

# Web Based Ambient Air Quality Monitoring System For Delhi

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**Abstract-** Urbanisation in India is more rapid in and around its Capital, Delhi. It becomes the major centre for commerce, industry and education. An enormous increase in the number of vehicles, industries etc. has resulted in increased emission of the air pollutant cosequentially level of air pollutants such as respirable suspended particulate matter are found to exceed the prescribed standards. In the present work an application is created which uses Real time Ambient Air Quality Data (AAQD) provided by the Delhi Pollution Control Committee (DPCC) on its website and visualise the information graphically in a much better way for decision making. Various parameters considered in our work are time, gas concentrations and, prescribed standard.

**Keyword-** Ambient Air Quality Data(AAQD); Prescribed Standard; Pollution; Health Hazards; DPCC; Air Pollutants; Suspended Particles

## I. Introduction

Air pollution monitoring in India began in 1978, when National Environmental Engineering Research Institute (NEERI) established a network in 10 cities including Delhi. In each city, at least three sampling sites representing residential, commercial and industrial zones were selected. Many years later the Central Pollution Control Board (CPCB) also began a monitoring programme. The main function of the CPCB under the Air (Prevention & Control of Pollution) Act 1981 is to improve the quality of air and to prevent, control and abate air pollution in the country. In order to assess the baseline situation, measure trends and evaluate the impact of interventions, it is essential to collect air quality data. Therefore, a National Ambient Air Quality Monitoring (NAAQM) programme was initiated in 1984 with 7 stations at Agra and Annapara [1].

Delhi Pollution Control Committee (DPCC) is a statutory agency under the Department of Environment which is responsible for overall environmental assessment, monitoring, protection and raising awareness

among the people of Delhi. The Central Pollution Control Board has delegated all its powers and functions to the DPCC since March 1991. The DPCC is responsible for the implementation of the various pollution control acts and rules which already exist and those which are passed by the Department.

For the intention to provide current air quality information to the end user DPCC regularly update its website with real time AAQD which is measured by it at six locations in Delhi. These stations are at Civil Lines, Punjabi Bagh, Mandir Marg , IGI Airport , R.K Puram and Anand Vihar (ISBT) as shown in Fig. 1 below.

In the present work we have created a web application which uses Real time AAQD provided by DPCC website and give a better way for graphical representation of the information to take better decisions. Graphs shown to the user for single or multiple pollutants ( ammonia,sulphur dioxide etc.) are based on three parameters (time, gas concentration, and, prescribed standard).

## II. Methodology

This application involved four main steps. In the first step, an interface is developed to interact with third party website i.e. DPCC website. The second step concentrated on rearranging the data provided by DPCC website. In the third step general query development takes place and in the last and final step well formatted graphical information is provided to end user.

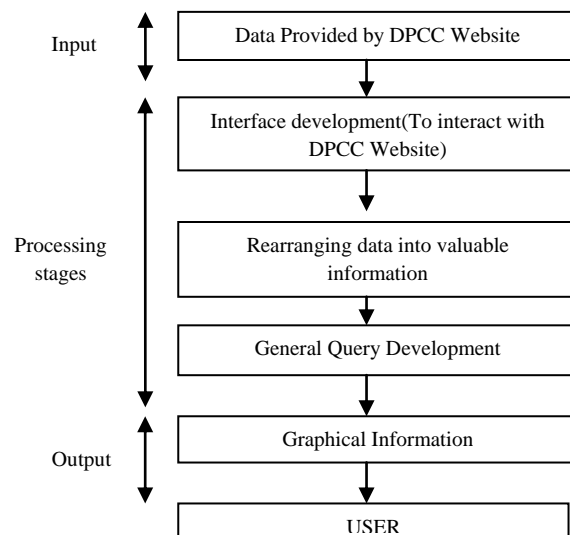




Fig. 1 DPCC Web Page Showing Real Time Ambient Air Quality Data for Mandir Marg.

#### A. Startup Screen

When a user browses the application an HTML page is open which contains a Google map with six marker position i.e. IGI, Mandir Marg etc. and four

DropDownLists for providing different option i.e. for selecting Gas Component, Date, and Time as shown in Fig. 2 below.

