

**REPORT ON THE ISWI/MAGDAS SCHOOL ON LITHO-SPACE WEATHER  
REDEEMER'S UNIVERSITY, MOWE, NEAR LAGOS, NIGERIA  
15-21 AUGUST 2011**

**Co-organized by:**

Space Environment Research Center (SERC), Kyushu University, Fukuoka, Japan

National Space Research and Development Agency (NASRDA), Abuja, Nigeria

Redeemer's University (RUN), Redemption City, Nigeria

Federal University of Technology, Akure FUTA, Nigeria; and

UN African Regional Center for Space Science Technology Education–English ARCSSTEE, Ile-Ife, Nigeria



Group photo taken on 16 August 2011 immediately after the Opening Ceremony

## **BACKGROUND INFORMATION**

International Space Weather Initiative ISWI is an international scientific cooperation endorsed by the United Nations and facilitated by the United Nations Office for Outer Space Affairs UNOOSA. Magnetic Data Acquisition Systems MAGDAS is an important instrument program of ISWI ([www.spaceweather-eg.org/iswi/](http://www.spaceweather-eg.org/iswi/)). MAGDAS is a project of the Space Environment Research Center SERC of Kyushu University, Fukuoka, Japan. The Director of SERC, Professor Kiyohumi Yumoto, is the Principal Investigator of MAGDAS. An important agenda of ISWI is *Capacity Building* of instrument hosts in the field. This has three main components: (1) Building their ability to maintain the instrument, (2) building their ability to analyze data from the instruments, and (3) building their ability to perform research (i.e., publish papers) based on (1) and (2). Accordingly, the main purpose of this ISWI/MAGDAS school is to advance *Capacity Building* within the African MAGDAS community.

This 1<sup>st</sup> *ISWI/MAGDAS School on Litho-Space Weather* was jointly organized by: the Space Environment Research Center (SERC), Kyushu University, Fukuoka, Japan; National Space Research and Development Agency (NASRDA), Abuja, Nigeria; Redeemer's University (RUN), Redemption City, Nigeria; Federal University of Technology, Akure (FUTA), Nigeria; and UN African Regional Center for Space Science Technology Education – English (ARCSSTEE), Ile-Ife, Nigeria.

## **VENUE AND DATES**

The workshop held between 15<sup>th</sup> and 21<sup>st</sup> August 2011 at the **Redeemer's University, Mowe, Near Lagos, Nigeria**. All lectures and laboratory demonstrations took place within various halls/rooms reserved within the University Campus.

## **ACCOMMODATION**

Trainee-participants were accommodated in shared apartment at the International Guest house of the Redeemer's University such that two trainee-participants shared a room. Each tutor had a room to himself within the same Campus.

## **ARRIVAL DATE**

The official arrival date was Monday 15<sup>th</sup> August 2011. The SERC team arrived a day earlier due to logistics.

## **THE PROGRAMME**

The School was declared open by the Acting Vice Chancellor of the Redeemer's University, Nigeria, Prof G.O. Emerole. On Tuesday 16<sup>th</sup> August 2011. Other speakers at the Opening ceremony were: Prof L.B. Kolawole, the convener; Prof K. Yumoto, Director of SERC and the PI MAGDAS; Dr O.A Agboola, the representative of the Director General of NASRDA; Dr. Babatunde. Rabi, the African Coordinator of MAGDAS; and Dr E.O. Falayi, LOC Co-Chairman.

Day-to-day activities of the School which followed a well structured schedule is as reflected in Appendix 1(Program of MAGDAS School). Detailed report on the various events and lectures are reported in the rapporteur's report labeled as Appendix 2.

The School was brought to a close on Saturday 20<sup>st</sup> August 2011 with a short wrap up session which featured presentation of certificates of attendance to all participants. A sample of the certificate is attached as Appendix 3

## **SUMMARY OF PARTICIPATION**

59 persons participated in the School; 8 tutors, 2guests and 49 trainees. In all participants from 11 Countries participated in the August event. See the list of participants in Appendix 4. Appendix 5 displayed a collection of pix by George Maeda of Kyushu University.

## **COUNTRIES OF PARTICIPANTS**

1. Cote D'Ivoire
2. Egypt
3. Ethiopia
4. Nigeria
5. Japan
6. Kenya
7. Mozambique,
8. South Africa
9. Sudan
10. Tanzania
11. Zambia

## **SPONSORSHIP**

SERC, Kyushu University, Fukuoka, Japan provided full travel funds for all foreign participants from outside Nigeria and 18 Nigerian participants. SERC was also responsible for the provision of writing pads, pen and files used in the School. NASRDA provided a sum of One Million Naira which was used to support the feeding of all the participants. ARCSTEE provided a sum of two hundred and fifty thousand Naira only which was used to pay part of the accommodation costs. FUTA and RUN supported the School in unquantifiable kind. FUTA provided a 40-Seater bus with a driver for use during the school. Lecture halls and laboratories of the Redeemer's University RUN and their associated facilities, such as multimedia projectors and other electronics, were freely made available to the School by the management of the University. The personnel of RUN were the bulk of the LOC and took care of all the logistics such as ensuring hotel reservation, airport/bus-stop pick-up and dropping of participants, organisation of meals etc. RUN also provided a 40-Seater bus with a driver for use during the school. The serene Christian environment of RUN offered excellent terrain for the School.

## LOCAL ORGANISING COMMITTEE

1. Professor Kolawole, Lawrence. B. – Convener and Co-Chair
2. \*Dr. Falayi, Elijah. O. – Co-Chair
3. Osinowo, Muritala O.
4. Akinyemi, Gbenga A.
5. Obot, Imaobong E.
6. Dairo, Oluropo F.
7. Bolarinwa, Joseph O.
8. Afuye, Zacchaeus
9. Awodibo, Michael
10. Soge, Ayodele O.

\*Dr Falayi is the Acting Head of Physics Department at the Tai Solarin University of Education, TASUED, Ijagun, Ijebu Ode. Others members of LOC are personnel of RUN.

### *School Co-Directors*

1. Prof Kiyohumi Yumoto, Director of SERC and the PI MAGDAS
2. Dr. Babatunde Rabi, African Coordinator of MAGDAS

## COMPLEMENTARY REPORT

A report on the MAGDAS School has also been released by SERC and is hereby attached as Appendix 5 to this document. Unarguably, the two reports complement each other and serve to give a good coverage of the 1<sup>st</sup> ISWI /MAGDAS School.

