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"A Review Of The Study Of Estimation Of The Concentration Of Particulate Matter Over Chhatrapati Sambhajinager (M.S) City Using Remote Sensing"

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Abstract:
India's ongoing population explosion has imposed a great strain on the country's environment. This rapid growth in population along with urbanization and industrialization has placed lot of pressure on India's infrastructure and natural sources. Forests destruction, soil erosion, water pollution and lowering of the level's quality continue to hinder economic development in under developed and rural region of India. The rapid urbanization and subsequently industrialization in India leads degrading environmental condition in metro cities in India. Chhatrapati Sambhajinager cannot be an exception Chhatrapati Sambhajinager is one of the most affected cities where air particulate matters (PM) have been registered at the levels more than 10 times our country's legal limit (Ninawe et-al 2010).
Despite of introducing legal policy measures in India air pollution remained major concern. In many urban areas including Chhatrapati Sambhajinager, there is high level of pollution. This cause increase in the levels of air pollution including deforestation that is causing human health hazards. In India aggravation of air pollution is owing to the rapid and growth in the size of cities. The movement of people from one place to other helped to Increase in consumption pattern, unplanned urban and industrial development is the main causes of air pollution in big cities of India that resulted the worst. (Chitale et-al 2010).
In India, the most severe problem of environment comes in varied forms including vehicular emissions and unsaturated industrial smoke. This has resulted in bringing about adverse effect on population and cities are unable to implement pertinent pollution control mechanism. High concentration of pollution in India is not due to absence of a sound environment legal regime, but is due to lack of environmental enforcement at the local level. Regulatory reforms aimed to improving the air pollution problem in most of the metro cities.
To my knowledge this might be the first attempt in Maharashtra, to produce high-resolution of particulate matter and gaseous NO2 and SO2 pollution surface, making use of remote sensing data (Kourase et-al 2010). The outcome of this research work will be made available to help expose health research in this polluted and densely populated region

Key Word*: Air pollution, Particulate matter, Gaseous and NAAQ Standards etc.*

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I. Introduction

The rapid and uncontrolled population growth, urbanization, industrialization, transportation and commercialization in urban areas around the world, resulted various health problem for man such as respiratory, cardiovascular and ophthalmic diseases (Brunekreef and Holgate,2002; Millar et_al.2007, Nandasen (2010), Gilex et_al2011). The significant air pollution is suspended particles, gases, different ion ingredient's and noise. The gases include the oxidized and reduced form of Nitrogen, Carbon, SO2, Vapors, and O3. The suspended particles include various forms of PM1, PM2.5 and PM10 particulates matters and heavy metals.

During the last few decades, India has been experiencing a revolution in technology, urbanization and industrialization growth and uncontrolled explosion in population growth. The scientific technology is greatly involved in these developments. However, a subsequent side effect of such technical developments on esthetic values, the quality of our surrounding environment, and this has received very little attention.

Ambient air pollution has become a matter of great concern particularly in mega cities and urban areas. The air pollution in India has been aggravated due to the rapid and unplanned growth in size of cities, industrialization, and increase in the levels of energy consumption level. Floating human population due to migration of people from rural to urban area led to the air pollution. In city like Chhatrapati Sambhajinager, has resulted and has led to the problem of becoming one of the worst polluted cities in India (chitale et_al2010).

