

# SAFAR-India (DELHI)

System of Air Quality and Weather Forecasting and Research (SAFAR)  
Indian Institute of Tropical Meteorology, Pune  
Ministry of Earth Sciences

## Air Quality Forecast for Diwali Period-2021

(Issued on 24<sup>th</sup> October 2022)

### TRENDING SUMMARY

*As predicted overall AQI today indicates 'Very Poor' air quality. Fine particles (size < 2.5 micrometer) contribute ~ 55% to PM10. Tonight AQI is likely to touch 'Upper end of Very Poor' or 'Lower end of Severe' due to net effect of stubble fire emissions, local weather and Diwali fire cracker emissions (if any). Fire counts/emissions over northwest region have increased to ~ 1450 yesterday and its impact on Delhi's air quality is likely to increase further (about 10 - 12%) due to favorable transport level wind flow from north west direction. Local surface winds are moderate (8-16 km/h) today and tomorrow (Max Temperature 31-32 deg C) that causes moderate dispersion of emitted pollutants. Pollutants are likely to remain confined to 200 m (Stable/inversion layer) during the night till 1000 hr of tomorrow, thereafter convection dissipates stable layer enhancing vertical mixing of air (Mixing layer height ~ 1.5 km) improving AQI gradually to 'Very Poor' by 25<sup>th</sup> evening. Air quality is likely to further improve on 26<sup>th</sup> Oct evening onwards to the lower end of Very Poor.*

24<sup>th</sup> Oct: VERY POOR (PM2.5: 137-167 ug/m3)

25<sup>th</sup> Oct: UPPER END OF VERY POOR TO SEVERE (PM2.5: 244-261)

26<sup>th</sup> Oct: VERY POOR (PM2.5: 151-180)

### DIWALI EMISSION SCENARIOS

The Air Quality Forecast for the Diwali-2022 period was issued based on the indigenously developed SAFAR-Air Quality Forecasting Framework. The forecast is based on the following two model scenarios:

- (A) **SCENARIO:** 0%: No additional Fire Cracker related Emissions.
- (B) **SCENARIO:** Firecracker emissions as last year (~25% of long-term average) to firecracker-related additional emissions. Above emissions are in addition of standard background emissions.

### IMPORTANT NOTE

- (1) Above model forecast does not take into account the impact of any control measures.
- (2) In both scenarios, Stubble emissions are considered as per the fire pattern seen in past 3 days. Any decline in fire activity may contribute toward better AQI.

### HIGHLIGHTS

- (1) **Any additional Local Emission impact:** Even a smaller increase in the additional local emissions due to firecrackers is likely to have a significant deterioration impact during 24-25<sup>th</sup> Oct. and may put AQI in the severe category on 25<sup>th</sup> Oct, if stubble fire is not controlled. If the stubble fire count is brought under 100 then AQI may reach only Very Poor on 25<sup>th</sup> and may not touch SEVERE.
- (2) **Peak Pollution Timings:** The peak levels of PM10 and PM2.5 are expected between 0100 hrs-0600 hrs on the midnight of Diwali day till morning hours on 25<sup>th</sup>.

- (3) Key Parameters:** All 3 critical factors, viz. (a) favourable stubble transport level wind speed and direction, (b) calm local weather conditions and shallow inversion layer height trapping pollutants and (c) additional fire cracker-related emissions (if any) are predicted to act together.
- (4) Updates:** Due to the erratic nature of weather change during this time of the year and its resulting impact on air quality, it is advised to keep checking SAFAR website updates.

SAFAR-AQI Forecast-DELHI NCT					
Date	22 <sup>nd</sup> Oct.	23 <sup>rd</sup> Oct.	24 <sup>th</sup> Oct.	25 <sup>th</sup> Oct.	26 <sup>th</sup> Oct.
<b>25 % Increase due to Firecracker emissions</b>					
PM 2.5 concentration( $\mu\text{g}/\text{m}^3$ )	181	196	167	261	180
<b>0 % Firecracker emissions</b>					
PM 2.5 concentration( $\mu\text{g}/\text{m}^3$ )	164	174	137	244	151

