

Global Rasdhul Qibla: The Probability of Four Times in A Year Study

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Abstract:

The global rasdhul qibla commonly called istiva' a'dzām occurs twice a year, 15/16 July and 27/28 May. On that date, the place that occurs during the day (illuminated by the Sun) can use the Sun's shadow to determine the direction of the qibla, because at that time the Sun is right above the Ka'ba. And for places where the night experiences (not illuminated by the sun), then you can use the rasdhul qibla of the turning point of the Ka'ba, which is on January 13/14 and 28/29 November. In this study, the authors found the probability of rasdhul qibla occurring four times a year somewhere. That is the combination of the rasdhul qibla when the Sun is above the Ka'ba, and the rasdhul qibla when the Sun is above the turning point of the Ka'ba. These places include Ambon, Namlea (Indonesia), Perth, Broome (Australia) and Tutuala (Timor Leste). Qibla rasdhul July 15-16 and 27/28 May take place in the late evening, and qibla rasdhul January 13-14 and 28/29 November occurs in the morning, after the sun rises.

Keywords: Rasdhul Qiblah, Global, Four Times

INTRODUCTION

The main discussion of Falak Science in Islam is the material relating to the times of worship, which is: determining the beginning of the month, determining prayer times, determining the direction of Qibla and determining eclipses, (Arwin, JRB, 2016). The attention of Muslims to astronomy, especially the direction of the Qibla is still very weak, this can be seen from their attention when setting up mosques or musala around them. Most of the people only rely on figures or religious experts around them who are considered to master the field of astronomy, not discuss the matter to astronomers in their area. This is ultimately becomes one of the factors causing the wrong direction of Qibla in various regions. According to Jayusman (2014) several factors that were thought to be the cause of errors in determining the direction of the qibla: 1) Qibla direction refers to existing mosques, 2) use of tools that are less accurate, 3) identified by community leaders, 4) there is a shift when development process, 5) the opinion that the qibla direction is in the west, 6) more consider artistic and beauty than precise calculations and measurements.

Determination of Qibla especially in Indonesia has always experienced development from time to time in accordance with the scientific and intellectual quality and

capacity possessed by Islamic society at that time. It can be seen from the tools, methods and technology used to measure it. It is starting from a low level of accuracy to a high level of accuracy among the tools used to measure such as Istiwa', Rubu' Mujayyab, compass, right triangle, Mizwala QF, Istiwa'aini, Theodolite and Global Positioning System (GPS) (Izzuddin, 2012: 67-83). In addition, to determining qibla direction, several software are also utilized such as Google Earth, Qibla Locator, and Qibla Direction. It can also be used to check the Qibla direction of mosque buildings or prayer rooms seen from above the Earth's surface (Aditiani, 2015).

While the methods often used to determine the Qibla direction are of two types, namely azimuth qibla and rashdul qibla. In Moehammad Awaluddin, et al. (2016) rashdul qibla is a method of observing shadows when the position of the sun is above the Ka'ba or when the sun is on a path that connects the Ka'ba with a place. In the study of astronomy, this method is referred to as a method of measuring the direction of Qibla by utilizing the events of Rashd al-Qiblat (Ilanurmila, 2016). From the methods of determining the direction of the Qibla, the rashdul qibla is a method that is often used in determining Qibla direction in the community. There are two kinds of Rashdul Qibla, which are the daily and annual Rashdul Qibla (Arifin, 2013: 22-30). Meanwhile, this annual Rashdul Qibla is usually used as a benchmark for other methods, both the azimuth qibla method and the daily Rashdul Qibla method.

The annual rashdul qibla that we know so far is that if the Sun is nearing or actually above the Ka'ba or the astronomical longitude and latitude of the Sun approaches or equals the longitude and latitude of the Ka'ba (21° 25' 21.03" LU / 39° 49' 34, 22" BT) (Hambali, 2002: 183-184).

When the Sun is above the Ka'ba, the hemisphere that gets the sun's light at that time can make use of the shadows of perpendicular objects that are against the Ka'bah as the direction of the pointer. This rashdul qibla occurs on 27/28 May at 16:18 Western Indonesian Time (WIB) and July 15/16 at 16:27 WIB. (Hambali, 2002: 183-184). However, at that time there must have been a hemisphere that did not receive sunlight (occurred at night). This hemisphere automatically cannot utilize this annual Qibla prayer.

