

# 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 4<sup>th</sup> November 2021)

### TRENDING SUMMARY

*The overall air quality of Delhi is plunged into the upper end of very poor category as predicted by SAFAR (within 5% accuracy). It will continue to fall now and may enter at the edge of very poor to Severe category by tonight even without any emission from fire crackers. If fire crackers are burned even 50% of last year then PM2.5 will enter SEVERE category by midnight and shoot up rapidly by tomorrow early morning with AQI even crossing 500+. The extremely calm wind conditions in Delhi combined with 25% stubble share (fire count 2293) are 2 major factors today. As per SAFAR model forecast, the stubble share will touch ~35% tomorrow (5<sup>th</sup> Nov) and ~40% on 6<sup>th</sup> Nov. and 7<sup>th</sup> Nov. Relief is expected only from the evening of 7<sup>th</sup> Nov but AQI will fluctuate within Very Poor range.*

### DIWALI EMISSION SCENARIOS

The Air Quality Forecast for the Diwali-2021 period issued based on the indigenously developed SAFAR-Air Quality Forecasting Framework. Forecast is based on following two model scenarios:

- (A) **SCENARIO:** 0%: No additional Fire Cracker related Emissions.
  - (B) **SCENARIO:** 50% of 2019 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. In the absence of its measurable estimate, it would be an added advantage towards better air quality.
- (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 increment in the local additional emissions due to fire crackers is likely to have significant deterioration impact during 4-6<sup>th</sup> Nov. and may put AQI in sever category.
- (2) **Peak Pollution Timings:** The peak levels of PM10 and PM2.5 are expected between 0100 hrs-0600 hrs on the night of 4<sup>th</sup> November and early mornig of 5<sup>th</sup> November.
- (3) **Key Parameters:** All 3 critical factors, viz. (a) favorable 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 -assumed 50% of 2019) are predicted to act together.
- (4) **Bio-mass Share:** Likely to increase significantly during 4-6<sup>th</sup> November (25-40%).
- (5) **Updates:** Due to irratic 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	3 <sup>th</sup> Nov.	4 <sup>th</sup> Nov.	5 <sup>th</sup> Nov.	6 <sup>th</sup> Nov.	7 <sup>th</sup> Nov.
<b>50 % Firecracker emissions</b>					
PM <sub>2.5</sub> concentration( $\mu\text{g}/\text{m}^3$ )	142	328	401	228	173
<b>0 % Firecracker emissions</b>					
PM <sub>2.5</sub> concentration( $\mu\text{g}/\text{m}^3$ )	136	220	244	198	168
Stubble Share (%) in Delhi's PM <sub>2.5</sub>	7%	25%	35%	40%	38%