### Report Prepared By:

**Babatunde Rabi**

*African Coordinator of MAGDAS*



Group photo taken on 20 August 2011 immediately after the Closing Ceremony.



Prof. L. B. Kolawole (Nigeria)  
The Convener.



Prof. K. Yamoto (Japan)  
Director of SERC and PI of MAGDAS Project.



Dr. A. H. Rabiu (Nigeria)  
NASKDA



Prof. Vañ Doumbia (Cote d'Ivoire)  
Univ. of Cocody



Dr. A. Yoshikawa (Japan)



Dr. S. Abe (Japan)



Dr. A. Ikeda (Japan)



Engr. G. Maeda (USA)



Magdi (Sudan), whose PhD supervisor is Prof. K. Yamoto of Kyushu University, Japan.

←←← attached to SERC, Kyushu University, Japan →→→

*The Convener and Tutors at the MAGDAS School (taken from George Maeda's collection)*



**ISWI / MAGDAS School on Litho-Space Weather**  
**Venue: Redeemer's University, Mowe, Near Lagos, Nigeria**  
**Dates: 15 – 21 August, 2011**



# FINAL PROGRAM

	8:30 – 10:00	10:00-10:30	10:30 – Noon	Noon – 1:00	1:00 - 2:30	2:30 – 3:00	3:00-5:00
<b>Day 1:</b> Monday 15 Aug 2011	<b>Arrival</b>						
<b>Day 2:</b> Tuesday 16 Aug 2011	Opening ceremony	<b>Tea break</b>	Introduction to MAGDAS <b>KY</b>	<b>Lunch break</b>	Data Analysis I <b>Abe, Magdi</b>	<b>Tea break</b>	Data Analysis II <b>Abe, Magdi</b>
<b>Day 3:</b> Wednesday 17 Aug 2011	Principles of geomagnetism <b>AY</b>		Ionospheric currents <b>AY</b>		MAGDAS operation and maintenance <b>AI, GM</b>		MAGDAS operation and maintenance <b>AI, GM</b>
<b>Day 4:</b> Thursday 18 Aug 2011	Equatorial ionosphere <b>ABR</b>		Space weather <b>Abe, AI</b>		Tutorials on MAGDAS data <b>Abe, Magdi</b>		Tutorials on MAGDAS data <b>Abe, Magdi</b>
<b>Day 5:</b> Friday 19 Aug 2011	Analysis of satellite geomagnetic data I <b>VD</b>		Estimation of Equatorial Electrojet from MAGDAS data / Group Research Discussion <b>ABR</b>		Stations Status Reports <b>GM</b>		Lithospheric dynamics <b>KY</b>
<b>Day 6:</b> Saturday 20 Aug 2011	Analysis of satellite geomagnetic data II <b>VD</b>		Open Discussion & Closing ceremony		Laboratory work on Space weather <b>Abe, AI</b>		Laboratory work on Space weather <b>Abe, AI</b>
<b>Day 7:</b> Sunday 21 Aug 2011	<b>Excursion: Visit to places of interest in Lagos</b>						
<b>Day 7:</b> Sunday 21 Aug 2011	<b>Departure</b>						

KY – Prof. K Yumoto; AY – Dr. Yoshikawa; VD – Dr. Vafi Doumbia; GM – Engr. G. Maeda; AI – Dr. A. Ikeda; ABR – Dr. A. B. Rabi; Abe – Dr Shuji Abe

**DAY-TO-DAY REPORT OF VARIOUS EVENTS AT THE ISWI/MAGDAS SCHOOL ON LITHO-SPACE WEATHER, HELD AT THE REDEEMER'S UNIVERSITY, MOWE, NEAR LAGOS, NIGERIA, 15-21 AUGUST, 2011**



**DAY 0, Sunday, 14<sup>th</sup> August 2011 - DAY 1, Monday, 15<sup>th</sup> August 2011: ARRIVAL**

The team from Space Environment Research Center, Kyushu University, Fukuoka, Japan led by the MAGDAS Principal Investigator PI and Director (SERC) Professor Kiyohumi Yumoto arrived safely on Sunday 14<sup>th</sup> August 2011. The team included George MAEDA, Dr. Akihiro IKEDA, Dr. Shuji Abe, and Elfadi MAGDI. Other participants arrived subsequently until morning of Tuesday 16<sup>th</sup> August 2011. The 6<sup>th</sup> member of SERC team, Dr A. Yoshikawa arrived on Tuesday 16<sup>th</sup> 2011, while Professor Vafi Doumbia arrived from Abidjan on who arrived on Wednesday 17<sup>th</sup> 2011. In all participants from the following 11 countries participated in the School, viz: Cote D'Ivoire, Egypt, Ethiopia, Nigeria, Japan, Kenya, Mozambique, South Africa, Sudan, Tanzania, and Zambia. The LOC received and guided every participant to his/her hotel room on arrival. The SECR team, in company of Dr O. A. Agboola and Dr. Babatunde Rabiou, and together with some members of the host University were hosted to a cocktail dinner at the house of Professor L.B. Kolawole. Dr. Olufemi A. Agboola who is the Director of the Department of Engineering and Space Systems represented Dr. S.O. Mohammed, the Director General of the National Space Research and Development Agency (NASRDA).

**DAY 2, Tuesday, 16<sup>th</sup> August 2011:**

At 8 'O clock am, the participants had their breakfast then proceeded to the senate chambers of the Redeemer's University for the opening ceremony. The Chaplain of the University started the ceremony with an opening prayer, after which the Nigerian National Anthem was recited. The convener, Prof L.B. Kolawole, gave the welcome address; while Dr. Babatunde. Rabiou, the African Coordinator of MAGDAS, gave an introductory speech and led every participant to introduce himself/herself. The acting Vice-Chancellor of Redeemer's University, Nigeria, Prof. G.O. Emerole gave an opening remark and declared the training school open. Director of SERC and the PI MAGDAS, Prof K. Yumoto gave a keynote address while Dr O.A Agboola, the representative of the Director General of NASRDA gave a Goodwill message. Dr E.O. Falayi, LOC Co-Chairman

gave the vote of thanks. The University Chaplain said the closing prayer which was followed by the recitation of the Nigerian National Anthem. The participants with the Guests then proceeded for a group photograph in front of the Senate Building of the Redeemer's University.

At 10:30am, the participants moved to the classroom for the lectures.

1<sup>st</sup> Lecture: 11:30am-12:30pm INTRODUCTION TO MAGDAS by Prof K. Yumoto.

