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Effect of Air Temperature, Air Humidity, and Air Pressure on Rainfall Based on Measurement Result in Kototabang

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ABSTRACT

Weather has a close relationship with community activities in Kototabang. Weather information can be used so that the risk of crop failure and disaster hazards can be minimized. Research to investigate the relationship of weather parameters was carried out using descriptive research with the multiple linear regression method. The variables in this study were divided into independent variables of air temperature, air pressure, and humidity, and the available variable was rainfall. The research method used is a multiple linear regression method with secondary data measurement of AWS and AAWS in Kototabang. The multiple linear regression method aims to predict values based on independent variables. The characteristic of this method is the presupposition variable used by more than one variable. The data processing technique applied was a multiple regression linear with three predictors (temperature, humidity, and air pressure) with the characteristics of three predictors. The purpose of the translation technique, in general, is to describe the effect of the predicted parameters on rainfall. From the output obtained, it is explained that there is a positive contribution from the predictive variable to rainfall. The correlation that occurs from the output is also very strong, reaching an output value of 99.1%. Simultaneously and partially explained that there is a large enough change in the presumed parameters (air pressure, temperature, and humidity) to rainfall. This proves that there is a very rapid change between pressure, humidity, and air temperature to rainfall in Kototabang in 2020.

Keywords : *Weather, Air temperature, Air pressure, Humidity, Rainfall, Kototabang.*

I. INTRODUCTION

Weather is defined as atmospheric behavior that can change from time to time [1]. In general, the weather has a close relationship with human activities. In areas such as Kototabang, with hills surrounding community settlements, they certainly need information about the weather such as air temperature, air humidity, air pressure, and rainfall to minimize disasters such as landslides, flash floods, and typhoons and so on [2]. Information can also be used in agriculture and transformation [3]. Each area in the tropics, such as Kototabang, also specifically has a very high diversity of rainfall [4].

Rainfall forecasts have an important role in engineering planning, such as for water structures such as irrigation, dams, ports, and docks [5]. Rainfall often changes due to the increase in global warming that occurs [6]. Weather forecasts are generally used to determine the feasibility of departure in the transportation sector and planting period in agriculture [7]. Cropping patterns in agriculture are in dire need of rainfall forecasts in the area concerned [8]. Forecasts are made using complex databases and take a long time so it is necessary to look for them. Rainfall data in an area is recorded continuously and used as planning material [9].

Several studies on weather elements have been carried out previously, such as in Sleman that rainfall is only influenced by air humidity but [10]. Rainfall in Pangkalpinang is significantly influenced by humidity and air temperature [11]. Simultaneously air temperature and air pressure on rainfall in Semarang [12]. Previous research still has limitations in research and research have not been carried out for the Kototabang area in 2020. The limitations found in previous studies, such as research on the causes of changes in temperature and humidity in Sleman, can only explain the effect of air temperature on rainfall. Research on what causes changes in temperature, pressure, and humidity from the amount of rain in Pangkalpinang is only explained within a period

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of 30 to 360 minutes in Pangkalpinang. The data that can be described is only from the January to March period in the study of the effect of temperature, pressure, and humidity on rainfall in Semarang.

Another problem in Kototabang that has never been studied is what causes changes in weather parameters (humidity, air pressure and air temperature) to rainfall in 2020. Based on the conditions of Kototabang and the limitations of previous studies, it is necessary to conduct research with weather parameters that affect rainfall for at least one year in Kototabang. From this, the author argues for research and process instrument output data in Kototabang and describes the influence of several measured weather parameters on rainfall in Kototabang in 2020. For a more focused study, it is necessary to put forward or describe the notion of weather, weather parameters, and the importance of weather in human life. Then the theoretical study will be explained in more detail as follows.

