



BAB 1

KEADAAN GEOGRAFIS
Geographical



Kelembaban, Tekanan udara dan temperatur di Surabaya diukur dari tiga lokasi, yaitu Perak I, Perak II dan Juanda. Ketiga lokasi tersebut dianggap mewakili kondisi suhu udara di kota Surabaya.

Dari keseluruhan data kelembaban udara di Kota Surabaya dalam tahun 2018, antara Perak I dan Perak II tidak jauh berbeda. Rata-rata tingkat kelembaban udara wilayah Perak I dan Perak II juga memiliki kesamaan, ini dikarenakan lokasi yang tidak terlalu jauh letaknya. Lebih lanjut lagi, jika memperhatikan tingkat kelembaban udara di Perak dan Juanda, interval kelembaban udara di Juanda sedikit lebih besar dibandingkan di kawasan Perak. Batas terbawah dan teratas kelembaban udara di kawasan Juanda lebih tinggi bila dibanding Perak.

Humidity, air pressure and temperature in Surabaya were measured from three locations, namely Perak I, Perak II and Juanda. The three locations are considered to represent the temperature conditions in the city of Surabaya.

From the overall air humidity data in the city of Surabaya in 2018, between Perak I and Perak II are not much different. The average of air humidity level in Perak I and Perak II also have the same value, this is because the location is not too far away. Furthermore, if you pay attention to the air humidity level in Perak and Juanda, the air humidity interval in Juanda is slightly larger than in the Perak area. The lower and upper limit of air humidity in the Juanda area is higher when compared to Perak.

Namun demikian, rerata kelembaban udara setiap bulan di wilayah pantauan Juanda lebih tinggi jika dibandingkan dengan Perak. Hal ini menunjukkan bahwa suhu udara di kawasan Juanda cenderung lebih rendah dibandingkan wilayah pantauan Perak. Hal ini juga tampak bahwa rata-rata suhu udara di kawasan pantauan Juanda adalah 28,1°C, sementara suhu udara di kawasan pantauan Perak I dan Perak II adalah sebesar 29°C dan 28,9°C).

Melihat tekanan udaranya, Surabaya memiliki tekanan udara yang masih dibawah tekanan udara normal yaitu 1.031 Mbs. Dari ketiga wilayah pantauan, rerata tekanan udara di Surabaya selama tahun 2018 cenderung tidak melebihi 1.031 Mbs. Ini menunjukkan bahwa secara umum Surabaya tidak memiliki potensi angin yang berlebihan.

However, the average air humidity every month in the Juanda monitoring area is higher when compared to Perak. This shows that the air temperature in the Juanda area tends to be lower than the Perak monitoring area. It also shows that the average air temperature in the Juanda monitoring area is 28,1°C, while the air temperature in the Perak I and Perak II observation areas is 29°C and 28.9°C).

Seeing the air pressure, Surabaya has an air pressure that is still below normal air pressure which is 1,031 Mbs. From three monitoring areas, the average air pressure in Surabaya during 2018 tends not to exceed 1,031 Mbs. This shows that in general Surabaya does not have excessive wind potential.



Berdasarkan hari hujan, wilayah pantauan Perak II memiliki jumlah rerata hari hujan yang lebih sedikit jika dibandingkan dengan dua wilayah pantauan lainnya. Demikian pula dengan tingginya curah hujan yang terukur di wilayah pantauan tersebut reratanya cukup rendah jika dibandingkan dua wilayah pantauan lainnya.

Dari arah anginnya, tiga wilayah pantauan menunjukkan bahwa rerata angin di Surabaya mengarah ke Timur. Sementara kecepatan anginnya, di dua wilayah pantauan Perak berkisar di 3 knot dan 4 knot, dan di Juanda 7,8 knot. Sementara untuk arah angin dan kecepatan maksimalnya, wilayah pantauan Perak I dan Perak II rata-rata kecepatan maksimal anginnya adalah 15 knot dan 27 knot, dan di Juanda rata-rata sebesar 19,9 knot. Hal ini menunjukkan bahwa wilayah pantauan Perak I memiliki pergerakan angin yang lebih stabil dibandingkan wilayah pantauan Perak II dan Juanda.

Based on rainy days, the Perak II monitoring area has a lower number of rainy days compared to the other two monitoring areas. Likewise with the high measured rainfall in the monitoring area the average is quite low when compared to the other two monitoring areas.