After the lecture Engr G.Maeda distributed the selected papers using MAGDAS data to the invited participants.

The lunch was had at 12:50pm

2<sup>nd</sup> Lecture: 1:30pm-2:30pm DATA ANALYSIS I (EE-index, Pc5 index) by K.Yumoto, Magdi and Dr Abe chaired by Dr. O. R. Oladosu

Short Break: 30min

3<sup>rd</sup> Lecture: 3:30pm-4:30pm DATA ANALYSIS II by K.Y. Magdi chaired by Dr. E. O. Oyeyemi

Dinner: 6:00pm

### **DAY 3, Wednesday, 17<sup>th</sup> August 2011:**

Breakfast: 8:30-9:00a.m

1<sup>st</sup> Lecture: 10:00-11:00am PRINCIPLES OF GEOMAGNETISM: CAUSES AND THEIR STRUCTURES by Aki Yoshikawa chaired by Dr. E. O. Oyeyemi

Short break: 30min

2<sup>nd</sup> Lecture: 11:35am-12:37pm: GEOMAGNETIC FIELD DISTRIBUTION by Dr A. Yoshikawa

After the lecture, MAGDAS hosts in Africa had a meeting with the PI and the SERC team.

Lunch Break: 1:00pm-2:00pm

3<sup>rd</sup> Lecture: 2:00pm-3:00pm: TUTORIAL ON MAGDAS by Dr Abe and Magdi

Short break: 20 min

4<sup>th</sup> Lecture: 3:20pm-4:10pm MATLAB PRESENTATION OF MAGDAS Chaired by Dr G. M. Olayanju

5<sup>th</sup> Lecture: 4:10-4:52 MAGDAS OPERATION AND MAINTENANCE by Dr A. Ikaeda and Engr G. Maeda

At 4:54pm Hosts of MAGDAS in Africa met with the MAGDAS team from Japan on the Bye Laws of the Association of African's MAGDAS (AMAGDAS)

Dinner: 6:00pm

**DAY 4, Thursday, 18<sup>th</sup> August 2011:**

Breakfast: 7:00am-8:25am

1<sup>st</sup> Lecture: 8:25-10:00am: THE EQUATORIAL IONOSPHERE by Dr A.B Rabiou chaired by Dr G.M. Olayanju

Short break: 25 min

2<sup>nd</sup> Lecture: 10:25am-12:00am SPACE WEATHER by Dr Abe and Dr A. Ikaeda chaired by Dr Nkechi Obikezie

Lunch break: 12:00-1:30pm

At 1:37 pm MAGDAS host in Africa gave status report of MAGDAS; the session was chaired by Engr G. Maeda

The following are the people who gave the report:

MAGDAS STATION CODE	COUNTRY	PERSONNEL
ABJ	Cote d'Ivoire	Dr Vafi Doumbia
ILR	Nigeria	Dr Falaiye
HER	South Africa	Enrol Julius
MPT	Mozambique	Luis Manuel Joao
DES	Tanzania	Unavailable due to SICKNESS
ASW/FYM	Egypt	Ahmed Khashaba
NAB	Nairobi	Adero Ochieng
LSK	Zambia	Dr. Hansingo, Kabumbwe
KRT	Sudan	Gamar Alanbia Bilal Mansour Hassan
ABJ	Nigeria	Engr Ale Felix
AAB	Ethiopia	Gebregiogis
LAG	Nigeria	M. Osinowo

3<sup>rd</sup> Lecture: 3:30-5:00pm LITHOSPHERIC DYNAMICS by Prof K. Yumoto chaired by Dr Godwin Agbo

Dinner: 6:00pm

**DAY 5, Friday, 18<sup>th</sup> August 2011:**

Breakfast: 7:00-8:30am

1<sup>st</sup> Lecture: 8:30-9:35am ANALYSIS OF SATELLITE GEOMAGNETIC DATA I by Prof Vafi Doumbia chaired by Dr R.S. Fayose

Short break: 30min

2<sup>nd</sup> Lecture: 10:15am-12:00pm ESTIMATION OF EQUATORIAL ELECTROJET FROM MAGDAS DATA by Dr A.B. Rabiou chaired by Dr T. Ewetumo

Short break: 30min

After the Short break Dr A.B. Rabiou chaired the group research discussion.

Lunch break: 1:30pm-2:30pm

3<sup>rd</sup> Lecture: 2:30-3:30pm LABORATORY WORK ON SPACE WEATHER II by Dr Abe and Dr A.Ikaeda

At 3:45pm Engr G. Maeda read the MADAS policy to the class

Dinner: 6:00pm

#### **DAY 6, Saturday, 19<sup>th</sup> August 2011:**

Breakfast: 8:00-8:30am

1<sup>st</sup> Lecture: 9:00-10 am ANALYSIS OF SATELLITE GEOMAGNETIC DATA II by Prof Vafi Doumbia and chaired by Dr Mrs Rabia Said. This happened to be the last official lecture delivered at the 1<sup>st</sup> ISWI/MAGDAS School.

After Prof Vafi's lecture, the PI, Prof K.Yumoto appreciated the class for their participation, association and cooperation; he expressed satisfaction with the conduct of the LOC. He was happy that the motivation of MAGDAS was clearly established and concluded by giving the future plans/agenda of MAGDAS. Dr A.B. Rabiou also appreciated the participants after which he coordinated the issuance of certificate to participants. Prof Vafi and Prof Yumoto presented the certificate to each participant. Some participants expressed appreciation to the organisers on behalf of others. Dr E.O. Falayi, LOC Co-Chair, gave the vote of thanks to all participants and the co-organiser for making the even a success. Mr Gbenga Akinyemi of the Redeemer's University gave the closing prayer. Participants recited the Nigeria's National Anthem. Group photograph was taken after which lunch was had. A post school excursion to Lagos city in Nigeria took place immediately after the lunch. The participants came back from the excursion and had their dinner.

