

## STATISTICAL DATA ON COMFORT LEVEL OF PLERET DISTRICT, BANTUL REGENCY, DAERAH ISTIMEWA YOGYAKARTA PROVINCE, INDONESIA

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### Abstract

Pleret District is one of the districts in Bantul Regency, Daerah Istimewa Yogyakarta Province. At 10:00, 13:00 and 16:00 several days showed uncomfortable conditions. The average Temperature Humidity Index at 13:00 showed uncomfortable conditions. The lowest average Temperature in Pleret District is 26.13 °C and the highest Temperature is 32.21 °C. The lowest average Humidity in Pleret District is 55.57% and the highest Humidity is 86.79%. The lowest average Temperature Humidity Index in Pleret District is 25.30 and the highest Temperature Humidity Index is 29.35.

**Keywords:** Pleret District, Temperature Humidity Index, Temperature, Humidity.

### 1. INTRODUCTION

Pleret District is one of the districts in Bantul Regency, Daerah Istimewa Yogyakarta Province, Indonesia. Pleret District is a cultural heritage area of the Mataram Kerto era, namely the capital of Mataram, where previously the capital of Mataram was in Kotagede. Some of these Mataram relics are the Palace, which was founded by Sultan Agung. The relics of the Mataram Palace in Pleret are placed in the Pleret Museum (Figure 7).

The area of Pleret District is 22.97 km<sup>2</sup> (Bantulkab, 2024). Pleret District has five sub-districts, namely: Wonolelo Subdistrict (Figure 2), Bawuran Subdistrict (Figure 3), Pleret Subdistrict (Figure 4), Wonokromo Subdistrict (Figure 5), and Segoroyoso Subdistrict (Figure 6). The Pleret District Office (Figure 1), Pleret Market (Figure 8), and Pleret Subdistrict Office are adjacent. The boundaries of Pleret District are (i) North: Banguntapan District, (ii) East: Piyungan District and Dlingo District, (iii) South: Jetis District and Imogiri District, (iv) West: Sewon District. Pleret District consists of 55% lowlands, 10% hills, and 35% mountains.



Figure 1. Pleret District



**Figure 2. Wonolelo Subdistrict**



**Figure 3. Bawuran Subdistrict**



**Figure 4. Pleret Subdistrict**



**Figure 5. Wonokromo Subdistrict**



**Figure 6. Segoroyoso Subdistrict**



**Figure 7. Pleret Museum of Ancient History**



**Figure 8. Pleret Market**

The comfort level is a standard measure of the weather's response to the human body. The comfort level is measured by the formula

$$THI = 0.8 \times Ta + (Ta \times HR)/500$$

where: (1)  $THI$  = Temperature Humidity Index; (2)  $Ta$  = Air Temperature; (3)  $HR$  = Humidity Relative. The identification of comfort criteria is:  $THI \leq 29$  (comfortable),  $29 < THI \leq 30.5$  (uncomfortable), and  $THI > 30.5$  (very uncomfortable) (Supriatna, et.al. 2016), (Sugiasih, 2023).

## 2. LEVEL OF COMFORT IN PLERET DISTRICT

The source of research data is Timedata (2024). The time of data collection is June 27, 2024 - July 11, 2024. Table 1 is the temperature and humidity data on June 27, 2024 - July 11, 2024 in Pleret District.

**Table 1. Temperature and Humidity on June 27, 2024 – July 11, 2024 in Pleret District**

No	Day, Date	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
1	Thursday, June 27, 2024	01.00	28	77	26.712	Comfort
		04.00	28	76	26.656	Comfort
		07.00	28	80	26.88	Comfort
		10.00	31	58	28.396	Comfort
		13.00	32	59	29.376	Discomfort
		16.00	31	71	29.202	Comfort
		19.00	30	77	28.62	Comfort
		22.00	29	83	28.014	Comfort
2	Friday, June 28, 2024	01.00	28	85	27.16	Comfort
		04.00	28	85	27.16	Comfort
		07.00	28	83	27.048	Comfort
		10.00	31	68	29.016	Discomfort
		13.00	33	59	30.294	Discomfort
		16.00	31	71	29.202	Discomfort
		19.00	30	78	28.68	Comfort
		22.00	27	88	26.352	Comfort
3		01.00	27	85	26.19	Comfort

