

CHAPTER III

PROFILE OF BAITUL HILAL TELUK KEMANG PORT DICKSON MALAYSIA

A. A Glance Information About Teluk Kemang Port Dickson Malaysia

Teluk Kemang is the largest and most popular beach of Port Dickson, located between 7th and 8th mile from Port Dickson town Negeri Sembilan. Negeri Sembilan as one of Malaysia's thirteen states, lies on the Western coast of Peninsular Malaysia, just South of Kuala Lumpur and borders Selangor on the North, Pahang in the East, and Malacca and Johor to the South.¹

The name is believed to derive from the nine (*sembilan*) villages or *nagari* in the Minangkabau language (now known as *Luak*) settled by the Minangkabau, a people originally from West Sumatra (in present-day Indonesia). Minangkabau features are still visible today in traditional architecture and the dialect of Malay spoken.²

In its history, the Minangkabaus from Sumatra settled in Negeri Sembilan in the 14th century under the protection of the Malacca Sultanate, and later under the protection of its successor, the Sultanate of Johor. As Johor weakened in the 18th century, attacks by the Bugis forced the

¹ http://en.wikipedia.org/wiki/Negeri_Sembilan, accessed on Monday, January, 06th 2014, at 20.30 WIB.

² *Ibid.*

Minangkabaus to seek protection from their homeland. The Minangkabau ruler, Sultan Abdul Jalil, obliged by sending his near relative, Raja Melewar. When he arrived, he found that another royal, Raja Khatib had already established himself as ruler. He declared a war against Raja Khatib and became the ruler of Negeri Sembilan. The Sultan of Johor confirmed his position by granting the title Yang di-Pertuan Besar Negeri Sembilan (He Who is highest Lord of Negeri Sembilan) in 1773. After king of Melewar's death, a series of disputes arose over the succession. For a considerable period, the local nobles applied to the Minangkabau ruler in Sumatra for a ruler. However, competing interests supported different candidates, often resulting in instability and civil war.³

In 1873, the British intervened militarily in a civil war in Sungai Ujong to preserve British economic interests, and placed the country under the control of a British Resident. Jelebu followed in 1886, and the remaining states in 1895. In 1897, when the Federated Malay States (FMS) was established, Sungai Ujong and Jelebu were reunited to the confederation of small states and the whole, under the old name of the Negeri Sembilan, was placed under a single resident and became a member of the FMS.⁴

The number of states within Negeri Sembilan has fluctuated over the years, the federation now consists of six states and a number of sub-

³ *Ibid.*

⁴ *Ibid.*

states under their suzerainty. The former state of Naning was annexed to Malacca, Kelang to Selangor, and Segamat to Johor.⁵

Negeri Sembilan endured Japanese occupation in World War II between 1941 and 1945, and joined the Federation of Malaya in 1948, and became a state of Malaysia in 1963.⁶

Unlike the hereditary monarchs of the other royal Malay states, the ruler of Negeri Sembilan is known as *Yang di-Pertuan Besar* instead of Sultan. The election of the Ruler is also unique. He is selected by the council of Undangs who lead the four biggest districts of Sungai Ujong, Jelebu, Johol, and Rembau, making it one of the more democratic monarchies. The capital of Negeri Sembilan is Seremban. The royal capital is Seri Menanti in the district of Kuala Pilah. Other important towns are *Nilai* and *Port Dickson*.⁷

Port Dickson is more famous for its attractive beaches, ample amenities and good infrastructure. There are also various types of accommodation for those wishing to holiday here. Among the famous beaches here are Teluk Kemang and Blue Lagoon. There are also infrastructure for watersports dan beach activity.⁸

Consequently, Teluk Kemang is the largest and most popular beach of Port Dickson, Teluk Kemang beach stretch has the most number of hotels, resorts and apartments providing family accommodation. On

⁵ *Ibid.*

⁶ *Ibid.*

⁷ *Ibid.*

⁸ <http://www.tourism.gov.my/en/my/Web-Page/Places/States-of-Malaysia/Negeri-Sembilan/Port-Dickson-Beach> , accessed on Monday, January, 06th 2014, at 20.00 WIB

weekends and public holidays, the beach gets unbelievably crowded with visitors, while the sea becomes frenzied from motorised water sports. Visitor facilities and amenities are abundant, including car parks, walkways, gazebos, bathrooms and zones for souvenir shops, hawker stalls and restaurants. A large square at the back hosts the annual Port Dickson festival, but is used for recreational activities other times.⁹

