890MHz
STARS-Me	静岡大学	マザー CW 437.245MHz, デジタル 437.405MHz ドータ CW 437.255MHz, デジタル 437.425MHz

Oct. 2018

193

06. Welcome new SEIC students (Kyutech entrance ceremony)



Kyutech Entrance Ceremony

This photo taken on 01 Oct. 2018 by Ms. Miwa Makino

New SEIC students

There are 5 Master course students and 7 Doctor course students.

- Hoda Awny A. A. ELMEGHARBEL (Master)
- Hari Ram SHRESTHA (Master)
- Hind MOHMOUD ELHAJ MOHAMMED (Master)
- Senior SHIMHANDA (Master)
- Timothy Ivan LEONG (Master)

- ◆ Lakhdar LIMAM (Doctor)
- ◆ Yasir Mohamed Osman ABBAS (Doctor)
- ◆ Izrael Zenar Casople BAUTISTA (Doctor)
- ◆ Marloun Pelayo SEJERA (Doctor)
- ◆ Mustapha Femi ISHOLA (Doctor)
- ◆ Mark Angelo Cabrera PURIO (Doctor)
- ◆ Yigit Cay (from Master to Doctor)

07. Welcome message from the Graduate School Office



To all SEIC students:

Welcome to Space Engineering International Course (SEIC) !

On behalf of Kyutech staff, I convey our fervent hopes that you will enjoy a rich experience here at Kyutech. I hope you will learn a lot, experience amazing things, and make friends for life.

Upon completion of SEIC, I hope you will use the world as your stage to make contributions as a researcher or as a "high-performance" engineer. I hope you will successfully promote space in your home countries in terms of education and industrialization.

And I hope you can make many bridges between Japan and your homeland -- using the skills and human contacts that you acquired during your years at Kyutech.

The staff of Kyutech will work tirelessly on your behalf -- and we will endeavor to show you that your decision to study at Kyutech was the right decision.

Kazuyo SAKAGUCHI
Graduate School Office, College of Engineering
28 September 2018

08. Staying in touch with the global space industry: Attending IAC in Bremen, Germany



Some staff and students of Kyutech attended UN/IAF workshop and the IAC in Bremen

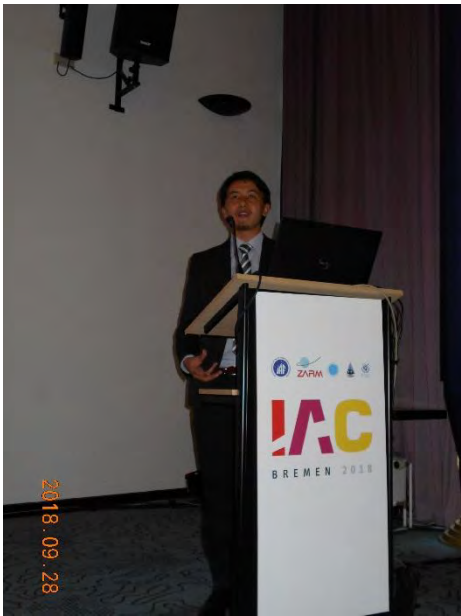


69TH INTERNATIONAL
ASTRONAUTICAL CONGRESS
BREMEN 1-5 OCT 2018

Dinner meeting with Prof. Cho, Dr Danielle Wood (MIT) and Dr Javier Stober (MIT—rocket propulsion expert) in front of main IAC entrance.

Per the table below, the workshop occupied the first three days. The next five days were for IAC.

Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
28-Sep	29-Sep	30-Sep	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct
IAF workshop	IAF workshop	IAF workshop	IAC	IAC	IAC	IAC	IAC
Day 1	Day 2	Day 3	Day 1	Day 2	Day 3	Day 4	Day 5



Cheki's talk during UN/IAF workshop



Cheki was invited to this UN/IAF workshop, and talked about Bhutan and space.



Dr. Jorge Kurita (director of Paraguayan Space Agency) and Cheki during a coffee break.

IAC-18-B4.6B-07 15:35 - 15:43

Design, Development, Testing and On-orbit Performance Results
of a Low-cost Store-and-Forward Payload Onboard a 1U CubeSat
Constellation for Remote Data Collection Applications
Salces, Adrian; Kim, Sangkyun; Masui, Hirokazu; Cho, Mengu



PM of
4 Oct. 2018

IAC presentation by
Adrian of BIRDS-2





The official flag of
Bremen

“Kyutech Night” was held at Bremen’s 600-year-old restaurant, “Ratskeller”



Many productive meetings occurred during the Bremen IAC . . .



Meeting with Dr Pom and the Thai delegation



Meeting with Dr Chizea and the DG of NASRDA



Meeting with Dr Spencer of NASRDA



Meeting with Kafi and Antara (BRAC Univ.)



Meeting with Dr Livio and Dr Kurita



Dinner with Adrian, Cheki, and Prof Taiwo (ISU)

IAC Student Reports

on the next three pages with photos

[in the order submitted]

All received on 15 Oct. 2018

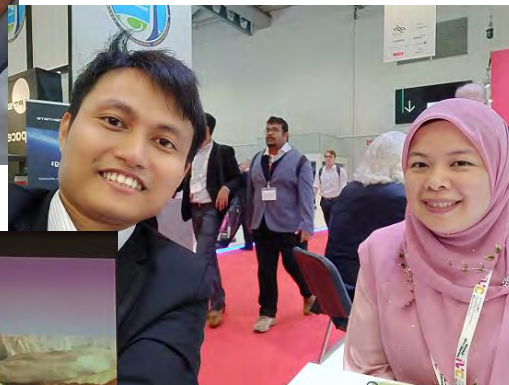
My First IAC Experience in the “City of Space” by Adrian Salces (BIRDS-2)



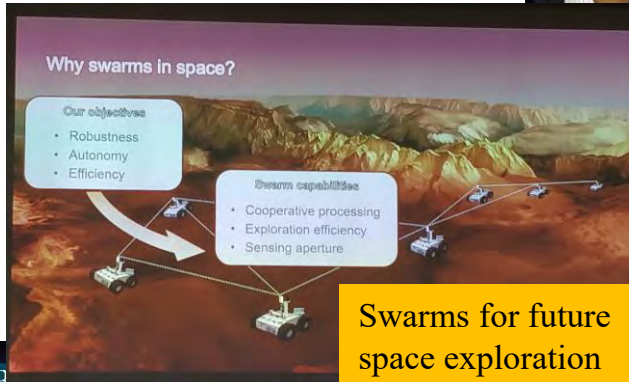
With fellow youngsters at a Meeting of Parliamentarians in the World.



Dinner with Taiwo at our apartment.



I had the chance to meet Dr. Amalina of UiTM for the first time. She is an Emerging Space Leader awardee.



Inspired by this year’s theme *#InvolvingEveryone*, the International Astronautical Congress 2018 has brought more than 6000 people in the global space community in Bremen, dubbed as the “City of Space”. I had the great privilege of participating in the largest space event in the world to present our work on BIRDS-2 Project’s S&F Mission but I experienced much more than that! As a first-timer, it was exciting to “see” and “hear” about the various work and issues that people, organizations and companies are doing in their respective fields. One general observation I had is that participants from almost everywhere in the world utilize space to deal with distinct and common issues – be it economic, political, technological or driven by humanity’s innate desire for “future exploration” – but regardless of the motivation, everyone had a platform to share!

Indeed, IAC2018 serves as a learning experience that is beneficial to my career as a space engineer. Aside from witnessing wonderful presentations, panel discussions, exhibits and even performances, I met old and new friends who I can collaborate with in future endeavors. Overall, IAC2018 was inspiring, knowledge-enriching, and a great venue for sharing experiences and meeting with people!

My Thoughts on IAC 2018 - Cheki (BIRDS-2)

IAC : International Astronautical Congress

Venue: Bremen, Germany

Date : 1 – 5 October 2018



This was my first time to attend IAC, which is an annual event. It is one of the largest conferences on space with more than 6,000 participants from around the globe. The participants are not just technical people involved in space but rather consists of lawyers, entrepreneurs, musicians and so on. It is good opportunity to meet many people at one place.

To mention two highlights of IAC2018: 1) Plenary event on “Gravitational Wave Astronomy: Sounds from the Dark Side of the Universe.” As predicted by Einstein, a gravitational waves, created when 2 Black Holes merge, was detected on ground in 2015. A paper was published on it. Who were authors of the paper? 1,004 authors for one paper!

2) Listening to astronauts talk. Seven real life astronauts from different countries took a stage to share their ideas. Even the current commander of ISS joined live from space to answer few questions.

Advice: There are many parallel sessions. Plan well before hand so as to not miss any session of your interest.

Repetitive quote at the IAC 2018: **Competition is driver. Cooperation is enabler.**



It was a great experience to attend IAC2018 in Bremen, Germany. I met and talked with many professionals including professors, researchers, also students that has interest of space science and technology. We gathered and shared the knowledge with each other. I also had the chance to present my research about ionosphere observation in front of so many people, which was an exciting experience! I got feedbacks from the audience that may improve the research as well.

But the things that even more exciting were the lectures and talks that I attended during IAC2018. There were many people talking about going back to the Moon and build a moon base over there. Many also talked about exploration to farther outer space, with Mars as the first step. Listening to all these lectures, not only it broaden my knowledge but also gave me the positive energy to keep pursuing the dream, even though it may sounds too impossible for the others.

I remember in one of the presentations that I attended, the presenter said in the last slide: the process of pursuing something is to get fascinated, then inspired, and motivated. With my background as a student from a developing country, IAC2018 left me a great impression and motivated me to do more especially in space technology. Overall, I encourage another student to gain experience as much as possible that will also support our future career as well.