No	Day, Date	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
	Saturday, June 29, 2024	04.00	27	86	26.244	Comfort
		07.00	27	83	26.082	Comfort
		10.00	31	68	29.016	Discomfort
		13.00	33	57	30.162	Discomfort
		16.00	32	65	29.76	Discomfort
		19.00	30	75	28.5	Comfort
		22.00	27	87	26.298	Comfort
4	Sunday, June 30, 2024	01.00	27	89	26.406	Comfort
		04.00	26	90	25.48	Comfort
		07.00	26	86	25.272	Comfort
		10.00	32	56	29.184	Discomfort
		13.00	33	51	29.766	Discomfort
		16.00	33	55	30.03	Discomfort
		19.00	30	71	28.26	Comfort
22.00	26	87	25.324	Comfort		
5	Monday, July 1, 2024	01.00	26	92	25.584	Comfort
		04.00	26	90	25,48	Comfort
		07.00	26	89	25.428	Comfort
		10.00	30	67	28.02	Comfort
		13.00	31	63	28.706	Comfort
		16.00	31	58	28.396	Comfort
		19.00	29	71	27.318	Comfort
22.00	27	80	25.92	Comfort		
6	Tuesday, July 2, 2024	01.00	27	80	25,92	Comfort
		04.00	27	83	26.082	Comfort
		07.00	27	83	26.082	Comfort
		10.00	30	72	28.32	Comfort
		13.00	31	70	29.14	Discomfort
		16.00	30	69	28.14	Comfort
		19.00	29	75	27,55	Comfort
22.00	28	85	27.16	Comfort		
7	Wednesday, July 3, 2024	01.00	27	84	26.136	Comfort
		04.00	26	88	25.376	Comfort
		07.00	26	85	25,22	Comfort
		10.00	32	54	29.056	Discomfort
		13.00	34	45	30.26	Discomfort
		16.00	31	67	28.954	Comfort
		19.00	30	76	28.56	Comfort
22.00	29	66	27.028	Comfort		
8	Thursday, July 4, 2024	01.00	-	-	-	-
		04.00	26	80	24.96	Comfort
		07.00	27	77	25.758	Comfort
		10.00	31	62	28.644	Comfort
		13.00	31	66	28.892	Comfort
		16.00	27	90	26.46	Comfort
		19.00	27	85	26.19	Comfort

No	Day, Date	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
9	Friday, July 5, 2024	22.00	26	86	25.272	Comfort
		01.00	26	87	25.324	Comfort
		04.00	25	90	24.5	Comfort
		07.00	26	88	25.376	Comfort
		10.00	30	62	27.72	Comfort
		13.00	32	55	29.12	Discomfort
		16.00	32	57	29.248	Discomfort
		19.00	29	63	26.854	Comfort
10	Saturday, July 6, 2024	22.00	28	78	26.768	Comfort
		01.00	28	78	26.768	Comfort
		04.00	27	74	25.596	Comfort
		07.00	27	74	25.596	Comfort
		10.00	30	61	27.66	Comfort
		13.00	32	57	29.248	Discomfort
		16.00	26	93	25.636	Comfort
		19.00	25	87	24.35	Comfort
11	Sunday, July 7, 2024	22.00	26	82	25.064	Comfort
		01.00	25	86	24.3	Comfort
		04.00	24	88	23.424	Comfort
		07.00	25	83	24.15	Comfort
		10.00	30	70	28.2	Comfort
		13.00	30	69	28.14	Comfort
		16.00	30	67	28.02	Comfort
		19.00	28	78	26.768	Comfort
12	Monday, July 8, 2024	22.00	27	81	25.974	Comfort
		01.00	27	80	25.92	Comfort
		04.00	27	79	25.866	Comfort
		07.00	26	83	25.116	Comfort
		10.00	30	65	27.9	Comfort
		13.00	32	56	29.184	Discomfort
		16.00	31	70	29.14	Discomfort
		19.00	29	77	27.666	Comfort
13	Tuesday, July 9, 2024	22.00	27	89	26.406	Comfort
		01.00	26	82	25.064	Comfort
		04.00	24	85	23.28	Comfort
		07.00	-	-	-	-
		10.00	-	-	-	-
		13.00	-	-	-	-
		16.00	-	-	-	-
		19.00	-	-	-	-
14	Wednesday, July 10, 2024	22.00	27	79	25.866	Comfort
		01.00	27	72	25.488	Comfort
		04.00	26	81	25.012	Comfort
		07.00	26	76	24.752	Comfort
		10.00	29	72	27.376	Comfort
		13.00	33	47	29.502	Discomfort

