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**GEOGRAFIS**  
Geographic



Surabaya adalah kota Pahlawan yang secara astronomis terletak diantara  $07^{\circ}9'$  -  $7^{\circ}21'$  Lintang Selatan dan  $112^{\circ}36'$  -  $112^{\circ}54'$  Bujur Timur. Wilayah kota Surabaya merupakan dataran rendah dengan ketinggian 3-6 m di atas permukaan air laut (dataran rendah), kecuali di bagian selatan terdapat daerah berbukit dengan ketinggian 25-50 meter di atas permukaan air laut. Luas kota Surabaya mencapai 33.306,30 Ha dengan batas wilayah sebagai berikut:

1. Sebelah Utara : Selat Madura
2. Sebelah Timur : Selat Madura
3. Sebelah Selatan : Kab. Sidoarjo
4. Sebelah Barat : Kab. Gresik

Seperti kota lain di Indonesia, kota Surabaya memiliki iklim tropis yang terdiri dari dua musim dalam setahun yaitu musim hujan dan kemarau. Di Stasiun Juanda Surabaya, tercatat bahwa kelembaban udara rata-rata berkisar antara 68% hingga 84% dengan tekanan udara 1010,4 Mbs hingga 1011,6 Mbs. Temperatur rata-rata di stasiun tersebut berkisar antara  $27,8^{\circ}\text{C}$  hingga  $30,5^{\circ}\text{C}$  dan durasi sinar matahari antara 36% hingga 89%.

*Surabaya known as the City of Heroes which is astronomically located in in  $07^{\circ}9'$  -  $7^{\circ}21'$  South Latitude and  $112^{\circ}36'$  -  $112^{\circ}54'$  East Longitude. Surabaya is a lowland area with 3-6 meters height above the sea level, except the Southern area which has 25-50 meters above the sea level. The total area of Surabaya reaches 33,306.30 hectares, and Surabaya shares the borders with:*

<i>North</i>	<i>: Madura Strait</i>
<i>East</i>	<i>: Madura Strait</i>
<i>South</i>	<i>: Sidoarjo Regency</i>
<i>West</i>	<i>: Gresik Regency</i>

*Like any other cities in Indonesia, Surabaya has tropical climate consist of two seasons in a year, which are rainy and dry season. In Juanda Meteorology Station of Surabaya, it is recorded that the humidity level is around 68%-84% with the air pressure of 1010,4 Mbs until 1011,6 Mbs. The average temperature in this station is recorded between  $27,8^{\circ}\text{C}$  and  $30,5^{\circ}\text{C}$  with the duration of sunlight between 36% and 89%.*



Di Stasiun Perak II Surabaya, kelembaban udara rata-rata berkisar antara 60% dan 81% dengan tekanan udara rata-rata antara 1007,7 hingga 1010,9 Mbs. Temperatur rata-rata antara 28,5 °C sampai 30,1°C dan durasi sinar matahari antara 36% hingga 86%.

