



# IGRGEA LETTER

International Geophysical Research Group /Europe-Africa  
International Geophysical Research Group /Europe-Asia

## IGRGEA

At the end of the IEEY (International Equatorial Electrojet Year), in 1995, IGRGEA (International Geophysical Research Group Europe Africa) were organized to follow the research work initiated during IEEY, in 1992. Since January 2003 IGRGEA has been established at the Institute of Geophysics in Hanoi, Vietnam.

**The last letter, No. 66, dated December 2022**

## BURKINA FASO

**KOALA** Somaila defended his doctorate in Physics on 7 January 2023 at the Nazi BONI University, Bobo-Dioulasso.

Thesis topic: "*From the Sun to the Earth: Dynamics, Structure of the Solar Wind and Geomagnetism during Solar Cycles 23 and 24*".



*From left to right in the photo*

**Christian ZOUNDI**, Senior Lecturer, Norbert ZONGO University, Burkina Faso

**Saïdou MADOUGOU**, Full Professor, Abdou Moumouni University, Niamey, Niger

**Jean Louis ZERBO**, Senior Lecturer, Nazi BONI University, Burkina Faso

**KOALA Somaila** (the student)

**Frédéric OUATTARA**, Full Professor, Norbert ZONGO University, Burkina Faso (Chairman of the jury)

**Emmanuel NANEMA**, Research Director, IRSAT/CNRST, Burkina Faso

**Kondia Honoré OUOBA**, Senior Lecturer, Nazi BONI University, Burkina Faso

**Doua Allain GNABAHOU**, Senior Lecturer, Norbert ZONGO University, Burkina Faso

**SAWADOGO Yacouba** defended his doctorate in Physics on 7 January 2023 at Nazi BONI University, Bobo-Dioulasso.

Thesis topic: "*Coronal mass ejections, fast solar winds and equatorial ionosphere during solar cycles 23 and 24.*"



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**Ibrahim TRAORE**, a doctoral student at the Norbert Zongo University in Koudougou, Burkina Faso, has been working on a research project entitled "The use of the GPS network in Burkina Faso applied to space meteorology. Comparison with space data" since January this year. This thesis is directed by Christian ZOUNDI and co-supervised by Frédéric PITOUT (Irap, Toulouse). Ibrahim, who benefited from a mobility grant from SCOSTEP, will be working in Toulouse in June 2023.

laboratory. As a result, he obtained scientific results that were useful for his doctoral thesis

**CÔTE D'IVOIRE**

**Diaby KASSAMBA ABDEL AZIZ** is now the National Coordinator of the International Astronomical Union in Côte d'Ivoire. His mission is to promote astronomy among children, pupils, students and the general public .

Renovated KOUDOUGOU GPS station, LAREME laboratory directed by **Frédéric OUATTARA**



**Nguessan KOUASSI** defended his doctorate in physics on 22 December 2022 at the Houphouët Boigny University Abidjan/Côte d'Ivoire.

The subject of his thesis was:  
*"Electromagnetic induction associated with eruptive solar events at low latitudes."*

**BURKINA FASO- VIETNAM**

**Tinlé PAHIMA** stayed in Vietnam from 11 to 27 August 2023 at the Geomagnetism Laboratory (LG), at the Institute of Geophysics in Hanoi (Vietnam). During his stay, he learned the techniques for processing GPS data in general and the Koudougou station data in particular: creating daily observation data files, converting observed data to RINEX files, calculating the total electronic content of the TEC ionosphere and the ROTI index. All this was done with Professor Minh LE HUY, director of LG, and in collaboration with the entire team at the



*From right to left: Moussa GRAFOUTE, Vafi DOUMBIA, Arsène KOBEA, Nguessan KOUASSI, Jean-Pierre ADOHI, Jérémie ZOUEU*