Weather is the state of an atmosphere that is influenced by various natural phenomena in a short time in an area [13]. Each region has different variations with the highest rainfall diversity [14]. Weather information is needed by humans to be used in several fields, such as agriculture and the field of transformation. Even weather information can also be used as forecasts to minimize disasters. Weather parameters are divided into air temperature, air humidity, air pressure, rainfall and others. Parameters can have relationships with other parameters and vary according to how the earth is and the presence of hills and valleys. Air temperature is a state of hot or cold air in a place. The air temperature gets lower in areas that are high open the earth. The average air temperature in Indonesia is generally measured every year at 28°C inland areas and 26.3°C in high areas [15].

Humidity is the level of concentration of water stream in a certain time and area. The measured humidity is lower when the air temperature is high [16]. The ratio of the water steam pressure when measuring to the maximum water vapor pressure that can be achieved at the temperature of the air and pressure is defined as relative humidity. Air pressure is a weather element that has an important role in the survival of living things. Changes in air pressure cause changes in air temperature and wind. Air pressure and wind also affect the distribution of rainfall on earth with several other supporting factors such as the shape of the area and the altitude of the area. Air pressure, in general, will increase with decreasing air temperature in an area, and air pressure will be measured low in high areas or vice versa [18]. Air pressure can also determine the altitude of an area, where air pressure will be lower in high and low areas, on the other hand [19].

Rainfall is the weather parameter with the highest diversity. Rainfall is a weather element that is measured using a rain gauge until the amount is known in millimeters (mm). Rainfall occurs because of the mass transfer of water vapor to a higher place [20]. Rainfall is measured using a tipping bucket with a certain funnel area (200 cm2 or 400 cm2) which is tipped inside. Each tip produces one pulse [21]. The amount of rainfall of 1 mm is equivalent to 1 liter/m^2. The calculated rainfall is the rainfall that falls to the ground. Rainfall in the tropics generally results from convection processes and the formation of hot rain clouds [8]. Rainfall is measured within 24 hours so that we get monthly and yearly rainfall data in millimeters [22].

Different rainfall certainly has an influence on human activism in each region. Heavy rainfall often occurs in high areas such as hills and mountains. Hilly and mountainous areas often experience landslides during heavy rains. Heavy rainfall can also cause restrictions on areas of human activity such as aviation (transformation) and agriculture during planting or crop failure [18]. From the conditions that occur, it is necessary to anticipate to minimize losses that occur due to excessive rainfall. One of the anticipations that can be done is to look at the behavior of rainfall to minimize losses. It can be seen that Kotatabang only has a weather observer agency. Rainfall forecasts can be obtained using a test of the influence between weather parameters and rainfall. Some parameters that can be used are temperature, humidity, and pressure. Since the parameter data mentioned are in the measurement of the Kototabang instrument, the research can be carried out by processing the measurement data of air temperature, air humidity, and air pressure based on their effect on rainfall. The relationship between these weather parameters needs to be investigated. This research aims to find a multiple linear regression model between rainfall and air temperature, air humidity, and air pressure, and determine the effect of air temperature, air humidity, and air pressure on rainfall both partially and simultaneously.

II. METHOD

This research can be classified into descriptive research method. In this research, the weather parameters were described to find their characteristics and the relationship between these weather parameters were investigated. Research data in the form rainfall, air humidity, air pressure and air temperature were obtained from BPAA LAPAN and GAW in Kototabang in 2020. The multiple regression method functions as a container. Data processing to describe the causes of changes in rainfall based on changes in the predicted parameters. The research stages to be carried out can be shown in the flow chart as follows:

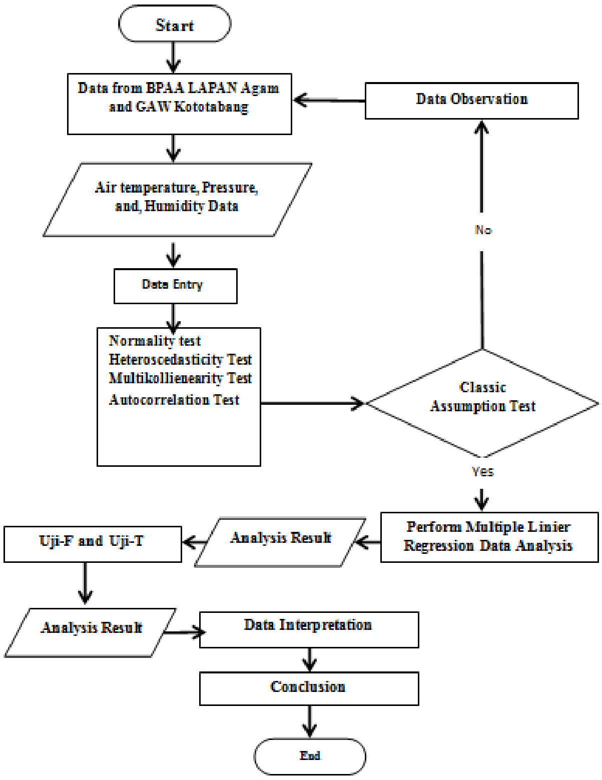

Fig 1. Flowchart of research stages

From the flowchart, it can be explained that the steps of this research began with borrowing data from BPAA LAPAN, namely measuring temperature and rainfall from the Automatic Weather station of the PortLog type and humidity and air pressure from the Automatic Agroclimate Weather Station at GAW Kototabang. The data was obtained in the test conditions using the classical assumption test. Data that pass the test requirements are allowed to perform multiple linear regression tests using the SPSS application. From the results of the linear regression test, it can be described in the form of equations, correlations, percentage contributions, the simultaneous effect of air pressure and humidity, and temperature of the air on rainfall and its partial effect.

Research variables are a number of values that vary. This research uses two variations of variables, namely the presumption variable and the influencing variable. Predicted variables of the air temperature, air humidity, and air pressure. The effect variable in this research is the total rainfall value. The data described in the research were data lent by BPAA LAPAN Kototabang and GAW Kototabang. The data obtained from BPAA LAPAN was the output of the Automatic Weather Station of the PortLog type in the form of data on air temperature and rainfall per minute in one year. The measurement results of the PortLog type Automatic Weather Station can be displayed in a table such as the following table:

Table 1. Kototabang AWS data example

Date	Time	T_Air	Rainf	Dew	Baro	WDir	WSpd
01/14/20	0:00	20.5	0.0	14.8	0.0	246	0.0
01/14/20	0:01	20.5	0.0	15.0	0.0	246	0.0
01/14/20	0:02	20.6	0.0	15.1	0.0	246	0.0
01/14/20	0:03	20.6	0.0	15.1	0.0	246	0.0
01/14/20	0:04	20.6	0.0	15.1	0.0	246	0.0
01/14/20	0:05	20.6	0.0	15.1	0.0	246	0.0

In table 1, the data displayed from the AWS Portlog type output is measured per minute. T_air and Rainf in the table are the output of air temperature and rainfall. The data obtained from GAW Kototabang is AAWS output data in the form of air pressure and humidity output. The data obtained is in a tabular form, such as the AAWS output table in 2020 as follows.

Table 2. Kototabang AAWS data example

Month	Humidity (%)	Pressure (mb)
January	81.1	917.8
February	82.1	916.6
March	82,4	917.7
April	82.5	917.8
May	84.6	917.8
June	83.9	916.2
July	83.9	916.8
August	82.8	917.0
September	83.6	917.2
Oktober	83.7	917.4
November	85.2	916.7
Desember	85.6	916.2

From table 2, the data displayed is in the form of ordinal data with a monthly period. Data were calculated from January to December 2020 in the form of monthly average air humidity and air temperature in Kotatabang. Where humidity was measured in millibars and humidity is expressed in percent. From the data obtained from BPAA LAPAN and GAW Kototabang, it will be processed based on data processing using data processing techniques with the SPSS application.