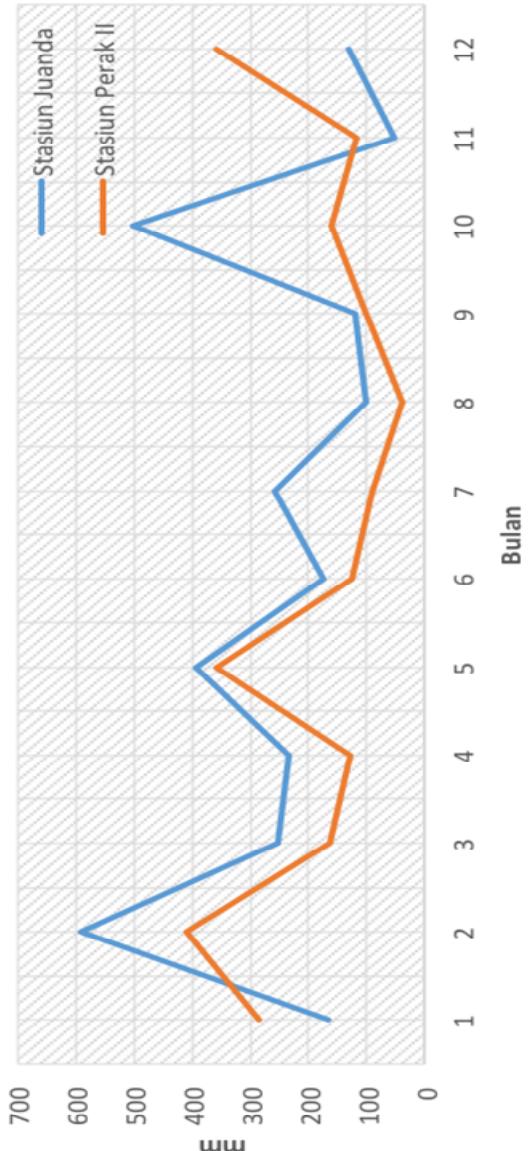
Curah hujan tertinggi dan banyaknya hari hujan tertinggi di Surabaya terjadi di bulan Pebruari. Rata-rata curah hujan setiap bulan adalah 248 mm (stasiun Juanda) dan 195 mm (stasiun Perak II). Banyaknya hari hujan lebih dari 25 hari terjadi pada bulan Pebruari (stasiun Juanda dan Perak II) dan Maret (stasiun Juanda) sedangkan curah hujan lebih dari 500 mm terjadi di stasiun Juanda pada bulan Pebruari dan Oktober.

*In the Perak II Meteorology Station of Surabaya, the humidity level is recorded between 60% and 81% in average with the average air pressure between 1007,7 and 1010,9 Mbs. The average temperature is recorded between 28,5°C until 30,1°C in average, and the duration of sunlight between 36% until 86%.*

*The highest rainfall and the most days of rain in Surabaya are in February. The average rainfall every month is 248mm (recorded in Juanda Meteorology Station) and 195 mm (recorded in Perak II Meteorology Station). The intencity of rain occurred more than 25 days in February (recorded in Juanda and Perak II Station) and in March (Juanda Station). While the intencity of rain for more than 500 mm recorded in Juanda Station on February and October.*



