**AIR QUALITY ANALYSIS IN TAMIL NADU**

**Abstract:**

The current research project engages in an in-depth scrutiny of the air quality in Tamil Nadu with an emphasis on stats of Sulfur Dioxide (SO2), Nitrogen Dioxide (NO2), and Respirable Suspended Particulate Matter/Particulate Matter 10 (RSPM/PM10) across many gauging locations. The main intent is to employ state-of-the-art approaches to data analytics to produce meaningful results, reveal trends, and create a predictive model for RSPM/PM10 levels utilizing SO2 and NO2 data. The dataset is used as the basis for identifying patterns in air pollution and consists of measurements from cities, towns, villages, and various locations. The initiative seeks to identify places with high levels of pollution through sophisticated analytics, providing useful information for policy formulation and focused intervention. Data analytics are used in the project's predictive modeling component to find relationships between the levels of SO2, NO2, and RSPM/PM10. The model seeks to enhance proactive air quality management efforts by providing a precise estimation of RSPM/PM10 levels using machine learning techniques. This project goes beyond typical investigations by adding data visualization techniques to provide findings in a clear and understandable way. Using graphs, charts, and heatmaps can assist stakeholders better grasp complex trends and patterns, enabling them to make educated decisions. The goal of this project is to create a predictive model for more pro-active environmental management by identifying pollution hotspots, locating air quality data for Tamil Nadu, and using cutting-edge data analytics to locate them.