

# Mapping PM2.5 in Indian cities using "Pocket PM2.5" sensor

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1

1

## Pocket PM2.5

- Measuring scope: PM2.5, PM10
- Price: ¥ 7840
- Measuring principle: Scatter Laser Light Sensor System
- Measuring range: 0 - 999 µg/m3
- Connection Type: USB OTG
- Power Supply: Smart phone
- App display: concentration, numerical and graph display

9/25/2019

2



## Brick Kilns

25-09-2019

3

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## Brick kiln, rural Lucknow

- Brick making units with large polluting chimneys.
- 4 round in one season. One season around 5-6 months
- 1 round produces 1 million bricks, requires 150 Tonne coal
- Age 15 years
- New license not easy
- Aged 15 years
- No regulatory intervention
- Adverse effect on crop



4



5



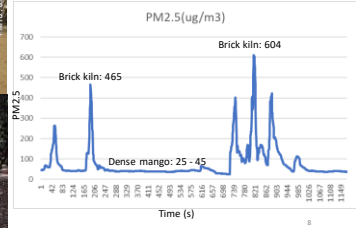
6

Illegal fuel, extreme exposure to workers

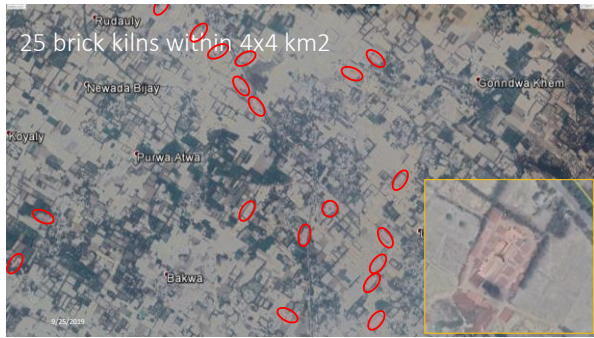


7

Brick kiln, rural Lucknow



8



9

Vehicular pollution

25-09-2019

10

10

Vehicular pollution – PM2.5 low, PM10 high



25-09-2019

11

11

Extreme instance of pollution, old bus acceleration



25-09-2019

12

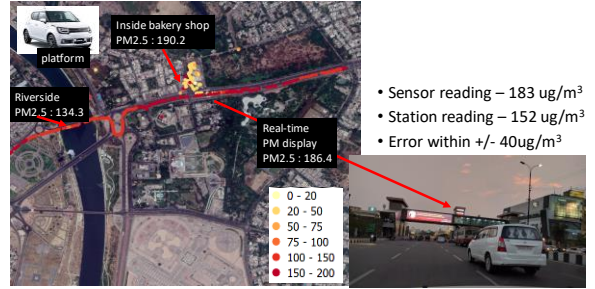
12

Vehicular pollution – PM2.5 high when accelerating



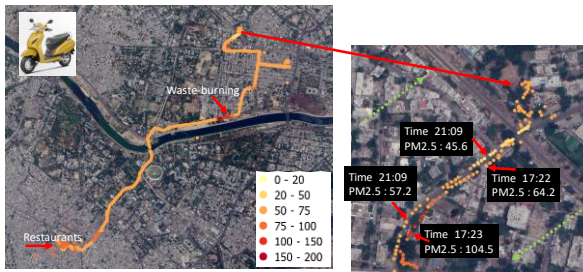
13

Lucknow – Comparison with fixed real-time PM2.5



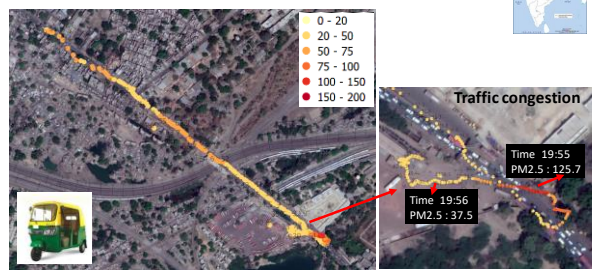
14

Lucknow - PM2.5 decreased within 1.5 hr



15

Kanpur – Low PM2.5 despite high traffic



16

Varanasi

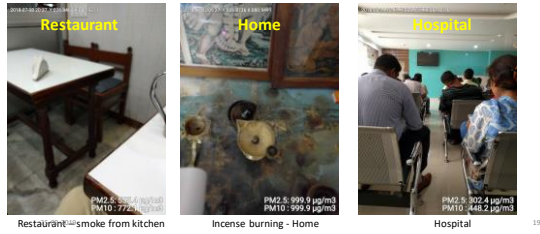


17

Indoor pollution

18

Indoor air pollution – PM2.5 high in closed places



19

Biomass burning

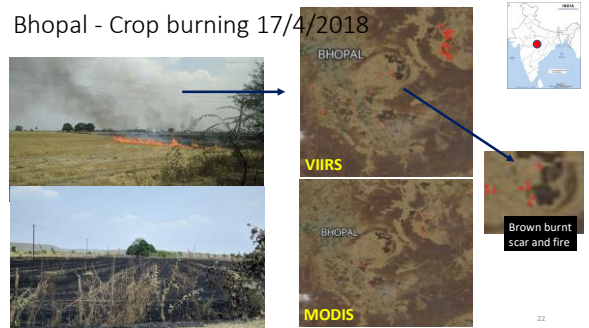
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Lucknow - Solid waste burning



21

Bhopal - Crop burning 17/4/2018



22

Ladakh – lowest PM2.5 seen so far



23

Issues

- Operating conditions? Sensor reading when mounted on vehicle, during wind
- How to mount on car?
- How to mount on self? For exposure monitoring, not friendly
- Effect of relative humidity on rainy day?
- Influence of mounted vehicle
- LED light colors
- Sudden disconnections
- Ability to record video

24

## Conclusion

- Traffic congestion pollutants are not spread widely
- Vehicular pollution does not appear to be leading contributor
- Biomass burning/ combustion leads to extremely high values in a larger neighborhood
- Indoor pollution higher than outdoor pollution
- Sensor accurate within +/- 40 ug/m<sup>3</sup>

Thank you

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25

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26

25

26