From the direction of the wind, the three monitoring areas shows that the average wind in Surabaya is towards the East. While the wind speed, in the two areas of Perak observation ranged from 3 knots and 4 knots, and at Juanda 7,8 knots. While for wind direction and maximum speed, the average of maximum wind speed in Perak I and Perak II observation area is 15 knots and 27 knots, and the average wind speed in Juanda is 19,9 knots. This shows that Perak I monitoring area has more stable wind movements than the Perak II and Juanda observation areas.

Tabel: 01.01.01 Kelembaban, Tekanan Udara dan Temperatur Maksimum dan Minimum di Perak I
Relative Humidity, Atmosphere Pressure and Maximum and Minimum Temperature at Perak I
2018

Bulan / Month	Kelembaban / Relative Humidity (%)		Tekanan Udara / Atmosphere Pressure (Mbs)		Temperatur / Temperature (°C)	
	Max	Min	Max	Min	Max	Min
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Januari / <i>January</i>	92	62	1.013,0	1.002,5	35,2	24,1
Pebruari / <i>February</i>	93	62	1.013,8	1.004,7	34,6	23,2
Maret / <i>March</i>	92	62	1.012,4	1.004,4	34,8	24,0
April / <i>April</i>	88	54	1.013,2	1.004,6	35,4	24,0
Mei / <i>May</i>	85	47	1.014,3	1.005,4	35,2	24,0
Juni / <i>June</i>	87	50	1.014,8	1.007,4	34,9	23,4
Juli / <i>July</i>	85	45	1.014,4	1.007,6	34,7	21,2
Agustus / <i>August</i>	82	43	1.015,1	1.007,6	34,2	21,2
September / <i>September</i>	81	37	1.005,6	1.007,4	35,8	22,8



Tabel: 01.01.01 – Lanjutan/
Continued

Bulan / Month	Kelembaban / Relative Humidity (%)		Tekanan Udara / Atmospher Pressure (Mbs)		Temperatur / Temperature (°C)	
	Max	Min	Max	Min	Max	Min
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Oktober / <i>October</i>	80	38	1.014,5	1.006,3	36,7	24,0
Nopember / <i>November</i>	87	51	1.013,4	1.005,4	37,2	24,4
Desember / <i>December</i>	91	60	1.012,7	1.004,3	35,5	24,3
Rata - rata / <i>Average</i>	87	51	1.013,1	1.005,6	35,4	23,4

Sumber : Stasiun Meteorologi Perak I Surabaya

Source : Meteorological Station at Perak I Surabaya

Tabel : 01.01.02 Kelembaban, Tekanan Udara dan Temperatur Maksimum dan Minimum di Perak II
Relative Humidity, Atmospher Pressure and Maximum and Minimum Temperature at Perak II
2018

Bulan / Month	Kelembaban / Relative Humidity (%)		Tekanan Udara / Atmospher Pressure (Mbs)		Temperatur / Temperature (°C)	
	Max	Min	Max	Min	Max	Min
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Januari / January	90	53	1.008,9	1.004,9	32,9	25,2
Pebruari / February	92	59	1.011,4	1.007,3	33,1	24,5
Maret / March	93	61	1.010,8	1.006,5	33,8	25,2
April / April	89	55	1.011,1	1.007,0	35,0	26,3
Mei / May	85	51	1.011,5	1.007,8	34,6	25,9
Juni / June	86	52	1.012,7	1.008,8	34,1	25,0
Juli / July	85	48	1.012,6	1.008,6	33,5	23,4
Agustus / August	82	16	1.013,4	1.009,0	33,4	23,4
September / September	82	42	1.013,3	1.008,8	34,4	24,6



Tabel: 01.01.02 – Lanjutan/
Continued

Bulan / Month	Kelembaban / Relative Humidity (%)		Tekanan Udara / Atmospher Pressure (Mbs)		Temperatur / Temperature (°C)	
	Max	Min	Max	Min	Max	Min
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Oktober / <i>October</i>	80	41	1.012,8	1.008,1	35,6	26,0
Nopember / <i>November</i>	86	53	1.011,7	1.007,2	35,0	26,3
Desember / <i>December</i>	89	58	1.010,6	1.006,6	33,9	26,0
Rata - rata / <i>Average</i>	87	49	1.011,7	1.007,6	34,1	25,2

Sumber : Stasiun Meteorologi Perak II Surabaya
Source : Meteorological Station at Perak II Surabaya

Tabel : 01.01.03 Kelembaban, Tekanan Udara dan Temperatur Table Maksimum dan Minimum di Juanda
Relative Humidity, Atmospher Pressure and Maximum and Minimum Temperature at Juanda
2018