#### **DAY 7, Sunday, 19<sup>th</sup> August 2011: DEPARTURES**

##### **Report Prepared By:**

**Olawumi SALAMI**  
*School Rapporteur*

**Babatunde Rabiou**  
*African Coordinator of MAGDAS*

# ***APPENDIX 3***

## **SAMPLE OF THE CERTIFICATE**

# Certificate of Participation



*Dr. Ikeda Akihiro*

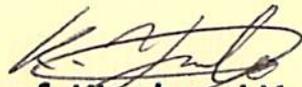


***Participated in the 'ISWI/MAGDAS School  
on Litho-Space Weather' Held at the  
Redeemer's University, Redemption City,  
Mowe, Nigeria***



***15 – 21 August 2011***



  
**Prof. Kiyohumi Yumoto**  
**PI MAGDAS Director, SERC,**  
**Kyushu University, Japan**

  
**Prof. Lawrence B. Kolawole**  
**Convener**  
**Redeemer's University**  
**Nigeria**

  
**Babatunde Rabi Ph.D**  
**African Coordinator MAGDAS**  
**& Director of MAGDAS School**

**APPENDIX 4**

**LIST OF PARTICIPANTS AT THE ISWI/MAGDAS SCHOOL ON LITHO-SPACE WEATHER,  
HELD AT THE REDEEMER'S UNIVERSITY, MOWE, NEAR LAGOS, NIGERIA, 15-21  
AUGUST, 2011**

S/N	Country	Name	Gender	Affiliation address	Email
1	South Africa	Julies, Errol Jack Johannes	M	SANSA Space Science (formerly, Hermanus Magnetic Observatory)	<a href="mailto:ejulies@hmo.ac.za">ejulies@hmo.ac.za</a>
2	Tanzania	Mtelela, Mtelela Khalfan	M	University of Dar es Salaam	<a href="mailto:Halfaniudsm@yahoo.com">Halfaniudsm@yahoo.com</a>
3	Kenya	Adero, Awuor Ochieng	M	Physics Dept. Univ. of Nairobi	<a href="mailto:aderoconstant@gmail.com">aderoconstant@gmail.com</a>
4	Egypt	Ahmed Ibrahim Amin Ramadan Khashaba	M	NRIAG, Helwan, Egypt.	<a href="mailto:geophysicist80@yahoo.com">geophysicist80@yahoo.com</a>
5	Sudan	Gamar Alanbia Bilal Mansour Hassan	M	Sudan University of Sci. and Tech.	<a href="mailto:gamar2008@yahoo.com">gamar2008@yahoo.com</a>
6	Mozambique	Joao, Luis Manuel	M	Eduardo Mondlane University	<a href="mailto:luis.joao@uem.mz">luis.joao@uem.mz</a>
7	Ethiopia	Fikade, Gebregiorgis Abraha	M	Addis Ababa University	<a href="mailto:ggabraha@yahoo.com.hk">ggabraha@yahoo.com.hk</a>
8	Zambia	Dr. Hansingo, Kabumbwe	M	Dept. of Physics, Univ. of Zambia	<a href="mailto:khansingo@gmail.com">khansingo@gmail.com</a>
9	Nigeria	Dr. Falayi, Elijah Olukayode	M	Tai Solarin University of Education, Ijagun	<a href="mailto:olukayodefalayi@yahoo.com">olukayodefalayi@yahoo.com</a>
10	Nigeria	Dr. Fayose, Rufus Sola	M	Adekunle Ajasin University, Akungba akoko	
11	Nigeria	Bello, Olawale Ramon	M	Federal University of Technology, Akure	<a href="mailto:olawaleramon@yahoo.com">olawaleramon@yahoo.com</a>
12	Nigeria	Dr. Agbo, Godwin A	M	Ebonyi State University, Abakaliki	
13	Nigeria	Dr. Obikezie, Theresa Nkechi	F	Nnamdi Azikwe University, Awka	
14	Nigeria	Akerele, Aderonke Adekemi	F	Obafemi Awolowo University, Ile-Ife	<a href="mailto:easyronke@yahoo.com">easyronke@yahoo.com</a>
15	Nigeria	Engr. Ale, Felix	M	National Space Research & Development Agency, Abuja	<a href="mailto:facosoft@yahoo.com">facosoft@yahoo.com</a>
16	Nigeria	Dr. Mai-Unguwa Hamisu	M	National Space Research & Development Agency, Abuja	
17	Nigeria	Abdulrahim, Rasheedat Bola	F	CSTD, NASRDA, Abuja	<a href="mailto:bourlarnley@gmail.com">bourlarnley@gmail.com</a>
18	Nigeria	Dr. Oladosu, Olakunle Rufus	M	UN-ARCSSTEE, Ile-Ife	<a href="mailto:koladosu@yahoo.com">koladosu@yahoo.com</a>
19	Nigeria	Auwalu, Musa	M	Bayero University, Kano	<a href="mailto:auwalu_musa@yahoo.co.uk">auwalu_musa@yahoo.co.uk</a>
20	Nigeria	Bello, Saeed Abioye	M	University of Ilorin, Ilorin	<a href="mailto:saeedbello@yahoo.com">saeedbello@yahoo.com</a>
21	Nigeria	Dr. Ewetumo, Theophilus	M	Federal University of Technology, Akure	