The data were processed using multiple regression processing techniques with a total of three predictors. Some of the data from AWS described are rainfall and AAWS air temperature, namely air pressure and air humidity. Multiple linear regression was used as a method with the aim of knowing the effect of air temperature, air pressure, and air humidity on rainfall. The condition that this method can be used is that there are three presumed/independent variables that are used to test the dependent variable. If the classical assumptions and the three predictor multiple linear regression test conditions were met, then data processing can be done using SPSS. The SPSS application here aims to simplify data processing.

III. RESULTS AND DISCUSSION

The study describes several outputs of the effect of air temperature, air humidity and air pressure on rainfall. A multiple linear regression method itself can be done if the data to be processed passes the classical assumption test. The classical assumptions obtained from the research are shown from the SPSS output as follows.

Table 3. Normality SPSS

Parameters and Result		Unstandardized Residual
N		12
Normal Parameters [a,b]	Mean	0.00
	Std. Deviation	3.65
Most Extreme Differences	Absolute	0.16
	Positive	0.40
	Negative	-0.16
Test Statistic		0.16
Asymp. Sig. (2-tailed)		0.20[c,d]

From the normality test table, using the Kolmogorov-Smirnov method can parse the value of Asymp. Sig. (2-tailed) which is read on the application is 0.2. A significance value of 0.2 > 0.05 means that the sample that occurs is normal. The conclusion obtained from SPSS is that H0 in the experimental hypothesis is accepted. Normal distribution means that it is allowed to do multiple linear regression tests. The conclusion obtained from SPSS is that H0 in the experimental theory is accepted. After it is known that the sample data to be tested is normal, the next test is to do a heteroscedasticity test with a sample of data that has been tested for normality.

The heteroscedasticity test serves to get the output of how big the role of the presumption variable is on the influencing variable. In every regression equation, in general, there must be a residue. Residues were defined as confounding variables in this study. The residue on heteroscedasticity will be greater if the observations made are getting bigger. The heteroscedasticity output obtained can be described from the SPSS application output, as shown in Table 2 below.

Table 4. Heteroscedasticity SPSS

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3829.1	249		1.53	0.16		
	Temperature	34.16	2.15	0.62	15.87	0.00	0.71	1.39
	Pressure	7.39	3.69	1.15	7.39	0.02	0.61	1.62
	Humidity	29.82	1.14	1.00	26.12	0.00	0.72	1.37

From the Heteroscedasticity table, it can be stated that the temperature limit in the air is 0.71, and pressure of the air is 0.61, and the humidity is 0.72, and it is known that the three samples have a large value of 0.1. The VIF output for the air temperature is 1.39, the air pressure is 1.62, the humidity is 1.37, and the three samples are less than 10. From the results described, it can be concluded that there is no multicollinearity in the test data because the conditions do not occur. Multicollinearity, namely the Tolerance value, is greater than 0.1. The heteroscedasticity test can also be known from the VIF value, which is smaller than 10, which concludes that there is no heteroscedasticity behavior. In the absence of heteroscedasticity that occurs from the sample, it can be checked whether the sample has multicollinearity or not.

Multicollinearity is the number of significant unidirectional changes between samples with other samples. From the output of the SPSS application, it is known whether or not there is multicollinearity of the significance value. The measured output is compared with the test limit value of 0.05 in order to obtain a decision on whether there is multicollinearity. The presence or absence of a multicollinearity process between samples can be met with the processed data issued by the SPSS application.

Table 5. Multicollinearity SPSS

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1.	(Constant)	-100	139		-0.07	0.94
	Temperature	0.61	1.20	0.19	0.51	0.62
	Pressure	0.03	1.51	0.01	0.02	0.98
	Humidity	0.65	0.64	0.39	1.02	0.33

From the multicollinearity test table, it can be stated that the significance value for the air temperature Parameters is 0.62, air humidity is 0.98, and air pressure is 0.33. When noted, the significance output of the three samples is higher than 0.05 as the boundary condition. This can be interpreted that there is no heterodastisity in the data for the independent variable. In the table, it is also known that there are no residuals or confounding variables from the value of the three variables, which are greater than the value of 0.05. The described results explain that H0 in the heteroscedasticity test hypothesis is accepted, or there is no multicollinearity in the tested data.