No	Day, Date	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
		16.00	33	46	29.436	Discomfort
		19.00	30	68	28.08	Comfort
		22.00	28	75	26.6	Comfort
15	Thursday, July 11, 2024	01.00	27	80	25.92	Comfort
		04.00	25	86	24.3	Comfort
		07.00	25	83	24.15	Comfort
		10.00	32	39	28.096	Comfort
		13.00	34	24	28.832	Comfort
		16.00	33	37	28.842	Comfort
		19.00	29	63	26.854	Comfort
		22.00	27	69	25.326	Comfort

From Table 1, Thursday, June 27, 2024, at 13:00 shows uncomfortable. Friday, Saturday, Sunday, June 28, 29, 30, 2024, at 10:00, 13:00 and 16:00 shows uncomfortable. Tuesday, July 2, 2024, at 13:00 shows uncomfortable. Wednesday, July 3, 2024, at 10:00 and 13:00 shows uncomfortable. Friday, July 5, 2024, at 13:00 and 16:00 shows uncomfortable. Saturday, July 6, 2024, at 13:00 shows uncomfortable. Monday and Wednesday, July 8 and 10, 2024, at 13:00 and 16:00 shows uncomfortable. From Table 1 shows that at 10.00, 13.00 and 16.00 some days are uncomfortable. For 01.00, 04.00, 07.00, 19.00 and 22.00 all areas in Pleret District are comfortable. Comfort and discomfort are influenced by temperature and humidity in Pleret District.

Table 2 shows the average temperature and humidity on June 27, 2024 - July 11, 2024 in Pleret District. At 13.00 it shows uncomfortable conditions in Pleret District.

**Table 2. Average Temperature and Humidity on June 27, 2024 – July 11, 2024 in Pleret District**

No	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
1	01.00	26.8571429	82.64285714	25.9248163	Comfort
2	04.00	26.1333333	84.06666667	25.3005511	Comfort
3	07.00	26.4285714	82.35714286	25.4960204	Comfort
4	10.00	30.6428571	62.42857143	28.3402653	Comfort
5	13.00	32.2142857	55.57142857	29.3518163	Discomfort
6	16.00	30.7857143	65.42857143	28.657102	Comfort
7	19.00	28.9285714	74.57142857	27.4573469	Comfort
8	22.00	27.2857143	86.78571429	26.5645918	Comfort