22	Nigeria	Dr. Olayanju, G. Moses	M	Federal University of Technology, Akure	<a href="mailto:Olayanju_gm@yahoo.com">Olayanju_gm@yahoo.com</a>
23	Nigeria	Dr. Ogolo, Emmanuel Omonigho	M	Federal University of Technology, Akure	-
24	Nigeria	Dr. Said, Salihu Rabia	F	Bayero University, Kano	<a href="mailto:rssid2001@yahoo.co.uk">rssid2001@yahoo.co.uk</a> , <a href="mailto:rabisalihu@gmail.com">rabisalihu@gmail.com</a> , <a href="mailto:rssidu.phy@buk.edu.ng">rssidu.phy@buk.edu.ng</a>
25	Nigeria	Dr. Oyeyemi, Elijah	M	University of Lagos, Lagos	-
26	Nigeria	Dr. Falaiye, Oluwasesan Adeniran	M	University of Ilorin, Ilorin	<a href="mailto:sesantayo2001@yahoo.com">sesantayo2001@yahoo.com</a>
27	Nigeria	Adabara, Hannah Rahimat	F	University of Ilorin, Ilorin	-
28	Nigeria	Salami, Rafiat Olawumi	F	Afe Babalola University, Ado-Ekiti.	<a href="mailto:olawunmmisalam@yahoo.com">olawunmmisalam@yahoo.com</a>
29	Nigeria	Dr. Oyebanjo Oluwakemi Abosedo	F	Tai-Solarin University of Education, Ijagun, Ogun State	-
30	Nigeria	Abdulraheem-Ismail, Qudrah A.	M	Tai-Solarin University of Education, Ijagun, Ogun State	<a href="mailto:babyronkyforever@yahoo.com">babyronkyforever@yahoo.com</a>
31	Nigeria	Alabi, Akeem Adewole	M	Tai-Solarin University of Education, Ijagun, Ogun State	<a href="mailto:wolexjic2005@yahoo.com">wolexjic2005@yahoo.com</a>
32	Nigeria	Osinowo, Muritala Olatunde	M	Redeemer's University, Redemption City, Mowe	<a href="mailto:osinowom@yahoo.co.uk">osinowom@yahoo.co.uk</a>
33	Nigeria	Akinyemi, Gbenga Akinpelumi	M	Redeemer's University,	<a href="mailto:akinpelug@yahoo.com">akinpelug@yahoo.com</a>
34	Nigeria	Obot, Imaobong Ernest	F	Redeemer's University,	<a href="mailto:tu2lovely2002@yahoo.com">tu2lovely2002@yahoo.com</a>
35	Nigeria	Dairo, Oluropo Feyisayo	M	Redeemer's University, Redemption City, Mowe	<a href="mailto:aosoge@yahoo.co.uk">aosoge@yahoo.co.uk</a>
36	Nigeria	Bolarinwa, Joseph Oluwatobiloba	M	Redeemer's University, Redemption City, Mowe	<a href="mailto:josebol2005@yahoo.co.uk">josebol2005@yahoo.co.uk</a>
37	Nigeria	Afuye, Zacchaeus	M	Redeemer's University, Redemption City, Mowe	
38	Nigeria	Awodibo, Michael	M	Redeemer's University, Redemption City, Mowe	
39	Nigeria	Ayodele Olatunbosun SOGE	M	Redeemer's University, Redemption City, Mowe	<a href="mailto:aosoge@yahoo.co.uk">aosoge@yahoo.co.uk</a>
40	Nigeria	Ayorinde, Toyese Tunde	M	Federal University of Technology, Akure	
41	Nigeria	Abe, Oladipo Emmanuel	M	Federal University of Technology, Akure	
42	Nigeria	Oloketuyi Jacob	M	Federal University of Technology, Akure	
43	Ethiopia	Ambelu Tebabal	M	ARCSSTEE, Ile-Ife	
44	Nigeria	Izang Patrick A.	M	ARCSSTEE, Ile-Ife	
45	Nigeria	Agoyi, Adedeji	M	Federal University of Technology, Akure	
46	Nigeria	Adesiji N. E.	F	Redeemer's University, Redemption City, Mowe	

47	Nigeria	Hammed Adeniyi Lawal	M	Olabisi Onabanjo University, Ago-Iwoye	
48	Nigeria	Ayanda, Jacob Dele	M	Tai-Solarin University of Education, Ijagun, Ogun State	
49	Nigeria	Oluyo, Kayode S	M	Yaba College of Technology, Yaba, Lagos	<a href="mailto:sunnykay1@gmail.com">sunnykay1@gmail.com</a>
#50	Nigeria	Dr. O. A. Agboola	M	National Space Research & Development Agency, Abuja	
@51	Nigeria	Prof. L. B. Kolawole	M	Redeemer's University, Redemption City, Mowe	<a href="mailto:proflbk@yahoo.com">proflbk@yahoo.com</a>
*52	Japan	Prof. Yumoto Kiyohumi	M	Space Environment Research Center, Kyushu University, Japan	
*53	Japan	Engr. Maeda Joji	M	Space Environment Research Center, Kyushu University, Japan	
*54	Japan	Dr. Abe Shuji	M	Space Environment Research Center, Kyushu University, Japan	
*55	Japan	Dr. Ikeda Akihiro	M	Space Environment Research Center, Kyushu University, Japan	
*56	Sudan	Yousif suliman Magdi Elfadil	M	Space Environment Research Center, Kyushu University, Japan	
*57	Japan	Dr A. Yoshikawa	M	Space Environment Research Center, Kyushu University, Japan	
*58	Cote d'Ivoire	Prof. Vafi Doumbia	M	University di Cocody, Abidjan, Cote divore	
*59	Nigeria	Dr. Babatunde Rabi	M	National Space Research & Development Agency, Abuja	

\*Tutors

#Guest Participant Representing NASRDA

@Convener

# ***APPENDIX 5***

**COMPLEMENTARY REPORT BY SERC**



Group photo after Opening Ceremony

Venue:  
Redeemer's University. 2011.08.18

2011  
MAGDAS School  
Report

Prof. Yumoto

Handing out completion certificates.

ISWI MAGDAS School on Lillo-Space Weather  
18-20 August 2011  
Venue: Redeemer's University, near Lagos, Nigeria.





# MAGDAS School Report

**“ISWI / MAGDAS School on Litho-Space Weather” (formal title)**

15-20 August 2011

Prof. K. Yumoto (SERC)

Prof. L.B. Kolawole (RUN)

Dr A.B. Rabiou (NASRDA)

**Venue: Redeemer's University, near Lagos, Nigeria.**

*Co-organizers:*

**Space Environment Research Center (SERC), Kyushu Univ., Japan**

**National Space Research and Development Agency (NASRDA), Abuja, Nigeria**

**Redeemer's University (RUN), Redemption City, Nigeria**

**African Regional Centre for Space Science and Technology Education - (ARCSSTE-E), Ile-Ife, Nigeria**

**Federal University of Technology, Akure, Nigeria**

## SUMMARY OF THIS SCHOOL

An important agenda of ISWI is *Capacity Building* of instrument hosts in the field. This has three main components: (1) Building their ability to maintain the instrument, (2) building their ability to analyze data from their instruments, and (3) building their ability to perform research (i.e., publish papers) based on (1) and (2). Accordingly, the main goal of this ISWI/MAGDAS school was to advance *Capacity Building* within the African MAGDAS community. This goal was achieved.

The plan for this one-week summer School was to invite persons embarking on a career in space weather science. The School achieved a good mix of students – a total of 51 students. Ten came from MAGDAS host stations: (1) Addis Ababa (Ethiopia), (2) Abuja (Nigeria), (3) Aswan and Fayum (Egypt), (4) Dar Es Salaam (Tanzania), (5) Hermanus (South Africa), (6) Khartoum (Sudan), (7) Lagos (Nigeria), (8) Lusaka (Zambia), (9) Maputo (Mozambique), and (10) Nairobi (Kenya). The other students came from various parts of Nigeria. It should be pointed out that the MAGDAS station students delivered excellent oral reports on their station status.