Teluk Kemang beach is not only become the most well-known beach to tourists and weekenders, but also famous by its observatory which support the development of astronomy science in Malaysia, especially in the crescent observation activity, namely observatory Baitul Hilal Teluk Kemang.¹⁰

Observatory Baitul Hilal Teluk Kemang commonly become the first and center of researchers science or astronomy for its success in the record of crescent sighting for determining the beginning of lunar month, that's also become the highest record crescent sighting of lunar month in the history of the observatory throughout Malaysia.¹¹

The success of Baitul Hilal Teluk Kemang in crescent sighting for determining the beginning of lunar month can be strong evidence and

⁹ <http://portdickson.info/teluk-kemang.htm>, accessed on Monday, January, 06th 2014, at 20.30 WIB

¹⁰ Ahmad Zaki bin Haji Hamzah, *Kompleks Baitul Hilal Teluk Kemang, Port Dickson Negeri Sembilan Darul Khusus*, tt. p.2

¹¹ See : Jabatan Kemajuan Islam Malaysia, *Kaedah Penentuan Awal Hijrah*, Kuala Lumpur : National printing for Malaysia Berhad, 2001, p.8. And <http://www.majlisraja-raja.gov.my/index.php/bm/sejarah/rekod-cerapan-hilal#section=p1> , accessed on Monday, January, 06th 2014, at 21.00 WIB

proof that the location of Baitul Hilal Teluk Kemang is in very strategic geographically and astronomically place in Southeast Asia.¹²

B. Baitul Hilal Teluk Kemang as Crescent Observation's Place

1. Institution Profile and History of Baitul Hilal Teluk Kemang

Baitul Hilal is one of the centers in implementing the crescent observation activity in Malaysia. Etymologically, Baitul Hilal consists of two words, namely *bait* and *hilal*. the word *bait* in Arabic means house, building, or part of a place.¹³ While, *hilal* means a new moon.¹⁴ So it can be understood that the words below means as the house of the new Moon. Baitul Hilal Teluk Kemang based on its purpose of the establishment of that building is to sight the new Moon.¹⁵

Baitul Hilal Teluk Kemang Malaysia is located at coordinate latitude North 2° 26' 44" and longitude east 101°51'21" with altitude about 25 meters above the sea surface, and it more precisely located at the observatory complex of Baitul Hilal Teluk Kemang Port Dickson, Malaysia.¹⁶

¹²<http://www.majlisraja-raja.gov.my/index.php/bm/sejarah/rekod-cerapan-hilal#section=p1> , accessed on Tuesday, September 10th 2013, at 06.00 WIB

¹³ Ahmad Warson Munawwir, *Kamus al-Munawwir*, Surabaya : Pustaka Progressif, 2002, p. 122.

¹⁴ *Ibid.*, 1514

¹⁵ Interview with Zambri bin Zainuddin, the supervisor of Baitul Hilal Teluk Kemang, Space Physics Laboratory, University of Malaya, on September 25th 2013.

¹⁶ Ahmad Zaki bin Haji Hamzah, *Kompleks Baitul Hilal Teluk Kemang, Port Dickson Negeri Sembilan Darul Khusus*, tt. p.2. See more information in : <http://www.islam.gov.my/e-falak/tempat-cerapan>, accessed on Sunday, September, 08th 2013, at 15.30 WIB

The history of using Baitul Hilal Teluk Kemang as crescent observation's place in Malaysia is more related with the establishing of National Council for Islamic Religious Affairs in 1970, committees were officially appointed places to sight the new Moon of Ramadan and Shawwal in three places, they are Teluk Kemang (Negeri Sembilan), Johor Bahru (Johor) and Kampung Pulau Sayak (Kedah). Teluk Kemang can be operated officially in the process of implementation of the crescent observation in Malaysia in 1972.¹⁷

