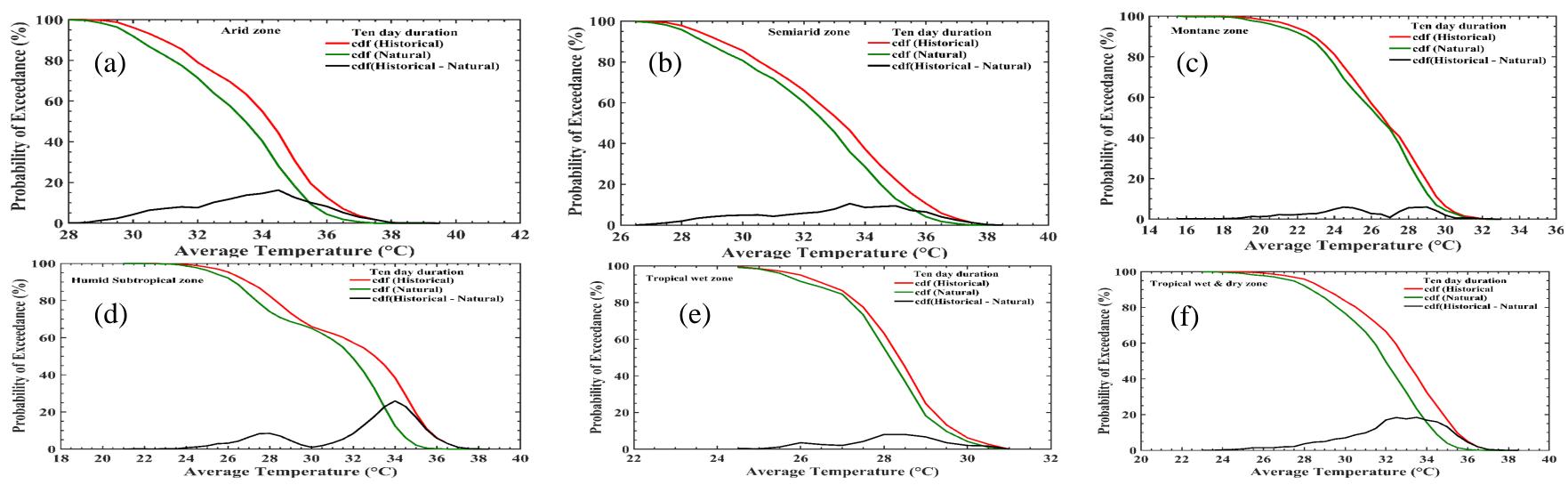


. Five day duration — cdf (Historical) Semiarid zone Five day duration Arid zone (b) (a) -80 F 2 34 36 32 34 36 38 Average Temperature (°C) 40 42 32 38 40 30 26 28 30 Average Temperature (°C) 100 -Five day duration — cdf (Historical) — cdf (Natural) Five day duration Tropical wet zone Humid Subtropical zone - cdf (Historical) -----cdf (Natural) (d) **18** 20 22 24 26 28 30 32 34 36 38 40 28 30 26 32 24 Average Temperature (°C) Average Temperature (°C)

Figure: 1 List of the cdf curve (Five-day duration) for (a) Arid zone, (b) Semiarid zone, (c) Montane zone, (d) Humid subtropical zone, (e) Tropical wet zone, (f) Tropical wet & dry zone.



Results and Discussions

Figure 2: List of the cdf curve (Ten-day duration) for (a) Arid zone, (b) Semiarid zone, (c) Montane zone, (d) Humid subtropical zone, (e) Tropical wet zone, (f) Tropical wet & dry zone.

Climatic zones of India	\mathbf{PM}_{10}	PM _{2.5}	NO ₂	NH ₃	SO ₂	СО	03	AQI
Arid	1.11	1.26	0.27	0	0.017	0.33	0.65	1.25
Semiarid	1.37	1.36	0.58	0.01	0.12	0.78	0.63	1.42
Montane	1.01	0.69	0.008	0.01	0.22	0.24	0.6	1.02
Humid Subtropical	1.33	1.31	0.5	0.001	0.25	0.78	0.7	1.40
Tropical wet	1.11	0.83	0.28	0.023	0.28	0.86	0.25	1.14
Tropical wet and dry	1.03	0.85	0.36	0.0057	0.12	0.75	0.42	1.1

Table 1: A list of the total entropy in each climatic zone for concentration of each pollutant during non-heat wave period.