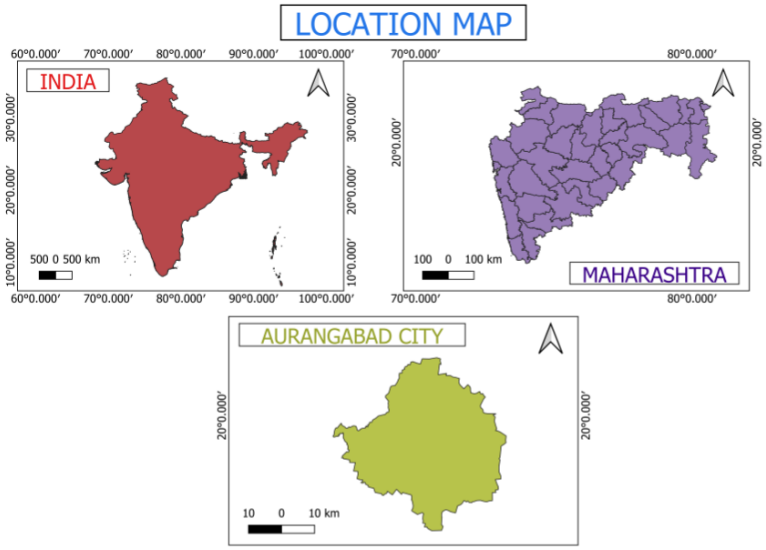

Fig.01 Chhatrapati Sambhajinager location map

In the present investigation, the spatio-temporal characterization of air pollution in the atmosphere of Chhatrapati Sambhajinager city will be discussed for the 30 to 40 stations on stratified Radom sampling. Main focus will be on the characteristics of trace gases (SO2 & NO2, CO) and particulate matter (PM2.5 and PM10). The relationship between air pollutants and land use changes with vegetation, land surface temperature and urban settings will be analyzed and keenly discussed for Chhatrapati Sambhajinager city.

Chhatrapati Sambhajinager city has been listed under the 17-non-attainment city in Maharashtra with respect to National Ambient Air Quality standards 2009.

Garg et_al (1995), from six metro cities, recorded more than 30 elements in suspended particulate matter (SPM) and showed that there was wide variation in toxic pollutant (As, Br, Cr, Cu, Hg and Sb) concentration. Naik et_al (1995) described that the pollutants are also present in remote highly elevated areas of mountains sites, which are quite away from the industrial and urban areas. Deb et_al (2002) undertook the monthly survey for atmospheric arsenic deposition in Raipur (Chhattisgarh) and stated that a range of arsenic particles is in the range of 0.100(0.20)-4.00(mo 0.020).Kulshreshretaet_al (2001) reported the impact of increased industrialization and urbanization has led to increase the atmospheric acidity which can cause incidence of acid rain .Agrawal et_al(2001),reported the role of industries at Shingruli area of Sonbhadra district between SO4 and accumulated rainfall and suggested that the source of SO4 is mainly due to the activities of industrial area. Rao et_al (2003) surveyed in developing countries, only the problem of air pollution, by making use of technique known as flue gas treatability tool for techno-economic selection of air pollution control system more precisely in medium scale industrial emission.

(Gokhale et_al2004)The size distribution of aerosol was measured near traffic intersections industrial area and also in the core of the Mumbai. The contribution of SPM is from vehicles and they are (PM10 and PM 2.5). It is well established that particulates in urban air are responsible for serious health effects. In Orissa, at an open pit coal mining area. Chaulyaet_al (2005) investigated the ambient air quality at an open pit coal mining area in Orissa sate India). The SPM, RSPM and tother particulates having less than 10mm aerodynamic diameter, SO2 and NO2 exceeded the concentration in respect to the standards in Indian Ambient Air Quality Standards(NAAQS).Chaulyaet_al (2005) also stated that some other investigative measures were also recommended like implementation of green belts around sensitive areas.

Bhanarkaret_al (2005) performed his research study in the Glass industry in Gujarat (India) for collecting samples for workplace air quality for SPM, SO2, NO2, and CO2 at eight sampling location points. Result of Air quality showed 8 hourly average concentration of SPM: 165-9118µg/m3, SO2: 6-9 µg/m3 and NO2: 5-42 µg/m3 which was below the threshold limit values of work place environment. In work place where the level of CO2 in air was found to be in the range of 827-2886 µg /m3 which is below TLV, but much higher than the normal concentration for CO2 in the air 585 µg /m3

Kaushik et_al (2006) investigated the ambient quality and pointed out the effects of the air pollution on health of human being in urban area of Haryana (India). The total SPM, RSPM (PM10), SOx and NOx were found recorded below permissible limit at all centers. Comparatively SO2 showed high concentration during winter seasons, which was found to be related with the enhanced combustion of fuel for space heating and relatively stable atmosphere conditions. Details of the importance of emissions from the sources like respirations of road dust, burning of refuse, stone crushers, wood combustion, vehicle exhausts due to fuel combustion are

found to be the major contribution to the total TSP load. In the same way for SO2 emission contributes to the total TSP Load. In the same way for SO2 emission contributors are industrial fuel oil combustion and power plant and for NO2 it is vehicles and power plants (World Bank 1997)