In 2006, there was a preliminary discussions between early discussions between government departments Mufti of Negeri Sembilan and the council of Islamic Religious State to build a new and modern of Baitul Hilal Teluk Kemang for astronomy progress in the future. Besides rebuilding a new and modern observatory, complex Baitul Hilal Teluk Kemang which located over an area of 1.2 hectares is also placing a hotel namely Klana Beach Resort Port Dickson.¹⁸

The construction projects for both observatory and the hotel is a joint venture between the Department of Awqaf, Zakat and Hajj (JAWHAR) and Islamic Religious Council Negeri Sembilan (MAINS) which is the owner of the land, project costing spent RM30 million, to

¹⁷ Mohd Zambri Zainuddin & Mohd Saiful Anwar Mohd Nawawi, *Analisa Kriteria Kenampakkan Hilal bagi Data 1972 hingga 2011 di Malaysia*. A presented paper in international workshop Penyatuan Kalender Hijriyah : Sebuah Upaya Pencarian Kriteria Hilal yang Objektif Ilmiah, Semarang To Wards Hijriah's Calender Unification; an effort for seeking crescent's criteria, scientifically and objectively, December, 12th 2012.

¹⁸ Ahmad Zaki bin Haji Hamzah, *Kompleks Baitul Hilal Teluk Kemang, Port Dickson Negeri Sembilan Darul Khusus, op.cit.*, p. 6.

RM18 million which was financed by JAWHAR and the remaining RM20 million was sponsored by MAINS. In 2009 the old building of Baitul Hilal is torn down and the construction process of complex Baitul Hilal is started in 2009 and finished in 2012 AD.¹⁹



Picture. 3.1

Baitul Hilal Teluk Kemang before 2009 AD²⁰



Picture. 3.2

Baitul Hilal Teluk Kemang after 2012 AD²¹

¹⁹ Interview with Zambri bin Zainuddin, the supervisor of Baitul Hilal Teluk Kemang, Space Physics Laboratory, University of Malaya, on September 25th 2013.

²⁰ A picture taken from Joko Satria A, *Teknik Observasi Dan Pencitraan Hilal Dengan Kamera Digital-Slr* "Suatu pengalaman di Baitulhilal Telok Kemang, Port Dikson, N9, Malaysia", power point (ppt) presented in Seminar "Peran Rekayasa Teknologi dalam Pelaksanaan Rukyatul Hilal di Malaysia, Semarang, Desember 25th 2013.

²¹ *Ibid.*

Nowadays, complex of Baitul Hilal Teluk Kemang become an important reference and research center for various activities such as sighting the Moon to determine the beginning of lunar month, study the Stars and Planets, especially for the development and advancement of astronomy.²²

The observatory also provided exhibition space houses over 20 artifacts on astronomy that is used across time researchers in the past. People who come to the observatory can see other space as they can also identify equipment used earlier researchers in their study of the universe.²³

Up to now, it has a lot of activities conducted by Baitul Hilal Teluk Kemang in the implementation of crescent observation and development of the astronomy, recent activities include:

- a) Crescent sighting dan observation since 2000 AD to 2020 to formulate a criteria of *Imkān ar-rukyaḥ* which can be more established in the future.
- b) Observed a lunar eclipse on 10 December 2011
- c) Observed transit of Venus on 6 June 2012
- d) Judgment Forum 2012 on 08 December 2012

²² Interview with Nazhatulshima Ahmad, the practitioner of Islamic Astronomy at Baitul Hilal Teluk Kemang, Space Physics Laboratory, University of Malaya, on September 26th 2013.

²³ Interview with Ahmad Zaki bin Hamzah, the manager of Baitul Hilal Teluk Kemang, on October 04th 2013.

- e) Geminids Meteor Shower on 14 Dec 2012
- f) Conducting the course of islamic astronomy subject for KUiTTHO students, Batu Pahat, Johor on 14th December 2012
- g) Negeri Sembilan Islamic Science Carnival 2013 on 17-19 March 2013-12-27
- h) Memorial World Astronomy Day on 20-21 April 2013
- i) Visiting astronomy for many countries, such as Saudi Arabia, Indonesia and many others²⁴

Furthermore, Ahmad Zaki, as manager of Baitul Hilal Teluk Kemang said that the vision of Baitul Hilal that to make world-class observatories through scientific research, education, and astrofotography and astronomy's discoveries.