Table 2: A list of the total entropy in each climatic zone for concentration of each pollutant during heat wave period.

Climatic zones of India	\mathbf{PM}_{10}	PM _{2.5}	NO ₂	NH ₃	SO ₂	СО	O ₃	AQI
Arid	0.87	1.22	0.57	0	0.056	0.35	0.66	1.10
Semiarid	1.38	1.49	0.77	0.004	0.18	0.89	0.70	1.48
Montane	1.14	0.90	0.022	0.02	0.37	0.12	0.38	1.11
Humid subtropical	1.39	1.38	0.6	0.003	0.19	0.76	0.66	1.46
Tropical wet	1.12	0.75	0.11	0	0.285	0.74	0.18	1.11
Tropical wet and dry	1.07	0.96	0.34	0.008	0.15	0.78	0.46	1.15

To Develop a Statistical Model for the Analysis of Heat Wave Intensity Duration Frequency Curve for Major Climatic Zones of India

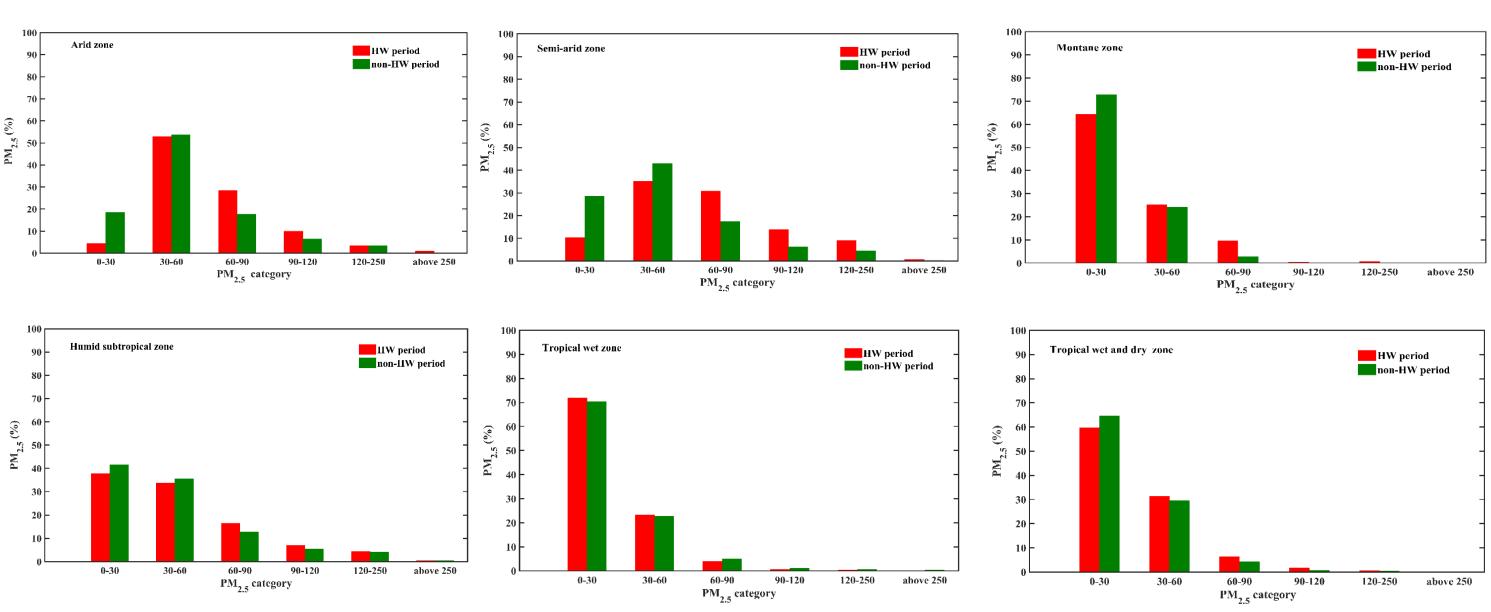
Priyankar Kumar* and Arun Chakraborty

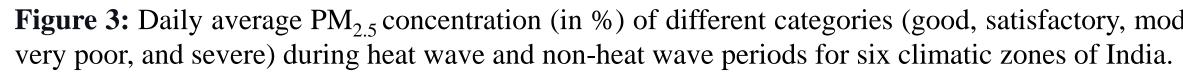
Centre for Ocean, River, Atmosphere and Land Sciences (CORAL), Indian Institute of Technology (IIT) Kharagpur, West Bengal-721302, India