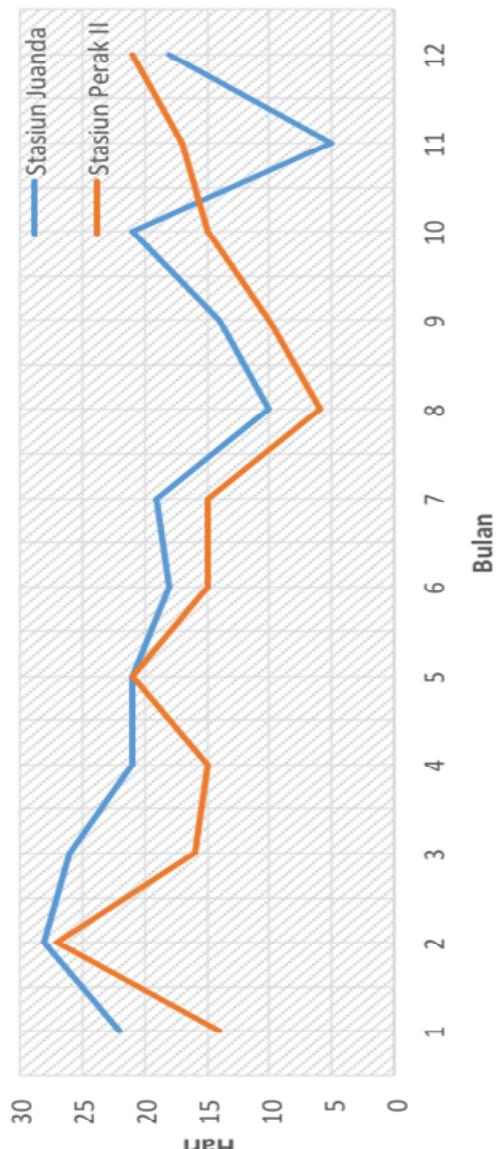
### Curah Hujan di Surabaya Tahun 2016



Sumber : Stasiun Meteorologi Juanda dan Perak II Surabaya



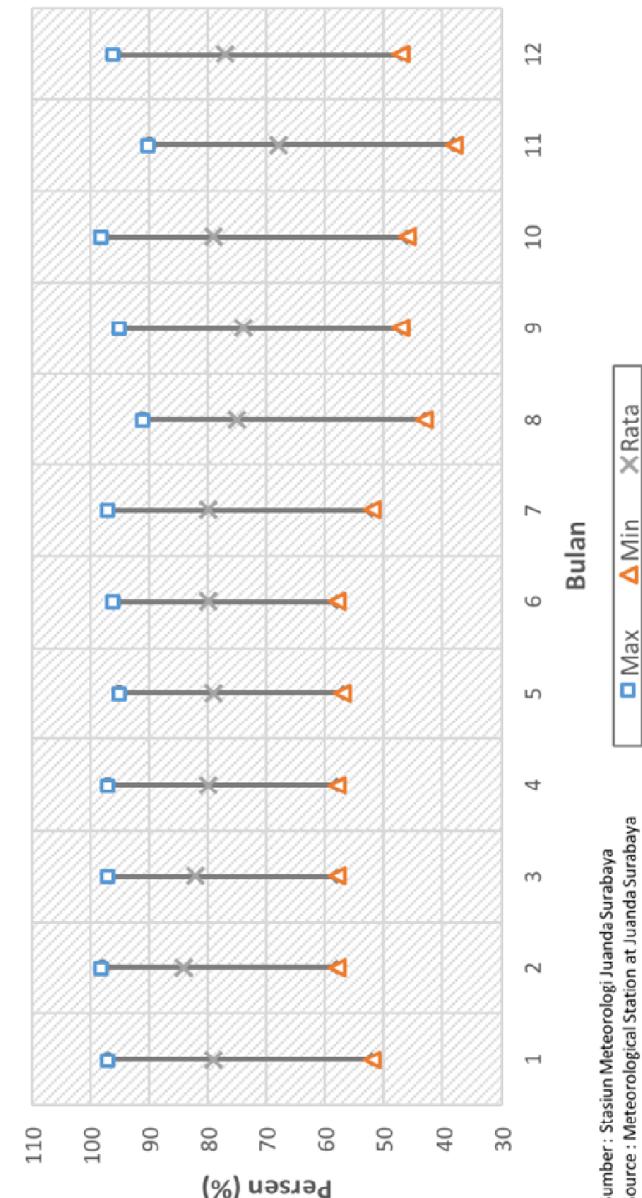
### Banyaknya Hari Hujan di Surabaya Tahun 2016



Sumber: Stasiun Meteorologi Juanda dan Perak II Surabaya



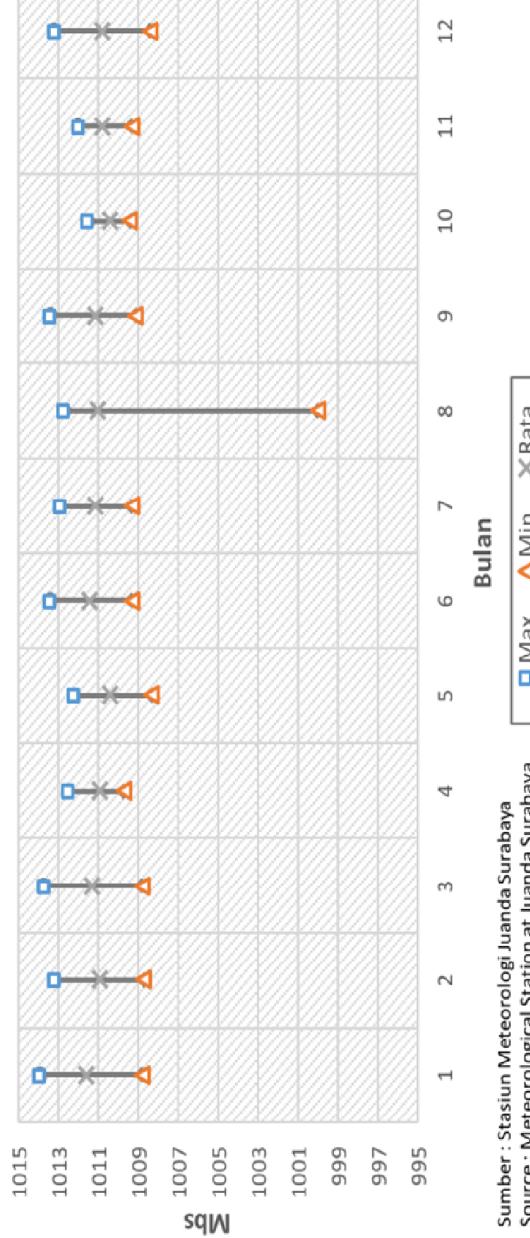
Kelembaban Udara di Stasiun Juanda Surabaya Tahun 2016