B u l a n/ M o n t h	Kelembaban/ Relative Humidity (%)		Tekanan Udara/ Atmospher Pressure (Mbs)		Temperatur/ Temperature (°C)	
	Max	Min	Max	Min	Max	Min
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Januari/ <i>January</i>	95	56	1.011,2	1.005,4	33,5	23,3
Pebruari/ <i>February</i>	99	56	1.012,9	1.007,8	33,3	22,6
Maret/ <i>March</i>	97	58	1.011,5	1.007,2	33,2	22,2
April/ <i>April</i>	97	48	1.012,4	1.008,2	34,0	22,0
Mei/ <i>May</i>	87	49	1.013,8	1.008,1	33,4	23,6
Juni/ <i>June</i>	92	50	1.013,5	1.010,5	33,0	22,7
Juli/ <i>July</i>	96	49	1.013,6	1.010,3	32,9	20,8
Agustus/ <i>August</i>	96	38	1.014,1	1.010,5	32,6	20,4
September/ <i>September</i>	85	37	1.014,5	1.010,7	34,0	21,4
Oktober/ <i>October</i>	82	37	1.014,1	1.010,3	35,3	22,9



Tabel: 01.01.03 – Lanjutan/
Continued

Bulan/ Month	Kelembaban/ Relative Humidity (%)		Tekanan Udara/ Atmospher Pressure (Mbs)		Temperatur/ Temperature (°C)	
	Max	Min	Max	Min	Max	Min
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Nopember/ November	96	42	1.012,7	1.008,8	35,9	23,2
Desember/ December	95	46	1.011,8	1.008,1	35,8	21,8
Rata-rata/ Average	93,1	47,2	1.013,0	1.008,8	33,9	22,2
2017	94,8	46,1	1.012,4	1.008,1	34,1	23,1
2016	95,6	51,2	1.012,8	1.008,2	34,0	23,4
2015	92,7	45,9	1.014,1	1.009,7	33,6	22,4
2014	93,9	46,8	1.013,1	1.009,0	33,5	22,9

Sumber : Stasiun Meteorologi Juanda Surabaya

Source : Meteorological Station at Juanda Surabaya

Tabel : 01.01.04 Rata-rata Kelembaban, Tekanan Udara, Temperatur dan Penyinaran Matahari di Perak I Surabaya per Bulan
Average of Relative Humidity, Atmospher Pressure, Temperature and Sunshine Duration at Perak I Surabaya per Month
2018

Bulan / Month	Kelembaban / Relative Humidity (%)	Tekanan Udara / Atmospher Pressure (Mbs)	Temperatur / Temperature (0°C)	Matahari / Sunshine Duration (%)
(1)	(2)	(3)	(4)	(5)
Januari / January	81	1.007,3	28,0	30
Pebruari / February	81	1.009,8	27,9	54
Maret / March	80	1.009,1	28,5	63
April / April	73	1.009,5	29,8	84
Mei / May	69	1.010,1	29,9	84
Juni / June	70	1.011,3	29,1	86
Juli / July	67	1.011,2	28,2	95
Agustus / August	64	1.011,8	28,1	92
September / September	62	1.011,6	29,2	91
Oktober / October	63	1.011,1	30,3	92



Tabel: 01.01.04 – Lanjutan/
Continued

B u l a n / <i>Month</i>	Kelembaban / <i>Relative Humidity</i> (%)	Tekanan Udara / <i>Atmospher Pressure</i> (Mbs)	Temperatur / <i>Temperature</i> (0 °C)	Matahari / <i>Sunshine Duration</i> (%)
(1)	(2)	(3)	(4)	(5)
Nopember / November	72	1.010,1	29,9	64
Desember / December	77	1.009,2	29,0	38
Rata - rata / Average	72	1.010,2	29,0	73
2017	75	1.010.1	28.7	68
2015	77	1.011,1	29,0	61
2014	73	1.012,3	28,7	78
2013	73	1.010,1	28,8	75

Sumber : Stasiun Meteorologi Perak I Surabaya

Source : Meteorological Station at Perak I Surabaya

Tabel : 01.01.05 Rata-Rata Kelembaban Tekanan Udara /Temperatur dan Penyinaran Matahari di Perak II Surabaya per Bulan

Average of realtive humidty atmospheir preassure Temperatur and sunshine duration at Perak II Surabaya per Month
2018