The number of instructors was eight: (1) Prof. K. Yumoto, SERC-Japan, (2) Dr. Babatunde Rabi, NASRDA-Nigeria, (3) Dr. Vafi Doumbia University of Cocody, Cote d'Ivoire, (4) Dr. Yoshikawa, SERC-Japan, (5) Dr. S. Abe, SERC-Japan, (6) Dr. A. Ikeda, SERC-Japan, (7) Mr. G. Maeda, SERC-Japan, and (8) Magdi, from Sudan, a Phd student under Prof. Yumoto at Kyushu University, Japan.

**THE DAY-BY-DAY PROGRAM OF THIS SCHOOL CAN BE FOUND ON THE NEXT PAGE.**



**ISWI / MAGDAS School on Litho-Space Weather**  
**Venue: Redeemer's University, Mowe, Near Lagos, Nigeria**  
**Dates: 15 – 20 August, 2011**



## PROGRAM

	8:30 – 10:00	10:00-10:30	10:30 – Noon	Noon – 1:00	1:00 - 2:30	2:30 – 3:00	3:00-5:00
<b>Day 1:</b> Monday 15 Aug 2011	<b>Arrival</b>						
<b>Day 2:</b> Tuesday 16 Aug 2011	Opening ceremony	<b>Tea break</b>	Introduction to MAGDAS <b>KY</b>	<b>Lunch break</b>	Data Analysis I <b>Abe, Magdi</b>	<b>Tea break</b>	Data Analysis II (EE-index, Pc5 index) <b>Magdi, KY</b>
<b>Day 3:</b> Wednesday 17 Aug 2011	Principles of geomagnetism <b>AY</b>		Ionospheric currents <b>AY</b>		Tutorials on MAGDAS data <b>Abe, Magdi</b>		MAGDAS operation and maintenance (YU-8T and MAG9) <b>AI, GM</b>
<b>Day 4:</b> Thursday 18 Aug 2011	Equatorial ionosphere <b>ABR</b>		Space weather <b>Abe, AI</b>		Station Status reports <b>Rep from each station.</b>		Lithospheric dynamics <b>KY</b>
<b>Day 5:</b> Friday 19 Aug 2011	Analysis of satellite geomagnetic data <b>I VD</b>		Estimation of Equatorial Electrojet from MAGDAS data / Group Research Discussion <b>ABR</b>		Laboratory work on Space weather <b>Abe, AI</b>		Laboratory work on Space weather <b>Abe, AI;</b> Data citation <b>GM</b>
<b>Day 6:</b> Saturday 20 Aug 2011	Analysis of satellite geomagnetic data <b>II VD</b>		Open Discussion & Closing ceremony		Excursion: Visit to places of interest in Lagos		
<b>Day 7:</b> Sunday 21 Aug 2011	<b>Departure</b>						

KY – Prof. K Yumoto; AY – Dr. Yoshikawa; VD – Dr. Vafi; GM – Engr. G. Maeda; AI – Dr. A. Ikeda; ABR – Dr. A. B. Rabi; Abe – Dr Abe

# ALL TALKS CAN BE VIEWED ON THE WEB.

As can be seen from the PROGRAM (previous page), each instructor gave one or more talks during The School. Each talk included a Power Point presentation. Each presentation has been converted to pdf and can be downloaded from the Web. Here is how to do it:

Research Core (GIN) Publication
<b>Space Weather Information</b>
Today's Space Weather Pc5 INDEX EE Index Pi2 Index (under const.)
<b>Data Service</b>
MAGDAS MAGDAS-II CPMN and Others
<b>Misc.</b>
MAGDAS Newsletter only member Link MAGDAS Session (Cairo, 2010) <b>MAGDAS School (Lagos, 2011)</b>

First, go to the SERC homepage:

[www.serc.kyushu-u.ac.jp](http://www.serc.kyushu-u.ac.jp) (and select English version).

On the left side of it (near the bottom) you will see this green-and-yellow column.

Under “Misc.”, click on “[MAGDAS School \(Lagos, 2011\)](#)”.

You will jump to a page that gives you full access to all presentations, List of Participants, and access to “[Selected Papers of MAGDAS](#)”, which was a textbook published for this school. It contains 24 MAGDAS-related papers; please see the next page to learn more about this book.

**Click here to access all MAGDAS School material.**

This was the 264-page textbook that was created for the MAGDAS School. It was printed up and distributed at The School. The title of the book is

## “Selected Papers of MAGDAS”

It contains 24 MAGDAS-related papers (see *Table of Contents* on the next page). This book is available to you in pdf (52 MB). Please refer to the previous page to understand how you can get this pdf copy for you and your students. This book has the strong endorsement of Prof. Hans Haubold of the United Nations Office for Outer Space Affairs (UNOOSA).



The image shows the front cover of a book. At the top center is the ISWI logo, which is a circular emblem with 'INTERNATIONAL SPACE WEATHER INSTITUTE' around the perimeter and 'ISWI' in the center. Below the logo, the title 'Selected Papers of MAGDAS' is printed in a bold, black, sans-serif font. Underneath that, the text 'for ISWI / MAGDAS School on Litho-Space Weather' is displayed in a larger, bold, black, sans-serif font. The date '15-20 August 2011' is centered below the title. The venue 'Venue: Redeemer's University, near Lagos, Nigeria.' is listed. The co-organizers are listed as: Space Environment Research Center (SERC), Kyushu Univ., Japan; National Space Research and Development Agency (NASRDA), Abuja, Nigeria; Redeemer's University (RUN), Redemption City, Nigeria; African Regional Centre for Space Science and Technology Education - (ARCSSTE-E), Ile-Ife, Nigeria; and Federal University of Technology, Akure, Nigeria. Below the text is a map of the world showing the 'MAGDAS (MAGnetic Data Acquisition System) Network at SERC, Kyushu Univ.' with various stations marked. The map includes labels for '90° MM Chain', '210° MM Chain', and 'Magnetic Equator Chain'. There are also small inset images of MAGDAS equipment and a 'MAGDAS-9 magnetometer'. The caption below the map reads 'Current global deployment of MAGDAS'.

Selected Papers of MAGDAS

for  
ISWI / MAGDAS School  
on Litho-Space Weather

15-20 August 2011

Venue: Redeemer's University, near Lagos, Nigeria.

