Demonstration of the African GNSS TEC (AfriTEC) Model, version 2.3

Introduction

- The AfriTEC model is a model of the ionospheric GNSS TEC over the entire African region (Longitudes 25 degree West to 60 degree East, Latitudes 40 degree South to 40 degree North).

- The model can be used to obtain the ionospheric GNSS TEC at all locations over the African continent.

STEPS

01

The program comes in a folder which contains all associating files

02

The main program to run is named AfriTEC.m

03

It generates a graphical user interface which is simple and easy to use

04

When the program runs, it creates the figure for the user specified details, and stores the corresponding data in a folder named Output

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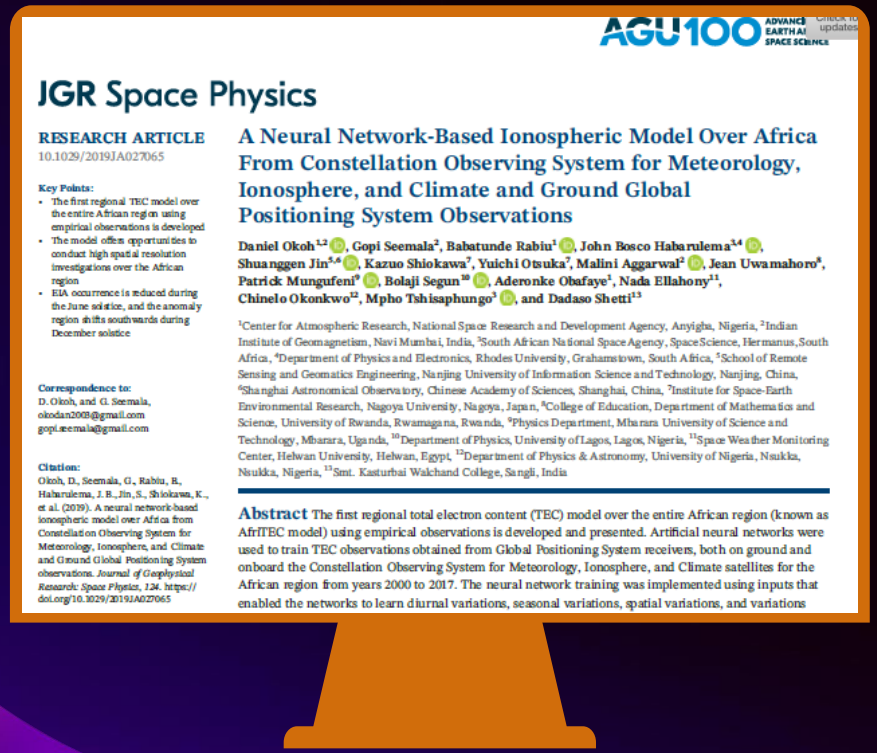

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Key Points:
- The first regional TEC model over the entire African region using empirical observations is developed
- The model offers opportunities to conduct high spatial resolution investigations over the African region
- EIA occurrence is reduced during the June solstice, and the anomaly region shifts southwards during December solstice

Correspondence to:
D. Okoh, and G. Seemala,
okodan2008@gmail.com
gopi.seemala@gmail.com

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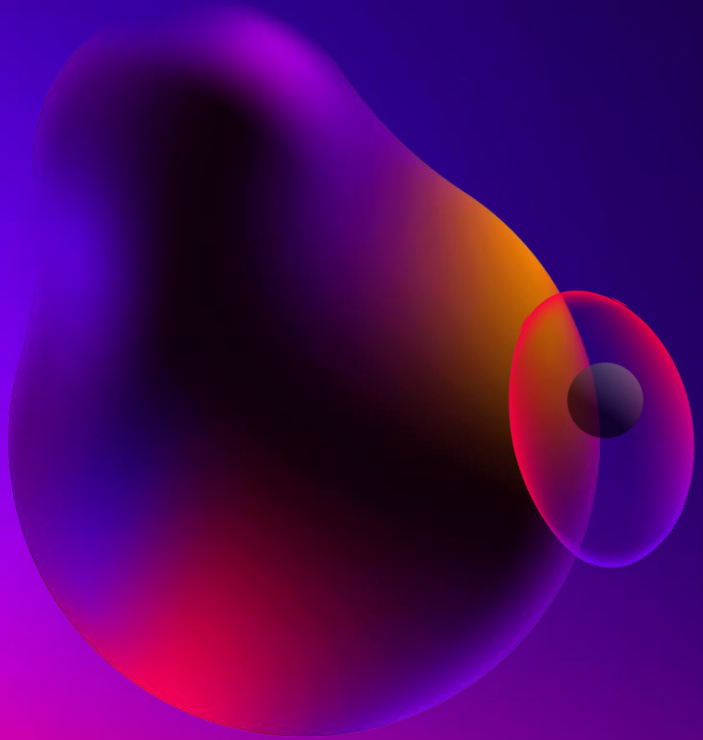
A Neural Network-Based Ionospheric Model Over Africa From Constellation Observing System for Meteorology, Ionosphere, and Climate and Ground Global Positioning System Observations

Daniel Okoh[1,2], Gopi Seemala[2], Babatunde Rabiu[1], John Bosco Habarulema[3,4], Shuanggen Jin[5,6], Kazuo Shiokawa[7], Yuichi Otsuka[7], Malini Aggarwal[2], Jean Uwamahoro[8], Patrick Mungufeni[9], Bolaji Segun[10], Aderonke Obafaye[1], Nada Ellahony[11], Chinelo Okonkwo[12], Mpho Tshisaphungo[3], and Dadaso Shetti[13]

[1]Center for Atmospheric Research, National Space Research and Development Agency, Anyigba, Nigeria, [2]Indian Institute of Geomagnetism, Navi Mumbai, India, [3]South African National Space Agency, Space Science, Hermanus, South Africa, [4]Department of Physics and Electronics, Rhodes University, Grahamstown, South Africa, [5]School of Remote Sensing and Geomatics Engineering, Nanjing University of Information Science and Technology, Nanjing, China, [6]Shanghai Astronomical Observatory, Chinese Academy of Sciences, Shanghai, China, [7]Institute for Space-Earth Environmental Research, Nagoya University, Nagoya, Japan, [8]College of Education, Department of Mathematics and Science, University of Rwanda, Rwamagana, Rwanda, [9]Physics Department, Mbarara University of Science and Technology, Mbarara, Uganda, [10]Department of Physics, University of Lagos, Lagos, Nigeria, [11]Space Weather Monitoring Center, Helwan University, Helwan, Egypt, [12]Department of Physics & Astronomy, University of Nigeria, Nsukka, Nsukka, Nigeria, [13]Smt. Kasturbai Walchand College, Sangli, India

Abstract The first regional total electron content (TEC) model over the entire African region (known as AfriTEC model) using empirical observations is developed and presented. Artificial neural networks were used to train TEC observations obtained from Global Positioning System receivers, both on ground and onboard the Constellation Observing System for Meteorology, Ionosphere, and Climate satellites for the African region from years 2000 to 2017. The neural network training was implemented using inputs that enabled the networks to learn diurnal variations, seasonal variations, spatial variations, and variations



Dr. Daniel Okoh
(okodan2003@gmail.com)

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Thanks!