Ninaweet_al(2010), stated that rapid growth in Indian population, along with urbanization and Industrialization has placed significant pressure on India infrastructure and its natural resources, axing of forests, soil erosion, water pollution and lowering of the land quality continue to turn worst and are hindering economic development in rural India, while rapid urbanization and Industrialization in India are straining the limits of municipal services and causing serious pollution problems. Vehicular pollution Control, motor vehicles are major contributors to air pollution in major urban cities, and Vehicular pollution control deserves a high priority such as augmentation and improvement of public transports system Increase in growth and improvement in private and public transport system has to be expanded in city areas also improvement in everyone has to work hard to facilitate pollution force movement in transport mode. In addition, strict implementation of legal policy measures in very meticulous manner in many of big cities in our country including Chhatrapati Sambhajinager, high pollution level is a main reason concern. Even after passing major bill against the issues cleaner technology and land use planning. Until today, there is no concert policy found in existing form and also lack of cooperation and coordination between various governmental agencies to impossible the transport. Is a major problem being very weak, refer as its implementation and enforcement of various rules and regulations related to check the human involved in the process of pollution Control. There is an urgent need that the governments agencies require to re-establish their mechanisms of environmental policies, which currently are found existing and they require very active and alert consideration include

•Technically improving the processes of monitoring at pollution hotspot by establishing traffic- inter station and more station and also by increasing frequenting of monitoring

•Additional air quality parameters (AQP) are needed to be monitored as PM 2.5.dry deposition of SO4 and NO3

•There should be an introduction of emission factors development for varied activities

•There should be installation of load mapping at frequent intervals especially needed in urban areas

•Implementation of air pollution model to be used as a tool for forecasting and urban planning

Recent Studies (Kapoor 2017 and Rahaman (2016) revealed that severe impacts have been observed in the past few decades such as population growth, unplanned sweeping urbanization and industrialization there has put a Pressure on natural resources and increased in the levels of air pollution, in addition deforestation brought about the health problem to human beings. Sweeping of huge growth industrialization has resulted a deterioration of Indian's air quality.

Nadzri Othman et_al (2010), estimated particulate matter concentration over Arid region using satellite remote sensing with objective to estimate the distribution of particulate matter of less than 10 micrometre (PM10) by using Land sat 7 ETM+ SIC off data calibrated with in situ concentration. Measurement Nadzri Othman then estimated model was then applied using PC Geometric maps processing software to generate air pollution PM10 maps for a particular date. They carried out the accuracy analysis by comparing the estimated data generated using multispectral algorithm model with in-situ data.

Shivangi sexenaet_al (2019) estimated the concentration of particulate matter PM2.5 and PM10 by applying remote sensing technique. The work demonstrates the potentiality of land SAT 8OLI TIRS for the monitoring of air quality by using GIS as the aiding tool. The study proved that the model derived by using different bands and land sat satellite image accurate estimation can be done for PM2.5 and PM10.while it cannot be used for gaseous pollutants. This model was validated using the ground truth data of 2017.

Geetanjali Kaushik et_al (2016) demonstrated the rapidly growing Indian cities such as Chhatrapati Sambhajinager which is with high concentration of particulate matter which is attributed to automobiles, industries, biomass burning and suspension of red dust. They also stated that their particulate matters have been implicated in various respiratory cardio-pulmonary diseases including cancer.

Mazumdar et-al (2012) described a methodology to obtain air pollution from images directly. Vegetation indica, NIR, SWIR can be taken as indicators for air quality information. The reliability of the model can be improved through inclusion of more sample points and integrating with traffic related parameters and population density.

Soleimany (2021) investigated and evaluated the Kaunas city Air pollutants between 14 and 25 October 2019 using the environmental stations data and satellite data. In this study relation was shown between air pollutant SO2, NO2 and PM (PM10 & PM2.5 remotely sensed data retrieved from sentinel 5P OM (Aura) and MODIS (Aqua and Terra) over the Kaunas City where tire recycling manufactory fire occurred in the Alytas and Geographic Information System has been investigated. According to analysis and results, author states that the terre, OMI (Aqua) and sentinel-%P satellite are all approximately equally well to be useful for detecting localised PM (PM10 & PM2.5) pollution.

Abdullah shaheanet_al (2017) estimated air particulate matter 10 using Landsat Multi-temporal Data and analysis the annual temporal pattern over Gaza Strip, Palestine. They stated that urbanization and population strongly affected the PM10 Concentration is found to be over urban area of Gaza Strip and constantly increasing. Decrease in rainfall promoted PM10 accumulation.

