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Theoretical aid for improving measuring instruments efficiency within the meteorological space of Lagos-Nigeria

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Abstract

We propose that the aerosols in the atmosphere form layers of varying refractivity. In this paper, we used proven dispersion model alongside the unified number to determine the dynamics of the aerosol transport. The inability of scientist to calculate the atmospheric constant over an area has lead to frequent failures of ground measuring devices e.g. radiosonde, weather stations in developing regions is worrisome. From literatures, established projects like AERONET, AMMA e.t.c. are burdened by same challenge. At the moment, AERONET or AMMA database shows a large volume of data loss. With only about 47% data set available to scientist, it is evident that accurate nowcast or forecast cannot be guaranteed. Upon numerical simulations, it revealed that the atmospheric constant over Lagos-Nigeria is $a_1 = 1.175$, $a_2 = 0.88$, $n_1 = 0.2926$ and $n_2 = 0.3573$. Lagos lies within the latitude of 6.465°N and longitude of 3.406°E .

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