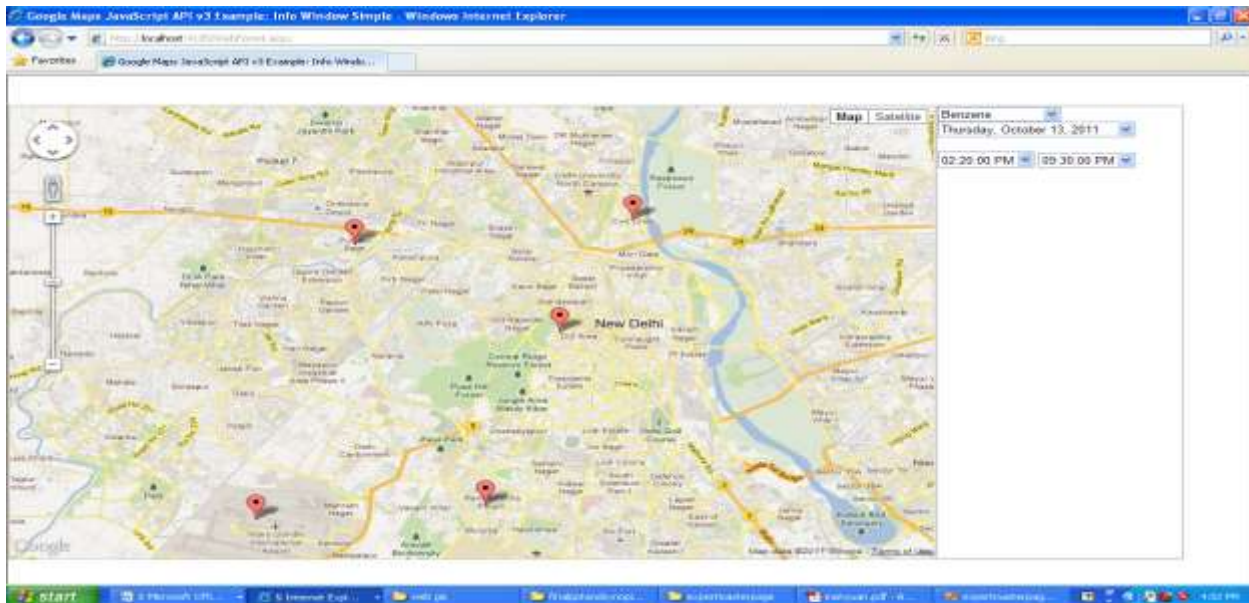
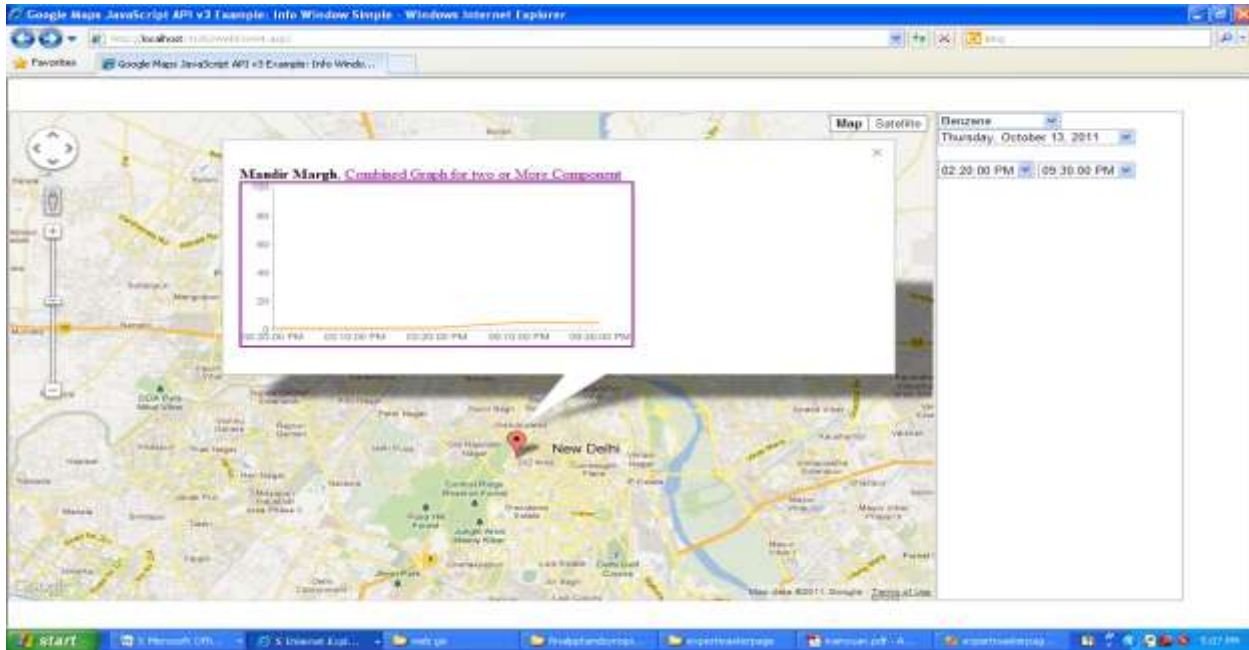