B u l a n / <i>Month</i>	Kelembaban / <i>Relative Humidity (%)</i>	Tekanan Udara / <i>Atmospheir Pressure (Mbs)</i>	Temperatur / <i>Temperatur (0 °C)</i>	Matahari / <i>Sunshine Duration (%)</i>
(1)	(2)	(3)	(4)	(5)
Januari / <i>January</i>	75	1.007,3	28,2	37
Pebruari / <i>February</i>	79	1.009,8	28,2	58
Maret / <i>March</i>	80	1.009,0	28,7	65
April / <i>April</i>	75	1.009,5	29,8	87
Mei / <i>May</i>	71	1.010,0	29,4	84
Juni / <i>June</i>	72	1.011,2	28,8	87
Juli / <i>July</i>	69	1.011,1	27,6	94
Agustus / <i>August</i>	67	1.011,7	27,6	93
September / <i>September</i>	65	1.011,5	28,8	95
Oktober / <i>October</i>	65	1.011,1	30,2	95



Tabel: 01.01.05 – Lanjutan/
Continued

Bulan / <i>Month</i>	Kelembaban / <i>Relative Humidity</i> (%)	Tekanan Udara / <i>Atmospher Pressure</i> (Mbs)	Temperatur / <i>Temperature</i> (0 °C)	Matahari / <i>Sunshine Duration</i> (%)
(1)	(2)	(3)	(4)	(5)
Nopember / <i>November</i>	73	1.010,1	30,1	69
Desember / <i>December</i>	77	1.009,1	29,2	47
Rata - rata / <i>Average</i>	72	1.010,1	28,9	76
2017	76	1.009,9	28,8	70
2016	76	1.010,1	29,4	66
2015	73	1.011,1	29,0	80
2014	73	1.010,2	29,1	80

Sumber : Stasiun Meteorologi Perak II Surabaya

Source : Meteorological Station at Perak II Surabaya

Tabel : 01.01.06 Rata-rata Kelembaban, Tekanan Udara, Temperatur, Penyinaran Matahari, dan Hujan di Juanda Surabaya per Bulan
Average of Relative Humidity, Atmospher Pressure, Temperature and Sunshine Duration at Juanda Surabaya per Month
2018

B u l a n / M o n t h	Kelembaban/ Relative Humidity (%)	Tekanan Udara/ Atmospheir Pressure (Mbs)	Temperatur/ Temperature (°C)	Matahari/ Sunshine Duration (%)
(1)	(2)	(3)	(4)	(5)
Januari/ January	81	1.007,7	27,6	21
Pebruari/ February	80	1.010,4	27,2	61
Maret/ March	83	1.009,6	27,6	49
April/ April	84	1.010,1	29,0	91
Mei/ May	77	1.010,7	28,7	91
Juni/ June	75	1.011,8	27,9	83
Juli/ July	73	1.011,8	26,7	97
Agustus/ August	71	1.012,6	26,7	93
September/ September	67	1.012,4	28,1	84
Oktober/ October	65	1.012,2	29,4	94



Tabel: 01.01.06 – Lanjutan/
Continued

B u l a n/ M o n t h	Kelembaban/ Relative Humidity (%)	Tekanan Udara/ Atmosphair Pressure (Mbs)	Temperatur/ Temperature (°C)	Matahari/ Sunshine Duration (%)
(1)	(2)	(3)	(4)	(5)
Nopember/ November	72	1.011,0	29,5	69
Desember/ December	77	1.009,8	29,0	45
Rata-rata/ Average	75,4	1.010,8	28,1	73,2
2017	76,8	1.010,3	28,1	66,4
2016	75,2	1.011,8	27,9	80,1
2015	75,7	1.011,0	28,0	71,0
2014	79,1	1.010,2	27,7	61,8

Sumber : Stasiun Meteorologi Juanda Surabaya

Source : Meteorological Station at Juanda Surabaya

Tabel : 01.01.07 Banyaknya Hari Hujan dan Curah Hujan di Perak I per Bulan
Number of Rainy Days and Rainfall at Perak I per Month
2012 – 2018