There is a logic that can be reversed and utilized by the hemisphere that occurs at night at that time, when the latitude and longitude of the Sun are close to or equal in value to the latitude and longitude of the turning point (21° 25' 21,03" S / 140° 10' 25,78" W). When the Sun is in that position, automatically the image of the perpendicular object produced will lead to the Ka'ba. This can be used by the hemisphere region which cannot perform the annual rashdul qibla (the Sun is above the Ka'ba) and make rashdul qibla of the turning point of the Ka'ba as its replacement.

If the turning point of rashdul qibla can be done correctly then there is a point of intersection which causes an area to do 4 times rashdul qibla in a year, i.e. twice at the time of the Sun above the kakah, and twice at the time the Sun is above the turning point of the Ka'ba.

When the sun is above the Ka'ba or at the time of zawal in Makkah, it is estimated that the time at is at 12.00 am Makkah time. If it is converted to Indonesia, the time zone difference is 4 to 6 hours with Makkah, then in Indonesia it will be around 16.00 (Western Indonesia Time/WIB), 17.00. (Central Indonesia Time/WITA) and 6 p.m. (Eastern Indonesia Time/WIT. At 4 p.m WIB and 5 p.m. WITA, it is certain that the sun has not sunk, and at 6 p.m. WIT, there is a possibility of sunlight.

Logically, at the Makkah turning point with a time zone GMT – 9 then at the Ka'ba turning point is happening zawal around 12 o'clock, then Greenwich is at 21 GMT, and Indonesia is at 4 p.m WIB, 5 p.m. WITA and 6 p.m WIT. At 4 p.m. WIB and 5 p.m WITA, it is possible that the Sun has not yet been rised, but at 6 p.m. WIT there is a possibility the Sun has appeared.

Here we have found an estimate of the intersection of the two types of rashdul qibla, which is approximately at WIT (Eastern Indonesia Time), this place is estimated to have a rashdul qibla 4 times a year, which is 2 times when the sun is at over the Ka'ba, and 2 times in the morning when the sun is at the turning point of the Ka'ba.

According to the author, this turning point phenomenon and a-four-time rashdul qibla in a year are very interesting and necessary to be further discussed and investigated.

DISCUSSION

Rashdul Qibla and Its Various Types

In its development, one of the methods used in Indonesia in determining the direction of the Qibla is to understand the position of the Sun right above the Ka'ba. (Hambali, 2002: 43). Rashdul qibla is a provision of time where the image of an object exposed to the sun's rays can indicate the direction of the Qibla.

This method is also called Al-syamsu fi madaril kiblah which is the determination of the Qibla direction based on the shadow of the Sun when it is right on the Ka'ba or better known as Istiwa A'dzam (Main Istiwa) (Azhari, 2008: 179). The position of the sun can be used to determine the direction of Qibla correctly if its use is accompanied by the correct techniques and methods and can be accounted for scientifically (Rohmat, 2012).

This method is the cheapest method of determining the Qibla direction compared to other methods, because it only relies on the Sun and tools that can be found anywhere as a supporting tool, such as sticks, threads, bows and nails. (Fadholi, 2012: 4). This method can be said to be accurate because it uses direct observation of the sun as an object. (Mujab, Syaiful, 2015). Method of rashdul qibla determination is a method whose accuracy can be equated with determining the Qibla direction using theodolite and GPS tools. (Nafi, AY, 2015)

In practice, the rashdul qibla is divided into two parts, the Daily Rashdul Qibla (Local) and the Annual Rashdul Qibla (Global).

Daily Rashdul Qibla

The direction of Qibla obtained in this way is local. This daily rashdul qibla method is not valid elsewhere since each place or area must be considered individually. Daily Qibla rashdul occurs when the Sun's azimuth is the same as azimuth qibla minus 180o or azimuth qibla plus 180o which is usually done in the morning or evening (Jamil, 2009: 3). Please note that the rashdul qibla hour changes every day, affected by the declination of the Sun. According to Padil, Abbas, (2013) declination is the distance from a celestial body to celestial equator measured by a time circle or declination circle and calculated by degrees, minutes and seconds. Related to that, the time circle is also called the declination circle. If the declination of a celestial body is north of the equator, the sign is positive and if it is in the sky to the south of the equator, the sign is negative. The sun's declination itself changes every hour, so that the declination of the sun is sometimes almost the same as the latitude of Mecca, and sometimes not. (Sakirman, 2017).