Krishna et_al (2019) estimated surface PM2.5 using satellite derived aerosol optical depth over India. The main goal of the study was to assess and establish the relationship between satellite retrieved AOD Values and the PM 2.5 over the Indian Region by applying satellite model-based inversion method to predict ground level PM 2.5 concentration. The derived PM 2.5 concentration showed high seasonal variation and was found to be similar with the mean monthly surface observation from different geographical locations in India.

Hadjimitiset_al (2008) determined values of the aerosol optical thickness for the industrial area which were found to be higher than those found from the Urban/suburban area of Limessol.GIS was used to support measurement for mapping and monitoring purposes.GIS can be used to support remote sensing measurement for mapping and monitoring.

Yang et_al (2017) from China, undertook research work, where in they have incorporated SRS and AQM, datasets, local geographic and local source related information with the ground-based measurement to generate high resolution pollution maps of PM2.5 and NO2 in PBD region of China. They recorded that SRS recorded have contributed significantly to the explained variance in NO2 concentration. The spatial variation in PM2.5 concentration was the best predicted using X and Y coordinated as predictors. The outcome of the above study would be made avaible to exposure and health research in the thickly populated area.

Lee et_al (2012) introduced a new approach that helped satellite AOD data to predict the spatial and temporal patterns of PM 2.5 levels in New England. The method used by them was based on the daily calibration of AOD measurement using ground level PM2.5 concentration, which was accomplished using a mixed effects model. They stated that this calibration was found necessary, since the relationship between AOD and PM2.5 concentration depends on many times varying parameters such as particle concentration vertical profile, particle composition and R.H.L among others. They also proposed a new method to predict PM2.5 concentration during non-retrieval days which were quite frequent in U.K due to clouds and sown. Overall, author demonstrated the tremendous potential of satellite AOD Data to accurately predict exposures to PM2.5, which in found very much essential for both short and long term PM2.5 epidemiological studies. This progress will accelerate the ability to assess daily subject specific PM2.5 exposures.

Klooget_al (2014) under took this study by using Available pertinent satellite-based aerosol optical (AOD) is potential to estimate particulate matter (PM 2.5). For the study of epidemiology which has increased substantively over the past few years. It is becoming increasingly common to use a new hybrid spatiotemporal model for recording daily multi-year PM2.5. Their concentration across the northern USA where in high resolution aerosol optical depth date has been taken in use to study epidemiology across this region.

Yang et_al (2018) estimated SPATIAL variability of ground level PM2.5 based satellite derived aerosol optical depth product in Fuzhon (China). The results obtained by them suggest that the mixed efforts model using MODIs 3 Km AOD together with metrological data could be effective for the estimation of PM2.5 concentration in Fuzhon area (China).

Widya et_al (2020) stated that they worked by mainly focusing on two objectives in their research ,1) To record spatio-temporal concentration of PM10 and PM2.5 by in-situ observation and application of advanced and 2) to explain the determinants influencing the concentration of air pollution. They also observed in this study further applied GWR and GTWR to identify and verify the obtained results in order to replicate results in addition LUI.it has been observed that this is their beginning of the study for finding out that air pollution concentration. In Indonesia by comparably these obtained the advanced methods.

Hu et-al (2013) demonstrated that feasibility of using 1 KM spatial resolution MAIAC AOD data to estimate ground level PM 2.5 concentration using a two-stage model. These results show overall accuracy of MAIAC Predicted PM 2.5 concentration at 1 KM resolution is comparable with MODIS predicted Pm 2.5 concentrations at 12 km resolution. Authors, in future are going to focus on to develop new statistical methods and introduce additional estimator to fill the gaps in areas where AOD is not retrieved.

Gerharz and Pebesma (2013) carried out this work using geostatistical simulation to disaggregate air quality model results for individual exposure estimation on GPS tracks. The methodology in this study for disaggregation for PM10 concentration from grid to point support to improve exposure modeling was developed and applied. An analysis of point support PM10 measurement for variogram estimation over the study area which cannot be captured by single Global Estimator. Auxiliary data set was used to obtained models that predict spatio-temporal variability of PM10 at point support. Authors have recommended to forth coming community researchers to include an assessment of the uncertainties due to the support mismatch in exposure in modeling methods.

Fioranvanti et al (2021) Illustrated that the main results of a spatio- terminal interpolation process of PM10 concentrations at daily resolutions using a set of 410 monitoring sites distributed throughout the Italian

Territory for the year 2015. This paper presents two illustrative examples of practical application of spatio temporal model.