- Rahmi (SPATIUM)

The next
IAC



Join us for IAC 2019 in Washington!

from the website below



The next IAC is in Washington, DC:

<https://www.iac2019.org/>

21-25 October 2019

09. SEIC Orientation – general explanations to the incoming batch of new SEIC students

During 10:30 am through Noon of 10th October 2018, SEIC Orientation was done for the incoming SEIC students.



Prof. Cho delivers a welcome address.



Ms. Makino explains course registration and other SEIC matters



Space Engineering International Course



We concluded with a group photo

10. INVITATION TO ALL BIRDS GRADUATES: We welcome your news as articles

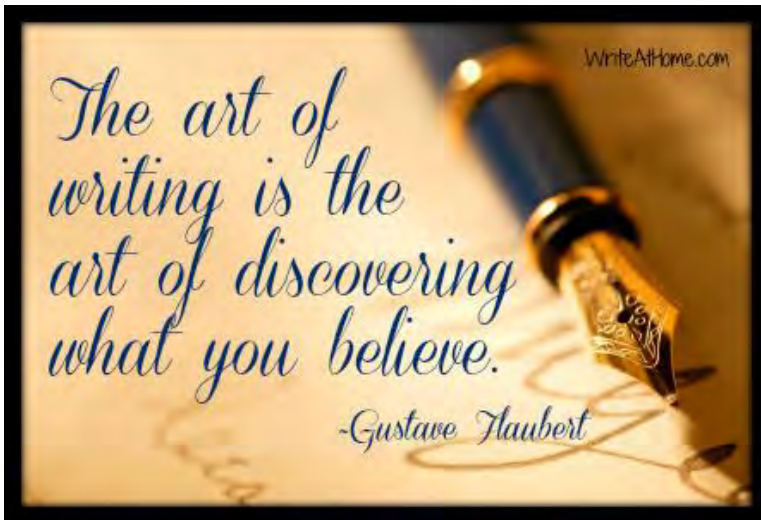


This is a request from the **PI of the BIRDS Project** (Prof. Mengu Cho) and from the **Editor of the BIRDS Project Newsletter** (George Maeda)

The graduates of **BIRDS-1** and **BIRDS-2** are cordially invited to submit articles to this newsletter as information to all members of the BIRDS community – which is quite large now. Tell us what you are doing. Or show us local media reports that are related to BIRDS or to yourself. If it might interest the entire BIRDS community, please send it in for publication in this newsletter. *Share your news, experiences, accomplishments, and technical developments.* We are deeply curious.

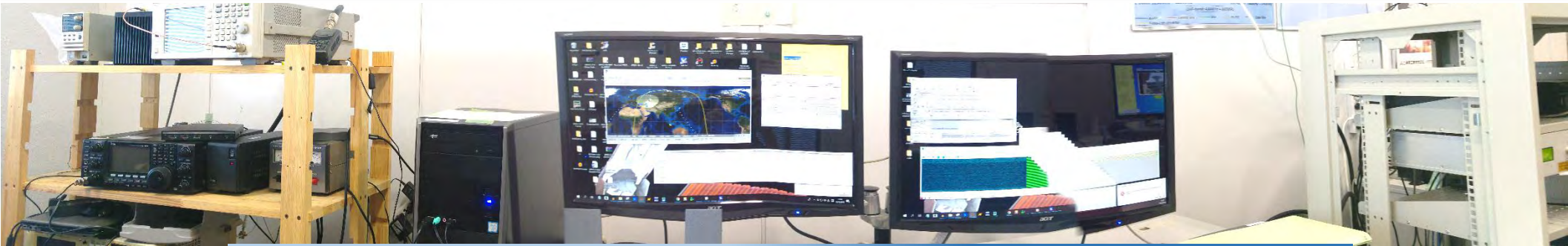
Format details:

- Use PowerPoint
- Use a good mix of text and graphics, photos, etc.; text only is deadly dull
- Keep it interesting and entertaining
- Write your name and affiliation, and date of completion
- Keep the bottom 1.5 cm clear for newsletter footers [you can see them below]
- Dead line is the 15th of each month, for that month



11. Antenna protection during violent storms

BIRDS GS Antenna Safe Mode



Objective


To prevent unwanted damage/accident on the antenna of BIRDS ground station, especially during typhoon/strong wind

Article prepared by:
Muhammad Hasif Bin Azami
October 11th, 2018

Precautions for Satellite Operation

- Before operation:

- Double check the **weather forecast** and **wind's speed sensor** (<10)

 <https://www.jma.go.jp/en/warn/346.html>

- After operation:

- Ensure the **antenna position** at **0 degree** for both azimuth and elevation
- Make an operation report and notify weather forecast for tomorrow

If there is a warning (i.e typhoon or strong wind)

- I. Immediately set the antenna position auto/manually using the controller to
 - a. **Elevation** of 90 degree
 - b. **Azimuth** of 0 degree *Refer to the picture in the next page!*
- II. Suspend the operation until the weather is OK
- III. Check the antenna at the roof top after the incident



Wind's speed sensor

Reference Pictures



Antenna rotator controller



BIRDS GS UHF/VHF Antenna (at Kyutech)

12. A report from UiTM in Malaysia

STEM ACTIVITIES at UiTMSAT



Prepared by: Siti Amalina Enche Ab Rahim & Siti Nadhirah Mohamad Rahim

Research Coordinator

Postgraduate student

Center for Satellite Communication

Faculty of Electrical Engineering, Universiti Teknologi MARA (UiTM)

15.October.2018

28 AUGUST
2018

STEM@UiTM Carnival was held at Menara Kejuruteraan Tuanku Abdul Halim Muadzam Shah, UiTM Shah Alam, Selangor, Malaysia from 8:00 am to 5:00 pm.
STEM is an abbreviation for Science, Technology, Engineering and Mathematics.

Center for Satellite Communication (UiTMSAT), Faculty of Electrical Engineering was selected to participate in this program and to provide STEM activities.
Students from upper primary school and secondary school from 500 different schools came to visit the UiTMSAT and participated in an interactive game conducted.



Prepared by: Siti Amalina Enche Ab Rahim & Siti Nadhirah Mohamad Rahim
Research Coordinator Postgraduate student
Center for Satellite Communication
Faculty of Electrical Engineering, Universiti Teknologi MARA (UiTM)
16.October.2018





During the event, UiTMSAT1 received a visit from The Honorable **Teo Nie Ching**, Deputy Minister of Education, Malaysia, accompanied by the top managements of UiTM .



Interactive game and activities during STEM@UiTM:

1. All about aurora.
2. Journey to Antarctic and experiment conducted by Dr. Huzaimy and team members.
3. Demonstration on the antenna's deployment of BIRDS-2 nanosatellite, and how a satellite can orbit the Earth.
4. Quizzes using Kahoot.



28 AUGUST
2018

Visit from MARA-JAPAN Industrial Institute

Center for Satellite Communication (UiTMSAT), Faculty of Electrical Engineering received a visit from MARA-JAPAN Industrial Institute (MJII). The purpose of this visit is to gain knowledge on BIRDS-2 nanosatellites, to take a look on the facilities, especially the satellite ground station, and to foster collaboration between MJII and UiTMSAT.



Assoc. Prof. Ir. Dr. Mohamad Huzaimy Jusoh presented about UiTMSAT to the visitors.



14-16
SEPTEMBER 2018

PETROSAINS SCIENCE FESTIVAL 2018

Center for Satellite Communication (UiTMSAT), Faculty of Electrical Engineering received an invitation from Petrosains to open a booth at Petrosains Science Festival 2018. This festival took place at Suria KLCC, Kuala Lumpur.

PETROSAINS SCIENCE FESTIVAL 2018 HIGHLIGHTS

- UBTECH, CHINA ROBOTICS
- ROBOPRENEUR, MALAYSIA ROBOTICS
- 'SAYANGI MALAYSIAKU' CULTURAL DANCE PERFORMANCE BY TOURISM MALAYSIA
- MALAYSIA'S FIRST NANOSATELLITE, UiTMSAT-1, BY UiTM
- LIVE PERFORMANCES (Ismail Izzani & Hael Husaini)
- DR. MASASHI KISHIMOTO & UiTM CHAMBER CHOIR (Winner of Italy's International Choir Festival 2018)
- 3R FASHION DESIGN COMPETITION 'WASTE IS AMAZE GREEN VELOCITY' BY ALAM FLORA
- SCIENCE TALK BY WORLD'S BEST SCIENCE COMMUNICATORS (FameLab International Champion 2018 - Dr. Siti Khairiyah Mohd Hanafiah, FameLab International Champion 2016 - Dr. Abhi Veerakumarasivam)

RATES & TIMES

OPERATION HOURS		ADMISSION RATES	
Galleria Petrosains	9.30am - 6.30pm Last Admission: 6.00pm	Category	Petrosains, The Discovery Centre
		HotScience Galleria Petrosains Esplanade, KLCC Park Concourse, Suria KLCC	MyKad My RM9.00 RM