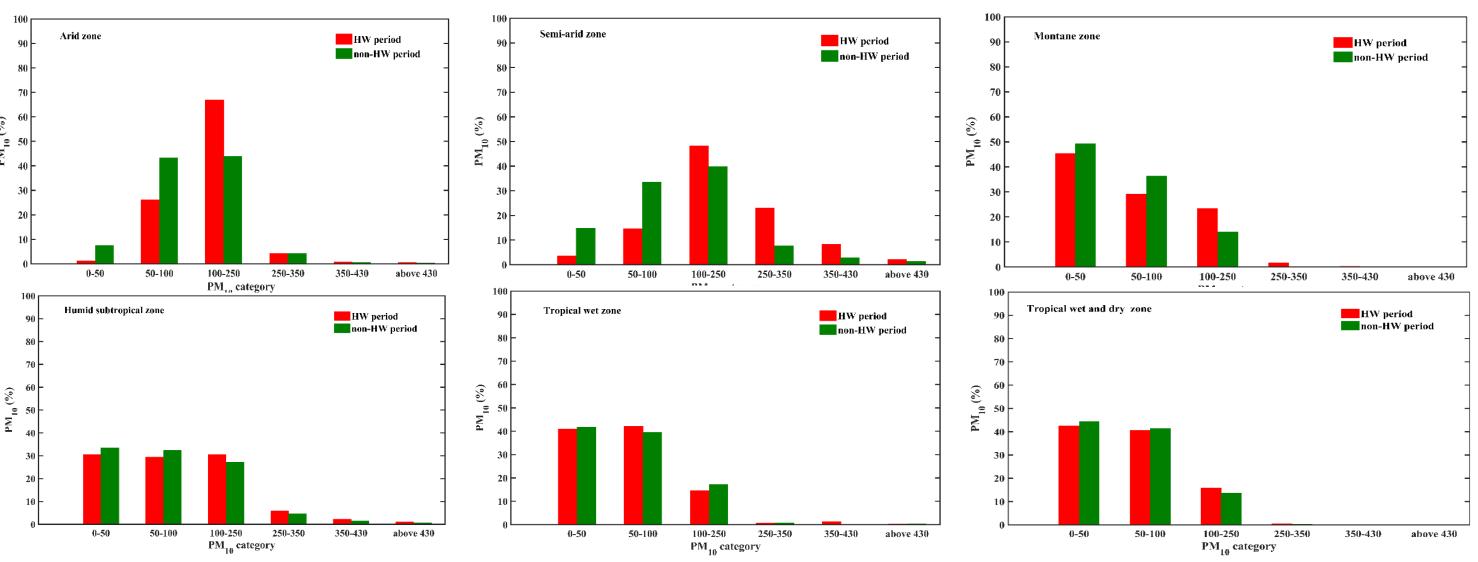
*Corresponding Author Email Id: priyankar7200@.iitkgp.ac.in

Table 3: A list of the ranks decided for the worst polluted **city** in the summer season using the MCDM method.

L	
City	Rank of worst polluted city
Delhi	1
Faridabad	2
Lucknow	3
Muzaffarpur	4
Kanpur	5
Ahmedabad	6
Jaipur	7
Patna	8
Gaya	9
Agra	10
Chennai	11
Howrah	12
Navi Mumbai	13
Kolkata	14
Mumbai	15
Hyderabad	16
Bengaluru	17
Guwahati	18
Thiruvananthapuram	19







very poor, and severe) during heat wave and non-heat wave periods for six climatic zones of India.

