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Development of an IoT based Air Quality Instrument suitable for profiling Particulate Matter (PM) distribution across Nigeria using a PMS5003 and DHT11 digital sensors.

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Informed knowledge on the distribution of dust particles and humidity variations across certain geographical location offers innumerable benefits to humanity. Such information could guide astronomers to make informed decision when locating or carrying out their optical observation; Medical professionals can monitor and predict trends in lung and cardiovascular related diseases, and other host of professions that might find such information invaluable. The work presents the indigenous development of network of Air Quality data loggers that monitors the distribution of PM based on wide range of diameter sizes in microns across a certain geographical distance within the country. The network comprised of a number of standalone sub-stations each of which is a microcontroller-based instrument that incorporates PMS5003 and DHT digital sensors for obtaining meteorological parameter, SIM module for cloud-based data storage and other peripherals for optimal performance. The network features a centralized cloud-based data repository from each of the respective locations of these sub-stations. These data can be used for onward scientific analysis and meteorological prediction.

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