B u l a n / <i>M o n t h</i>	Hari Hujan (hari)/ <i>Rainy Days (days)</i>						Curah Hujan (mm)/ <i>Rainfall (mm)</i>					
	2012	2013	2014	2015	2016	2018	2012	2013	2014	2015	2016	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Januari/ <i>January</i>	28	26	29	24	17	22	499	649	302	503	288,8	191,7
Pebruari/ <i>February</i>	22	20	23	24	28	18	274	197	266	330	427,0	224,5
Maret/ <i>March</i>	22	20	19	23	20	20	315	197	251	291	154,3	205,8
April/ <i>April</i>	12	12	19	25	19	10	60,3	141	253	169	181,8	44,0
Mei/ <i>May</i>	9	16	13	12	22	4	70,6	179	51	96,1	289,3	4,1
Juni/ <i>June</i>	4	17	13	5	18	4	3,1	235	68	0,2	76,1	25,5
Juli/ <i>July</i>	1	9	9	3	13	-	0	91	6	0	76,7	-
Agustus/ <i>August</i>	0	0	0	3	3	1	0	0	0	0	55,5	45,2
September/ <i>September</i>	0	0	0	0	13	-	0	0	0	0	82,5	-
Oktober/ <i>October</i>	5	5	1	0	20	-	57,3	6	8	0	170,4	-
Nopember/ <i>November</i>	13	13	13	9	18	13	49	80	70	167,9	190,1	147,8



Tabel: 01.01.07 – Lanjutan/
Continued

B u l a n/ M o n t h	Hari Hujan (hari)/ Rainy Days (days)						Curah Hujan (mm)/ Rainfall (mm)					
	2012	2013	2014	2015	2016	2018	2012	2013	2014	2015	2016	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Desember/ December	26	26	24	19	24	20	215	371	337	134,8	384,1	214,1
Rata-rata/ Average	14	12	14	14	18	12	143	129	179	161	199	122,5

Sumber : Stasiun Meteorologi Perak I Surabaya

Source : Meteorological Station at Perak I Surabaya

Tabel : 01.01.08 Banyaknya Hari Hujan dan Curah Hujan di Perak II Per Bulan
Number of Rainy Days and Rainfall at Perak II per Month
2013 – 2018

Bulan/ Month	Hari Hujan (hari)/ Rainy Days (days)						Curah Hujan (mm)/ Rainfall (mm)					
	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Januari/ <i>January</i>	26	26	23	14	29	22	477,7	272,1	436,6	284,1	366,3	243,2
Pebruari/ <i>February</i>	17	23	19	27	20	21	276,6	335,6	293,5	409,3	248,5	245,8
Maret/ <i>March</i>	24	12	18	16	22	21	322,4	186,0	243,8	163,1	244,0	279,6
April/ <i>April</i>	18	17	23	15	18	11	189,4	245,9	133,0	129,6	102,1	62,8
Mei/ <i>May</i>	17	11	8	21	9	5	159,4	54,8	109,7	358,8	157,9	3,7
Juni/ <i>June</i>	14	9	1	15	11	4	240,4	47,7	0,7	136,8	91,5	14,9
Juli/ <i>July</i>	8	7	1	15	7	-	103,0	4,0	-	90,1	22,4	-
Agustus/ <i>August</i>	-	1	2	6	-	1	-	4,8	-	38,2	-	28,5
September/ <i>September</i>	-	-	-	10	4	1	-	-	-	102,0	11,3	TTU
Oktober/ <i>October</i>	3	1	-	15	4	1	4,6	0,4	-	161,5	26,6	1,2
Nopember/ <i>November</i>	20	15	9	17	20	12	90,3	69,0	130,2	117,9	326,6	146,3



Tabel: 01.01.08 – Lanjutan/
Continued

Bulan/ Month	Hari Hujan (hari)/ Rainy Days (days)						Curah Hujan (mm)/ Rainfall (mm)					
	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Desember/ December	24	23	16	21	23	13	229,8	284,7	184,8	358,8	291,1	146,3
Rata-rata/ Average	17	13	12	16	15	10	209,4	136,8	191,5	195,0	171,7	117,2

Sumber : Stasiun Meteorologi Perak II Surabaya

Source : Meteorological Station at Perak II Surabaya

Tabel : 01.01.09 Banyaknya Hari Hujan dan Curah Hujan di Juanda per Bulan
Number of Rainy Days and Rainfall at Juanda per Month
2012 – 2018

B u l a n / <i>M o n t h</i>	Hari Hujan (hari)/ <i>Rainy Days (days)</i>						Curah Hujan (mm)/ <i>Rainfall (mm)</i>					
	2012	2013	2014	2015	2016	2018	2012	2013	2014	2015	2016	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(12)	(13)	(14)
Januari/ <i>January</i>	26	25	24	23	22	23	446	365	259	465	167	314
Pebruari/ <i>43February</i>	17	20	22	25	28	23	179	287	247	437	590	529
Maret/ <i>March</i>	21	28	22	23	26	22	211	461	455	480	252	433
April/ <i>April</i>	14	19	22	21	21	19	141	141	273	259	235	270
Mei/ <i>May</i>	10	21	16	12	21	1	114	196	105	182	393	0
Juni/ <i>June</i>	6	21	9	1	18	4	67,7	240	202	TTU	174	77
Juli/ <i>July</i>	-	10	6	2	19	-	-	109	48	2	258	-
Agustus/ <i>August</i>	-	1	-	4	10	1	-	0,6	-	18	101	0,3
September/ <i>September</i>	-	1	-	-	14	-	-	0,2	-	-	121	-
Oktober/ <i>October</i>	2	2	-	-	21	-	2,1	3,6	-	-	502	-
Nopember/ <i>November</i>	7	14	11	5	5	12	58	108	72	53	53	188



