

Statistical Distribution of Seasonal Variation of Refractivity Gradient in Lagos, Nigeria

Oluropo F. Dairo¹ and Lawrence B. Kolawole¹

¹Department of Physical Sciences, College of Natural Sciences, Redeemer's University, P.M.B. 230 Ede,
Osun State 232101, Nigeria
(Email: dairof@run.edu.ng, kolawolel@run.edu.ng)

ABSTRACT

The study of the refractivity gradient has continued to be of interest because of its application to microwave radio communications. The parameters on which refractivity depends – temperature, pressure and water vapour – change with time and space resulting in corresponding temporal and spatial variation of refractivity gradient. The present study is a statistical distribution of the refractivity gradient of the first kilometre using the in-situ upper air data obtained from the Nigerian Metrological Agency (NiMET). The statistical measures include median for the interval $-300 \text{ N-units/km} \leq D_n \leq -40 \text{ N-units/km}$ computed from the probability, P_0 , that the refractivity gradient is lower than or equal to D_n and the cumulative probability P_1 of D_n for $D_n \leq Med$.