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



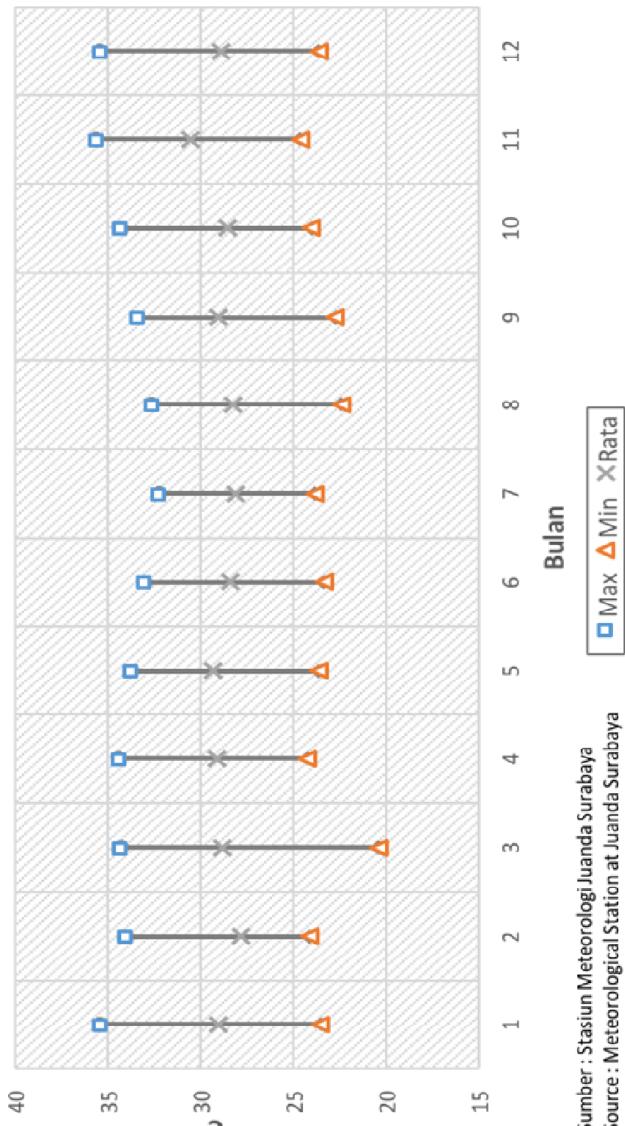
Tekanan Udara di Stasiun Juanda Surabaya Tahun 2016