Tabel: 01.01.09 – Lanjutan/
Continued

B u l a n/ M o n t h	Hari Hujan (hari)/ Rainy Days (days)						Curah Hujan (mm)/ Rainfall (mm)					
	2012	2013	2014	2015	2016	2018	2012	2013	2014	2015	2016	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(12)	(13)	(14)
Desember/ December	24	20	22	17	18	16	171	359	320	130	132	387
Rata-rata/ Average	14	15	18	18	20	13	154,2	189,2	220,1	225,1	248,2	244,3

Sumber : Stasiun Meteorologi Juanda Surabaya

Source : Meteorological Station at Juanda Surabaya

Tabel 01.01.10 Arah terbanyak Kecepatan Rata-Rata dan Kecepatan Maksimum Angin di Perak I per Bulan
Mostly Directional Speed Averages and Mostly Wind Velocity at Perak I per Month
2018

Bulan / Month	Arah Terbanyak/ Mostly Directional	Kecepatan Rata-rata/ Speed Average (Knot)	Kecepatan Angin Maksimum / Mostly Wind Velocity			
			Arah / Direction	Kecepatan / Velocity (Knot)	Jam / Hours (BBWI)	Tanggal/ Date
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Januari / January	B	3	210	18	14,00	28
Pebruari / February	B	3	250	14	15,00	6
Maret / March	B	2	270	12	14,00	2
April / April	T	2	080	14	13,00	30
Mei / May	T	4	100	20	11,00	23
Juni / June	T	3	120	14	14,00	17
Juli / July	T	3	100	14	12,00	23
Agustus / August	T	4	080	15	14,00	19
September / September	T	4	100	18	14,00	16
Oktober / October	T	4	130	16	13,00	7



Tabel: 01.01.10 – Lanjutan/
Continued

B u l a n / <i>Month</i>	Arah Terbanyak/ <i>Mostly Directional</i>	Kecepatan Rata-rata/ <i>Speed Average (Knot)</i>	Kecepatan Angin Maksimum / <i>Mostly Wind Velocity</i>			
			Arah / <i>Direction</i>	Kecepatan / <i>Velocity (Knot)</i>	Jam / <i>Hours (BBWI)</i>	Tanggal/ <i>Date</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Nopember / <i>November</i>	T	2	120	14	12,00	2
Desember / <i>December</i>	BL	2	070	10	15,00	19
Rata-rata/ Average	T	3		15		

Sumber : Stasiun Meteorologi Perak I Surabaya

Source : Meteorological Station at Perak I Surabaya

Table 01.01.11 Arah Terbanyak kecepatan Rata-Rata dan Kecepatan Maksimum Angin di Perak II per Bulan
Mostly Directional Speed Averages and Mostly Wind Velocity at Perak II per Month
2018

Bulan/ Month	Arah Terbanyak/ Mostly Directional	Kecepatan Rata-rata/ Speed Average (Knot)	Kecepatan Angin Maksimum/ Mostly Wind Velocity			
			Arah/ Direction	Kecepatan/ Velocity (Knot)	Jam/ Hours (BBWI)	Tanggal/ Date
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Januari / January	B-BL	4	340	25	15,10	20
Pebruari / February	B	4	310	28	13,50	2
Maret / March	U	3	220	21	15,50	24
April / April	T	4	120	25	12,40	23
Mei / May	T	4	90	25	14,20	21
Juni / June	TG	4	130	23	15,50	17
Juli / July	TG	4	140	20	13,40	9
Agustus / August	TG	5	130	37	15,10	26
September / September	TG	5	120	43	11,40	11
Oktober / October	TG	5	130	26	15,20	7