Co-organizers:  
Space Environment Research Center (SERC), Kyushu Univ., Japan  
National Space Research and Development Agency (NASRDA), Abuja, Nigeria  
Redeemer's University (RUN), Redemption City, Nigeria  
African Regional Centre for Space Science and Technology Education - (ARCSSTE-E), Ile-Ife, Nigeria  
Federal University of Technology, Akure, Nigeria

MAGDAS (MAGnetic Data Acquisition System) Network at SERC, Kyushu Univ.  
PI: Prof. K. Yamoto

90° MM Chain  
210° MM Chain  
Magnetic Equator Chain

MAGDAS-9 Installation  
MAGDAS II Planned  
MAGDAS II Installed  
FM-CW radar  
MAGDAS Planned  
MAGDAS Installed  
MAGDAS-9 magnetometer

Current global deployment of MAGDAS

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for

# Selected Papers of MAGDAS

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5.	Characteristics of Pi2 magnetic pulsations observed at the CPMN stations: A review of the STEP results...	K. Yumoto	37
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7.	A Calibration Technique for Temperature Drift of MAGDAS Magnetometer Data.....	T. Uozumi	63
8.	A new index to monitor temporal and long-term variations of the equatorial electrojet by MAGDAS/CPMN real-time data: EE-Index.....	T. Uozumi	73
9.	Low Latitude Pc 5 Index using MAGDAS/CPMN data.....	A. Fujimoto	79
10.	Quantification and hemispheric asymmetry of low-latitude geomagnetic disturbances caused by solar wind pressure enhancements.....	C S Huang	87
11.	Characteristics of counter-Sq SFE (SFE*) at the dip equator CPMN stations.....	Y. Yamazaki	99
12.	Horizontal amplitude and phase structure of low- latitude Pc 3 pulsations around the dawn terminator...	Y M Tanaka	105
13.	Simultaneous identification of a plasmaspheric plume by a ground magnetometer pair and IMAGE Extreme Ultraviolet Imager.....	S. Abe	115
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15.	Propagation characteristics of Pi 2 pulsations observed at high- and low-latitude MAGDAS/CPMN stations: A statistical study.....	T. Uozumi	131
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17.	AKR modulation and global Pi2 oscillation.....	T. Uozumi	155
18.	Equivalent current systems for the annual and semiannual Sq variations observed along the 210 MM CPMN stations.....	Y. Yamazaki	171
19.	Reexamination of the Sq-EEJ relationship based on extended magnetometer networks in the east Asian region.....	Y. Yamazaki	181
20.	An empirical model of the quiet daily geomagnetic field variation.....	Y. Yamazaki	189
21.	Intensity variations of the equivalent Sq current system along the 210-degree magnetic meridian.....	Y. Yamazaki	209
22.	A new ULF wave analysis for Seismo-Electromagnetics using CPMN/MAGDAS data.....	Y. Yumoto	217
23.	Possible association between anomalous geomagnetic variations and the Molise Earthquakes at Central Italy during 2002.....	E M Takla	225
24.	Anomalous Geomagnetic Variations Possibly Linked with the Taiwan Earthquake (Mw=6.4) on 19 December 2009.....	E M Takla	233

Created by G. Maeda  
on 25 August 2011.

MAGDAS School Participants holding the "Selected Papers  
of MAGDAS" -- the textbook for this school (15-20 August 2011)



A

B

C

1 2 3 4 5 6 7 8 9 10 11

The Convener and the Instructors of MAGDAS School (RUN, Nigeria)



Prof. L. B. Kolawole  
(Nigeria)  
The Convener.



Prof. K. Yumoto  
(Japan)  
Director of  
SERC and PI  
of MAGDAS  
Project.



Dr A.B. Rabi  
(Nigeria)  
NASRDA



Prof. Vafi  
Doumbia  
(Cote d'Ivoire)  
Univ. of  
Cocody



Dr A.  
Yoshikawa  
(Japan)



Dr S. Abe  
(Japan)



Dr A. Ikeda  
(Japan)



Engr G. Maeda  
(USA)



Magdi (Sudan),  
whose Phd supervisor is  
Prof. K. Yumoto of Kyushu  
University, Japan.

in<--- attached to SERC, Kyushu University, Japan --->



This photo taken on 16 August 2011 immediately after the Opening Ceremony.

## **ISWI/MAGDAS School on Litho-Space Weather**

(15-20 August 2011, Redeemer's University, near Lagos, Nigeria)



This photo taken on 20 August 2011 immediately after the Closing Ceremony.

## **ISWI / MAGDAS School on Litho-Space Weather**

(15-20 August 2011, Redeemer's University, near Lagos, Nigeria)

## FEEDBACK ON MAGDAS SCHOOL

**Received from Prof. Vafi Doumbia (University of Cocody, Abidjan) on 8 Sept 2011:**

*About MAGDAS school:*

*I am very grateful to the project PI, Professor Yumoto, and all the SERC team members who have acted to make my attendance possible. I have really appreciated and enjoyed the Lagos MAGDAS School 2011. It was very successful and, I think, most of the participants including myself have taken very large advantages to this opportunity to strengthen our knowledge in different fields. Other important advantage of this school was the human warmness, joy and gladness were clearly visible on the faces of all the participants. And finally, it offered very good opportunity of scientific collaboration. For instance, many participating students are already requesting my co-supervision of their PhD. .... Really interesting.... Hopefully, many other future MAGDAS Schools.*

*Best regards,  
Vafi*

**Received from Magdi (Sudanese Phd student under Prof. Yumoto) on 12 Sept 2011:**

*.... Any way that's a good example of what Dr. Vafi pointed out when he said "other important advantage of this school was the human warmness, joy and gladness were clearly visible on the faces of all the participants"; that's entirely right, among this human warmness is the serious desire of all participants to establish a human networking that is when every body contributed by giving inputs to the Bye-Laws of the Africa MAGDAS Association (AMAGDASA), which is inaugurated collectively by all participants representing Africa MAGDAS host institutions; I think this should also be included within the human*

*warmness which is stated by Prof. Vafi. I pray we will meet again in a similar event, and we will work for this, this time around through our association (AMAGDASA). Please let's all together keep in contact, posting our news and keep intact the human warmness we'd established.*

## **FEEDBACK ON The Selected Papers of MAGDAS**

*Just today [9 Sept. 2011] I received the Proceedings titled "[Selected Papers of MAGDAS for ISWI/MAGDAS School on Litho-Space Weather, 15-20 August 2011, Redeemer's University, Lagos, Nigeria](#)". This is an outstanding scientific publication making available a collection of papers that are related to or emanated from IHY/ISWI/MAGDAS, published in the international literature in the period of time 1996-2010 (15 years!). I would like to make the recommendation to MAGDAS to mail this Proceedings volume to each of the PIs of the 15+ ISWI instrument arrays as identified in United Nations General Assembly document A/AC.105/994 (attached). Encourage them to bring out a similar Proceedings volume.*