Annual Rashdul Qibla

The Sun phenomenon above the Ka'ba is a phenomenon that can be used as an effective method to determine the direction of Qibla. This method is very famous in Indonesia. This method is not a new or modern, but is a method that has been carried out and practiced by previous astronomers. Although this method has always been used, it is still accurate and effective for today

This method has actually been mentioned in the books of previous scholars such as the book *Tadzkirah fi al-Ilmi al-Hayyah* by Nasaruddin 1343 H. This method was raised in 1990 by Baharuddin Zainal, Chairman of the Syar'i Falak Unit, Sultan Zainal Abidin College of Religion in the article on Malaysia weekly news, May 27, 1990. The method applies when the declination value of the Sun equals or approaches the value of the latitude of the Mecca, where the Ka'ba is located. When this phenomenon occurs, the entire image of the upright object will show towards the Qibla. (Jani, tt: 1)

The qibla direction of Muslims once led to Baitul Maqdis, but eventually returned to the Ka'ba (Mecca). Behind the secret of returning the Ka'ba as a qibla has its own meaning. The Ka'ba with coordinates 21o 25 '21.03 " N or 21.42250833 has the same value as the Sun Declination for one year (Rachim, 1983: 9)

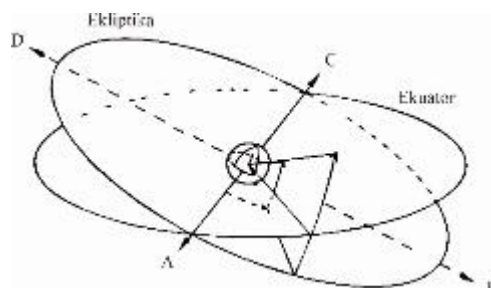
This Sun Declination changes periodically around – 23,5o/23,5o S till 23,5o/23,5o N. Thus, the Ka'ba Latitude is in the range of circulation of the Sun's declination. At certain times the Sun will culminate right above the Ka'ba. This opportunity is made by the Muslims in determining the qibla direction of a musholla and a mosque. The opportunity came on 27/28 May and 15/16 July in each year as "Yaumur Rashdil Qibla". Yaumur Rashdil Qiblat is also called the day of straightening the direction of Qibla, because of the position of the Sun when the culmination is right at the zenith point of the Ka'ba (Jamil, A, et al, 2015) by observing the sun right above the Kaaba, where according to the calculation every May 28 or May 27 (for leap years) at 12:18 p.m. time of Mecca or 09.18 UT, and also on July 15 (for leap years) or July 16 (for short years) at 12:27 p.m. time of Makkah or 09.27 UT (Khazin, 2005: 68).

Our earth rotates in its orbit 24 hours around the Sun. For those of us who are on earth, the rotation of the earth causes the celestial objects to appear as if they are circling around the earth with the direction of movement opposite the rotation of the earth. The stars look as if they are moving from east to west. This is similar to the movements of the trees that we observe when carrying a vehicle, as if the trees are moving in the opposite direction to the movement of our vehicle. This round effect also causes us to see celestial objects (including the Sun) rising in the east and setting in the west.

Meanwhile, our earth revolves around the Sun in 365.5 days. As a result, the stars in the sky and the Sun seem to change in position from day to day and approximately after a year they will return to their original position. The sun moves more or less a day to the east. However, because the field of earth circulation (ecliptic) is not the same as the earth's rotation, the movement of the Sun is not right to the east, but forms an angle of 23,5o (declination angle)

The Earth and the Sun circulate over different fields. These fields are described as different railroads where the Earth and the Sun travel on different rails. The difference in

the orbit of the Earth and the Sun causes the declination angle between + 23,5o (North) and -23,5o (South).



(Figure 1. Intersection of the Ecliptic and Equator Fields)

Based on the image above, the field of the Sun and the earth meet at points A and C. Point A occurs on March 21 every year, right in the aries point. The declination angle is 0o. Likewise, when the Sun is at point C, right at the point of libra, it occurs on September 23 every year. The declination angle is also 0o. When the sun is in position B, on December 22, the declination angle is --23,5o (southern declination). When the sun is in position D, on June 21, the declination angle is +23,5o (north declination). This means the Sun will go north-south for one year which will manifest 4 seasons. This round causes us to see the Sun in a different position every day.