UiTMSAT-1 featured in the Petrosains Science Festival 2018's booklet

PETROSAINS SCIENCE FESTIVAL 2018

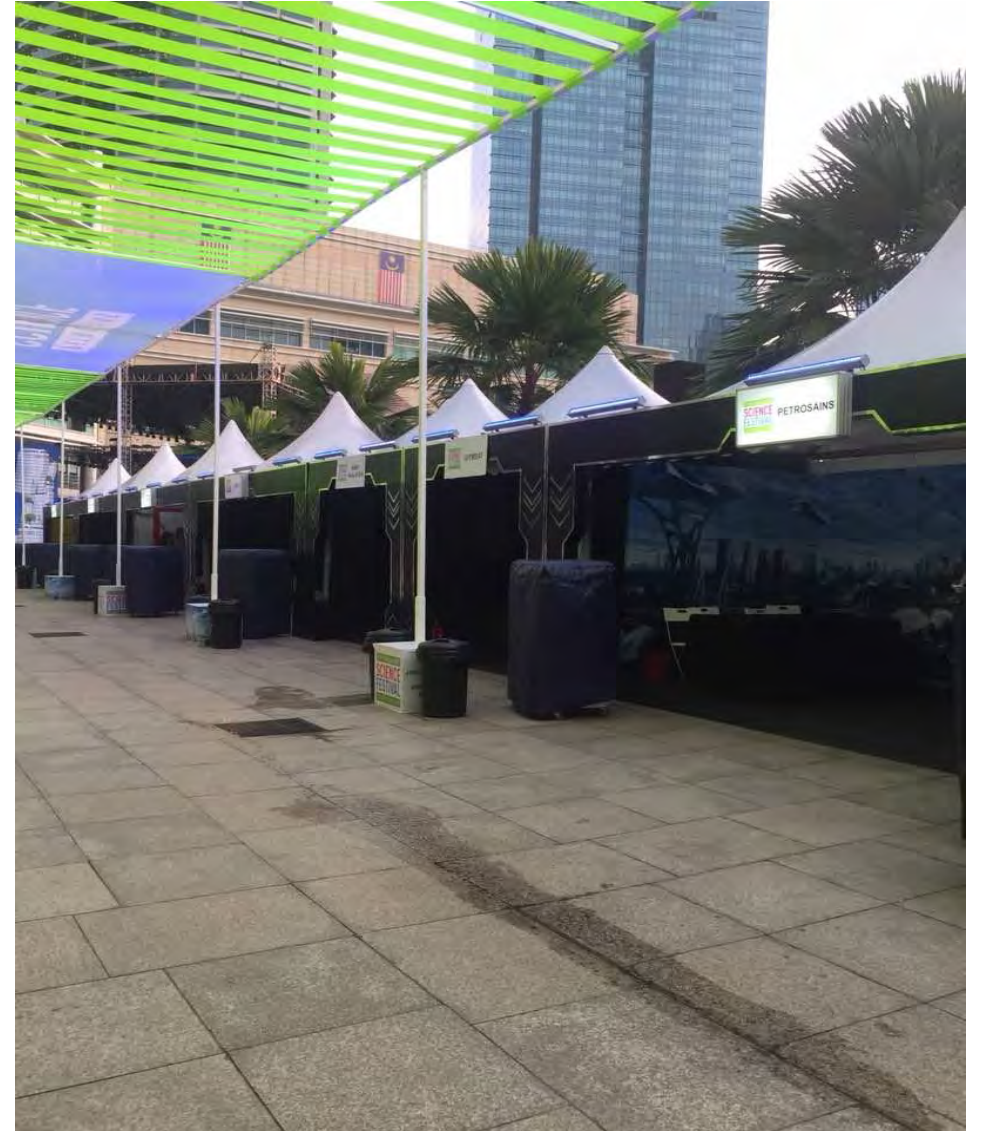
JOURNEY INTO THE FUTURE, ONE DISCOVERY AT A TIME.

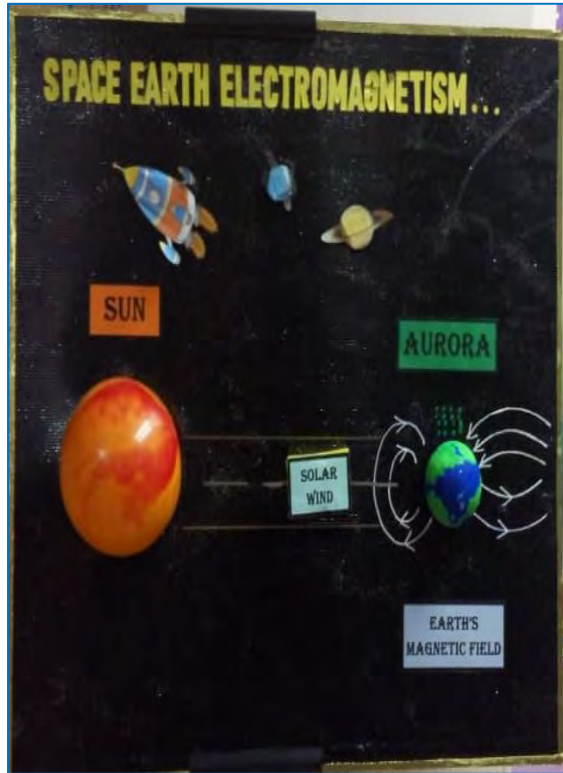
14 - 16 SEPTEMBER 2018
Petrosains, KLCC • Concourse, Suria KLCC • Esplanade, KLCC Park

Take a peek into the future of mobility, sustainable living, education, healthcare and more at this year's Petrosains Science Festival. Don't miss out on a weekend filled with engaging talks, exciting workshops and interactive learning sessions!



The venue: Suria KLCC, Kuala Lumpur

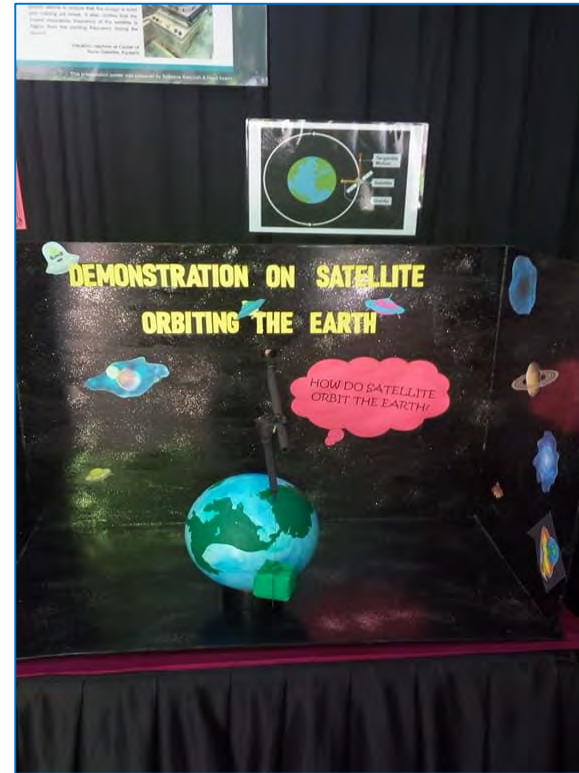




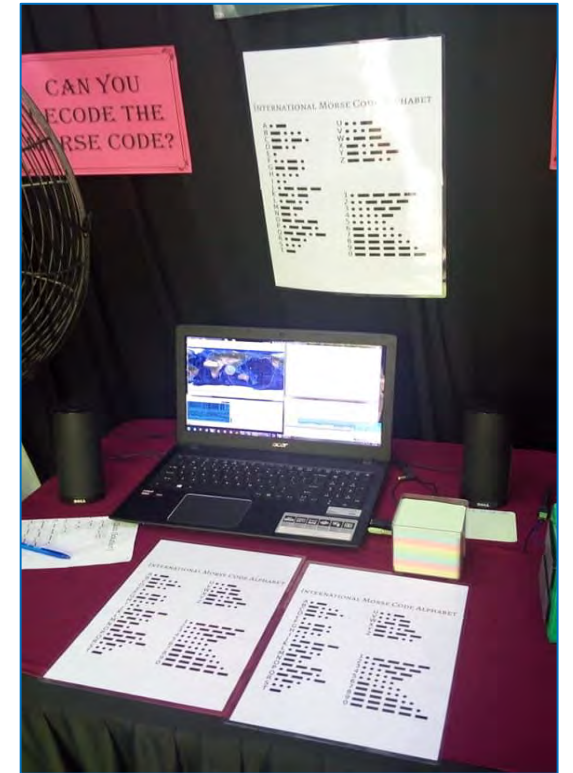
Aurora borealis



Deployable antenna mechanism



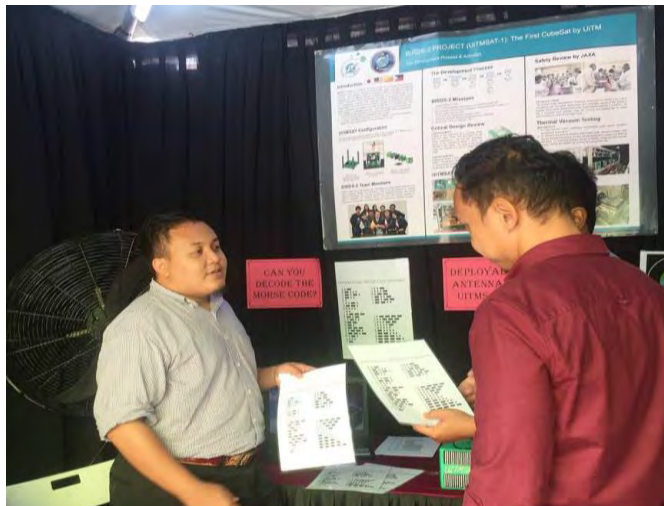
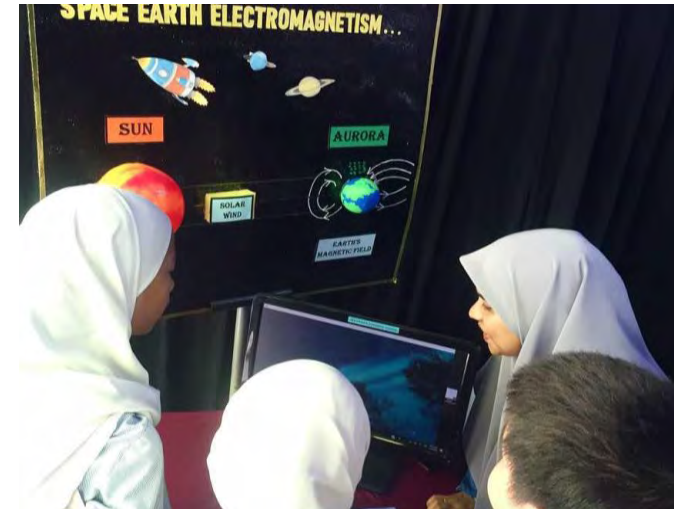
How satellite orbits the Earth



Reading the Morse code

STEM activities @ UiTMSAT's booth during Petrosains Science Festival

The festival was held for 3 days (14-16 September 2018). Our booth received many visitors who were interested with UiTMSAT-1 and BIRDS projects.





