

## Seasonal variability in aerosol microphysical properties over selected rural, urban and maritime sites in Kenya

Atmospheric aerosols are posing a great threat to the already stressed climate with the effects being felt more on African continent. Their presence and interaction with the clouds contribute to the strongest uncertainty in aerosol characteristics and Earth's energy budget hence; calling for a long term assessment to be done. The present study analyses long term spatiotemporal microphysical aerosol characteristics (namely: effective radius ( $r_{eff}$ ) and surface-area concentration), using AErosolROboticNETwork (AERONET) framework over Kenyan urban atmosphere (Nairobi-1 S, 36 E), rural atmosphere (ICIPE-Mbita-0 S, 34 E) and maritime atmosphere (CRPSM-Malindi-2 S, 40 E). AERONET framework was used due to its availability over the selected sites; it is also located in sites that provided contrasting aerosols type, source and characteristics and due to its synergism with other frameworks. The findings indicated a spatial and temporal variability in microphysical properties over CRPSM-Malindi, Nairobi and ICIPE-Mbita. CRPSM-Malindi is dominated with coarse aerosols in all seasons while Nairobi with coarse mode in the DJF and MAM seasons. ICIPE-Mbita is on the other hand dominated with fine aerosols in all season. In terms of size distribution, the three AERONET sites displayed a bimodal distribution inflecting at  $0.44\text{ }\mu\text{m}$  and fine mode radius of  $0.15\text{ }\mu\text{m}$  while CRPSM-Malindi recorded a coarse mode of  $3.86\text{ }\mu\text{m}$  and Nairobi and ICIPE-Mbita with  $5.06\text{ }\mu\text{m}$ . The coarse aerosols have a higher concentration than the fine aerosols in all AERONET sites because of aerosol coagulation and dominance of certain type of aerosols that are coarse.