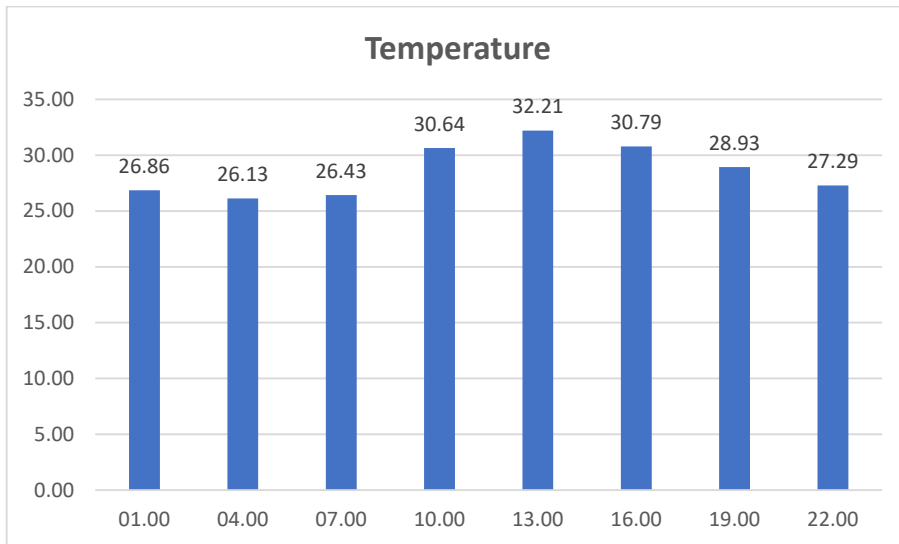


Figure 9. Average Temperature

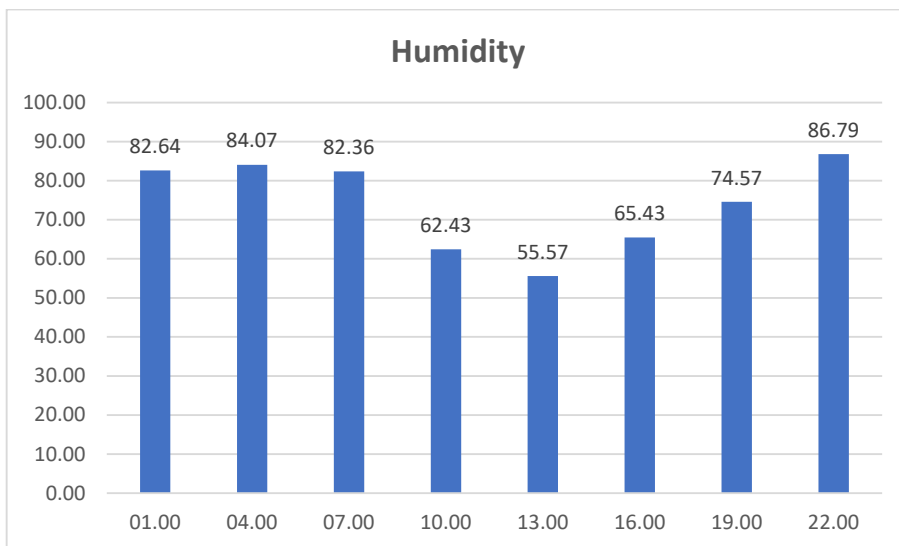
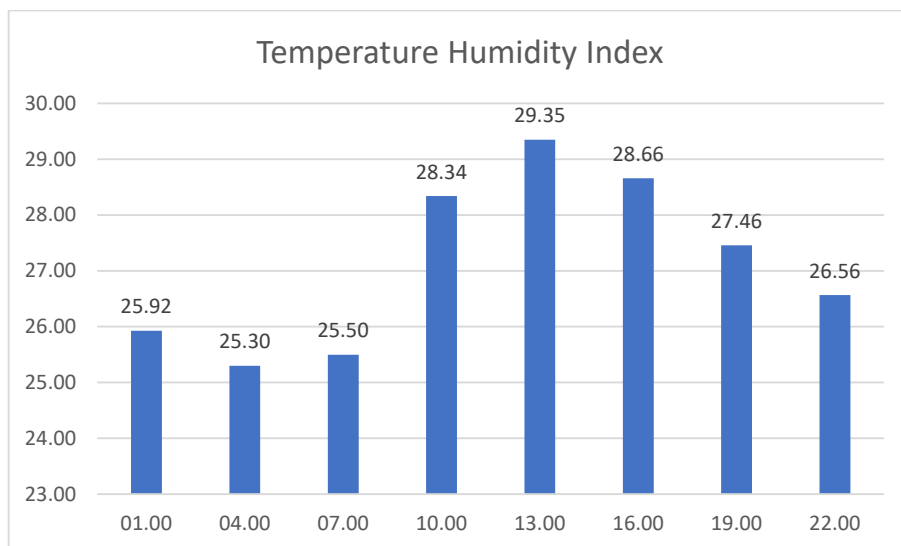


Figure 10. Average Humidity



**Figure 11. Average Temperature Humidity Index**

Figure 9, Figure 10, and Figure 11 are the average Temperature, Humidity, Temperature Humidity Index from June 27, 2024 – July 11, 2024 in Pleret District. Figure 9, 13.00 shows the highest Temperature and the lowest Temperature at 04.00. From Figure 10, 22.00 shows the highest Humidity and the lowest Humidity at 13.00. From Figure 11, 13.00 shows the highest THI and the lowest THI at 04.00.

**3. CONCLUSION**

Pleret District is a district in Bantul Regency, Daerah Istimewa Yogyakarta Province, Indonesia. Pleret District has five sub-districts, namely: Bawuran Subdistrict, Pleret Subdistrict, Segoroyoso Subdistrict, Wonokromo Subdistrict, and Wonolelo Subdistrict. The area of Pleret District is 22.97 km<sup>2</sup>. At 10:00, 13:00 and 16:00 several days showed uncomfortable conditions in Pleret District. For the average THI, at 13:00 it showed uncomfortable conditions.

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