



JOSEPH OUKO OLWENDO

Phone in KENYA: +254 4447552

E-mail: castrajoseph@yahoo.com, j.olwendo@pu.ac.ke

Cell phone: +254 701 965 569

Address: Pwani University
P.O Box 195-80108
Kilifi-Kenya

Personal Data:

Date of Birth: 25th November, 1981.
Family Status: Married
Nationality: Kenyan
Title: Dr.

Goal:

Pursuance of research in the use of Satellite Navigation and Technology Data to study Ionospheric Scintillation and Total Electron Content variability at low latitude regions and to develop ionospheric models with modern techniques employed in simulation and modeling in space weather sciences.

Education:

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|--------------------------------|-----------------------|----------------|
| Ph.D | Pwani University | November 2014. |
| Master of Science in Physics | University of Nairobi | October 2008 |
| Bachelor of Science in Physics | University of Nairobi | October 2005 |

PhD Thesis Title:

CHARACTERIZATION OF IONOSPHERIC DYNAMICS OVER THE EAST AFRICAN DIP EQUATORIAL REGION USING GPS-DERIVED TOTAL ELECTRON CONTENT.

Research Interests:

1. Space Physics particularly on Atmospheric sciences, Ionosphere and Magnetospheric physics
2. Lower atmospheric forcings and Ionospheric Total electron content, Scintillations studies

Using GPS measurements, Ionospheric TEC responses to Space weather events (Geomagnetic storms), Earthquake, solar eclipse, study of Plasma bubbles and scintillation mechanisms from GPS signals.

3. Validation of ionospheric models with GNSS derived Total electron content to enhance application in Navigation and precise positioning applications.

Collaborations:

Research Collaboration- I have initiated international research collaboration between my University (Pwani University) and other international research institutions namely :

1. China Research Institute of Radio wave Propagation in the area of Ionospheric observation. Under this collaboration Pwani University received and installed a specialized Dual GPS receivers equipment for real times ionospheric plasma measurements. The equipment is worth USD 35, 000.
2. Pwani University and Istituto Nazionale Geofisica e Vulcanologia in ionospheric and Geomagnetic research.

PUBLICATIONS:

INTERNATIONAL REFEREED JOURNAL PUBLICATIONS

1. **Olwendo O. J., C. Cesaroni, Y. Yamazaki , P. Cilliers** Equatorial ionospheric disturbances over the East African sector during the 2015 St. Patrick's Day storm (under review. Submitted to the **J. of Advances in Space Research in December 2016**).
2. **Olwendo O. J., Y. Yamazaki , P. J. Cillier, P. Baki, P. Doherty,** A study on the variability of ionospheric total electron content over the East African low latitude region and a storm time ionospheric variations, **Journal of Radio Science, 51, 5103-1518, doi.10.1002/2015RS005785 (September, 2016)**.
3. **Olwendo, O. J., Yu Xiao, Ou Ming,** Ionospheric scintillation observations over Kenyan region- Preliminary results, **Advances in Space Research, Doi:10.1016/j.asr.2016.07.008 (July 2016)**.
4. **Olwendo, O. J., and C. Claudio,** Validation of NeQuick 2 model over the Kenyan region and its application in Ionospheric Studies, **Journal of Atmospheric and Solar-Terrestrial Physics, 145, 143-153, 2016. (Doi:10.1016/j.jastp.2016.04.011 (April, 2016))**.
5. **Olwendo, O. J., P. Baki, P. J. Cilliers, P. Doherty, S. Radicella,** Low latitude ionospheric scintillation and zonal plasma irregularity drifts climatology around the equatorial anomaly crest over

Kenya, Journal of Atmospheric and solar terrestrial Physics, **Journal of Atmospheric and Solar-Terrestrial Physics 138-139, 9–22, 2016 (January, 2016)**