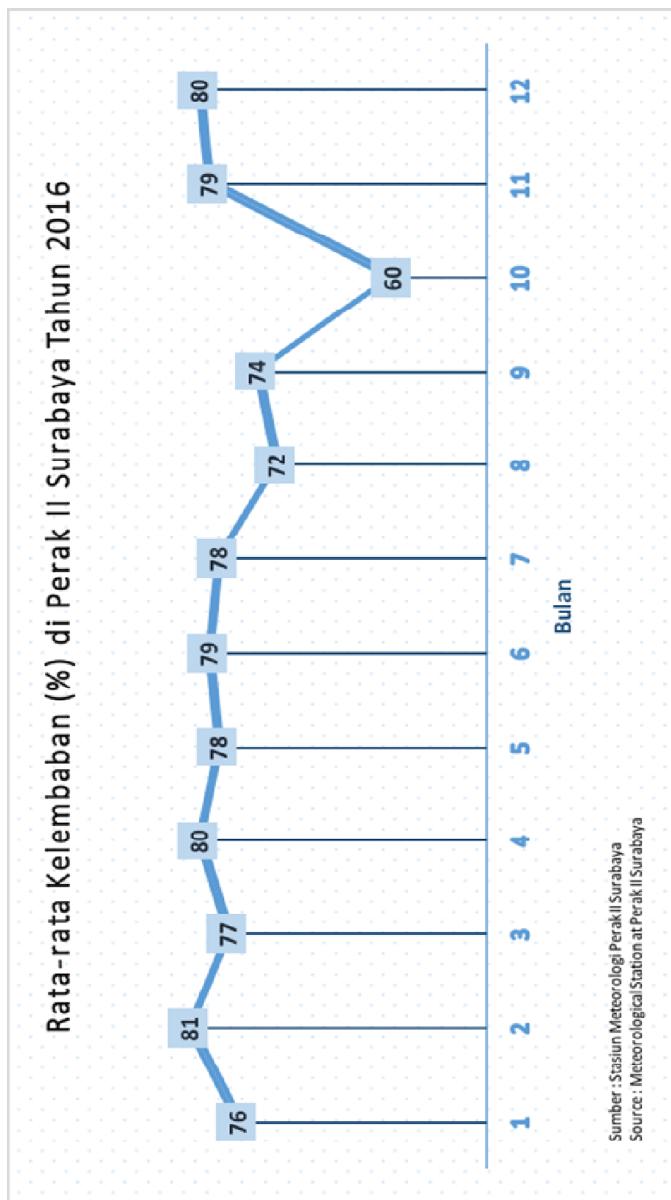
Sumber : Stasiun Meteorologi Juanda Surabaya  
Source : Meteorological Station at Juanda Surabaya



Temperatur Udara di Stasiun Juanda Surabaya Tahun 2016

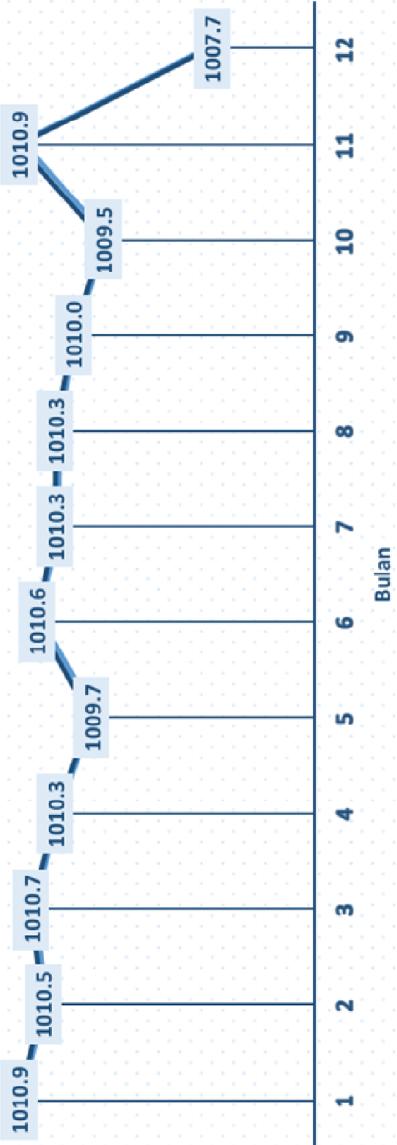


Sumber : Stasiun Meteorologi Juanda Surabaya  
Source : Meteorological Station at Juanda Surabaya