The visitors were interested with UiTMSAT-1 and BIRDS project.

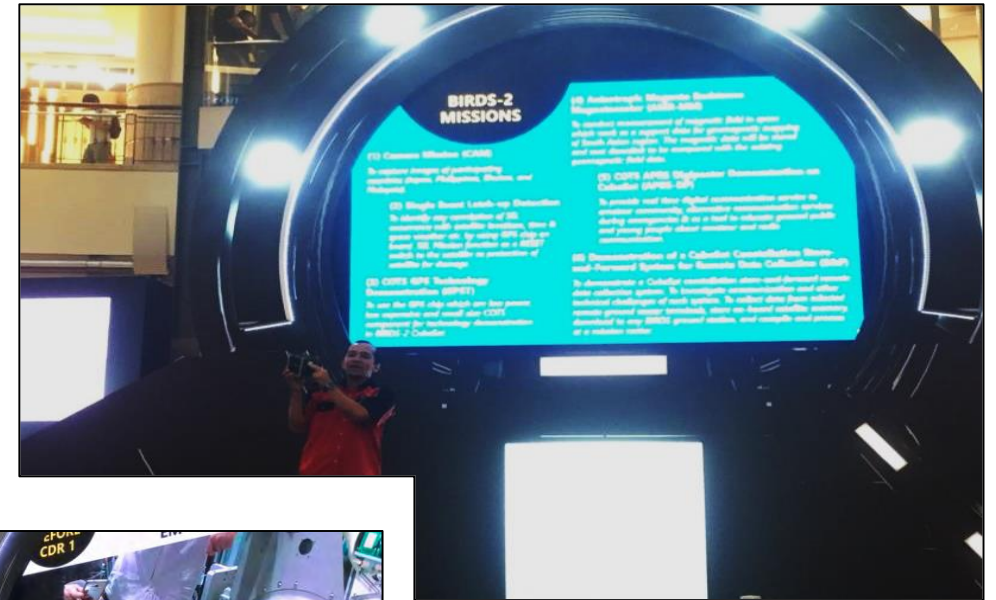


Children were curious about how satellite can orbit the earth.



Full house!

Assoc. Prof. Ir.
Dr. Mohamad
Huzaimy Jusoh
was invited as a
speaker during
the festival. He
delivered his
talk on
UiTMSAT-1
and BIRDS-2
project on 15
September
2018.



END OF REPORT FROM UiTM

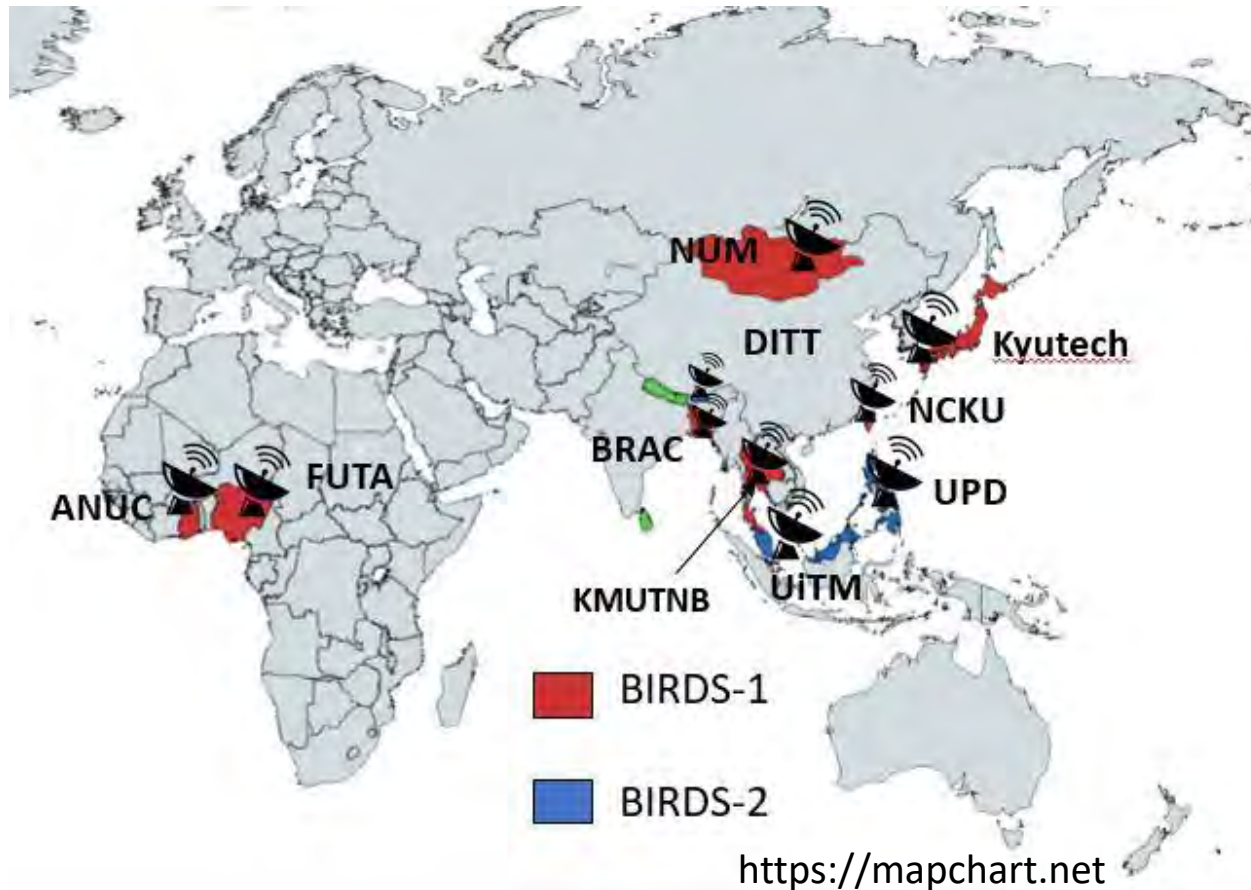
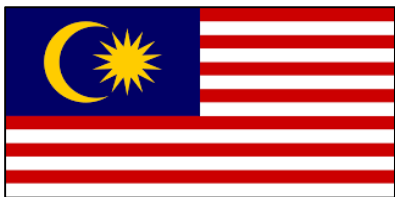




13. BIRDS-2 CW Decoding Competition

Prepared by Kiran, BIRDS-2

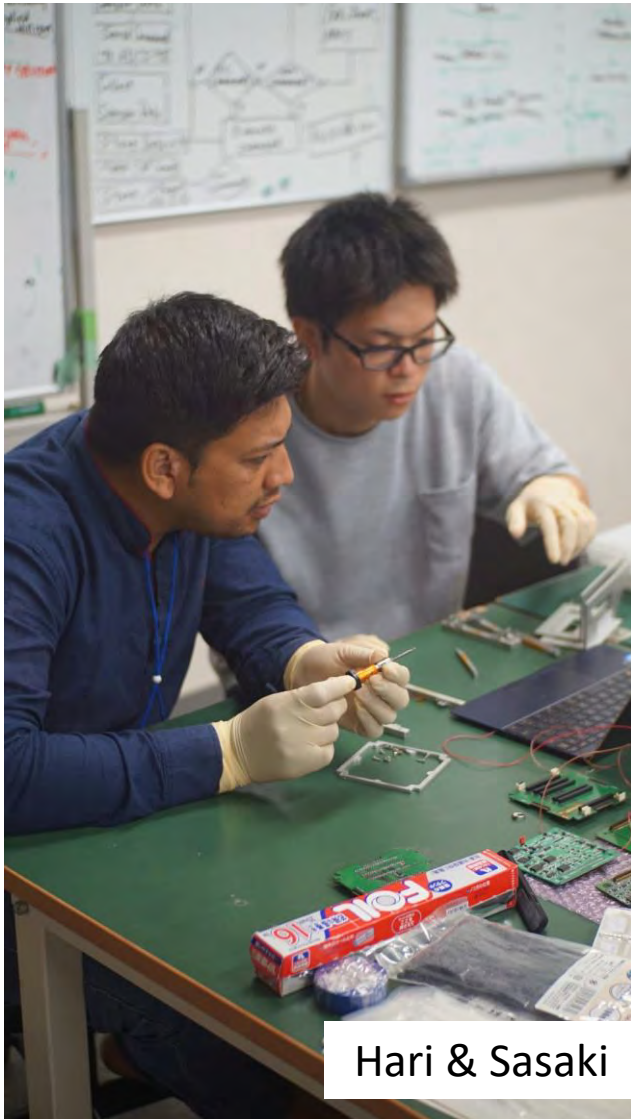
- A competition among BIRDS GS network
- Competition period: August 24 – September 24, 2018
- 5 Ground Stations actively participated:
 - BRAC, Bangladesh
 - DITT, Bhutan
 - UiTM, Malaysia
 - UPD, Philippines
 - NCKU, Taiwan
- The Competition continues for another month: October 1-31, 2018.
- **Winner for first month: UiTM GS, Malaysia**