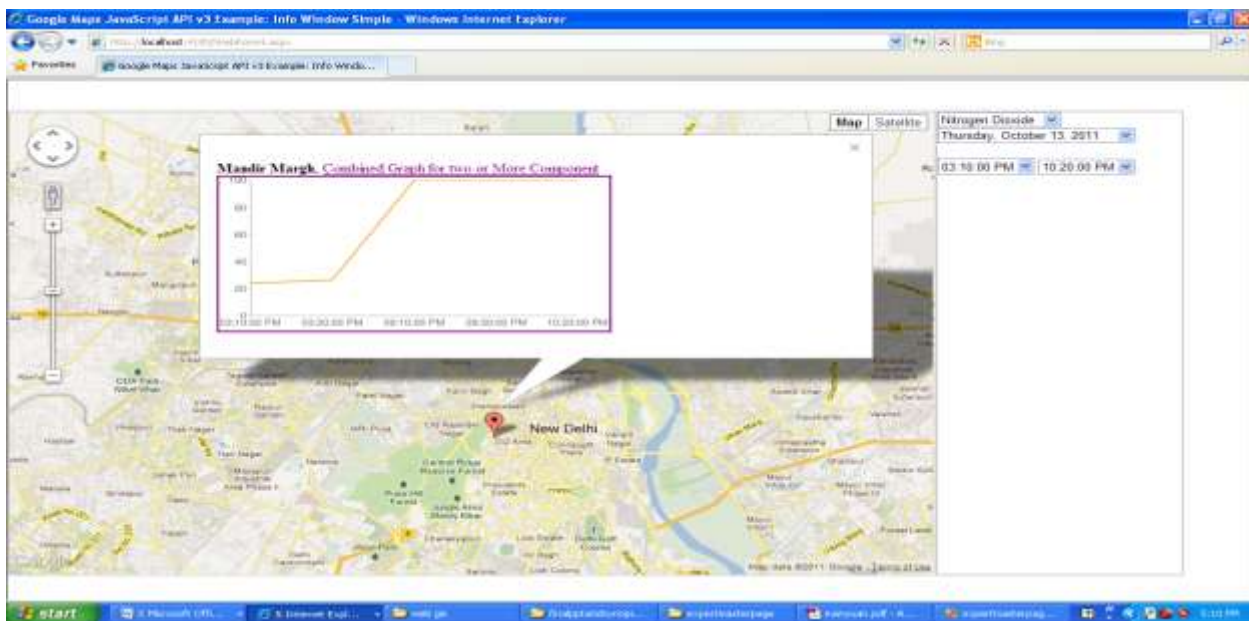
Fig.2 Startup Screen

### B. Showing Graph for Single Gas Component

As shown in Fig.3 and Fig.4 below.



**Fig. 3 Application Page Showing Graph for Benzene between two time limits.**



**Fig. 4 Application Page Showing Graph for Nitrogen Dioxide Between two time limits.**

### C. Showing Graph for Multiple Gas Component

For better visualization each individual gas component (Benzene, Carbon Monoxide etc.) with its

prescribed standard is given a same color i.e. Benzene (Red) and Carbon Monoxide (Green) as shown in Fig.5 and Fig.6 below.

