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Abstract

A VB.NET class library has been developed for surface radio refractivity (Ns), reduced-to-sea-level refractivity (No) and modified refractivity (M). The class library contains

thirty functions, seven properties and five powerful methods which are polymorphized with at least seven members each. Using our dynamic class library, an accurate, flexible and windows-based software package was developed and applied to study radio refractivity at four Meteorological stations in Nigeria. Calculated results were compared with other researchers' works and found to be in agreement. Results from our application show that No values range between 306-385 N-Units at Abuja site; 304-378 and 294-395 N-Units respectively at Enugu and Sokoto sites. AkureFUTA site has the highest Ns value while Sokoto has the least value. Other accurate results for all the sites were obtained for Ns and M. Software developers will find our class library useful in their works, and the scientific community will benefit tremendously from the use of our package.

Reference

- Adenugba, D.A and Balogun, E.E. 2003. An Interactive Computer Package for Radio Refractivity Studies Over Nigeria. J. Res. Sci. Mgt. 1(1), 56-62.
- Adenugba, D.A. 2007. An Atomspheric Server For Some Atmospheric Parameters: Development And Application. J. Res. Sci. Mgt. 5(1), 91-104.
- Adeyemi Raimi, A. 1992. Seasonal and Diurnal Variations of Surface Radio Refractivity in Akure, South-Western Nigeria. Unpublished M.TECH Thesis. The Federal University of Technology, Akure.
- Ajayi, G.O, Feng S, Radicella S.M and Reddy, B.M. 1996. Handbook On Radio Propagation Related To Satellite Communications In Tropical And Subtropical Countries. 5-90.
- Evangelos Petroutsos. 2010. Mastering Microsoft Visual Basic 2010. Wiley Publishing Inc.

- ITUR-R. Int. Rep.IC/89/23. Physics of the Tropospheric Radio Propagation. 1989. 1-54.
- ITUR-R (453-9), The Radio Refractive Index Its Formula And Refractivity Data. 2003. 1-27.
- Kolawole, L.B.1980. Climatological Variations of Surface Radio Refractivity in Nigeria. Bull. Nig. Inst. Phys. 4. 97-116.
- Kolawole, L.B. 1981. Vertical Profiles of Radio Refractivity Over Nigeria. J. West Africa Sci. Association.
- Owolabi, I.E. And Williams,V.A. 1970. Surface Radio Refractivity Patterns in Nigeria and The Southern Cameroon's J. West Africa Science Association. 15, 3–17.
- Rotheram, S. 1989. Clear Air Aspects of The Troposphere And Their Effects On Propagation Mechnisms From VHF To Millimetre Wave. Radiowave Propagation. Peter Peregrinus Ltd., 150-153.
- Smith, E.K and Weintraub, S. 1953. The Constants in The Equation For Atmospheric Refractive Index At Radio Frequencies. Proc. IRE 41, 1033-1037.
- Thearon and Bryan. 2010. Beginning Microsoft Visual Basic 2010. Wiley Publishing Inc.

Index Terms

Computer Science   Programming Languages

Key words

Reduce to sea-level   Modified Refractivity   Surface Refractivity