

ABSTRACT

The potential of the forest as a natural sink is vast and enormous and has been well documented in several types of research and reports. This project is an attempt at re-emphasizing this potential, by using geospatial technology, to quantify the amount of carbon sequestered by the Oluwa Forest Reserve. Remote sensing methods, specifically supervised image classification augmented with field data, were employed. Landsat imageries of 1984, 1991, 2002, 2010 and 2015 were obtained and the maximum likelihood supervised classification algorithm was used in obtaining the landuse/land cover information for those years. From this, the trend in the landuse was monitored and ascertained. The study revealed two distinct tree species, and subsequently, four forest strata were established. The heights and diameters at breast height of the trees from ten randomly selected 20 m × 20 m sample points, were measured. The allometric equation of Brown (1989, 1997) was used in estimating the above ground and belowground biomass while the Soil Organic Carbon (SOC) was obtained from the laboratory test on the soil samples, taken at 0 –15 cm, and 15 – 30 cm from the ten sample points using the Walkey Black method. The total above and belowground biomass was obtained to be 162,826.343 Mg/ha and 32,565.269 Mg/ha respectively while the total SOC was 5.7971 Mg/ha. The total carbon sequestered by the forest was estimated to be 358.565 Mg Ca. A multiple regression analysis was carried out and an adjusted r-squared value of 0.9809 with an f-test significance of -0.000000401 was obtained. This is to find the correlation between the biomass and the dbh, diameter at breast height and the tree heights, h.

Keywords: Oluwa Forest, Carbon Sequestration, Allometry, Tropical Rainforest.