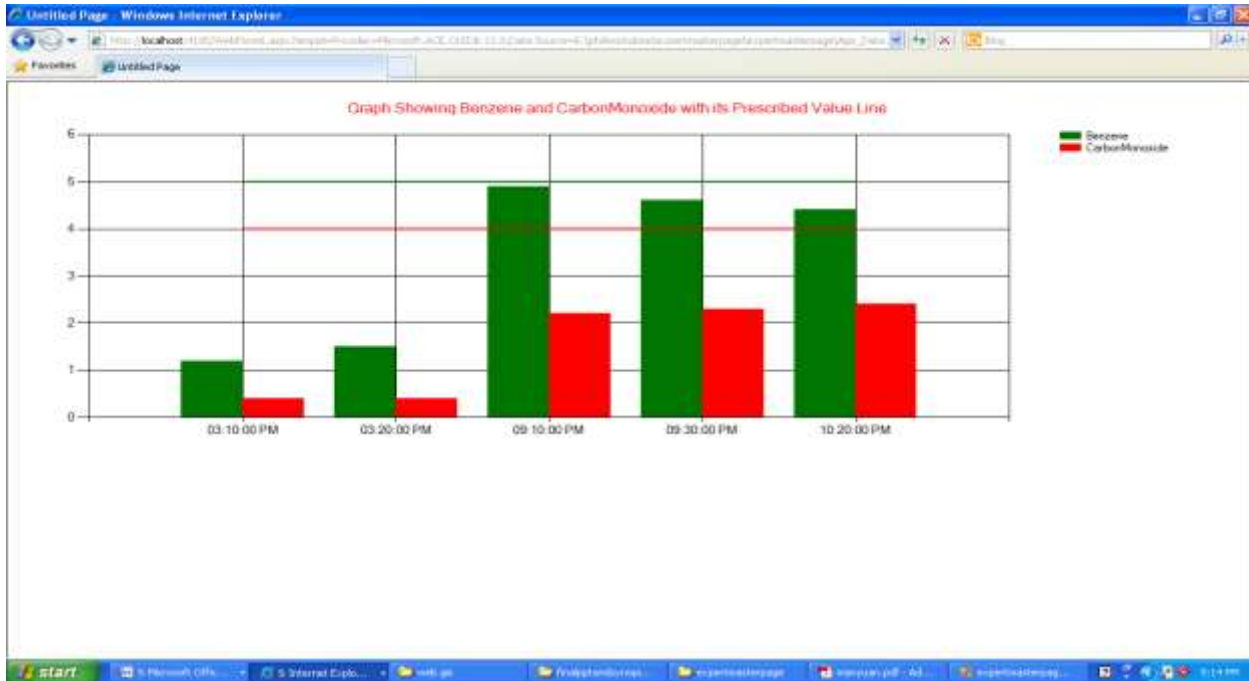


Fig. 5 Graph for Benzene and Carbon Monoxide Between two time limits with its Prescribed Standard Line.

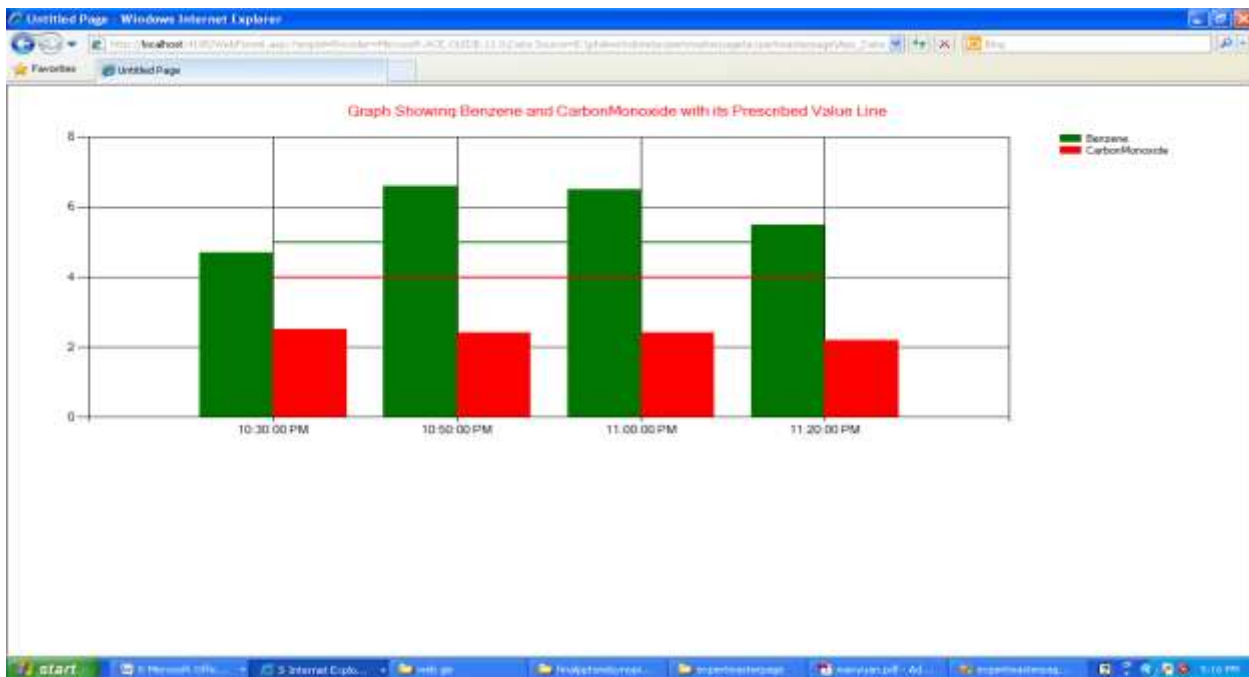


Fig. 6 Graph for Benzene and Carbon Monoxide Between two time limits with its Prescribed Standard Line.



### III. Results

As shown in Fig.5 and Fig.6 above for a time limit between 3:10 PM TO 10:20 PM emission of benzene and carbonmonoxide is below prescribed limits i.e. below dangerous level but between 10:30 PM to 11:20PM emission of benzene suddenly increases and crosses the prescribed standard i.e. above dangerous level and need attention.

### IV. Conclusion

Good visualization is very important to understand typical problem. Through this work user are able to visualize the data published by DPCC website in a much better way for proper decision making.

### Acknowledgement

We thankthe Delhi Pollution Control Committeeittee (DPCC) for publishing vital environmental data that play very important role in developing our application.

### References

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