Hoogh, et al (2017) estimated daily level of PM 2.5 in Switzerland from 2003 to 2013 at a fine resolution the prediction can be facilitated environmental epidemiological research at five temporal and spatial scales, after performing successful test in applying a noble approach to a get information from an extensive PM10 monitoring network to inform the relative sparse PM 2.5 data set moreover updates of model needs repeated investment in measurements.

Hanhui Qin, et al (2020) reported the spatial and temporal variations of air pollutions and its influencing factors for eighteen cities in Henan Province from April 2015 to 2017 with the aim of increasing our understanding of the spatio temporal characteristics and underline mechanisms. Obtained results showed that ambient air pollution has become more serious of some cities, even after implementation of various policies actions to control air pollutions in Henan. Cities like HebiPuyang and Anyang experienced marked increases in the both the NAQ1 and non-attainment days. The spatial auto correlation analysis placed in Anyang and Hebi in a high spatial cluster in 2016, indicating that air pollution in these cities could continue to be reduced by implementing joint measure. These results increased understanding of the variation characteristics of regional air pollution, which is critical for guiding region-oriented policies making into reduce air pollution.

Sanchez – Balseca and Perez-Foguet (2020) in their research paper entitled "Spatio temporal air pollution modeling using compositional approach" stated that the compositional approach used in the work improved the classical. Classical spatial temporal modeling based on dynamic liner method. This model used here enhances dynamic liner modeling of pollutant with high variability (i.e., SO2) besides compositional modeling improves spatial correlation description of standard non compositional approaches. Authors have stated that this approach allowed better predictions, which could be made about the reduction in the level of pollutant over an urban territory.

Lixin Li et al (2020) reported that spatial interpolation methods for was Air-pollution, developed to estimate values at Remote Locations based upon values that are spatially sampled in Geographic Information System (GIS). "These methods predict a stronger correlation among points that are closer than those farther apart. They are characterized due to their either deterministic or stochastic depending on weather statistical properties are utilized. Deterministic interpolation methods to determine an unknown value using mathematical functions with predefined parameters like distances interpolation methods such a distance in inverse weighting (IDW). In this endeavour, authors focused on deterministic spatio temporal interpolation methods based on SFs, IDW and RBFs.

Chaulya et al(2020), in their research article titled on "Modelling for Air Quality Estimation for a planned coastal washer to control Air Pollution based on modelling exercise" Author concluded that concentration of PM 10 may get increased from 0.058-51.333 and 0.039 - 17.485 mg/m3 under the uncontrolled emission conditions respectively at the air quantity monitoring sites and selected receptor locations in the close vicinity of the washery through this investigation it has been suggested that in order to minimize the fugitive dust level from washery site installation of the dry dust suppression system was recommended at different dust generative source in addition to implementation of other dust control measure in and around the cool washery.

Alyousifi et al (2020), reported that although the analysis of Air pollution data as is available in of literature and study using different methods and implementing some models. In this paper Alyousifi et al (2020) made use of spatial Markov Chain (SMC) it was used not used frequently by the earlike worker. But this SMC mode however, is found to be pertinent to be applied since the daily data from 2012 to 2014 that have been gathered from 37different air quality Peninsular Malaysia is found to exhibit the property of special auto concentration. Based on the spatial transition probability matrices found from the SMC model specific characteristic of Air pollution are studied in the regional context. These Characteristics are the Long. Run properties and the mean first passage time for each state of air pollution.

The paper involves exploring the potential impact of spatial dependence over time and space maker on the distribution of air pollutant based on the spatial Markov chain (SMC) model using the longitudinal air pollution index (API) data. The authors collected 3 years data from 2012 to 2014collected from 37 air quality monitoring station in Malaysia.

Issues and Problems: About Chhatrapati Sambhajinager

Chhatrapati Sambhajinager city is in Maharashtra state, it is the administrative head quarter for Marathwada region. Elevation of Chhatrapati Sambhajinager is longitude 75.3433130, latitude 19.8761653, Total Area of Chhatrapati Sambhajinager is 10107 Sq. Km. Chhatrapati Sambhajinager city has been listed under 17 nominated cities in Maharashtra, based on observation of exceedance with respect to National Ambient Air Quality standards-2009.However particulate matter and gaseous emission contamination is a cause of concern for the city.