Tabel: 01.01.11 – Lanjutan/
Continued

B u l a n/ <i>Month</i>	Arah Terbanyak/ <i>Mostly Directional</i>	Kecepatan Rata-rata/ <i>Speed Average (Knot)</i>	Kecepatan Angin Maksimum/ <i>Mostly Wind Velocity</i>			
			Arah/ <i>Direction</i>	Kecepatan/ <i>Velocity (Knot)</i>	Jam/ <i>Hours (BBWI)</i>	Tanggal/ <i>Date</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Nopember / <i>November</i>	TG	4	50	22	16,00	18
Desember / <i>December</i>	BL-U	3	60	25	13,40	7
Rata-rata/ <i>Average</i>	TG	4		27		

Sumber : Stasiun Meteorologi Perak II Surabaya

Source : Meteorological Station at Perak II Surabaya

Tabel 01.01.12 *Arah Terbanyak Kecepatan Rata-Rata di Juanda per Bulan*
Mostly directional speed averages at Juanda Per Month
2018

B u l a n / <i>Month</i>	Arah Terbanyak / <i>Mostly</i> <i>Directional</i>	Kecepatan Rata-rata/ <i>Speed</i> <i>Average</i> <i>(Knot)</i>	Kecepatan Angin Maksimum/ <i>Mostly Wind Velocity</i>			
			Arah/ <i>Direc-</i> <i>tion</i>	Kecepatan/ <i>Velocity</i> <i>(Knot)</i>	Jam/ <i>Hours</i> <i>(BBWI)</i>	Tanggal/ <i>Date</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Januari/ <i>January</i>	BARAT	9,6	300	30	14,00	18
Pebruari/ <i>February</i>	BARAT	7	330	21	14,00	2
Maret/ <i>March</i>	BARAT	8,4	100	18	17,00	7
April/ <i>April</i>	TIMUR	6,8	110	14	13,00	23
Mei/ <i>May</i>	TIMUR	7,3	80	17	15,00	15
Juni/ <i>June</i>	TIMUR	7	90	17	18,00	19
Juli/ <i>July</i>	TIMUR	7	100	16	18,00	23
Agustus/ <i>August</i>	TIMUR	7,9	120	18	12,00	11
September/ <i>September</i>	TIMUR	8,3	100	19	14,00	30
Oktober/ <i>October</i>	TIMUR	8,6	100	19	13,00	19



Tabel: 01.01.12 – Lanjutan/
Continued

B u l a n/ <i>Month</i>	Arah Terbanyak / <i>Mostly Directional</i>	Kecepatan Rata-rata/ <i>Speed Average (Knot)</i>	Kecepatan Angin Maksimum/ <i>Mostly Wind Velocity</i>			
			Arah/ <i>Direc- tion</i>	Kecepatan/ <i>Velocity (Knot)</i>	Jam/ <i>Hours (BBWI)</i>	Tanggal/ <i>Date</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Nopember/ <i>November</i>	BARAT	8	220	31	18,00	25
Desember/ <i>December</i>	BARAT	7,1	250	19	17,00/14,00	30/31
Rata-rata/ <i>Average</i>	TIMUR	7,8		19,9		

Sumber : Stasiun Meteorologi Juanda Surabaya
Source : Meteorological Station at Juanda Surabaya

Tabel : 01.01.13 Banyaknya Penguapan Panci Terbuka di Perak I Surabaya per Bulan
Monthly Quantity of Evaporation at Perak I in Surabaya
2010 – 2018

Bulan/ Month	2010	2011	2012	2013	2014	2015	2016	2017	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Januari/ <i>January</i>	126,7	123,3	130,3	130,0	140,3	162,2	135,9		107,3
Pebruari/ <i>February</i>	129,7	128,2	126,3	111,8	133,3	144,5	130,2		99,8
Maret/ <i>March</i>	131,0	137,7	133,5	129,5	169,7	156,4	142,0		121,7
April/ <i>April</i>	131,6	107,5	132,5	96,3	139,5	126,6	114,7		131,4
Mei/ <i>May</i>	102,5	127,1	133,6	114,8	148,7	154,2	134,8		138,2
Juni/ <i>June</i>	98,4	138,6	136,8	93,7	141,3	146,1	106,6		123,1
Juli/ <i>July</i>	123,3	159,6	150,0	125,3	156,6	162,8	180,1		131,5
Agustus/ <i>August</i>	156,7	175,4	176,1	173,0	176,9	179,4	187,6	153,8	151,2
September/ <i>September</i>	129,7	181,2	185,5	186,2	206,2	203,0	133,3	177,9	168,2
Oktober/ <i>October</i>	148,4	194,9	203,9	207,6	214,2	210,0	218,3	170,7	174,6
Nopember/ <i>November</i>	131,6	108,6	160,1	153,4	192,2	194,0	153,2	127,9	153,8