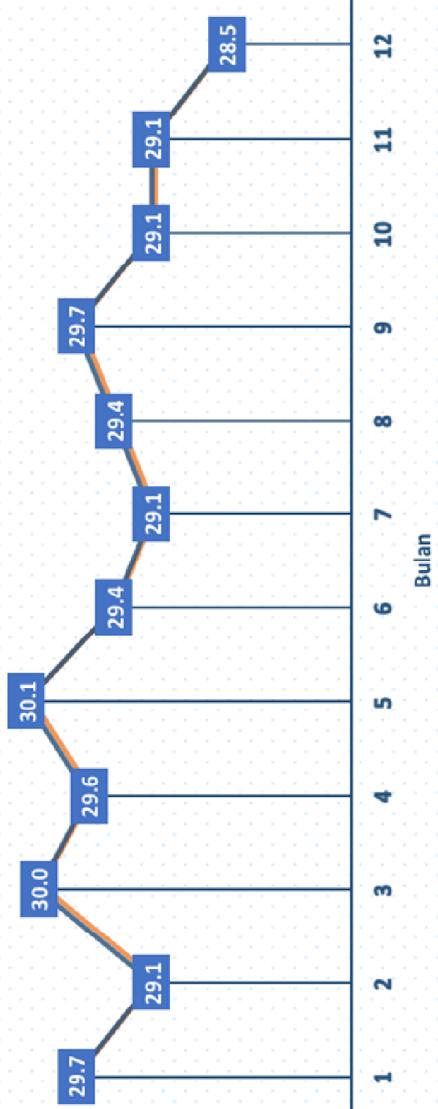




Rata-rata Tekanan Udara (Mbs) di Perak II Surabaya Tahun 2016



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

Rata-rata Temperatur ( $^{\circ}\text{C}$ ) di Perak II Surabaya Tahun 2016

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


**Arah Terbanyak, Kecepatan Rata-rata di Juanda per Bulan Tahun  
2016**
**Tabel I.1***Mostly Directional, Speed Averages at Juanda per Month*

<b>Bulan/Month</b>	<b>Arah Terbanyak/ Mostly Directional</b>	<b>Kecepatan Rata - rata/ Speed Average (Knot)</b>	<b>Kecepatan Angin Maksimum</b>			
			<b>Arah/ Direction</b>	<b>Kecepatan/ VeloMunicipality (Knot)</b>	<b>Jam/ Hours (BBWI)</b>	<b>Tanggal/ Date</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>
Januari/January	Timur	7.1	300	19	15	25
Pebruari/Pebruary	Barat	7.7	300	21	13,00/15,00	2/24
Maret/March	Barat	6.5	110	20	22	25
April/April	Barat	7	90	17	12	26
Mei/May	Timur	6.7	210	18	18	7
Juni/June	Timur	6.8	90	15	11	15
Juli/July	Timur	7.2	140	15	2	30
Agustus/August	Timur	7.9	110	17	11	19
September/September	Timur	7.4	100	10	15	3
Oktober/October	Timur	7.5	330	18	16	2
Nopember/Nopember	Timur	7	60	16	14	26
Desember/December	Barat	7.5	80	20	19	4
<b>Rata-rata/ Average</b>		7.2				
2015	Timur					
2014	Timur	7.3				
2013	E	7				
2012	E	7.3				

**Sumber : Stasiun Meteorologi Juanda Surabaya**  
*Source : Meteorologi Station of Juanda Surabaya*



**Rata-Rata Kelembapan, Tekanan Udara, Temperatur  
dan Penyinaran Matahari dan Hujan di Juanda  
Surabaya Per Bulan Tahun 2016**

**Tabel I.2**

*Average of Relative Humidity, Atmosphair Pressure,  
Temperature, Sunshine Duration and Rainy at Juanda  
Surabaya per Month*

<b>Bulan/Month</b>	<b>Kelembaban/ Relative Humidity (%)</b>	<b>Tekan Udara/ Atmosphair Pressure</b>	<b>Temperatur/ Temperature</b>	<b>Matahari/ Sunshine Duration (%)</b>	<b>Hujan (MM)</b>	
	(1)	(2)	(3)	(4)	(5)	(6) HH
					(7) JCH	
Januari/January	79	1,011.6	29.0	69.0	22	167
Pebruari/February	84	1,010.9	27.8	52.0	28	590
Maret/March	82	1,011.3	28.8	67.0	26	252
April/April	80	1,010.9	29.1	68.0	21	235
Mei/May	79	1,010.4	29.3	76.0	21	393
Juni/June	80	1,011.4	28.4	60.0	18	174
Juli/July	80	1,011.1	28.1	84.0	19	258
Agustus/August	75	1,011.0	28.2	87.0	10	101
September/September	74	1,011.1	29.0	80.0	14	121
Oktober/October	79	1,010.4	28.5	36.0	21	502
Nopember/Nopember	68	1,010.8	30.5	89.0	5	53
Desember/December	77	1,010.8	28.9	62.0	18	132
<b>Rata-rata/ Average</b>	<b>78</b>	<b>1,011</b>	<b>29</b>	<b>69</b>	<b>19</b>	<b>248</b>
2015	75.2	1,011.8	27.9	80.1	-	-
2014	75.7	1,011.2	28.0	71.0	-	-
2013	79.1	1,010.2	27.7	61.8	-	-
2012	77.2	1,010.5	27.5	72.9	-	-