**Chairman: M. KOBEA Toka Arsène**, Director of Research, Félix Houphouët-Boigny University (Abidjan)

**Director: M. DOUMBIA Vafi**, Senior Lecturer, Université Félix Houphouët-Boigny (Abidjan)

Rapporteur:

**Mr ADOHI Bibi Jean Pierre**, Full Professor, Félix Houphouët Boigny University (Abidjan)

**Candidate: Nguessan KOUASSI**

**Rapporteur: M. ZOUEU Thouakessah Jérémie**, Full Professor, Institut National Polytechnic Houphouët- Boigny (Yamoussoukro)

**Examiner: Mr GRAFOUTE Moussa**, Senior Lecturer, Félix Houphouët Boigny University (Abidjan).

**David BARATROUX, Diaby KASSAMBA ABDEL AZIZ and Harris YAO MARC** published an article in the journal the conversation entitled 'Côte d'Ivoire launches its first locally-made observation satellite'. <https://theconversation.com/la-cote-divoire-lance-son-premier-satellite-dobservation-de-la-terre-fabrique-localement-208318>

FRANCE

### **Announcement by Jean Lilenstein**

The aim of the SESAME project (Raising Awareness of Space Weather) is to raise awareness of space weather among the general public in France (mid-2023), then in Europe and French-speaking countries (end-2023), before extending to the rest of the world by 2024. The project has 3 main strands, all of which can be developed in any language:

La Planeterrella: demonstrating the beauty of the polar aurora using a simulator

(<https://planeterrella.osug.fr/>) that details and explains the interactions between a star and planets. Already reproduced 38 times around the world, it's a great way of popularising the phenomenon.

Space weather bulletins: broadcasting weather forecasts and the physical mechanisms of the Sun's atmosphere on traditional media and/or online platforms. The aim is not to frighten people, but to show the beauty of these phenomena.

The social network: Bringing together people from all walks of life and connecting the general public and scientists through a social network that avoids commercial channels, under the aegis of local scientists, where people express themselves in their own language.

This project is funded by the French CNRS. The first bulletins are broadcast monthly on Radio France International to test their relevance. The first bulletins for the written press should appear in France at the end of the summer, and in the autumn for television bulletins.

By the end of 2023, our ambition is to set up a channel that will enable these bulletins and the network to be shared internationally, and to find funding for Planeterrella. To achieve this, we will be relying on two international networks: E-SWAN ([eswan.eu](http://eswan.eu)) for Europe, and GIRGEA for Africa. As far as the bulletins are concerned, the process we have devised is as follows: every Monday morning, bulletins (for various media) are prepared in Grenoble by our team of forecasters, assisted by scientists from the French OFRAME group, the CEA and the CNES, who sit on the scientific advisory board. The forecaster from the SIDC in Brussels validated the scientific content. On Monday afternoon, the bulletins are formatted for radio, television and the press. On Tuesday morning, they are sent to our partner countries in English and French. We believe it is essential that a scientific colleague in each country receive them. This colleague will be responsible for translating them into his or her own language (adding local particularities if he or she so wishes) and, on the basis of a contract drawn up between the 'Centre Opérationnel de Météorologie de l'Espace des Alpes (COMEAL)' and a local media outlet (television, radio, newspaper), for broadcasting them on Tuesday evening or Wednesday.

So, almost simultaneously, the information will reach several hundred million people.

SESAME also includes a sociological study. Space weather is a discipline that is still relatively unknown to the general public. With SESAME, it will be accessible to hundreds of millions of people. However, the acceptance and perspective of space are not the same in all regions of the world. That's



why four other countries have already agreed to help us test the concept while setting up a Sociologist/Space Meteorologist pairing, in a spirit of sharing between researchers on the one hand, and with the general public on the other. The countries involved are Côte d'Ivoire, Algeria, Greece and Kazakhstan.