Tabel: 01.01.13 – Lanjutan/
Continued

Bulan/ Month	2010	2011	2012	2013	2014	2015	2016	2017	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Desember/ December	311,8	135,8	122,4	119,9	147,3	268,4	162,0	117,4	118,1
Rata-rata/ Average	143,5	143,2	149,3	136,8	164,0	176,0	149,9	150,0	135

Sumber : Stasiun Meteorologi Perak I Surabaya

Source : Meteorological Station at Perak I Surabaya

Tabel : 01.01.14 Banyaknya Penguapan Panci Terbuka di Perak II Surabaya per Bulan
Monthly Quantity of Evaporation at Perak II in Surabaya
2010 – 2018

Bulan/ Month	2010	2011	2012	2013	2014	2015	2016	2017	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Januari/ January	121,5	134,1	126,7	150,6	140,3	162,2	151,4	134,2	119,9
Pebruari/ February	123,5	118,0	139,1	129,4	133,3	144,5	141,8	124,8	108,0
Maret/ March	134,5	137,3	145,3	153,7	169,7	156,4	163,4	147,8	128,1
April/ April	119,4	116,2	147,0	112,3	139,5	126,6	131,5	127,3	148,3
Mei/ May	106,8	143,2	151,1	126,5	148,7	154,2	138,2	143,9	139,5
Juni/ June	111,3	130,9	139,6	110,1	141,3	146,1,1	124,5	122,4	142,5
Juli/ July	133,6	152,9	155,5	125,9	156,6	162,8	139,8	148,0	146,2
Agustus/ August	155,3	174,3	181,2	170,8	176,9	179,4	154,4	171,2	165,7
September/ September	138,0	194,3	189,6	193,5	206,2	203,0	171,1	174,8	175,0
Oktober/ October	144,3	204,6	221,5	213,8	214,2	210,0	142,4	190,1	190,6
Nopember/ November	137,0	218,4	171,6	154,0	192,2	194,0	127,1	127,9	155,1



Tabel: 01.01.14 – Lanjutan/
Continued

Bulan/ Month	2010	2011	2012	2013	2014	2015	2016	2017	2018
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Desember/ December	133,5	133,6	139,7	140,1	147,3	268,4	113,8	128,2	113,6
Rata-rata/ Average	128	155	159	148	164	176	142	145	144

Sumber : Stasiun Meteorologi Perak I Surabaya

Source : Meteorological Station at Perak I Surabaya

Tabel 01.01.15 Banyaknya Penguapan Panci Terbuka di Juanda Surabaya per Bulan
Monthly Quantity of Evaporation at Juanda in Surabaya
2010-2017

Bulan/ Month	2010	2011	2012	2013	2014	2015	2016	2017
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Januari/ <i>January</i>	171,2	151,5	161,0	143,3	180,2	134,6	173,5	159,3
Pebruari/ <i>February</i>	144,2	135,7	148,9	146,9	143,8	166,9	145,5	151,5
Maret/ <i>March</i>	166,1	127,5	133,4	149,5	186,0	160,8	155,2	138,8
April/ <i>April</i>	179,9	108,2	121,7	152,6	153,1	143,8	140,2	144,3
Mei/ <i>May</i>	144,6	141,6	158,0	166,9	143,8	184,4	182,0	149,4
Juni/ <i>June</i>	166,1	138,7	164,4	159,4	117,7	153,0	162,9	124,4
Juli/ <i>July</i>	193,0	159,0	174,4	156,3	131,8	162,2	175,1	156,7
Agustus/ <i>August</i>	229,3	197,3	182,1	189,7	172,4	190,6	188,0	178,9
September/ <i>September</i>	233,4	163,2	183,8	198,9	192,7	208,0	217,3	190,6
Oktober/ <i>October</i>	258,6	178,6	205,5	221,1	216,6	232,8	224,3	192,6
Nopember/ <i>November</i>	211,0	154,7	155,1	189,5	156,5	193,3	204,8	143,0



Tabel: 01.01.15 – Lanjutan/
Continued

Bulan/ Month	2010	2011	2012	2013	2014	2015	2016	2017
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Desember/ December	197,2	132,9	129,3	141,2	142,3	135,2	163,5	123,7
Rata-rata/ Average	191,2	149,1	159,8	167,9	159,7	172,1	177,7	154,4

Sumber : Stasiun Meteorologi Juanda Surabaya
Source : Meteorological Station at Juanda Surabaya