When the Sun is at the declination angle which is equal to the latitude of a place, the Sun will be right above the zenith point of that place when it is at the middle of the Sun (zawal). This causes the direction of the shadow of objects that are in half the place on the surface of the earth to be back to that place.

On 27/28 May at 16:17:56 WIB and 16/17 July at 16:26:43 IWST, the Sun will be at a declination angle of about 21o 25' 21,03o along with Makkah latitude, or in the Makkah time zone, the zawal occurs at 12:17:56 May 27/28 and 12:26:43 July 16/17. This phenomenon causes all direction of the image of upright objects in the area that occur during the day to be against the Qibla and the opposite direction of the shadow is the Qibla direction.

Although this method is very good to use, but there is still a limit in its use. This method can only be used in areas whose latitude is between 23,5o N and 23,5o S and also in areas experiencing daylight (in the distance of approximately 90o longitude from Makkah or around 129o 49' 34,22" E to the west to 50o 10' 25,78" W. Therefore, for regions that have experienced dusk or night at this time, they cannot do this method. In Indonesia, this method can be applied easily and effectively, with a position between latitude 6o N to 11o 08' S and longitude 95o E to 141o 45' E (Google Maps). Such a position makes it easy to apply this method. In Indonesia, istiwa a'dzam takes place in the afternoon. It is very beneficial for Indonesia because at that time the shadows will be longer, making it easier to mark the Qibla direction.

Nevertheless, when it is not possible to do this method at night, there is still a way to do it, by counting the opposite of the istiwa a'dzam, that is when the Sun is above the turning point of the Ka'ba. (Jani, tt: 51-55).

From the explanation above, it can be seen that on May 28 and July 16, the places where we can execute this method are all of Africa, Europe, and all of Asia, except for Eastern Indonesia (Papua). (Gandis, 1997: 18)



(Figure 2. Annual Map of Day and Night Rashdul Kiblat / May 28 and July 16)
(Sky View Cafe Online)

How to determine the direction of the Qibla with Annual *istima a'dzqam*/Rashdul Qibla (Global) as follows: (Hambali, 2013: 38)

- Choose a spacious room and gets sunlight
- Plug one pole in the area to be searched for the Qibla direction
- Make sure the pole is perpendicular to the ground
- Prepare accurate hours.
- Right at the time *istima a'dzqam* the shadow of the Sun will face or turn his back to Ka'ba
- Make a line right on the shadow of the object. Then the reverse direction of the shadow is the Qibla direction.

Rashdul Qibla of Ka'ba Turning Point

Rashdul qibla of Ka'ba turning point is the opposite of the annual rashdul qibla (when the Sun is above the Ka'ba). This rashdul qibla utilizes the shadows of perpendicular objects when the Sun is above the turning point of the Ka'ba, the resulting shadow will face toward the Ka'ba, and it can be used as one of the accurate Qibla directions, but it is rarely done in Indonesia, because the rashdul qibla occurs only in eastern Indonesia. The incident occurred on 28/29 November and 13/14 January. It is on November 28 and November 14 for leap years, November 29 and January 13 for the year basithoh.



(Figure 3. Map of the Day and Night of Rashdul Qibla of the Ka'ba turning point / November 29 and January 13)
(Sky View Café Online)

Rashdul qibla calculations for the turning point can be explained as follows:

- Determine the date of the occurrence of the rashdul turning point, that is when the Sun declination approaches or equals to the latitude of the turning point ((21° 25' 21,04" S / - 21° 25' 21,04").
- Look for the equation of time data when the Sun declination approaches the latitude value of the Ka'ba turning point
- Calculating zawal time at Ka'ba turning point with the formula: (Hambali, 2013: 46-47)

$$\text{Zawal} = 12 - e - (\lambda^L - \lambda^S) / 15$$

- Convert the hours of the rashdul qibla occurrence from the Ka'ba turning point to the area where rashdul qibla carried out.

Meanwhile, to get evidence, it can be done by:

- Calculating the Sun's azimuth during rashdul qibla
- Calculate the qibla azimuth of that place
- Comparing the Sun azimuth and Qibla azimuth

One of the places that the author has set as an example is the city of Ambon with coordinates 3° 42' S / 128° 47' E with a time zone of GMT + 9, calculated in January 2015.