2. The Weather and Climatological Information of Baitul Hilal Teluk Kemang Port Dickson

As a center for astronomical observations which located in Teluk Kemang, Baitul Hilal Teluk Kemang has almost the same climate and weather condition with some areas of Port Dickson and other regions in Malaysia. This relates to the position of regional state parts in

²⁴ Ahmad Zaki bin Haji Hamzah, *Kompleks Baitul Hilal Teluk Kemang, Port Dickson Negeri Sembilan Darul Khusus*, tt. p.15, and interview with Nazhatultulshima Ahmad, the practitioner of Islamic Astronomy at Baitul Hilal Teluk Kemang, Space Physics Laboratory, University of Malaya, on September 26th 2013.

Malaysia are relatively close to each other, particularly in the areas of Peninsular Malaysia.²⁵

The characteristic features of the climate of Malaysia are uniform temperature, high humidity and copious rainfall. Winds are generally light. Situated in the equatorial doldrum area, it is extremely rare to have a full day with completely clear sky even during periods of severe drought. On the other hand, it is also rare to have a stretch of a few days with completely no sunshine except during the northeast monsoon seasons.²⁶

a) Wind flow

Though the wind over the country is generally light and variable, there are, however, some uniform periodic changes in the wind flow patterns. Based on these changes, four seasons can be distinguished, namely, the southwest monsoon, northeast monsoon and two shorter periods of inter-monsoon seasons.²⁷

The Southwest monsoon season is usually established in the later half of May or early June and ends in September. The

²⁵ Interview with Joko Satria, the practitioner of Islamic Astronomy at Baitul Hilal Teluk Kemang, Space Physics Laboratory, University of Malaya, on September 25th 2013.

²⁶ See more Malaysian Meteorological Department, *Climate Change ,Scenarios For Malaysia 2001 – 2099*, Scientific Report January 2009. And see more spesific information in : http://www.met.gov.my/index.php?option=com_content&task=view&id=75&Itemid=1089, accessed on Monday, January, 06th 2014, at 21.00 WIB

²⁷ *Ibid.*

prevailing wind flow is generally southwesterly and light, below 15 knots.²⁸

The Northeast monsoon season usually commences in early November and ends in March. During this season, steady easterly or northeasterly winds of 10 to 20 knots prevail. The winds over the East coast states of Peninsular Malaysia may reach 30 knots or more during periods of strong surges of cold air from the North (cold surges).²⁹

During the two intermonsoon seasons, the winds are generally light and variable. During these seasons, the equatorial trough lies over Malaysia.³⁰

It is worth mentioning that during the months of April to November, when typhoons frequently develop over the West Pacific and move Westwards across the Philippines, Southwesterly winds over the northwest coast of Sabah and Sarawak region may strengthen to reach 20 knots or more.³¹

As Malaysia is mainly a maritime country, the effect of land and sea breezes on the general wind flow pattern is very marked especially during days with clear skies. On bright sunny afternoons,

²⁸ *Ibid.*

²⁹ *Ibid.*

³⁰ *Ibid.*

³¹ *Ibid.*

sea breezes of 10 to 15 knots very often develop and reach up to several tens of kilometers inland. On clear nights, the reverse process takes place and land breezes of weaker strength can also develop over the coastal areas.³²

b) Rainfall Distribution

The seasonal wind flow patterns coupled with the local topographic features determine the rainfall distribution patterns over the country. During the Northeast monsoon season, the exposed areas like the east coast of Peninsular Malaysia, Western Sarawak and the Northeast coast of Sabah experience heavy rain spells. On the other hand, inland areas or areas which are sheltered by mountain ranges are relatively free from its influence. It is best to describe the rainfall distribution of the country according to seasons.³³

Related with Seasonal Rainfall Variation in Peninsular Malaysia, The seasonal variation of rainfall in Peninsular Malaysia is of three main types:³⁴

- 1) Over the East coast states, November, December and January are the months with maximum rainfall, while June and July are the driest months in most districts.