6. **Olwendo, O. J.**, Y. Yamazaki, P. Cilliers, P. Baki, C. M. Ngwira, C. Mito, A study on the response of Equatorial Ionization Anomaly over the East African Sector during the geomagnetic storm of November, 13, 2012. **Advances in Space Research 55 (12) 2863-2872, 2015.**
7. Alex Chartier, Joe Kinrade, Cathryn Mitchel, Julian Rose, David Jackson, Pierre Cilliers, John-Bosco Habarulema, Zama Katamzi, Lee Anne Mckinnel, **Joseph Olwendo et al., (2013), Ionospheric Imaging in Africa, Radio Science, doi:10.1002/2013RS005238, 2013.**
8. **Olwendo, O.J.**, P. Baki, P.J. Cilliers, C. Mito, P. Doherty, Comparison of GPS TEC variations with IRI-2007 TEC prediction at equatorial latitudes during a low solar activity (2009-2011) phase over the Kenyan region. **Advances in Space Research, 52(10), 1770-1779, 2013.**
9. Ngwira, C.M., J. Klenzing, **J. Olwendo**, F. M. D’ujanga, R. Stoneback, P. Baki, A study of intense ionospheric scintillation observed during a quiet day in the East African low latitude region. **Radio Science, 48, doi:10.1002/rds.20045, 2013.**
10. **Olwendo, O.J.**, Baluku, T., Baki, P., Cilliers, P.J., Mito, C., Doherty, P., Low latitude ionospheric scintillation and zonal irregularity drifts observed with GPS-SCINDA System and closely spaced VHF receivers in Kenya, **Advances in Space Research, 51(9), 1715-1726, 2013.**
11. F.M. D’ujanga, P. Baki, **J.O. Olwendo**, B.F. Twinamasiko, Total electron content of the ionosphere at two stations in East Africa during the 24-25 October 2011 geomagnetic storm. **Advances in Space Research, 51(5), 712-721, 2013.**
12. **Olwendo O.J**, P. Baki, C. Mito.P. Doherty, Characterization of ionospheric GPS Total Electron Content (GPS-TEC) in low latitude zone over the Kenyan region during a very low solar activity phase. **J. Atmospheric and Solar Terrestrial Physics, 84(C), 52-61, doi:10.1016/j.jastp.2012.06.003, 2012.**
13. Adewale, A.O., Oyeyemi, E.O., and **Olwendo, J.** Solar activity dependence of total electron content derived from GPS observations over Mbarara. **Advances in Space Research, 50(3), 415-426, 2012.**
14. **Olwendo O. J**, P. Baki, P.J. Cilliers and C. Mito , Using GPS-SCINDA Observations to study the correlation between Scintillation, Total Electron Content Enhancement and Depletions over the Kenyan Region. **Advances in Space Research, 49(10), 1363-1372, 2012.**

15. **Olwendo, O.J.**, P. Baki, P.J. Cilliers, C. Mito, P. Doherty, Comparison of GPS-TEC measurement with IRI-2007 TEC Prediction over the Kenyan region during the descending phase of solar cycle 23. **Advances in Space Research**, **49(5)**, 914-921, 2012.
16. **Olwendo, J.O.**, Baki, P., Mito, C., Doherty, P., "Elimination of Superimposed Multipath Effects on Scintillations Index on Solar Quiet Ionosphere at Low Latitude over the Kenyan Airspace from a Lone Positioned SCINDA System," *Proceedings of the 23rd International Technical Meeting of The Satellite Division of the Institute of Navigation (ION GNSS 2010)*, Portland, OR, September 2010, pp. 386-392.
17. **Olwendo O.J.**, P. Baki, C. Mito, P. Doherty" Effects of TEC disturbances on satellite tracking over Kenyan Airspace"- **Nigeria Journal for Space Research**, **7**, 73-85, 2009.