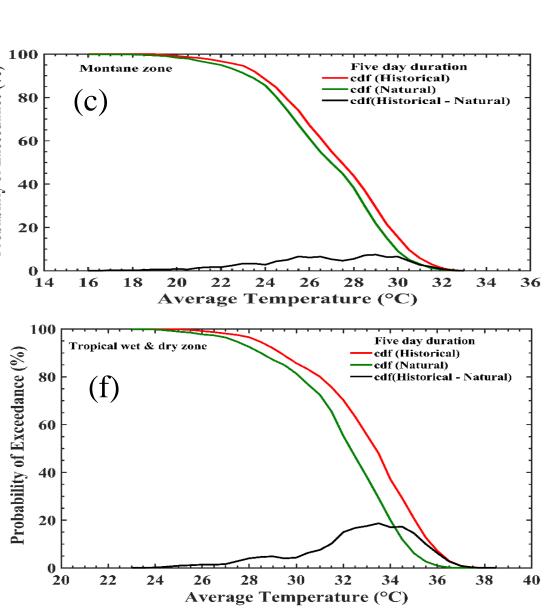
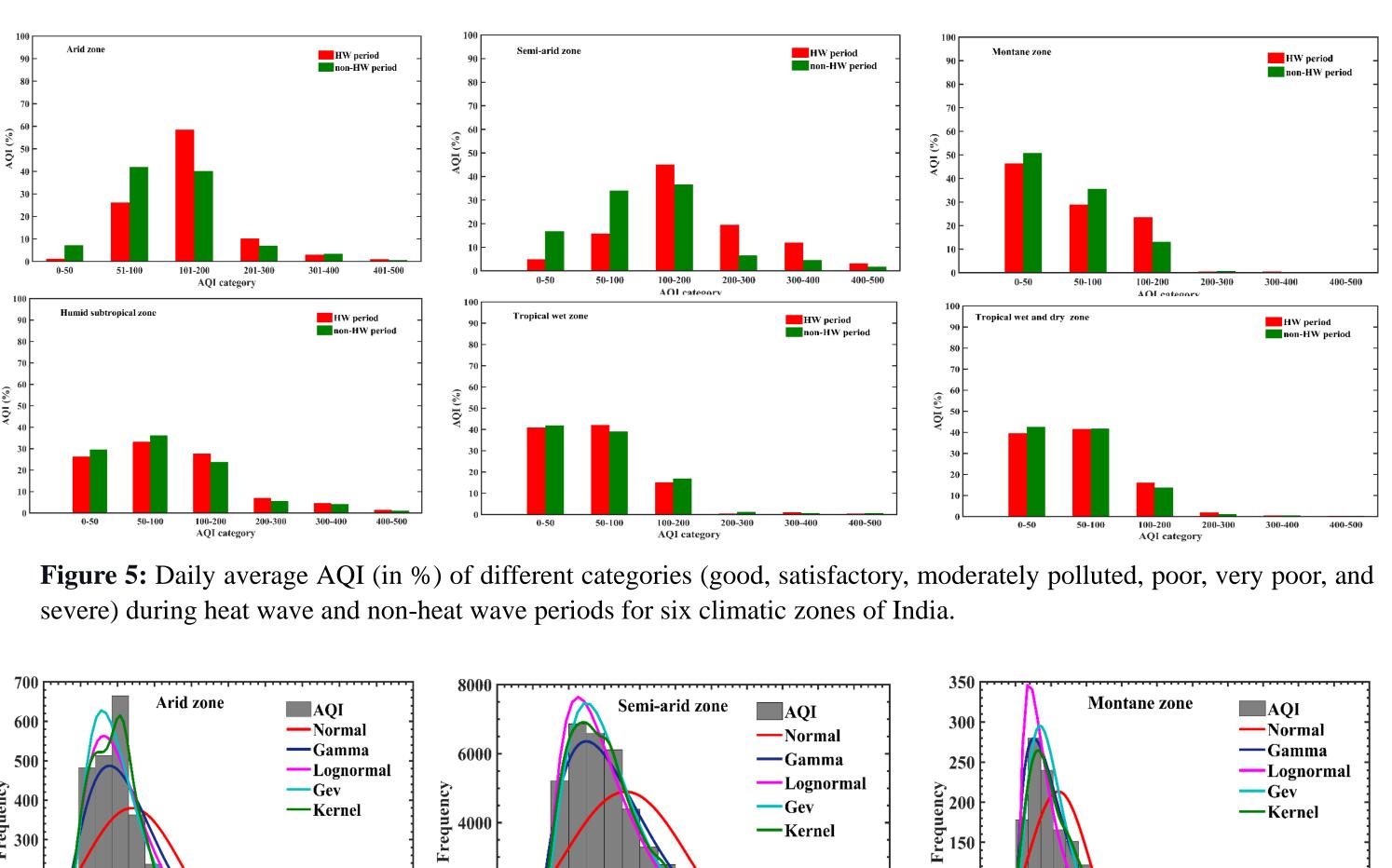
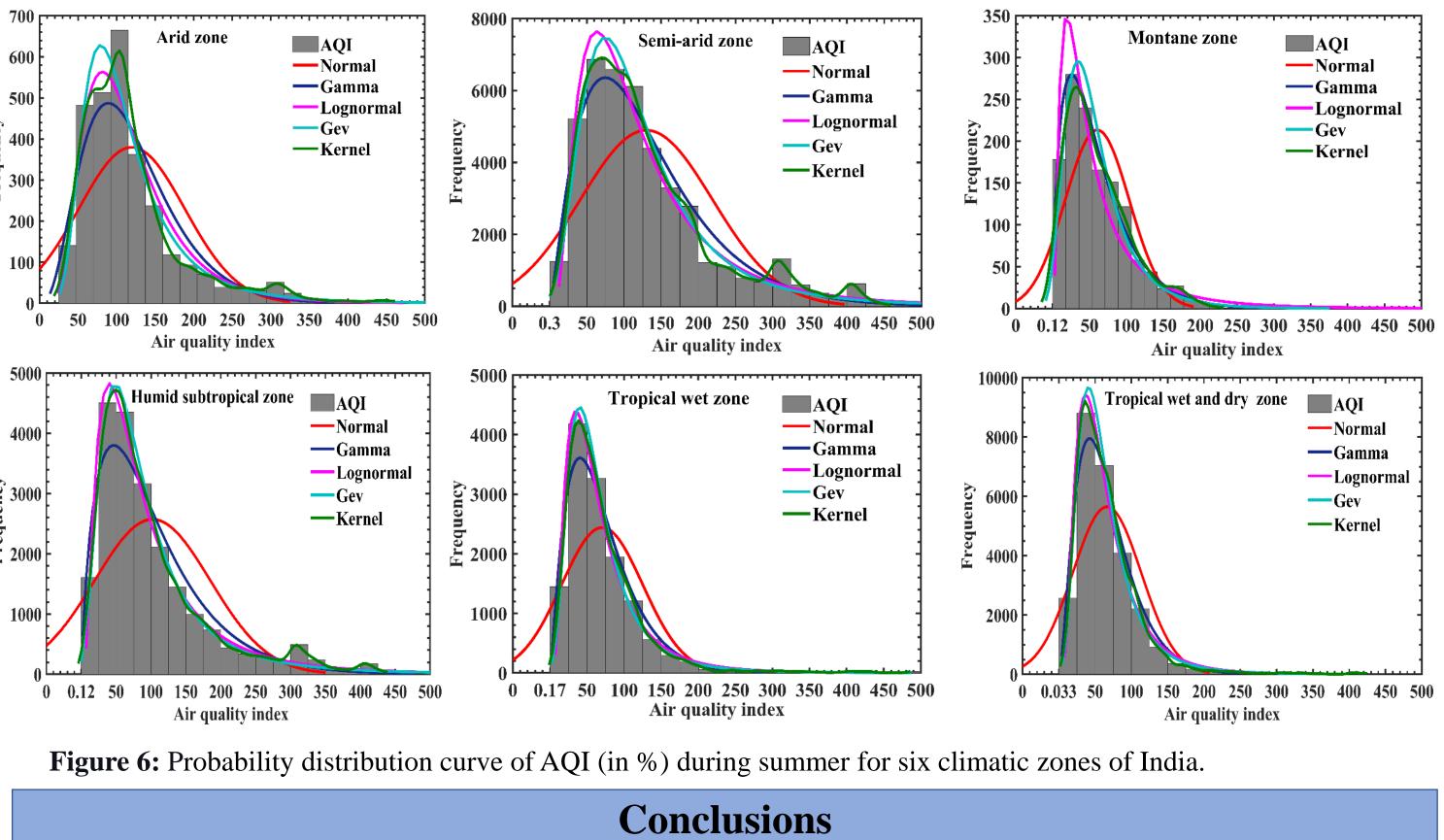


Figure 3: Daily average PM_{25} concentration (in %) of different categories (good, satisfactory, moderately polluted, poor,

Figure 4: Daily average PM₁₀ concentration (in %) of different categories (good, satisfactory, moderately polluted, poor,





- zones of India.
- $PM_{2.5}$ is lower and uncertainty is higher.



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✓ Particulate matter ($PM_{2.5}$ and PM_{10}) has more influence on heat wave and non-heat wave periods for all climatic

✓ Arid, Semi-arid, and Humid subtropical zones have highly polluted air quality during heat wave periods.

 \checkmark NH₃ pollutant is approximately invariant or has lower variability, while the probability certainty of PM₁₀ and

✓ The worst polluted climatic zone and city are the semi-arid zone and Delhi, respectively, and the lowest polluted zone and city are the Montane zone and Thiruvananthapuram – Kerala, respectively.