*Professor Hans J. Haubold  
UN Office for Outer Space Affairs  
Vienna International Centre  
P.O. Box 500, A-1400 Vienna, Austria*

## List of Participants for MAGDAS School (15–20 August 2011)

No.	Country	Instructor	Name	Gender	Affiliation	email address	photo
1	S. Africa		Julies, Errol Jack Johannes	M	SANSA Space Science (formerly, Hermanus Magnetic Observatory)	ejulies@hmo.ac.za	
2	Tanzania		Mtelela, Mtelela Khalfan	M	University of Dar es Salaam	Halfaniudsm@yahoo.com	
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4	Egypt		Ahmed Ibrahim Amin Ramadan Khashaba	M	NRIAG, Helwa, Egypt.	geophysicist80@yahoo.com	
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6	Mozambique		Joao, Luis Manuel	M	Eduardo Mondlane University	luis.joao@uem.mz	
7	Ethiopia		Fikade, Gebregiorgis Abraha ("GG")	M	Addis Ababa University	ggabraha@yahoo.com.hk	
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11	Nigeria		Bello, Olawale Ramon	M	Federal University of Technology, Akure	olawaleramon@yahoo.com	
12	Nigeria		Dr. Agbo, Godwin A	M	Ebonyi State University, Abakaliki		
13	Nigeria		Dr. Obikezie, Theresa Nkechi	F	Nnamdi Azikwe University, Awka		
14	Nigeria		Akerele, Aderonke Adekemi	F	Obafemi Awolowo University, Ile-Ife	easyronke@yahoo.com	
15	Nigeria		Engr. Ale, Felix	M	National Space Research & Development Agency, Abuja	facosoft@yahoo.com	
16	Nigeria		Dr. Mai-Unguwa Hamisu	M	National Space Research & Development Agency, Abuja		
17	Nigeria		Abdulrahim, Rasheedat Bola	F	CSTD, NASRDA, Abuja	bourlarnley@gmail.com	
18	Nigeria		Dr. Oladosu, Olakunle Rufus	M	UN-ARCSSTEE, Ile-Ife	koladosu@yahoo.com	
19	Nigeria		Auwalu, Musa	M	Bayero University, Kano	auwalu_musa@yahoo.co.uk;	
20	Nigeria		Bello, Saeed Abioye	M	University of Ilorin, Ilorin	saeedbello@yahoo.com	
21	Nigeria		Dr. Ewetumo, Theophilus	M	Federal University of Technology, Akure		
22	Nigeria		Dr. Olayanju, G. Moses	M	Federal University of Technology, Akure	Olayanju_gm@yahoo.com	
23	Nigeria		Dr. Ogolo, Emmanuel Omonigho	M	Federal University of Technology, Akure		

24	Nigeria		Dr. Said, Salihu Rabia	F	Bayero University, Kano	rssaid2001@yahoo.co.uk, rabisalihu@gmail.com, rssaidu.phy@buk.edu.ng	
25	Nigeria		Dr. Oyeyemi, Elijah	M	University of Lagos, Lagos		
26	Nigeria		Dr. Falaiye, Oluwasesan Adeniran	M	University of Ilorin, Ilorin	sesantayo2001@yahoo.com	
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36	Nigeria		Bolarinwa, Joseph Oluwatobiloba	M	Redeemer's University, Redemption City, Mowe	josebol2005@yahoo.co.uk	
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38	Nigeria		Awodibo, Michael	M	Redeemer's University, Redemption City, Mowe		
39	Nigeria		Ayodele Olatunbosun SOGE	M	Redeemer's University, Redemption City, Mowe	aosoge@yahoo.co.uk	
40	Nigeria		Ayorinde, Toyese Tunde	M	Federal University of Technology, Akure		
41	Japan	Yes	Prof. Yumoto Kiyohumi	M	SERC, Kyushu University, Japan		
42	Japan	Yes	Engr. Maeda Joji	M	SERC, Kyushu University, Japan		
43	Japan	Yes	Dr. Abe Shuji	M	SERC, Kyushu University, Japan		
44	Japan	Yes	Dr. Ikeda Akihiro	M	SERC, Kyushu University, Japan		
45	Sudan	Yes	Yousif suliman Magdi Elfadil	M	SERC, Kyushu University, Japan		
46	Japan	Yes	Dr A. Yoshikawa	M	SERC, Kyushu University, Japan		
47	Cote d'Ivoire	Yes	Prof. Vafi Doumbia	M	University di Cocody, Abidjan, Cote divore		
48	Nigeria	Yes	Dr. Babatunde Rabi	M	National Space Research & Development Agency, Abuja	tunderabi@yahoo.com	
49	Nigeria		Dr. O. A. Agboola	M	National Space Research & Development Agency, Abuja		
50	Nigeria		Prof. L. B. Kolawole	M	Redeemer's University, Redemption City, Mowe	proflbk@yahoo.com	
51	Nigeria		Abe, Oladipo Emmanuel	M	Federal University of Technology, Akure		
52	Nigeria		Oloketuyi Jacob	M	Federal University of Technology, Akure		
53	Ethiopia		Ambelu Tebabal	M	ARCSSTEE, Ile-Ife		
54	Nigeria		Izang Patrick A.	M	ARCSSTEE, Ile-Ife		
55	Nigeria		Agoyi, Adedeji	M	Federal University of Technology, Akure		
56	Nigeria		Adesiji N. E.	F	Redeemer's University, Redemption City, Mowe		
57	Nigeria		Hammed Adeniyi Lawal	M	Olabisi Onabanjo University, Ago-Iwoye		
58	Nigeria		Ayanda, Jacob Dele	M	Tai-Solarin University of Education, Ijagun, Ogun State		
59	Nigeria		Oluyo, Kayode S	M	Yaba College of Technology, Yaba, Lagos	sunnykay1@gmail.com	

Note:

SERC = Space Environment Research Center (Director is Prof. K. Yumoto)

ARCSSTEE = African Regional Center for Space Science Technology Education English.

NASRDA = National Space Research and Development Agency.

END OF MAGDAS SCHOOL REPORT  
(created in September of 2011).



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