In addition, almost care has been taken; the high air pollution level problems are still there in many urban areas in Chhatrapati Sambhajinager city and also in other main Cities in Maharashtra never the less, these are still existing some 'n' number of gaps related with different policies such as prevention-based policies related to environmental. However, that needs to be a lacuna on the aspect on the aspect of separate policy at the national level in addition it is well established that is no legal well-defined policy to participate and in public transport that shows a lack of coordination between Government agencies in order to improve the transport services. The government agencies are required to reorient and revitalize their enforcement mechanism.

Some of the gaps in the information data, currently existing require active consideration EPCA (2001)
•To establish strong monitoring stations at pollution hot spots like traffic intersection
•To monitor additional air quality parameters such as PM 2.5, PM 10 NOx, SOx, dry deposition of SO_4 and NO_3
•To make it mandatory the stratified random sampling of pollutants as it has not been done
•To make it mandatory to study flow of pollutant
•To undertake remotely sensed data this has not been used as pollutant for the study.

In addition to the legal and policy measures introduced in air pollution are found to be major concern in India currently initiates and successful management of air pollution (TERI 2001). Rao et_al (2003) developed a novel technique known as flue gas treatability, NEERI, Nagpur, India.

Chhatrapati Sambhajinager is a developing city, where the development is more or less in an unplanned is continuously taking place. This uncontrolled and unplanned urbanization led to the ecological imbalance and that resulted in bringing about an ecological collapse. All this is being adversely affecting natural ecology and today's environmental scenario, however, air pollution has become a major concern. The deteriorating air quality has become a prime priority with respect to regulation of environment where in we live today. In India, most of the large cities, deterioration of air quality in most of our large cities mainly due to industrialization, uncontrolled growth of human population making use of auto vehicles i.e., increased dependence on automobiles. The collected literature in the form of references logically supports the existence of several constituent that affect the air quality of a city Viz PM10, PM2.5, SOx, NOx, O3, CO, Ammonia, NH3 and heavy metals. In a city like Chhatrapati Sambhajinager, which is having several industries in the areas where there is a continues development taking place. Developing zones like Chitegoan, Bidkin. Besides, there could be possibility of additional sources, which can serve for additional requirement of polluting component in air that are needed to be identified. It is also imperatively needed to understand whether these pollutants are local or moved with respect to space and time.

Keeping this view in mind an attempt will be made during our research study to evolve or develop a GIS model that will help us continuously and conveniently in collecting air quality information directly from remotely sensed data. In this contest a mathematical or probabilistic model can be developed that will help in the characterization of air quality both in space with time. This will be used in validating the ground truth data and mapping data. This obtained data could be used for estimating modelling, mapping and predicting pollution level of a particular matter.

Several researchers from Chhatrapati Sambhajinager have worked on these lines. They have used the data procured by installing the sensors that were installed by Central Pollution Control Board (CPCB). The number of stations identified by board was found to be varied. Kaushik et_al (2006), identified and chosen 11 stations at different site, places to study the pollutants in Chhatrapati Sambhajinager. However, the strategy implemented by them for air sampling at these centres did not appear to be stratified. Therefore, in view of that in our research study the stratified random sampling strategy will be implemented for studying the pollution spectrum of Chhatrapati Sambhajinager.

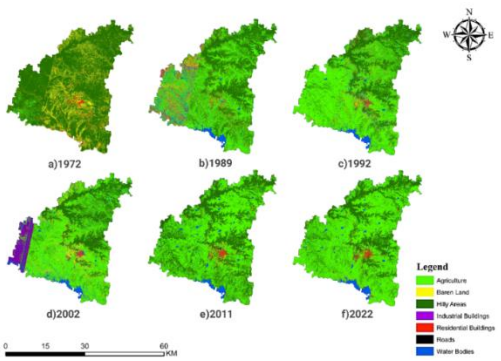

Fig.02 Chhatrapati Sambhajinager of the district for year 1972 to 2022 with various map LULC classes which were manually digitized in QGIS.

Objectives:

While estimating the concentration of particulate matter from the atmosphere of Chhatrapati Sambhajinager the satellite remote sensors will be used. It is proposed to proceed further by adopting following objective:

"To estimate the distribution and concentration of particulate matter less than 10 micrometer (PM10), PM2.5 by using remote sensing techniques."