SEMINARS, CONFERENCE AND WORKSHOPS ATTENDED

1. Satellite Navigation Science and Technology for Africa, From March 23rd –April 10th, 2009 in ICTP-Italy.
2. DAAD PhD writing workshop, April 24th, 2009
3. International Year of Astronomy May 3rd - 4th 2009. - Presented a technical paper entitled "Solar astronomy and its impact on navigation and telecommunication".
4. TAD Regional workshop on astronomy 9th -13th November, 2009 in Kenya.
5. Workshop on high performance computing applications in space science 2010. A joint Workshop between CHPC, North-West University and HMO, 1-2 March, 2010.
6. Visited the Hermanus Magnetory Observatory in South Africa for the periods 28th Feb-13th March, and gave a seminar on 11th March, 2010.
7. East and Central Africa workshop on GNSS, July, 19-24, 2010 in, 680 Hotel Nairobi.
8. The first ISWI summer school in Bahir Dar University, on 27th October-05th November, 2010 at EthioStar Hotel, Ethiopia.
9. Visited the Hermanus Magnetory Observatory in South Africa for the periods 9th April-9th July 2011 as a PhD research student. During my visit I had the opportunity to work with senior researchers and PhD students from SANSA. I gave a seminar on 5th July, 2011.
10. A workshop for the International Reference Ionosphere 2011 (IRI2011) on October 10th -14th, 2011 in SANSA Space Science, South Africa.

11. A workshop on Science Applications of GNSS in Developing countries followed by the seminar on Development and use of the Ionospheric Nequick model, 11 April-2 May 2012, ICTP- Italy.
12. AGU Chapman conference- longitude and Hemispheric dependence of Space weather, November 12th - 16th 2012,. Addis Ababa, Ethiopia.
13. Ionospheric Monitoring Workshop, January 24th -25th , 2013 organized by SANSa Space Science at the SANSa directorate in Hermanus, SA. After the conference I had a three day research visit at the SANSa facility between January 28th -31st, 2013.
14. Workshop on GNSS Data application to Low latitude Ionospheric Research, 5th -17th May 2013, ICTP, Trieste, Italy.
15. ISWI/SCOSTEP School on Space Science, October 21-November 1, 2013, Kenya Institute of Education, Nairobi Kenya.
16. Sixth Science conclave 2013, A congregation of Nobel Laureates and Eminent Scientists, An MHRD-DST initiative at IIIT- Allahabad, INDIA, December 8th -14th , 2013.
17. African School on Space Science: Related applications and Awareness for Sustainable Development of the region, June 30- July 11, 2014, Kigali Institute of Science and Technology- Rwanda.
18. 1st ASI-SAPIENZA meeting with Kenyan local Universities, January, 29th, 2015, University Of Nairobi-Chiromo Conference Centre.
19. Visited the International centre of theoretical Physics for the period April 5 to June 13, 2015 as A Junior Associate Scientist.
20. Workshop and conference on NeQuick Latest Developments and Advanced Uses, 4-8 May, 2015, ICTP, Trieste, Italy
21. 1st URSI Atlantic Radio Science Conference (URSI AT-RASC 2015), held in Gran Canaria, Spain from 18th to 22nd May 2015.
22. Visited China Research Institute of Radio Wave Propagation (CRIRP) to attend a research Collaboration Meeting between Pwani University and CRIRP at Qingdao from 10th -14th August 2015.
23. The 14th International Symposium on Equatorial Aeronomy, Bahir Dar, Ethiopia 19th -23rd October 2015.
24. 2nd ASI-SAPIENZA meeting with Kenyan local Universities, January, 26th, 2016, University Of Nairobi-Chiromo Conference Centre.
25. Visited the International centre of theoretical Physics for the period May 29 to July 29, 2016 as A Junior Associate Scientist to carry out research.

26. Workshop on use of Ionospheric GNSS Satellite Derived Total Electron Content data for Navigation, Ionospheric and Space weather research, 20th June-24 June 2016, ICTP, Trieste, Italy.
27. 19th International Beacon Satellite Symposium, 27th June-1st July, 2016, ICTP, Trieste, Italy.
28. High Level Forum 2016: Space as a driver for socio-economic sustainable development. 20-24 November, 2016, Dubai, United arab Emirates.
29. American Geophysical Union Fall Meeting, San Francisco, 12-16 December, 2016 (presented A paper as an invited talk).