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Jean Lilensten

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IPAG : <http://ipag.osug.fr/>

JSWSC: <http://www.swsc-journal.org/>

Planeterrella : <http://planeterrella.osug.fr/>

### **Announcement by Frédéric Pitout**

After many years of being organised in Belgium, the European Space Weather Week is now travelling. After Belgrade in 2022, Toulouse will host the 2023 event, from 20 to 24 November. Unlike the usual scientific congresses, the European Space Weather Week is also aimed at private players in the sector, as well as users. So it's a large community that's coming together. The congress will be punctuated by a number of different events : the traditional plenary and parallel sessions, as well as more informal discussion groups and poster sessions. All the information you need about the event, including paper submissions and registration, can be found on the dedicated website: [esww2023.org](http://esww2023.org).

To attract students and young researchers to the congress, the organizing committee and the European Space Weather Association (E-SWAN) are organizing a 3-day training course on the weekend before the congress. Other satellite events during the European Space Weather Week are also on offer. For more information: [esww2023.org](http://esww2023.org).

Frédéric Pitout: [frederic.pitout@irap.omp.eu](mailto:frederic.pitout@irap.omp.eu)

The article on GIRGEA's last school, to be held in Côte d'Ivoire in 2022, which appeared in the journal *La Météorologie*, is now available online: issue 121

<https://lameteorologie.fr/issues/2023/121>

## GUINEA

The next GIRGEA IMAOC6 school will be held in Guinea in autumn 2024. The national coordinator of this school is **René Tato LOUA**, Director of Meteorology in Guinea. **Olivier Le CONTEL** (LPP) and René Tato LOUA's request for financial support for the School, submitted under the CNRS/Africa call for proposals

(<https://international.cnrs.fr/actualite/le-cnrs-lance-trois-campagnes-pour-renforcer-sa-cooperation-scientifique-avec-lafrique/>) has been accepted and will cover all student travel costs. The institutions of each speaker at the School will be officially informed by the CNRS of this support.

## **SPACE WEATHER SUMMER SCHOOL**

**Physics and use of tools**

**October 14-25 2024**

**Conakry, Guinea**

**2024**

Organized by  
National Meteorological Agency  
Directorate General for Innovation

With the support  
International Space Weather Initiative  
(ISWI)

and  
ICG (International Commission of GNSS)

Under the High Patronage of the Minister  
of Transport of the Guinea Republic  
**Mr Félix LAMAH**



**NIGERIA**

From 4 to 8 September, an ICELLI workshop on equatorial and low latitude ionosphere was held at the University of Ilorin in Nigeria.

**University of Ilorin**

The first IPS-42 ionosonde was installed in 1989 at the University of Ilorin. Below are photos of the laboratory and antennas



The scientist in charge are :  
Professor **Olushola A. OLADIPO**  
[ooladipo@ilorin.edu.ng](mailto:ooladipo@ilorin.edu.ng)  
Professor **Adeniji O. OLAWEPO**  
[Olawepson@unilorin.edu.ng](mailto:Olawepson@unilorin.edu.ng)

**Bowen University**

At Bowen University, an HF radar is currently being installed.



The scientists in charge are:

Professor O. S. BOLAJI  
[olorieimpjch2002@yahoo.co.uk](mailto:olorieimpjch2002@yahoo.co.uk)  
Professor Babatunde RABIU  
[Tunderabiu2@gmail.com](mailto:Tunderabiu2@gmail.com)

**Laboratory « Space Research Environment » at  
Abuja <https://arcsstee.org.ng>  
"United Nations African Regional Centre for Space  
Science and Technology Education –English/Nigeria"**



**Instruments**

GNSS receivers, Full sky camera  
Scintillator  
Fabry Perot interferometer  
HF Radar, GNSS receivers  
Space Meteorology Laboratory  
The MAGDAS and AMBER  
magnetometers are no longer  
working, but the data are  
available.



**Contacts**

Babatunde Rabiou: [tunderabiu2@gmail.com](mailto:tunderabiu2@gmail.com)  
Daniel Okoh : [okodan2003@gmail.com](mailto:okodan2003@gmail.com)



PAKISTAN

Waqar YOUNAS defended his thesis in Physics on 31 May at Quaid-I-Azam University.