A condition whether or not there is a change that occurs between one presumed sample and another can be known by checking the autocorrelation. Good data should have no autocorrelation between presumed samples. Durbin-Wattson is a container for checking autocorrelation samples. The presence or absence of autocorrelation is checked by describing the output of Durbin-Wattson SPSS as follows.

Table 6. Autocorrelation SPSS

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.996[a]	0.991	0.988	4.272	2.823

The regular Durbin-Wattson of SPSS output is 2.823. An autocorrelation test can be done if you have obtained a comparison value against the output value of Durbin-Watson. The way to get it is by looking for comparison values in the autocorrelation test table with sample 12 and using values up to the K-3 variable. The values obtained are for the value of d = 2.823 and the value of d_L = 0.658 and the value of d_U = 1.864. The values of d, d_L, and d_U were then tested on the autocorrelation test table to see whether or not there was autocorrelation in the tested variables. To get a decision on the autocorrelation test, it can be made by looking at the area where the Durbin-Wattson number ranges between the nominal output d_L and d_U based on the following categories.

Table 7. Autocorrelation decision

Null Hypothesis	Decision	If	Region
There is No Positive Autocorrelation	Reject	$0 < d < d_L$	(1)
There is No Positive Autocorrelation	No decision	$d_L \leq d \leq d_U$	(2)
There is No Positive/Negative Autocorrelation	Not Rejected	$d_U < d < 4- d_L$	(3)
There is No Negative Autocorrelation	No decision	$4- d_U \leq d \leq 4- d_L$	(4)
There is No Negative Autocorrelation	Reject	$4- d < d < 4$	(5)

From the autocorrelation test table above, it can be illustrated that the output of D is in the area (3). This result means that the described Durbin-Watson value is higher than d_U and lower than the 4-d_L output. The decision obtained is that there is no autocorrelation between the tested variables. From the output of the normality, heteroscedasticity, multicollinearity, and autocracy, the decision obtained is that the data tested is feasible for multiple linear regression tests. Multiple regression test aims to describe the regression equation, correlation, and contribution, as well as the partial and simultaneous effect that occurs between the variables of the temperature of the air, humidity, and pressure on rainfall.

The results at the first SPSS output, namely to find out the multiple regression equation in data processing, can be looked at in the coefficient in SPSS. Multiple linear regression equations are arranged based on the output of beta values.

Table 8. Multiple linear regression equation

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	3829.4			1.53	0.16
Temperature	34.16	2.15	0.61	15.87	0.00
Pressure	7.39	3.69	1.15	3.73	0.02
Humidity	29.81	1.14	1.00	26.12	0.00

From table 8, it can be formulated that the beta value output results in a constant value of 3829.4, the air temperature value is 34.16, the humidity is 7.39, and the pressure is 29.81. From the beta values obtained, they are arranged according to their respective variables so that a multiple linear regression equation is obtained, namely:

$$Y= 3829.4 + 34.16\, X_a + 7.39\, X_b + 29.81\, X_c \qquad (1)$$

From this equation, it means that the variable Y depends on the variable X. The value of 3829.4 is the intercept value, which means that if Xa, Xb, and Xc are counted as zero, then Y is 3829.4, meaning that if there is no temperature, pressure and humidity, it will rain. Of 3829.4. A positive interaction was found between Xa, Xb, and Xc with respect to Y. An greater temperature of the air, pressure and humidity measured, the greater the effect on the high rainfall that occurred. From the SPSS output data, multiple linear regression equations have been obtained, so the next step is to find out how the correlation and contribution of the presumed variable to the effect variable are.

Each contribution and correlation of the presupposed variables can be seen from the results of SPSS processing. The contribution of the presupposition variable is equal to the value of R square multiplied by 100%. Meanwhile, the rest of the other contributions are caused by factors other than modeling. Correlation can be described using the value of R with a comparison of how close to the value of one in SPSS. SPSS output for the contribution and correlation of the presumption and effect variables can be seen in table 9
.