Distinctions:

- 1. A warded Full Tuition Scholarship for Masters at the University of Nairobi- National Merit Scholarship (2006-2008).**
- 2. Appointed as a Junior Associate of the International Centre for Theoretical Physics from 1st January 2014 until 31st December 2019.**
- 3. Recipient of the AT-RASC 2015 Young Scientist Award- at-rasc@ursi.org**
- 4. American Geophysical Union Winner of the 2016, Basu Early Career Award in Sun Earth Science [Citation: AGU (2016), Olwendo receives 2016 Basu Early Career Award in Sun-Earth Systems Science, *Eos*, 97, doi:10.1029/2016EO061641, 27th October 2016].**

CURRENT RESEARCH PROJECT(S)

Principal Investigator (PI):

- 1. Ionospheric Scintillation and Total Electron Content observations over the Kenya region using specialized scintillations GPS receivers installed at Pwani University.**

Co-Investigator:

Prof. Zhen Weimin,
China Research Institute of Radio Wave propagation,
266107, No. 36, Xianshandong Road, Qingdao, China.

- 2. Ionospheric Total Electron Content and geomagnetic observations over the dip equatorial region in the East African Sector**

Co-Investigator:

Dr. Lucilla Alfonsi
Istituto Nazionale Geofisica e Vulcanologia (INGV)
Via di Vigna Murata, 605, 00143 Rome, Italy.

Professional Experience:

1. Lecturer in Physics- Pwani University, 2010 August to Date.
2. Teaching Assistant, University of Nairobi from 2006- to 2008.
3. Part-time lecturer at Kenya Methodist University from January –June 2009.
4. Part-time lecturer at Kenya Polytechnique University College 2009-2010.
5. Part-time lecturer -University of Nairobi-2009 till August 2010.

Units lectured:

Undergraduate: Mechanics, Analytical Geometry, Classical mechanics, Thermal Physics I & II, Relativistic Mechanics, Structure and properties of matter, Solid state Physics, Nuclear Physics, Modern Physics, Electricity and Magnetism, Mathematical Physics, computational Physics with Matlab, Quantum Mechanics, Electrodynamics, Ionospheric Physics, Atmospheric Physics, Space Physics.

Postgraduate: Statistical Mechanics, Computational Physics with Matlab.

Students Supervision

(a) Undergraduates

1. **Annttoinette Anita Vunya-120/PUC/0136/10-** Ionospheric Total Electron response to geomagnetic storms over the Kenyan airspace (**Successfully graduates in 2014**)
2. **Trizah Bosibori Onyangore- 120/PUC/0132/10-** GPS derived Ionospheric Total Electron Content Variations in the Kenyan region (**Successfully graduated in 2014**)

(b) Post-Graduate

1. **George Ochieng Ondede- Technical University of Kenya, Thesis title: characterization of the ionospheric disturbances in the East African sector around the peak of 24rd solar cycle (PhD-Continuing with research work).**

Other Responsibility:

1. Post-Graduate Coordinator in Physics Department [from 2016- to date].

Professional society:

1. Member of the Institute of Navigation –Membership number 33640.
 2. African Geophysical Union (AGU)-member.
 3. Federations of Associate Scheme member at the International centre of theoretical Physics.
 4. American Geophysical Union (Membership expires December, 31, 2019)
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REFEREES:

Prof. Paul Baki,
Department of Physics & Space Science
Technical University of Kenya
P.o Box 52428-00200
Nairobi.
Email:paulbaki@gmail.com

Prof. Hannington Oyoko
Department of Mathematics and Physics
Pwani University
P.o Box 195-80108
Kilifi.
Email: karabondi@yahoo.com