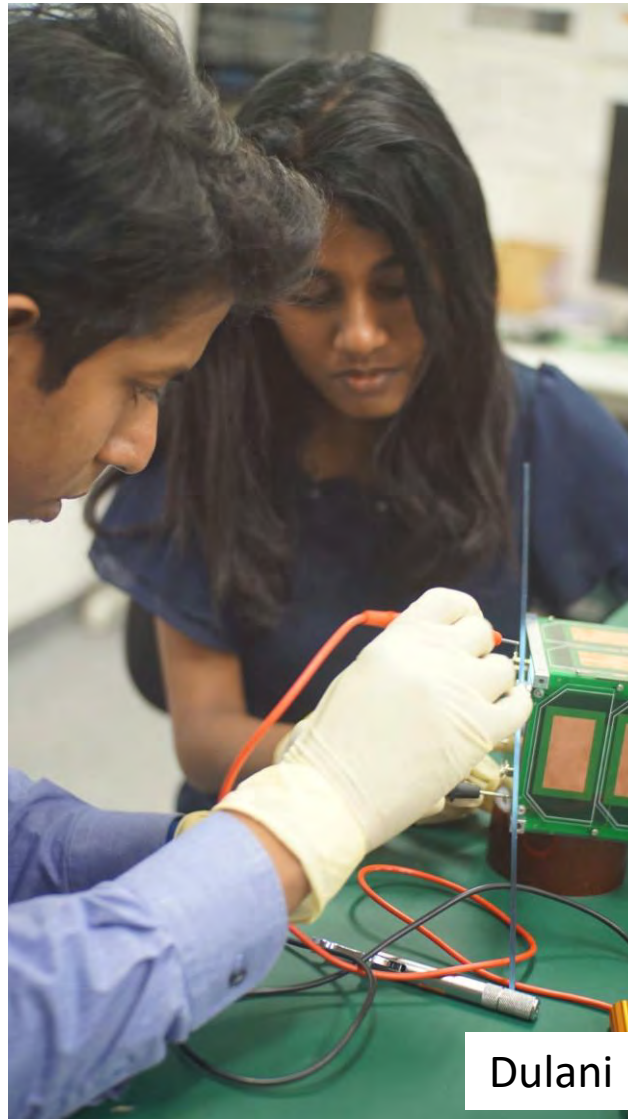
14. BIRDS-3: Monthly activities report



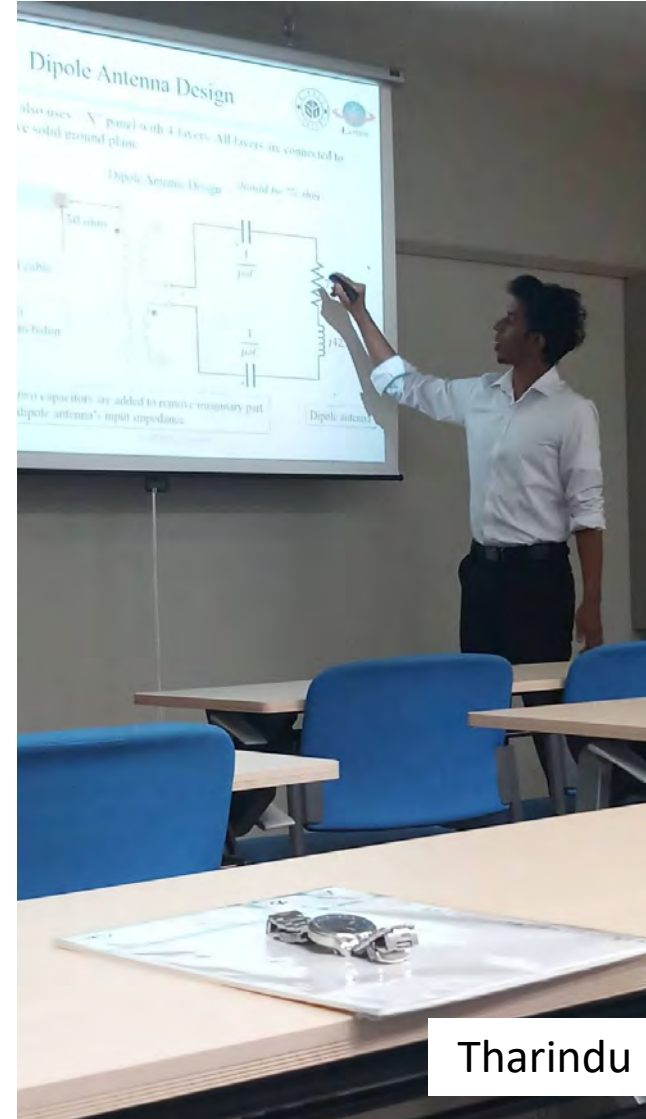
BIRDS-3
Sept-Oct 2018
Monthly Report
by
Abhas
(BIRDS-3 Project Manager)



Hari & Sasaki



Dulani



Tharindu

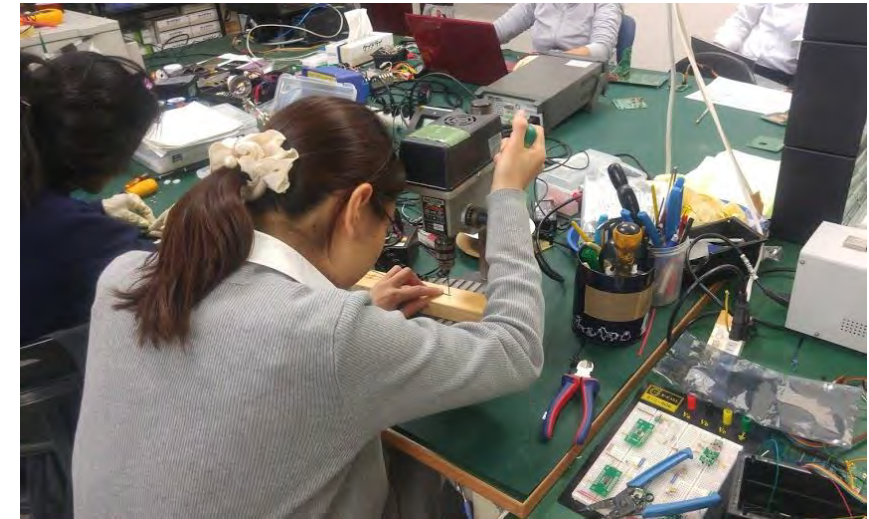
BIRDS-3 Activities on Sept-Oct 2018 (Abhas)



BIRDS-3 Weekly Meeting



EM-2 Preparation



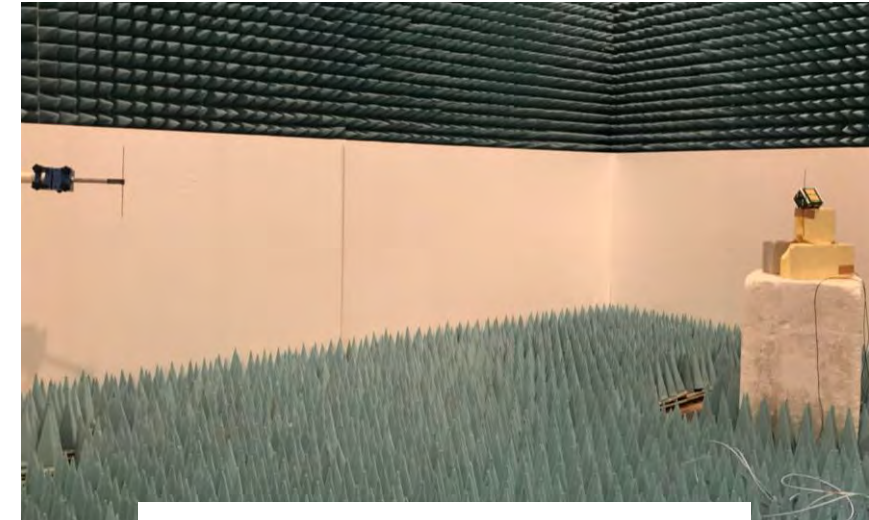
Makiko Prepares Dipole Antenna



Visitors from Malaysia to BIRDS room

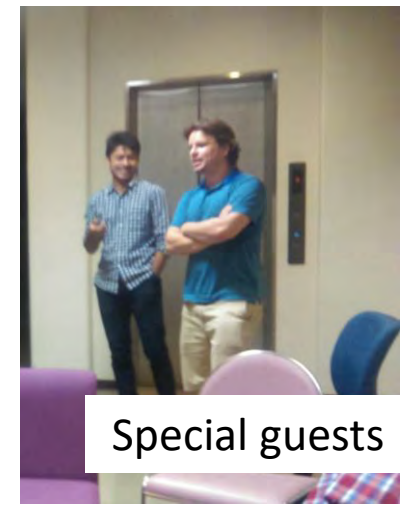
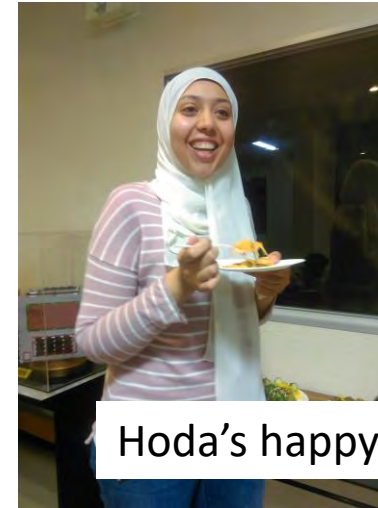