- The date when the Sun declination approaches the latitude of the Ka'ba turning point is January 13, 2015
- Equation of time when the declination of the Sun approaches the latitude of the equator at 20:05:52 GMT with a declination value of -21° 25' 23,01" is -0° 8' 41,24"
- Counting zawal time:

$$\begin{aligned} \text{Zawal time} &= 12 - (-0^\circ 8' 41,24'') - (135^\circ - 140^\circ 10' 25,79'') / 15 \\ &= 12 : 29 : 22,96 \text{ GMT} - 9 \end{aligned}$$

- Clock Conversion

- Ka'ba turning point = GMT - 9

$$12 : 29 : 22,96 = \text{GMT} - 9$$

$$\text{GMT} = 12 : 29 : 22,96 + 9$$

$$\text{GMT} = 21 : 29 : 22,96$$

$$\text{Ambon} = \text{GMT} + 9$$

$$\text{Ambon} = 21 : 29 : 22,96 + 9$$

$$\text{Ambon} = 30 : 29 : 22,96 - 24$$

$$\text{Ambon} = 06 : 29 : 22,96 \text{ WIT (change days)}$$

So the rashdul qibla of Ka'ba turning point took place in Ambon on 14 January 2015 at 06: 29: 22, 96 WIT

The proof is as follows:

- Calculating the Sun's Azimuth
 - Data needed
 - Place coordinat (Latitude and Longitude), Ambon ($3^{\circ} 42' S / 128^{\circ} 47' E$) dan $\lambda^L = 135$
 - Time of Rashdul Qibla = 06 : 29 : 22,96 WIT
 - Declination at 6 WIT / 21 GMT = $-21^{\circ} 24' 57,7''$
 - Declination at 7 WIT / 22 GMT = $-21^{\circ} 24' 31,8''$
 - Declination at 06 : 29 : 22,96 = $-21^{\circ} 24' 45,02''$
 - Equation of time at 6 WIT / 21 GMT = $-0^{\circ} 8' 42,08''$
 - Equation of time at 7 WIT / 22 GMT = $-0^{\circ} 8' 43''$
 - Equation of time at 06 : 29 : 22,96 = $-0^{\circ} 8' 42,53''$
 - Calculating the angel of time with formula: (Hambali, 2013:65)
 Time angle (t) = $[(\text{Waktu} + e - (\lambda^L - \lambda^x)) / 15 - 12] \times 15$
 = $[(06 : 29 : 22,96 + (-0^{\circ} 8' 42,53'') - (135 - 140^{\circ} 10' 25,79'')) / 15 - 12] \times 15$
 Time angle (t) = $91^{\circ} 02' 46,8''$
 - Calculating the direction of the Sun with formula:
 Cotan Direction of Sun = $\text{Tan } \delta^m \cdot \text{Cos } \varphi^x / \text{Sin } t - \text{Sin } \varphi^x / \text{Tan } t$
 = $\text{Tan } -21^{\circ} 24' 45,02'' \times \text{Cos } -3^{\circ} 42' / \text{Sin } 91^{\circ} 02' 46,8'' - \text{Sin } -3^{\circ} 42' / \text{Tan } 91^{\circ} 02' 46,8''$
 Direction of the Sun = $-68^{\circ} 33' 46,28''$
 - Calculating the Azimut of the Sun, because the result of the direction of the Sun is negative and the result of a negative time angle, the Sun azimuth Sout East, can be obtained with formula :
 The Sun Azimut = $180 + \text{Direction of the Sun}$
 = $180 + (-68^{\circ} 33' 46,28'')$
 = $111^{\circ} 26' 13,72''$
- Calculating the azimuth qibla
 - Data needed:
 - Coordinate places (Latitude and Longitude), Ambon ($3^{\circ} 42' S / 128^{\circ} 47' E$)
 - Coordinate of the Ka'ba (Latitude and Longitude), Ka'ba ($21^{\circ} 25' 21,03'' N / 39^{\circ} 49' 34,22'' E$)
 - Calculating the Makkah Regional Longitude Difference (SBMD). because Ambon is in east longitude and is located east of the Kaaba, the formula:
 SBMD = $\lambda^x - \lambda^k$
 = $128^{\circ} 47' - 39^{\circ} 49' 34,22''$
 = $88^{\circ} 57' 25,78''$
 - Calculating the Qibla direction with formula :
 Cotan Qibla Direction = $\text{Tan } \varphi^k \cdot \text{Cos } \varphi^x / \text{Sin SBMD} - \text{Sin } \varphi^x / \text{Tan SBMD}$