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


**Kelembaban, Tekanan Udara dan Temperatur  
Maksimum dan Minimum di Juanda Tahun 2016**
**Tabel I.3**
*Relative Humidity, Atmosphair Pressure and Maximum an  
Minimum at Juanda*

<b>Bulan/Month</b>	<b>Kelembaban/ Relative Humidity (%)</b>		<b>Tekan Udara/ Atmosphair Pressure</b>		<b>Temperatur/ Temperature</b>	
	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>
<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>	<i>(6)</i>	<i>(7)</i>
Januari/January	97	52	1013.9	1008.8	35.4	23.5
Pebruari/Pebruary	98	58	1013.2	1008.7	34.0	24.1
Maret/March	97	58	1013.7	1008.8	34.3	20.4
April/April	97	58	1012.5	1009.7	34.4	24.2
Mei/May	95	57	1012.2	1008.3	33.7	23.6
Juni/June	96	58	1013.4	1009.3	33.0	23.3
Juli/July	97	52	1012.9	1009.3	32.2	23.8
Agustus/August	91	43	1012.7	1000.0	32.6	22.4
September/September	95	47	1013.4	1009.1	33.4	22.7
Oktober/Octobe4r	98	46	1011.5	1009.4	34.3	24.0
Nopember/Nopember	90	38	1012.0	1009.3	35.6	24.6
Desember/December	96	47	1013.2	1008.4	35.4	23.6
<b>Rata-rata/ Average</b>	<b>95.6</b>	<b>51.2</b>	<b>1012.9</b>	<b>1008.3</b>	<b>34.0</b>	<b>23.4</b>
2015	92.7	45.9	1014.1	1009.7	33.6	22.4
2014	93.9	46.8	1013.1	1009.0	33.5	22.9
2013	94.8	49.5	1012.3	1008.0	33.7	22.6
2012	92.6	47.3	1012.8	1008.1	33.6	22.5

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


**Banyaknya Penguinan Panci Terbuka di  
Juanda Surabaya per Bulan Tahun 2016**
**Tabel I.4**
*Monthly Quantity of Evaporation at Juanda  
in Surabaya*

<b>Bulan/Month</b>	<b>2016 (mm)</b>
(1)	(2)
Januari/January	5.5
Pebruari/February	5.0
Maret/March	4.6
April/April	5.4
Mei/May	5.2
Juni/June	4.3
Juli/July	5.0
Agustus/August	5.3
September/September	7.2
Oktober/October	5.4
Nopember/Nopember	6.8
Desember/December	5.3
<b>Rata-rata/ Average</b>	<b>5.4</b>

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



**Rata-rata Kelembaban, Tekanan Udara, Temperatur dan Penyinaran Matahari di Perak II Surabaya per Bulan Tahun 2016**

**Tabel I.5**

*Average of Relative Humidity, Atmosphair Pressure, Temperature and Sunshine Duration at Perak II Surabaya per Month*

Bulan/Month <i>(1)</i>	Kelembaban/ Relative Humidity (%) <i>(2)</i>	Tekanan Udara/ Atmosphair Pressure (Mbs) <i>(3)</i>	Temperatur/ Temperature 00C <i>(4)</i>	Matahari/ Sunshine Duration (%) <i>(5)</i>
Januari/January	76	1010.9	29.7	63
Pebruari/Pebruary	81	1010.5	29.1	55
Maret/March	77	1010.7	30.0	70
April/April	80	1010.3	29.6	60
Mei/May	78	1009.7	30.1	76
Juni/June	79	1010.6	29.4	69
Juli/July	78	1010.3	29.1	78
Agustus/August	72	1010.3	29.4	86
September/September	74	1010.0	29.7	79
Oktober/October	60	1009.5	29.1	61
Nopember/Nopember	79	1010.9	29.1	55
Desember/December	80	1007.7	28.5	36
<b>Rata-rata/ Average</b>	<b>76</b>	<b>1010.1</b>		
2015	73	1011.1	29.0	80
2014	73	1010.2	29.1	80
2013	75	1009.6	28.7	72
2012	72	1009.8	28.8	77