Kakimoto Preps for EM-2 OBC

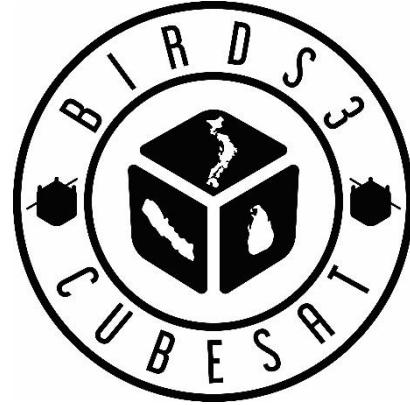


Anechoic Chamber Testing III

BIRDS-3 September 2018 Potluck Dinner



15. BIRDS-3: Magnetometer calibration at Sasaguri (Kyushu Univ. facility)

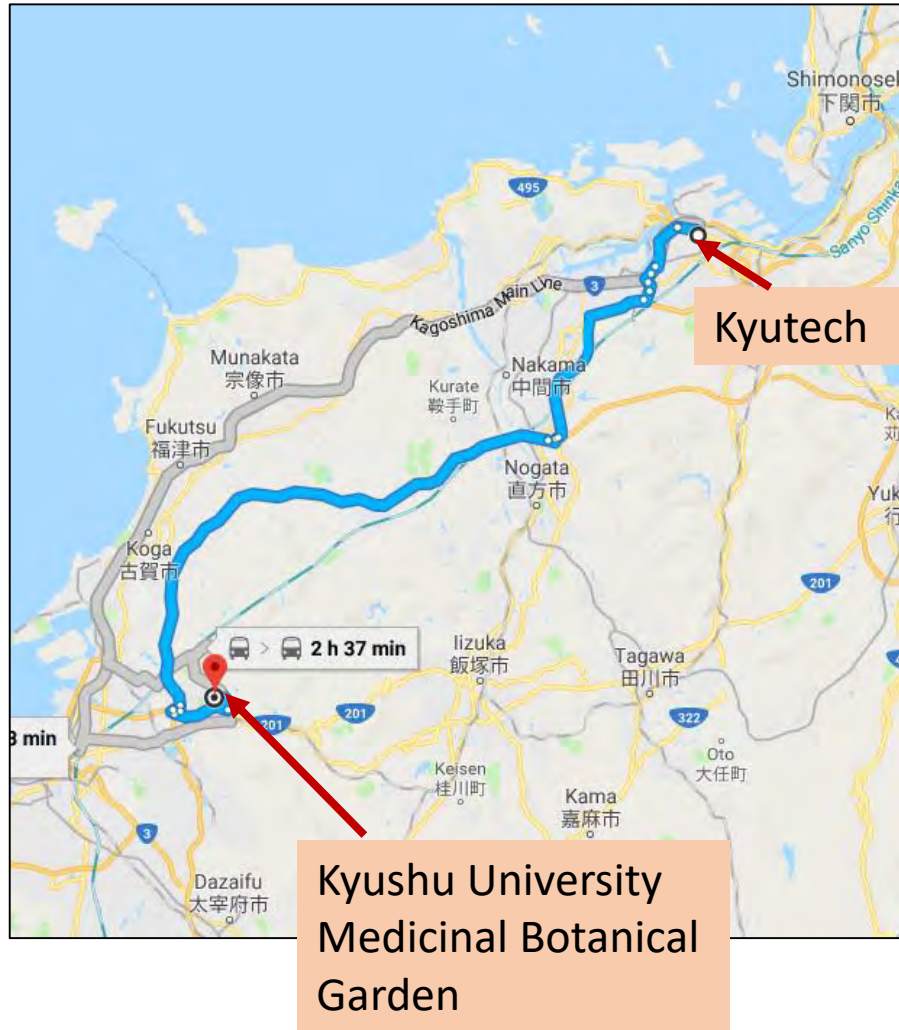


BIRDS-3 MAGNETOMETER CALIBRATION IN SASAGURI

by

Dulani Chamika and Yuta Kakimoto

13 October 2018



As BIRDS-3 needed to calibrate the magnetometer used in the satellite we visited Kyushu University Medicinal Botanical Garden in Sasaguri.

International Center for Space Weather Science and Education (ICSWSE), of Kyushu University owns a Helmholtz coil.

We visited this place on 25th of September. Professor Uozumi from Kyushu University ICSWSE joined to help us with the test.



Entrance of the botanical garden

The Test Location



In front of the main building/
Prof Uozumi in the left



Helmholtz coil's Lab



On the way to the lab

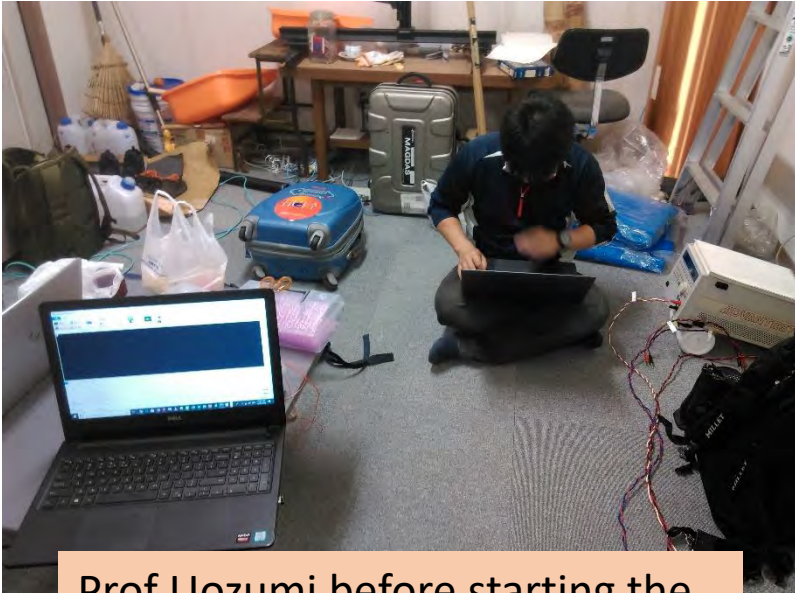


Small gate to enter to the lab



After entering from the small gate

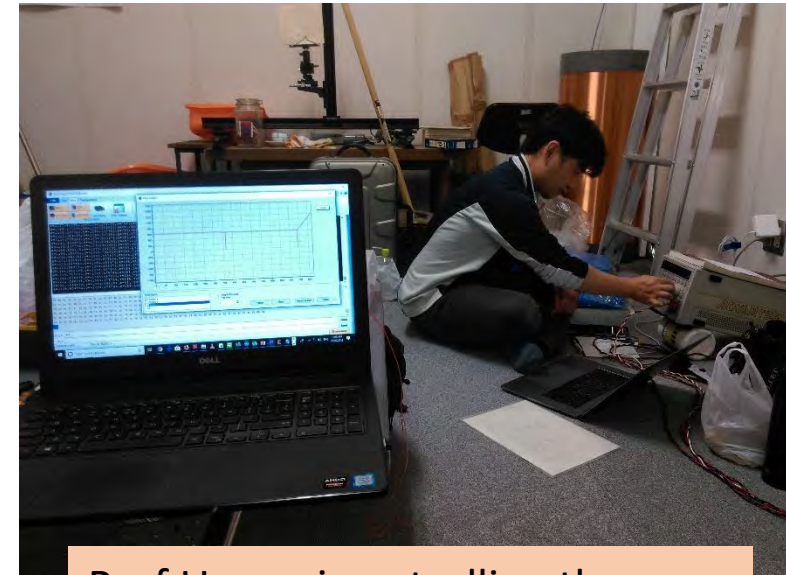
Preparing for the test



Prof Uozumi before starting the test



Kakimoto checking the UART connection



Prof Uozumi controlling the Helmholtz coil

Specifications of the Helmholtz Coil



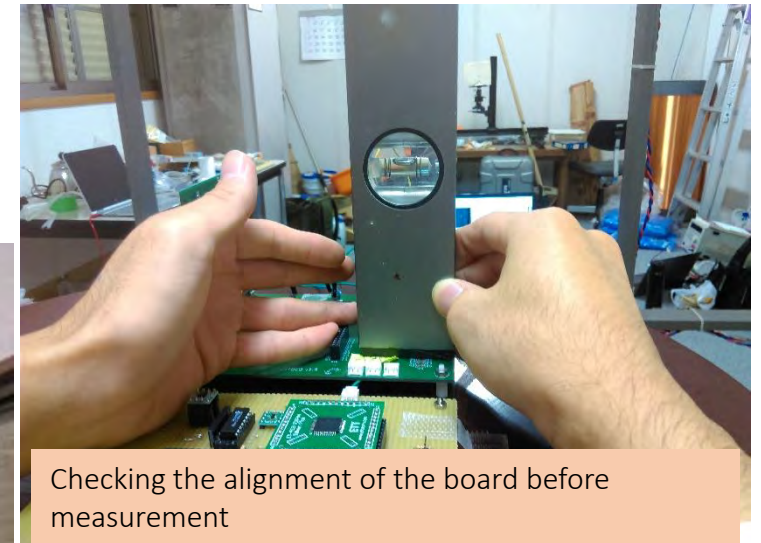
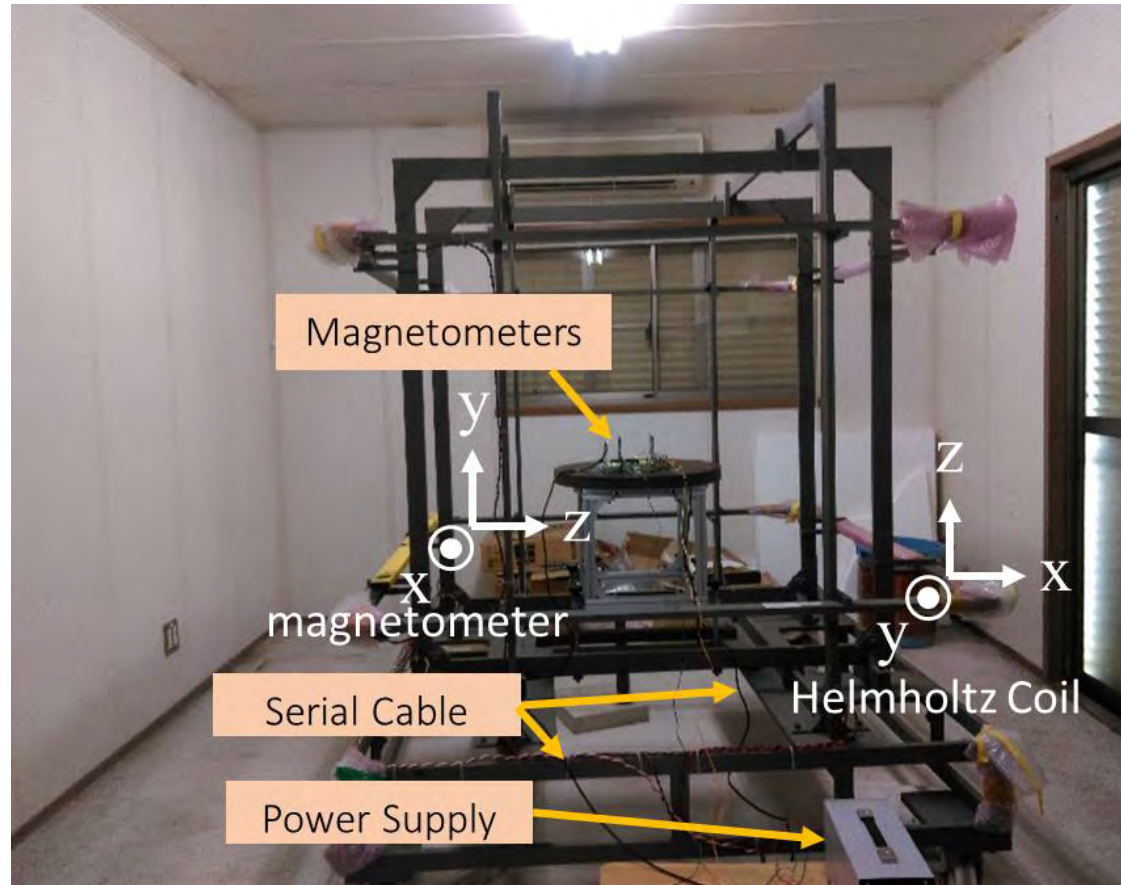
Helmholtz coil in Sasaguri