- $$= \tan 21^\circ 25' 21,03'' \times \cos -3^\circ 42' / \sin 88^\circ 57' 25,78'' - \sin -3^\circ 42' / \tan 88^\circ 57' 25,78''$$
- Qibla Direction = $68^\circ 33' 23,6''$
- Calculating the Azimuth Qibla. Since the result of the positive qibla direction and ambon are in the east of Makkah, the azimuth result of North West is calculated with this formula :

$$\begin{aligned} \text{Azimut Qibla} &= 360 - \text{Qibla Direction} \\ &= 360 - 68^\circ 33' 23,6'' \\ &= 291^\circ 26' 36,4'' \end{aligned}$$
 - Compare the results of the two azimuths:
 - Azimuth Sun Results = $111^\circ 26' 13,72''$. Since the shadows produced will lead to the Ka'ba, not against the Ka'ba, the azimuth used is the azimuth of the Sun shadows. How to get it is to add a value of 180° , hence, it becomes $111^\circ 26' 13,72'' + 180^\circ = 291^\circ 26' 13,72''$
 - Qibla Azimuth Results = $291^\circ 26' 36,4''$. From the two azimuths, it can be very clearly proven that the solution for the turning point of rashdul qibla can be used to determine the direction of the Qibla, because the difference found is only in seconds, which is $0^\circ 0' 22,68''$.

The examples of above calculations and evidences can also be applied on November 29, which is also the Rashdul qibla of the Ka'ba turning point.

Probability of Four Rashdul Qibla in a Year

In this first study, the author calculates one of the events of the Rashdul qibla of the Ka'ba turning point, which was written above. If the turning point rashdul qibla can be done, then there must be a point of intersection that causes an area to do 4 times the rashdul qibla in a year, i.e. twice at the time of the Sun above the Ka'bah, and twice at the time the Sun is above the turning point.

When the sun is above Ka'ba or at the time of zawal in Makkah, it is estimated that the time is 12 a.m Makkah time. If it is converted to Indonesia with the time zone difference is 4 to 6 hours with Makkah, then in Indonesia it will be around 16.00 WIB, 17.00 WITA and 18.00 WIT. At 16.00 WIB and 17.00 WITA, it is certain that the sun has not sunk, and at 18.00 WIT, there is still the possibility of sunlight.

Logically, at the Makkah turning point with a time zone GMT - 9, and if at the Ka'ba turning point is happening zawal around 12 o'clock, then Greenwich is at 21 GMT, and Indonesia is at 4 WIB, 5 WITA and 6 WIT. At 4 WIB and 5 WITA, it is possible that the Sun has not yet been risen, but at 6 WIT there is a possibility the Sun has appeared.

Here we have found an estimate of the intersection of the two types of rashdul qibla, which is approximately at WIT (Eastern Indonesia Time). This place is estimated to have a four-time rashdul qibla a year, which is 2 times when the sun is at over the Ka'ba, and 2 times in the morning when the sun is at the turning point of the Ka'ba.

It is also possible in other locations that are astronomically located at the turning point of the Eastern part of Indonesia, but with inverse logic, it can occur twice when the sun is above the Ka'ba and occur twice when the evening is above the turning point Ka'ba.

To help search the location, the author uses the Sky View Cafe Online application, then combines the images of day and night while rashdul qibla of the Ka'ba, and rashdul qibla the turning point of the kakkah. Image found as follows:



(Figure 4. Results of the Combination of Day Map - Night of the Sun above the Ka'ba and the turning point of the Ka'ba)

From the picture it can be explained that there are areas that continue to experience daylight when 4 times of the rashdul qibla occurs, even though there are only very few regions.

These areas include:

- Ambon, Indonesia
- Namlea, Indonesia
- Perth, Australia
- Broome, Australia
- Tutuala, Timor Leste

In addition to the area, there are still several other areas that the author has not identified.

From the data above, the author looks for coordinates (latitude and longitude), place height and time zone. Then the author tries to prove:

- At Rashdul Qibla when the Sun is above the Ka'ba and at the Sun above the turning point of the Ka'bah, the place mentioned above is still morning / afternoon / evening (The sun has risen and has not yet sunk)
- The Azimuth value of the Sun when the 4 rashdul qibla approaches / equals the Azimut qibla.