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


**Arah Terbanyak, Kecepatan Rata-rata dan Kecepatan Maksimum Angin di Perak II Per Bulan Tahun 2016**
**Tabel I.6**
*Mostly Directional, Speed Averages and Mostly Wind Velocity Municipality at Perak II per Month*

<b>Bulan/Month</b>	<b>Arah Terbanyak/ Mostly Directional</b>	<b>Kecepatan Rata - rata/ Speed Average (Knot)</b>	<b>Kecepatan Angin Maksimum</b>			
			<b>Arah/ Direction</b>	<b>Kecepatan/ Velocity Municipality</b>	<b>Jam/ Hours (BBWI)</b>	<b>Tanggal/ Date</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>
Januari/January	Barat Laut	5	340	30	11:20	23
Pebruari/February	Barat Laut	5	300	19	17:10	29
Maret/March	Utara	5	300	18	14:10	1
April/April	Timur	6	90	21	9:30	15
Mei/May	Timur	4	100	16	12:10	2
Juni/June	Timur	2	100	8	11:40	3
Juli/July	Timur	3	110	8	14:10	6
Agustus/August	Timur	3	100	8	14:40	10
September/September	Timur - Tenggara	4	130	20	9:40	7
Oktober/October	Timur - Tenggara	4	60	22	17:40	9
Nopember/Nopember	Timur - Timur Laut	3	60	21	13:10	28
Desember/December	Barat - Barat Laut	4	190	18	19:50	26
<hr/>						
<b>Rata-rata/ Average</b>	<b>Timur</b>	<b>4</b>	<b>Timur</b>	<b>17</b>		
2015	Timur	-	Timur	-		
2014	Timur	7	Timur	26		
2013	Timur	7	Timur	25		
2012	Timur	7	Timur	25		

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


**Banyaknya Hari Hujan dan Curah Hujan di  
Perak II per Bulan Tahun 2010 - 2016**
**Tabel I.7**
*Sumber of Rainy Days and Rainfall at Perak II per Month*

Bulan/Month	Hari Hujan (hari)/ Rainy Days (Days)							Curah Hujan (mm)/Rainfall (mm)						
	2010	2011	2012	2013	2014	2015	2016	2010	2011	2012	2013	2014	2015	2016
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Januari/January	26	24	28	26	26	23	14	303	175	312	478	272.1	437.0	284.1
Pebruari/February	19	21	23	17	23	19	27	403	172	213	277	335.6	294.0	409.3
Maret/March	19	21	22	24	12	18	16	216	375	311	322	186.0	244.0	163.1
April/April	23	22	14	18	17	23	15	321.0	252.0	43.7	189.0	245.9	133.0	129.6
Mei/May	20	14	8	17	11	8	21	130.0	78.9	75.0	159.0	54.8	110.0	358.8
Juni/June	15	2	3	14	9	1	15	53.2	21.3	43.0	240.0	47.7	1.0	126.8
Juli/July	7	2	-	8	7	1	15	39.7	1.6	-	103.0	4.0	-	90.1
Agustus/August	8	-	-	-	1	2	6	48.5	-	-	-	4.8	-	38.2
September/September	18	-	-	-	-	-	10	88.4	-	-	-	-	-	102.0
Okttober/October	21	6	5	3	1	-	15	239.0	28.0	49.8	4.6	0.4	-	161.5
Nopember/Nopember	17	20	15	20	15	9	17	73.0	182.0	82.9	90.3	69.0	130.0	117.9
Desember/December	28	24	23	24	23	16	21	286.0	510.0	318.0	230.0	284.7	185.0	358.8
Rata-rata/ Average	18	16	16	17	13	12	16	183.4	179.6	160.9	209.4	136.8	191.5	195.0

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