Thesis topic:

"Ionospheric and magnetic changes induced by space weather at low-and-mid-latitudes."



From left to right :

Waqar YOUNAS (Candidate), Dr Muhammad KAMRAN (Examiner 2), Dr Majid KHAN (Thesis Director), Dr Aman UR REHMAN (Examiner 1) Dr Kashif SABEEH (Chairman, Department of Physics QAU),

External Rapporteurs

Art RICHMOND, Michel BLANC

Co-Directors:

Christine AMORY-MAZAUDIER, Rolland FLEURY

DRC

The members of the Supervisory Committee for the doctoral thesis of the Head of Works NDIADIA KANDOLO Emmanuel/ University of Kinshasa (DR Congo), meeting on Saturday 13.05.2023, having heard the main results of this thesis, have declared it admissible.



Head of work NDIADA KANDOLO Emmanuel is preparing his presentation to the jury.

Thesis topic: "Contribution to the study of monthly, seasonal and inter annual variability of lightning activity in Equatorial Africa".

The University of Kinshasa has donated space within the University for the construction of a new Geophysical Research Centre (CRG). The centre is currently under construction.



Professor Keto TONDOZI, pictured below, has been appointed Director of the CRG.





## SENEGAL

**Idrissa GAYE**, from the University of Thiès, has been promoted to Senior Lecturer.



**Idrissa GAYE** is currently on an immersion stay at the University Technologic of Troyes as part of the Erasmus+/KA171 Key 171 action, from 1 October to 1 November. This action concerns mobility projects for students and higher education staff between \*member countries of the Erasmus + program and non-associated third countries.

## TUNISIA

**Ahmed AMMAR** has been recruited as a permanent lecturer at the ESPRIT engineering school (*École Supérieure PRivée d'Ingénierie et de Technologies*) in Tunis, which is one of the institutions affiliated to Honoris United Universities.

He would like to create a research unit on weather and space technologies.

## UNITED NATIONS WORKSHOP

From 26 to 30 June, the United Nations Workshop on the International Space Weather Initiative: the Way Forward was held in Vienna. There were two presentations from GIRGEA (Côte d'Ivoire and Burkina Faso)

**Diaby KASSAMBA ABDEL AZIZ** (Côte d'Ivoire) and **Inza GNAMOU** (Burkina Faso) presented their work.

Communication of **Diaby KASSAMBA ABDEL AZIZ**:  
« *Estimating the daytime vertical ExB drift velocities in the F region equatorial ionosphere using IEEF and AMBER magnetic data in West Africa.*»

Communication of **Inza GNAMOU**:  
« *Effect of turbulence high speed solar winds upstream of the Earth's magnetosphere, cases of the outer minima of solar cycles 20, 21, 22, 23 and 24.*»



## CHINA - ICMP 2023

An international workshop/Yanqi Youth Forum and the first ICMP Space Weather School were held in Beijing from 14 to 23 September.

**Christine AMORY-MAZAUDIER** presented:  
*Space Weather activities within the GIRGEAA Europe-Africa-Asia*

**Michel BLANC** presented:  
*Progress report and way forward on the Europe-Africa-Pacific second Meridian Circle*

There was only one participant from Africa:  
**Diaby KASSAMBA ABDEL AZIZ**





## SITE INTERNET

At [www.girgea.org](http://www.girgea.org), you will find all the GIRGEA letters sent since May 1992.

You can also download all Rolland FLEURY's softwares for processing GPS data and some ionosonde data.

To download the softwares you need a password, which Rolland will provide.

Mails from Rolland :

[rolland.fleury@telecom-bretagne-eu](mailto:rolland.fleury@telecom-bretagne-eu)

[rolland.fleury@imt-atlantique.fr](mailto:rolland.fleury@imt-atlantique.fr)