• The proof is as follows:

- Ambon, Indonesia (3° 42' S/128° 47' E, 101 mdpl, GMT + 9)

No	Date	Time	Rise	Set	Az. Sun/ +180	Az. Qibla
.						

1	13/ Jan	6:29:08	6:23:4 5	-	291° 26' 13,72"	291° 26' 36,4"
2	28/ May	18:17:54	-	18:19:52	291° 27' 06,12"	291° 26' 36,4"
3	16/ Jul	18:26:43	-	18:28:42	291° 24' 18,17"	291° 26' 36,4"
4	29/ Nov	6:08:46	6:03:2 8	-	291° 22' 31,37"	291° 26' 36,4"

- Namlea, Indonesia (3° 23' S/127° 09' E, 209 mdpl, GMT + 9)

No	Date	Time	Rise	Set	Az. Sun/ +180	Az. Qibla
1	13/ Jan	6:29:08	6:28:3 8	-	291° 42' 24,48"	291° 32' 47,93"
2	28/ May	18:17:54	-	18:29:04	291° 33' 17,71"	291° 32' 47,93"
3	16/ Jul	18:26:43	-	18:37:53	291° 20' 39,13"	291° 32' 47,93"
4	29/ Nov	6:08:46	6:08:2 0	-	291° 17' 48,06"	291° 32' 47,93"

- Perth, Australia (31° 57' S/115° 51' E, 34 mdpl, GMT + 8)

No	Date	Time	Rise	Set	Az. Sun/ +180	Az. Qibla
1	13/ Jan	5:29:09	5:22:1 9	-	295° 30' 49,43"	295° 23' 49,68"
2	28/ May	17:17:54	-	17:22:30	295° 24' 20,71"	295° 23' 49,68"
3	16/ Jul	17:26:43	-	17:31:25	295° 22' 00,9"	295° 23' 49,68"
4	29/ Nov	5:08:47	5:02:3 8	-	295° 08' 12,7"	295° 23' 49,68"

- Broome, Australia (17° 57' S/122° 14' E, 20 mdpl, GMT + 8)

No.	Date	Time	Rise	Set	Az. Sun/ +180	Az. Qibla
1	13/ Jan	5:29:09	5:25:25	-	292° 48' 36,86"	292° 40' 01,64"
2	28/ May	17:17:54	-	17:23:32	292° 40' 33,15"	292° 40' 01,64"
3	16/ Jul	17:26:43	-	17:32:25	292° 37' 53,79"	292° 40' 01,64"
4	29/ Nov	5:08:47	5:05:24	-	292° 24' 09,28"	292° 40' 01,64"

- o Tutuala, Timor Leste ($8^{\circ} 23' S/127^{\circ} 15' E$, 90 mdpl, GMT + 9)

No.	Date	Time	Rise	Set	Az. Sun/ +180	Az. Qibla
1	13/ Jan	6:29:09	6:20:52	-	291° 42' 55,41"	291° 33' 33,93"
2	28/ May	18:17:54	-	18:20:00	291° 34' 04,46"	291° 33' 33,93"
3	16/ Jul	18:26:43	-	18:28:50	291° 31' 17,88"	291° 33' 33,93"
4	29/ Nov	6:08:47	6:00:40	-	291° 18' 10,61"	291° 33' 33,93"

CONCLUSION

Seeing the description of the discussion above, the author has a number of conclusions. First, the Rashdul qibla of the Ka'ba turning point on 13/14 and 28/29 November can be done. In general, the turning point qibla can only be done by regions or places that occur at night when rashdul qibla of the Sun is above the Ka'bah.

Second, it is evident that there is an intersection that occurs between the Rashdul Qibla when the Sun is above the Ka'ba and when the Sun is above the turning point of the Ka'ba, which when the two types of rashdul qibla are annual. The place that occurs in morning / evening (there is sunlight). The places are Ambon and Namlea in Indonesia, Perth and Broome in Australia, and Tutuala in Timor Leste. These places can do annual rashdul qibla 4 times a year.

Third, it is simply logic to do rashdul qibla four times a year because the shape of the earth is in the form of a ball. However, if we take into account the altitude of the place, it might happen because the horizon will be deeper. Furthermore, the Sun seen above the horizon is longer. According to the evidence made by the author in several places, rashdul qibla happens four times a year in that place no later than 12 minutes after the sun rises / before sunset and at least 2 minutes after the sun rises / before the sun sets.

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