³² *Ibid.*

³³ *Ibid.*

³⁴ *Ibid.*

- 2) Over the rest of the Peninsula with the exception of the Southwest coastal area, the monthly rainfall pattern shows two periods of maximum rainfall separated by two periods of minimum rainfall. The primary maximum generally occurs in October - November while the secondary maximum generally occurs in April - May. Over the northwestern region, the primary minimum occurs in January - February with the secondary minimum in June - July while elsewhere the primary minimum occurs in June - July with the secondary minimum in February.
- 3) The rainfall pattern over the Southwest coastal area is much affected by early morning "Sumatras" from May to August with the result that the double maxima and minima pattern is no longer distinguishable. October and November are the months with maximum rainfalls and February the month with the minimum rainfall. The March - April - May maximum and the June -July minimum rainfalls are absent or indistinct.

c) Sunshine and Solar Radiation

Being a maritime country close to the equator, Malaysia naturally has abundant sunshine and thus solar radiation. However, it is extremely rare to have a full day with completely clear sky even in periods of severe drought. The cloud cover cuts off a substantial

amount of sunshine and thus solar radiation. On the average, Malaysia receives about 6 hours of sunshine per day. There are, however, seasonal and spatial variations in the amount of sunshine received. Alor Setar and Kota Bharu receive about 7 hours per day of sunshine while Kuching receives only 5 hours on the average. On the extreme, Kuching receives only an average of 3.7 hours per day in the month of January. On the other end of the scale, Alor Setar receives a maximum of 8.7 hours per day on the average in the same month.³⁵ Solar radiation is closely related to the sunshine duration. Its seasonal and spatial variations are thus very much the same as in the case of sunshine.

Here as average sample of climate and weather information in Malaysia since January until December based on visitquick.com :

Iklim Malaysia					
Jan	Feb	Ber	Apr	Mun	Jun
33°	34°	34°	34°	32°	32°
23°	23°	23°	24°	24°	24°
8 jam / hari	8 jam / hari	8 jam / hari	8 jam / hari	7 jam / hari	6 jam / hari
31 mm	31 mm	81 mm	101 mm	200 mm	200 mm

Source : Visitquick.com

Picture 3.3

The Weather of Malaysia information from January – June 2013³⁶

³⁵ *Ibid.*

³⁶ <http://id.visitquick.com/in/cuaca/cuaca-di/malaysia>

Jul	Aug	Sep	Okt	Nov	Des
31°	31°	31°	31°	32°	32°
23°	24°	23°	23°	23°	23°
					
6 jam / hari	6 jam / hari	6 jam / hari	6 jam / hari	6 jam / hari	7 jam / hari
					
200 mm	200 mm	200 mm	200 mm	200 mm	61 mm

Source : Visitquick.com

Picture 3.4
The Weather of Malaysia information from July – December 2013³⁷

Based on the described data above, we know that the average length of sunlight time in Malaysia in minimum is about 6 hours/day it happen on June, July, August, September, October, November and for maximum is about 8 hours/day which happen on January, February and March. So that, the average of the length of sunlight time in Malaysia is about 6.8 hours/day.

The information of weather and climate data which provided by visitquick.com is look more complete, as far as it how the information for average data for daily, monthly and annual data. It's different with the information which provided by department of meteorology of Malaysia which only provided data for about daily data up to seven days data. As far, it has no much more different data which provided by both of visitquick.com and Department of Meteorology of Malaysia.

For specific information about the weather and climate information in

³⁷ *Ibid.*

Malaysia, the writer tries to combine the result information from Department of Meteorology of Malaysia government and visitquick.com, as mentioned data below :

Negeri Sembilan	
7 Days Weather Outlook for Negeri Sembilan	
<p>Monday, 21/04/2014</p>  <p>Isolated thunderstorms Afternoon</p>	<ul style="list-style-type: none"> › Morning : Isolated rain over coastal areas › Afternoon : Isolated thunderstorms › Night : Isolated rain
<p>Tuesday, 22/04/2014</p>  <p>Isolated thunderstorms Afternoon</p>	<ul style="list-style-type: none"> › Morning : Cloudy over coastal areas › Afternoon : Isolated thunderstorms › Night : No rain
<p>Wednesday, 23/04/2014</p>  <p>Isolated thunderstorms Afternoon</p>	<ul style="list-style-type: none"> › Morning : No rain › Afternoon : Isolated thunderstorms › Night : No rain
<p>Thursday, 24/04/2014</p>  <p>Isolated thunderstorms</p>	<ul style="list-style-type: none"> › Morning : No rain › Afternoon : Isolated thunderstorms › Night : No rain