II. Material And Methods

During the period of present investigation, the tools as mentioned below will be used. The research will be carried out based on following steps

- Envirotech Sampler for Stratified random sampling of data.
- Laboratory analysis of the data for quantifying PM10, PM2.5, NOx, SOx.
- Spatial prediction and analysis of pollutant data
- Flow / Directional analysis of data
- Integration of remote sensing datasets (MODIS, LANDSAT)
- Characterization air quality

Envirotech's Dust Sampler APM460 DXNL along with the gaseous sampling attachment APM411TE, also from the same company would be used for in-situ sampling of the selected sites. During the sampling process, APM460 DXNL sampler first separates the coarser particles (larger than 10 microns) from the air stream before filtering it on Whatman QM-A filter paper allowing measurement of both the total solid particles (TSP) and the respirable fraction of the suspended particulate matter simultaneously.

Stratified random sampling:

It is based on the traffic intensity and the type of the place, data collection locations will be selected based on a stratified random sampling strategy at the selected stations that are Jalna-Chhatrapati Sambhajinager main roads, Beed Bypass Road, Jalgaon road, old mondha Chhatrapati Sambhajinager area and industrial area.

Central Pollution Control Board (CPCB) laid down the methods prescribed for the gases SOX, NOX and the particulate pollutant, PM10 are:

(a) Improved West and Gaeke method,
(b) Modified Jacob Hochheiser method; and
(c) Gravimetric method, respectively.

Spatial prediction:

In order to predict the amount of pollutants at unknown location we need to use spatial interpolation technology, which is of two types:

1. Deterministic interpolation technology and
2. Non-deterministic interpolation technology

Anisotropic analysis of the data:

The anisotropic analysis of the data will be done through variograms

Remote sensing datasets

Remote sensing datasets these would be used for:

1. Moderate Resolution Imaging Spectrometer (MODIS)
2. LANDSAT 7 ETM+ and LANDSAT 8 OLI

III. Conclusion

In India the major cities growing rapidly are facing severe air pollution problems; rapidly growing cities such as Mumbai, Delhi, Pune and Chhatrapati Sambhajinager have a high concentration of particulate matter in air which is due to automobiles, industries, biomass burning and re-suspension of road dust. These particulate matters have been proved as a cause for various respiratory ,cardio pulmonary diseases and even a dangerous cancer.Therfore,now it is the moto of our Indian government to focus in attention on economic growth with regards to benefits of longer lives and favor incidences of PM (Particulate Matter) related sickness critical evils of suspended particulate matter (SPM) and PM10 exist in all over the cities due to transportation and industrialization.Highlevels of NO_x and CO_x exist in Many traffic intersections. RPM as well as SPM prevails excessively high pollution loads. In addition, the high level of air pollution load is rapidly increasing number of patients suffering from respiratory diseases, heart diseases and also the patients suffering from cancer. As a result, high economic costs area associated with the degradation of air quality.

Auto vehicles are being Strong and effective strategic are needed to be adopted that are like making/using compulsory use of public transport and mass rapid transport systems along with traffic planning and management. Taxes as fuels and vehicles and cleaner fuel like CNG replacement of two stroke engines on to mitigate air pollution in addition industrial sources of small- and large-scale units also required to be targeted to reduce identified as one of the major sources in urban areas. Vehicular pollution control in cities (urban area) and town (rural area) needs to identified as one of the major sources in urban areas. Vehicular pollution control in cities (urban area) and town (rural area) needs to be given top priority. Strong and effective strategic rules needed to be adopted and make it compulsion to use public transport and mass rapid transport systems along with traffic planning and effective management of taxes on fuels and vehicles and make use of cleaner fuel like CNG replacement of two stroke engines in addition industrial sources of small- and large-scale units also required to be targeted to reduce the intensity of air pollution. Emphasis would have be given on waste minimization and utilization capabilities would facilitate in improving the enforcement mechanism, though a number of measures have been framed earlier and now are to be seriously to mitigate the problem of air pollution, never the less much still is needed to be meticulously under taken the residents of metro cities of urban area like Mumbai, Pune, Chhatrapati Sambhajinager in order to be breath clean air and make environment pollution free.

Need of the house is to introduce the strike rule for institutional and technical measures to strickly check and control incidence of air pollution due to particulate. In view of the above it is very much essential that everyone should give co-operation in the management of urban air pollution. This would be of great significance in established the best if shared to keep clean and maintain the area free from air pollution and well-balanced ecosystem.

Need of every Indian citizen is to be strike in extenly their whole hanted help and cooperation to strictly follow the traffic to check and control incidences of air pollution and cooperate the traffic controllers that will help in the management of air pollution in urban areas and make the air of the urban pollution free.

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