	X	Y	Z
Inside Dimension	1290mm x 1290mm	1180mm x 1180mm	1400mm x 1400mm
Outside Dimension	1390mm x 1390 mm	1280mmx 1280mm	1500mm x 1500mm
Coil Space	723mm	661mm	781mm
Magnetic field	77010nT	83897nT	71459nT
Current	2.0A	2.0A	2.0A

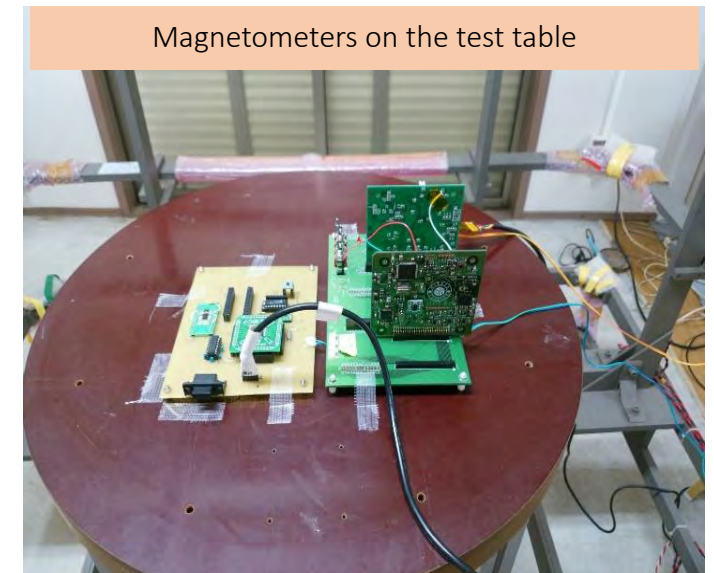
According to Prof. Uozumi, uniform magnetic field can be generated at the center 20 cubic centimeters area. So we should set up our magnetometer within this 20 cubic centimeters area.

Test Set Up

From this room, the north is the X axis of the Helmholtz coil. If we set the magnetometer properly, in our magnetometer, Y and Z axis should get some negative value of earth magnetic field, and X axis should be almost 0. We installed the MSN board vertically by checking the spirit level.



Checking the alignment of the board before measurement



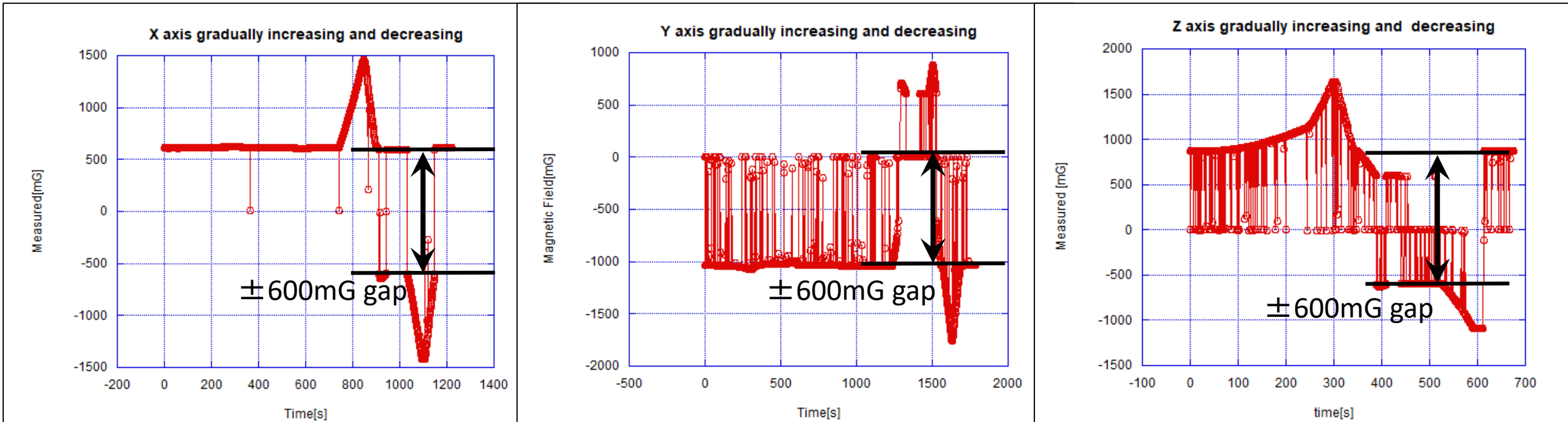
Magnetometers on the test table

Testing Procedure

No.	Operation
Procedure 1 Initial value measurement	Checked the initial value of the magnetometer
Procedure 2 Rough check for magnetometer working	250mG and 500mG was given to X, Y, Z axis and checked the magnetometer readings. (The magnetometer readings had some dropping points)
Procedure 3 Find the error of the magnetometer	To check the dropping points the Magnetic Field was gradually increased and decreased manually
Procedure 4 Measurement after modifying the error	After modifying the program again the magnetic field was gradually increased and decreased manually to check the whether there are dropping points.
Procedure 5 Measure the magnetic field value for the calibration of the Magnetometer	A magnetic field was generated for 60s and the switched off for 60s. The generated magnetic field was from 60000nT to -60000 nT ($\pm 20000\text{nT}$, $\pm 40000\text{nT}$, $\pm 60000\text{nT}$).

Correct the Magnetometer Error

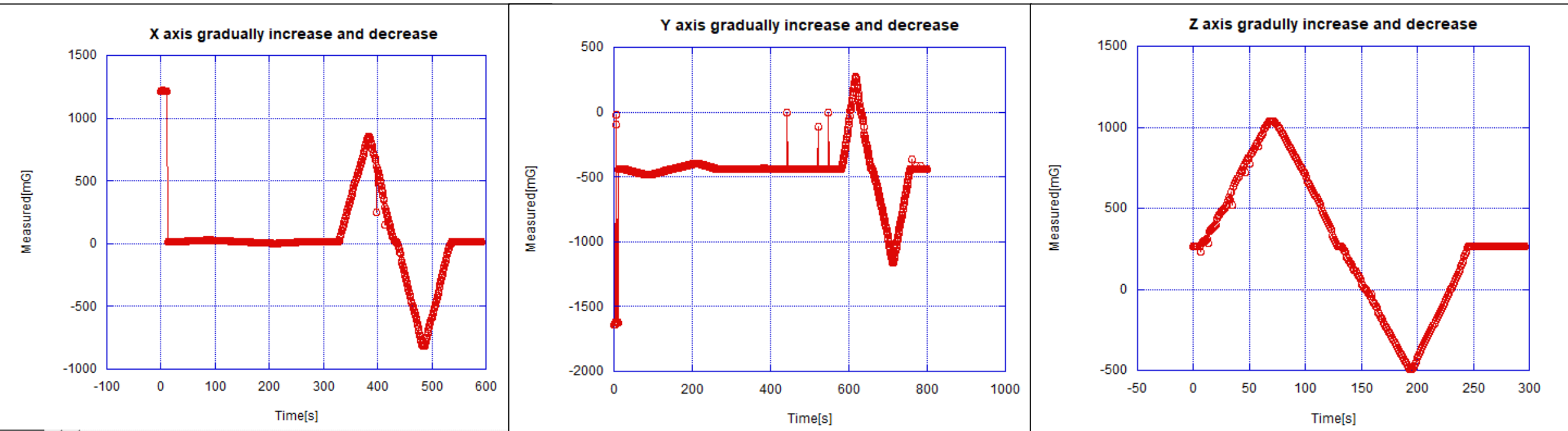
At the procedure2 (Rough check for magnetometer working), we found some error of our magnetometer working, by gradually increase/decrease the generated magnetic field.



For each axis value, there is a large gap between ± 600 mG. Before we start the calibration test, we needed to correct the error. Also, the value was very noisy, so we also added some function to remove the noise.