Source : Meterology Department of Malaysia

Picture 3.5

The weather and climate information of Negeri Sembilan from April, 21st –24th 2014

Hari ini 21 Apr	Besok 22 Apr	Rabu 23 Apr	Kamis 24 Apr
			
Moderate or heavy rain shower	Patchy rain possible	Moderate or heavy rain shower	Patchy rain possible
33°	35°	35°	34°
23°	24°	24°	24°
			
Patchy rain possible	Clear skies	Patchy rain possible	Clear skies
			
0.4 1	0.4 1	0.4 1	0.4 1

Source : Visitquick.com

Picture 3.6

The weather and climate information of Negeri Sembilan from April, 21st –24th 2014

Based on described data above, we have the information that Negeri Sembilan will be rained for four (4) days, that start from from April, 21st –24th 2014. Although, the provided data by department of meterology Malaysia give us clear information in estimating condition in the morning, day and night. And we get nothing information from visitquick.com which only show us the general information of the weather and its temperature of climate.

3. Astronomical Equipment at Baitul Hilal Teluk Kemang

Astronomical equipment which used to support the observation at Baitul Hilal Teluk Kemang is generally divided into two categories, the equipment for crescent observation activity and equipment for astronomical observations and laboratory. The equipment that used for crescent observation activity at Baitul Hilal Teluk Kemang is in collaboration with Space Physics Laboratory of Malaya University, which those astronomical instruments are always scaled from time to time for its development. Among astronomical equipment and accessories always carried in each session of crescent observation activity, such as:³⁸

³⁸ Joko Satria A, *Teknik Observasi Dan Pencitraan Hilal Dengan Kamera Digital-Slr “Suatu pengalaman di Baitulhilal Telok Kemang, Port Dikson, N9, Malaysia”*, a presented paper in Seminar “Peran Rekayasa Tekhnologi dalam Pelaksanaan Rukyatul Hilal di Malaysia, Semarang, Desember 25th 2013. And see more information in : Laporan Kajian Cerapan Kenampakan Hilal Tahun 2000-2012 /1420 - 1433 Hijrah, By Makmal Fizik Angkasa By Jabatan Fizik, Fakulti Sains Universiti Malaya Jabatan Ukur dan Pemetaan Malaysia (JUPEM) Jabatan Kemajuan Islam Malaysia (JAKIM) dan Jabatan Mufti Kerajaan Negeri Negeri Sembilan Darul Khusus (JMKNNNS).

Telescope Meade LX200 12 "complete set

- a. Telescope Borg 101ED complete set (2009)
- b. Filter the Sun (12 ", 4", and 1.5 ")
- c. Flip and mirror system
- d. Focal reducer f/6.3
- e. Nikon D90 Digital SLR (2009)
- f. Canon EOS 40D Digital SLR (2009)
- g. Sony 3CCD video camera
- h. Notebook (with software MoonC)
- i. Higrrometer³⁹
- j. Thermometer⁴⁰
- k. Barometer⁴¹
- l. Form of observations

³⁹ Higrrometer is an instrument used for measuring the moisture content in the atmosphere. Humidity measurement instruments usually rely on measurements of some other quantity such as temperature, pressure, mass or a mechanical or electrical change in a substance as moisture is absorbed. see in <http://en.wikipedia.org/wiki/> , accessed on Monday, January, 06 th 2014, at 21.00 WIB

⁴⁰ Thermometer is a device that measures temperature or temperature gradient using a variety of different principles, see in <http://en.wikipedia.org/wiki/>, accessed on Monday, January, 06 th 2014, at 21.15 WIB.

⁴¹ Barometer is a scientific instrument used in meteorology to measure atmospheric pressure. Pressure tendency can forecast short term changes in the weather, see in <http://en.wikipedia.org/wiki/>, accessed on Monday, January, 06 th 2014, at 21.00 WIB.

There are many equipments for astronomical observations and laboratory, such as :

- 1) Major telescopes
 - a. Meade SCT 12inch f/6.3 (Motorized Mount)
 - b. Canon DSLR
 - c. Accessories telescope / camera DSLR
- 2) Complement telescope
 - a. Borg Telescope 101mm
 - b. Nikon DSLR
 - c. Laptop with imaging software