Table 9. Correlation and contribution

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.996[a]	0.991	0.988	4.273

The measured R shows the correlation of each parameter, such as temperature, pressure, and humidity, close to the value of 1. The R-value of 0.996 indicates that the correlation that occurs is very strong between air temperature, air pressure, and humidity on rainfall. The R-square value of 0.991 means that the effect of each parameter, such as temperature, pressure, and humidity, is 99.1% on the increase in rainfall. The correlation and contribution of the independent variables to the dependent variable is very strong.

The effect of each independent variable (air temperature, humidity, and air pressure) on the dependent variable (rainfall) can be seen from the correlation table and the SPSS output Anova table. The simultaneous effect can be seen from the simultaneous test conditions in the Anova table, where the F table value must be smaller than the F count and sig value. In other words, this F value is smaller than < 0.05 . The interaction of the presumption variable and the effect variable can be described in the table below.

Table 10. Simultaneous effect of independent variables on the dependent variable

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	16726.6	3	5575.5	305.4	0.00^{b}
	Residual	146.1	8	18.3		
	Total	16872.7	11			

Simultaneous checking table whether or not the sample used can be interpreted from the output significance of temperature, pressure, and humidity, and it turns out that simultaneously there is a significant change in rainfall by comparing the calculated F with the F table. F table is obtained by the following formula:

$$Ftable = F\,(k\text{-}1;\ n\text{-}k) \qquad (2)$$

That the calculated F value is 305.4 and the F table value is 4.07. In accordance with the condition that there is a simultaneous influence between air temperature, air humidity, and air pressure on rainfall, namely F count bigger than F table, then the SPSS results obtained are in accordance with the requirements. Because the calculated F value is 305.4, bigger than F table 4.07. F table. A significance value smaller than 0.05 also strengthens the statement that there is a simultaneous influence between air temperature, humidity, and air pressure on rainfall. From the SPSS output, it is found that the calculated F value is 305.4, and the F table value is 4.07. In accordance with the condition that there is a simultaneous influence between air temperature, air humidity, and air pressure on rainfall, namely F count bigger than F table, then the SPSS results obtained are in accordance with the requirements. Because the calculated F value is 305.4, bigger than F table 4.07. F table. A significance value smaller than 0.05 also strengthens the statement that there is a simultaneous influence between the temperature of the air, humidity, and pressure of the air on rainfall.

The partial effect of temperature of the air, humidity, and pressure of the air on rainfall can be seen from the t-test on SPSS. The condition for knowing the effect of each temperature of air, humidity, and pressure of the air on rainfall is to look for the t table value. The requirement for this t-test is to compare the t count value with the t table value. The value of t count obtained must be greater than t table. The following table of coefficients has been processed using the SPSS data processing application as a decision-making medium for the partial influence between the presupposition variable to the effect variable.

Table 11. Partially influence

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3829	2496		1.53	.164
	Temperature	34.16	2.15	.61	1,87	.000
	Pressure	7.39	3.69	1.15	7.39	.025
	Humidity	29.81	1.14	1.00	26.12	.000

Before looking at the results of the t test, it is necessary to know the t table value as a comparison on the t test. The value of ttable can be known from the following formula.

$$t_{table} = t\,(\alpha\,\tfrac{1}{2};\ k\text{-}n\text{-}1\,) \qquad (3)$$

After the ttable value is known, it can be compared with the thitun value for each variable of air temperature, humidity, and air pressure. It is known that the tcount of air temperature is 15.87, the higher the t-table is 2,3. The measured output of t-calculated air humidity is 26.12, which is greater than t table of 2.3. It is also known that the air pressure t-count is 7.39, which is bigger than the t-table of 2.3. The decision taken is that partially there is a significant relationship between temperature of the air, humidity, and pressure of the air with significant rainfall. This also proves that temperature of the air, humidity, and pressure of the air greatly affect rainfall in Kototabang in 2020.

