

The Determination of Palembang Climate Type by Using Schmidt-Ferguson Method

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Abstract: The climate is an important component of ecosystem, because the climate could influence the human life. Schmidt and Ferguson have divided the climate at tropics into 8 types. Each type of them has special characteristic and special impact to human existence. Therefore the type of climate is very important to know. The purpose of this research is to determine the type of Palembang climate by using the Schmidt-Ferguson method. This method needs data of the rainfall amount at least for 30 years. The data which is used in this research is the monthly data in Palembang since year 1965 until year 2000. The result of this research is Palembang has the very wet climate.

Keyword: Climate Type, Schmidt-Ferguson Method, Rainfall, Wet Month, Dry Month

1. INTRODUCTION

The earth's climate is generally defined as the average weather over a long period of time [1]. A place or region's climate determined by both natural and anthropogenic (human-made) factors. The natural elements include the atmosphere, geo-sphere, hydrosphere, and biosphere, while the human factors include land and resource uses. Changes in any of these factors can cause local, regional, or even global changes in the climate. **Weather** is the current atmospheric conditions, including temperature, rainfall, wind, and humidity at a given place. If you stand outside, you can see that it's raining or windy, or sunny or cloudy. You can tell how hot it is by taking a temperature reading. Weather is what's happening right now or is likely to happen tomorrow or in the very near future. **Climate**, on the other hand, is the general weather conditions over a long period of time. Some meteorologists say that "climate is what you expect and weather is what you get. Climate is sometimes referred to as "average" weather for a given area. There are many differences of climates around the world, divided into climate zones. They include tropical, desert, temperate and polar climates. These exist because different parts of the Earth receive different amounts of sunlight. The Sun is stronger nearer the equator and weaker nearer the poles. Near the equator (like Indonesia), the Sun can be overhead during the middle of the day, heating the surface very strongly. Even during the winter, sunlight near the equator is strong and temperatures rarely fall below 25°C during any time of the year. This part of the world is called the **tropics**. They are warm, humid and receiving a lot of **rainfall**, particularly during their wet season, that can occurred once or twice each year. The daytime temperature in the tropics rarely falls below 25°C, even in winter, and nights are generally almost as warm.

Schmidt and Ferguson have determined the **type of climate at tropics** based on the calculation of the number of dry month and wet month. They used the Mohr method for determining the wet month and the dry month. The aim of this research is to determine the type of Palembang climate by using the Schmidt-Ferguson method. The data is the amount of monthly rainfall in Palembang since year 1965 until year 2000.

2. METHODOLOGY

This research has been done at Palembang Weather Service on November 2002. The data is the amount of rainfall monthly in Palembang for 36 years (1965-2000). The steps of the research are:

- to calculate the number of wet month and dry month in every year
- to calculate the yearly average of wet month and dry month for 36 years (1965-2000)
- to calculate the Q value.
- to determine the type of Palembang climate based on Q value.

Schmidt and Ferguson used the Mohr method for determining the wet month and the dry month. According to the Mohr method:

- if the amount of rainfall on one month is more than 100 mm, that month is named wet month,
- if the amount of rainfall on one month is less than 60 mm, that month is named dry month,
- if the amount of rainfall on one month is between 60 mm and 100 mm, that month is named moist month.

Schmidt and Ferguson calculated the number of wet month and dry month every year at least for 30 years, and then took the average value of them. For determining the type of climate, they used the formulation [3]:

$$Q = \frac{D}{W}, \quad (1)$$

where W is average number of wet month and D average number of dry month

Based on the Q value, they determined the type of climate into 8 zones and 8 types of climate, that are [3]:

Table 1 The type of climate based on Q value.

Q VALUE	ZONE	TYPE OF CLIMATE
< 0.14	A	Very Wet
0.14 – 0.33	B	Wet
0.33 – 0.60	C	Rather Wet
0.60 – 1.00	D	Medium
1.00 – 1.67	E	Rather dry
1.67 – 3.00	F	Dry
3.00 – 7.00	G	Very dry
> 7.00	H	Extraordinarily dry

3. RESULTS AND DISCUSSION

From the data of monthly rainfall amount in Palembang city for 36 years (432 months) we found that:

- Number of wet month is 337 months
- Number of dry month is 46 months
- Number of moist month is 49 months

So that, the Average number of wet month (W) is:

$$W = \frac{337}{432} = 0.7800 \quad (2)$$

and Average number of dry month (D) is:

$$D = \frac{46}{432} = 0.1065 \quad (3)$$

The Q number is:

$$Q = \frac{0.1065}{0.7800} = 0.1365 \quad (4)$$

Based on Tabel 1, if $Q < 0.14$, the area is on A zone and has a very wet climate type. Therefore we could make a conclusion that Palembang has a very wet climate type.

The characteristics of very wet climate are [2]:

- The air temperature is hot
- The rain precipitate is about 2.500 mm yearly
- It has two season, that are rainy season and dry season
- It has two transiton time from rainy season to dry season and from dry season to rainy season
- It has the uniform air temperature which is around 27^0 C.

If we look at to the characteristics of those, Palembang has rainy season and dry season, and two transition time of that season. It is appropriate to the fact. However, it is still needed to do the research about period of the transition time.

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5. CONCLUSION

Palembang has a very wet climate. It means that Palembang has: hot air temperature, about 2.500 mm of yearly rain precipitate, rainy season and dry season, two transiton time of season, and around 27^0 C of air temperature.

6. REFERENCES

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