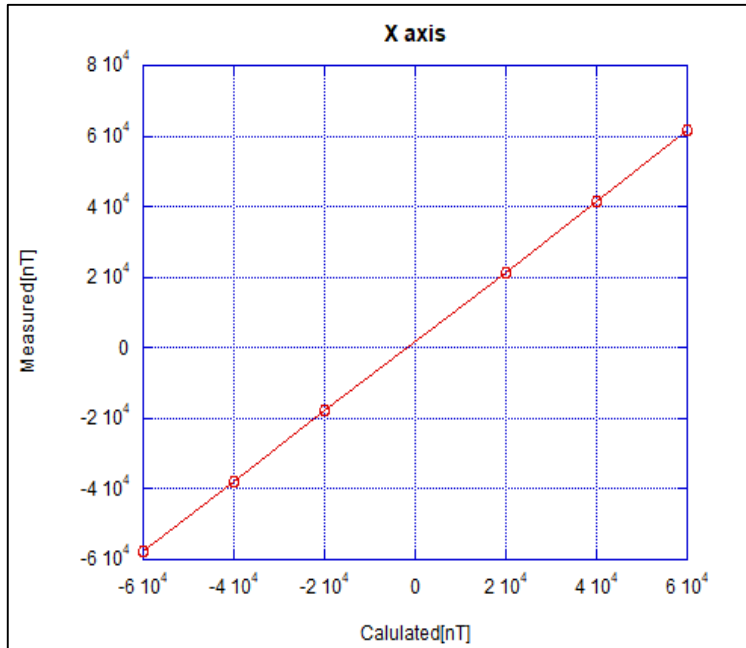
Correct the Magnetometer Error

After correct the gap error and noise problem, we checked the gradually increase/decrease the magnetic field again (test procedure 4).

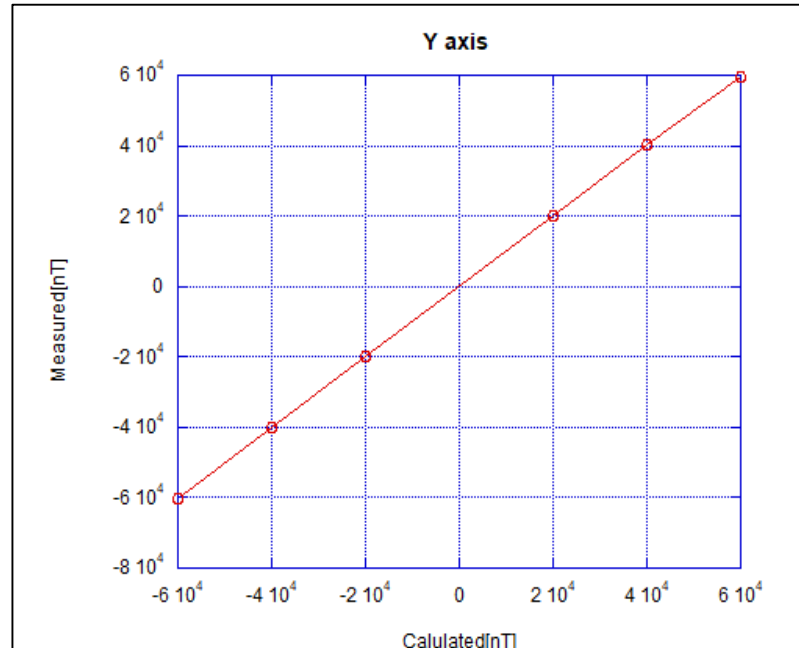


As you can see from this result, the $\pm 600\text{mG}$ gap had been removed. Actually, some noise still there, but they are the tolerance for this test. Also, as mentioned on the previous page, X axis value is almost 0mG. Now we were ready to start the proper calibration test (procedure 5).

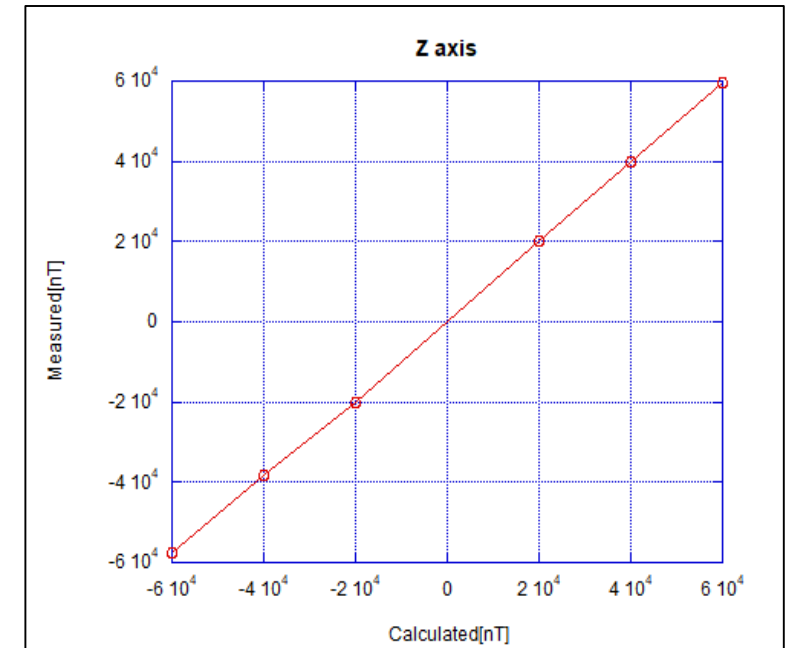
Test Results



Accuracy 1.20 %



Accuracy 0.40 %



Accuracy 1.40 %

The purpose of the test was to check the linearity between the measured magnetic field (from the magnetometer) and the calculated magnetic field (generated from the Helmholtz coil). According to the graphs measured magnetic field and the calculated magnetic field are linear.

Conclusion

- In this magnetometer test, we could get the linearity in the graph of the theoretical value and measured value.
- Currently, our magnetometer meets the requirements of satellite stabilization mission.
- As a future task, we will execute some test about whole ADCS system which includes this magnetometer, gyro sensor, GPS, and magnetorquer by using some test equipment in our laboratory.

We, the authors, wish to gratefully acknowledge the huge amount of assistance from Prof. Uozumi of Kyushu University.

Summary of recent news out of Nepal

by Hari Ram Shrestha
12 October 2018

“Launching of Nepal’s First Satellite in Nepalese Media”

On behalf of Government of Nepal, Nepal Academy of Science and Technology (NAST) and Kyushu Institute of Technology (Kyutech) Japan had signed the MOU to launch the first Nano-Satellite of Nepal in Space. Besides this, Kyushu Institute of Technology has been supporting NAST time and again both technically and academically in order to gain knowledge on Nano Satellite technologies. As this is the first time Nepal is launching its first Nano-satellite, various national and local medias such as televisions, newspapers, FM Radios, online portals, etc. are taking interest in covering up the news on BIRDS-3 project as well as Nepal's first Nano-Satellite. Curiosity on this topic amongst the youngsters, technical experts, students of Science and Technology is growing at a greater pace. Along with this, medias has been supporting to this project highlighting and publicizing this Birds-3 project as well as Nepal's first Nano-satellite. Dr. Buddhi Ratna Khadge, Secretary of NAST, in an interview quoted to establish a Ground Station along with Space Centre by this year with the cost of seed money of NPR. 2 crores for hardware and launching cost to Kyutech. Similarly, Dr. Rabindra Pd. Dhakal, Chief of Faculty of Technology, NAST, marked to provide opportunity for the Engineers and Space related students in the field of research, development of satellite in the home country as well as its application therein encouraging the youth. The former Vice-chancellor of NAST, Prof. Dr. Jiba Raj Pokharel has initiated this program and had been focusing on its importance and ultimately develops skilled manpower in Nepal. For this, Hari Ram Shrestha has been nominated from NAST to take a step forward and make a remarkable effort in the field of Nepal's first Nano-satellite.

Related Links are:

<https://youtu.be/rfFb2kQ4KSA> from Kantipur Television

[https://youtu.be/aru610QMLhA?t=1051\(1:00 to 16:38\) min](https://youtu.be/aru610QMLhA?t=1051(1:00 to 16:38) min) ,from Nepal Television
,NAST Television Program

[https://youtu.be/zpyOhaol2cE?t=305\(1:00 min to 14: min\)](https://youtu.be/zpyOhaol2cE?t=305(1:00 min to 14: min)) ,from Nepal Television
,NAST Television Program

<https://youtu.be/fp7-ULFcDz0?t=3> from AP1, Television

<https://setopati.com/from-paper/135758> from Setopati.com

<https://youtu.be/jzVeldbPrds> (from Sagarmatha Television)

https://youtu.be/_ieZmK7Ycn8(News24 Television, time 6:30 to 9:07) min

<https://www.youtube.com/watch?feature=share&v=i0AwXJYX8hs&app=desktop>

<http://www.nayapatrikadaily.com/2018/10/06/102483/>

<http://himalkhabar.com/news/8825>

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

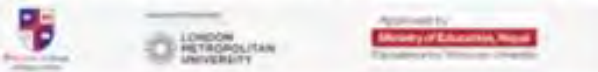
Photos from different media



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Rabindra Dhakal
 October 5 at 7:09 AM

Inspiring and motivating smart and energetic students and Faculties of KU to make a successful move on nano-satellites in near future. Thanks goes to Robotics club of KU organizing this talk program.

You, मनिष, Madhav Kafle and 115 others
 3 Comments

17. Abstract dead line for 32nd ISTS & 9th NSAT, all students should take note



The banner features a dark space background with a satellite and the moon. On the left, there are logos for the 32nd ISTS & 9th NSAT and JSASS. A navigation menu is visible on the left side. The main text includes the event title, dates, location, and a slogan. A map of Japan highlights the Fukui region. At the bottom, there is an image of a rocket launch and a traditional Japanese gate.

32nd ISTS & NSAT

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
©IKESHITA AKIHIRO/AXA

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Program

Registration

Dead line for abstracts is the end of October 2018

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

End of this **BIRDS Project Newsletter**

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– Issue Number Thirty-Three

This newsletter is archived at the BIRDS Project website:

<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.