Based on the objectives of this study, the first results of the classical assumption test obtained are the data tested under normal conditions. There is no heteroscedasticity, there is no multicollinearity, and there is no autocorrelation between variables. From the results obtained, it is explained that the data to be processed has passed the classical assumption test. This is in accordance with the explanation from Alita (2021) which stated that the condition for the multiple linear regression test that can be done is to pass the previous classical assumption test [22].

The second result is the equation obtained from the SPSS output. The equation shows a positive relationship between air temperature, humidity, and air pressure on rainfall. The output also explains that a 389.5 increase in bulk occurs when the temperature, humidity and air pressure are zero. In accordance with the equation obtained by Marni (2016), that humidity and temperature have a positive relationship to rainfall. However, the data being tested is only for a duration of 30 to 360 minutes [12].

The third result is the correlation and contribution that occurs in the research. The correlation is very strong, with a value close to 1. The change in the presupposition variable to the measurable effect variable is 99.1%. Research conducted by Azkia (2019) also found that there was a strong correlation between air humidity and rainfall 63% [10]. However, this study cannot explain the correlation between air temperature and rainfall.

In this study, there were several obstacles that had quite an influence on the results of the study. The first obstacle is there is limited access to the instrument and the lack of data that is processed to be able to draw more accurate conclusions. Instrument Automatic Weather Station does not operate at certain times due to a lack of power from the Solar cell sensor. This causes some instrument output data to have overload and extreme data values. Therefore, the parameters obtained for this study are only the output data of air temperature and rainfall from BPAA LAPAN Agam.

The results of the next study were processed using the F test on the SPSS application. The results obtained are described to determine as a result of the temperature of the air, the pressure of the air, and humidity simultaneously on rainfall. The results that can be described are in accordance with the opinion of Prakoso (2018); there is a significant simultaneous effect between air temperature, air pressure, and air humidity simultaneously on rainfall [13]. But the data described are only in the time span from January to March.

The latest research results from the SPSS results obtained are described to describe the resulting temperature of the air, pressure of the air, and humidity partially to rainfall. The results that can be described are that there is a partial influence between temperature, pressure and humidity on rainfall. Suryatika (2019) also found that there is a partial effect between air temperature and humidity with rainfall [18]. However, the only predictable variables that can be explained are temperature and humidity.

The next obstacle is that humidity and pressure data obtained from GAW Kototabang itself can only be obtained within a month. This causes the data to be processed limited because it can only be described in the form of an average per month and per year. Therefore, the parameters obtained from LAPAN and GAW in Kototabang can only be processed in the monthly and annual averages of the 2020.

IV. CONCLUSION

From the previous data processing, several measured results of multiple linear regression can be described as three predictors to describe the effect of air temperature, humidity, and air pressure on rainfall. The output described for the purpose of the first study can be seen from the SPSS output in the form of a multiple linear regression equation, namely from the equation, it can be described that there is a positive relationship between air temperature, humidity, air pressure and rainfall. An increase in rainfall of 3829.4 will occur if the temperature, humidity and air pressure are zero. In the results of the second study, with the aim of finding the magnitude of the correlation and contribution of the presumption variable to the effect variable, It has been determined that correlation occurred at 0.96, which means there is a strong interaction of the presumption variable with the resultant variable with the contribution of the presumption variable being 99.1% and the remaining 0.9 is influenced by other factors. The third objective to be achieved is the results of the SPSS test to determine the change in temperature of the air, pressure, and humidity on rainfall. The SPSS output results found that there is a partial influence between air temperature, humidity, and air pressure on rainfall. The fourth objective to be achieved is the result of the SPSS test to determine the simultaneous change in temperature of the air, pressure, and humidity on rainfall. The results of the SPSS output found are that there is a simultaneous influence between air temperature, humidity, and air pressure on rainfall. From the previous review, the meaning described is that it is evident that changes in temperature of the air, humidity, and pressure of the air greatly affect changes in rainfall that occur in Kototabang in 2020.

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