



Research report

Subject

Relationship between air temperature and cloud type

And the density of clouds in the period between 12:30 PM and 1:00 PM.

At the football field at Bueng Khong Long Wittayakhom School Bueng Kan

Province

Prepared by

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Keeratika Sonaub

Porntip srithun

Secondary School Year 2/1

Semester 2, Academic Year 2021

Teacher advisor

Suthirat Srisongkram Teacher

Pattamaporn KhunKaew Teacher

Bandit SriSongkhram Teacher

Bueng Khong Longwittayakhom School Bueng Khong Long District Bueng Kan

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Preface

Research report on the relationship between temperature and cloud type and cloud density during 12:30 am to 1:00 pm at the Bueng Khong Long Witthayakhom School football field area. The researcher has studied, surveyed and prepared with the objective To find the relationship between temperature at birth, cloud type, and tightness at Bung Khong Longwitthayakhom football field area. Which research results and recommendations It will be more or less beneficial to the organizers and stakeholders in the application of the research results for benefit. As well as being developed for further problem solving

Researchers would like to thank Teacher Suthirat Srisongkram and Teacher Pattamaporn Khun Kaew from Bueng Khong Longwitthayakhom School. Bueng Kan Province Who gives assistance as an educator Tool assistance As well as help in various areas Which allows the research work to be carried out well and that allows the report authors to collect the information Any value and benefit Resulting from this research The researcher wishes to give readers every Those who support and are interested in conducting this research.

Researchers

Thai story	Relationship between air temperature and cloud type And the density of clouds in the period between 12:30 PM and 1:00 PM. At the football field at Bueng Khong Long Wittayakhom School Bueng Kan Province
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Field of study	science
Academic year	2021
Advisor	Teacher Suthirat Srisongkram Teacher Pattamaporn KhunKaew

Abstract

A survey was conducted to find the relationship between air temperature, cloud type and cloud density at Buengkhonglong Wittayakhom (BW) School football field, Bueng Kan Province in February 2021. The survey measured the global surface temperature at the center of the BW School football field using a thermometer. Then we documented temperatures, took pictures, observed the types of clouds using a cloud map. Using a 7x7.5 cm wooden frame table to determine the density of the clouds. The survey determined the relationship between air temperature, cloud type and cloud density. The survey found that high temperatures, cirrostratus (Cs) clouds were found in high clouds and when air temperatures were low, the Altostratus (As) cloud which are mid- clouds has a density of 100%

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Chapter 1

Introduction

1.1 Background and importance of the problem

Bueng Kan Province is a province located in the upper Northeast of Thailand. The landscape is plateau and has a fertile environment with beautiful mountains, rivers and waterfalls. The climate, due to being influenced by the Mekong River, is characterized by extreme weather conditions during extremely hot and dry rains. (December - January) During March to May, it is the northern monsoon season. Temperature rises quickly In March and very hot in April. During the southwest monsoon (June-July), temperatures typically drop in October as the seasons change to the south. The temperature starts to drop in winter so it doesn't get very hot in summer. In winter, the weather is suitable for tourism and relaxation, especially during important festivals. Usually a lot of tourists come to visit.

In the past, when our Thailand Meteorological Department did not have any progress as it is today, science and technology have not yet made much progress. In ancient times, rural communities were employed in agriculture. But has the ability to predict the weather Each day in different ways such as observing ants running into the nest means it will rain, etc.

At present, Thailand has developed in various fields. Both science and technology studies, while the current weather forecasting has evolved as well. Since there is now the Meteorological Department, which the weather forecasting agency reports on natural phenomena and daily weather conditions, as well as various warning signs that are modern, accurate and very accurate.

1.2 Research objectives.

1.2.1. To study the relationship between cloud formation temperatures.

1.3 Research Hypothesis This research has the following hypotheses.

1.3.1. If each day the air temperature is different, then different clouds are found.

And different cloud densities.

1.4 Research scope.

1.4.1 Content scope.

1.4.1.1 The study of temperature affects the type of clouds.

1.4.2. The population of this research is.

1.4.1.1 Cloud type at Bueng Khong Longwittayakhom School.

1.4.3. An example is.

1.4.3.1 Mek Mor Krabong Football Field Bueng Khong Long Wittayakhom School.

1.5. Terminology.

1.5.1. High temperature 30 - 35 degrees.

1.5.2. Density level 0 - 100 percent.

1.5.3. Time: 12.30 - 13.00.

1.5.4. Weaving in the middle of a football field at Bueng Khong Long Wittayakhom School.

1.6. Expected benefits.

1.6.1 Can tell the weather.

Chapter 2

Related research papers

The organizers can study and research related information and documents as follows:

2.1. Cloud related documents and types.

2.2 Guess related documents.

Cloud

2.1.1 The meaning of the clouds

Cloud is a group of microscopic water droplets formed by condensation of water droplets in the air. Or water from natural sources on the ground is the starting point for large cloud masses. When getting heat from the sun will evaporate into water vapor floating in the air. And when the water vapor condenses into water droplets or ice flakes to settle into a clump in the air like this we call it the cloud. These clouds reflect light waves at each wavelength in the visible range. At the same level we see the clouds as white. But it can also be seen in gray or black if the cloud is so dense that light is impenetrable.

2.1.2. Types and types of clouds

1. Divided by shape

Clouds are divided into two broad categories: horizontal tiered and rising vertically. They are called stratus (which means layered) and cumulus (which means pile up) respectively.

Words used to characterize clouds.

- | | | |
|-----------|------|------------------|
| - Stratus | mean | Layered pattern |
| - Cumulus | mean | ลักษณะเป็นกองสูง |
| - Cirrus | mean | ลักษณะเป็นลอนผม |
| - Nimbus | mean | rain |

2.แบ่งตามระดับความสูง

It is divided into 4 groups according to the height of the clouds. The altitude of this cloud is measured from the base of the cloud. Not measured from above.

Classification by elevation is used to detect and classify meteorological clouds. To provide the same standard for forecasting weather using cloud base altitude as the classification criteria.

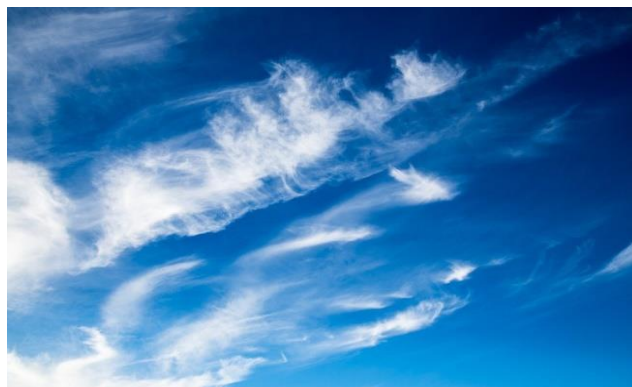
For example, with vertical cloud formation in the sky, the air temperature would rise, referring to the state of the air before the storm.

Or if the clouds in the sky are scattered horizontally, it means a calm climate with little vertical air currents. Or if the clouds in the sky form a very high vertical It refers to the nature of the thunderstorm cloud known as the cumulonimbus cloud. It will rain heavily and there will be lightning thunder, sometimes even lightning may come down to the ground. This thunderstorm cloud is very dangerous for small planes.

High clouds

Formed at heights of over 16,500 feet (5,000 m) in low temperatures in the troposphere At this altitude, most of the water freezes. Clouds made of ice crystals The clouds in this layer are mostly tiny and tend to be relatively transparent.

- **The cyrus cloud** reaches an average height of 10,000 m and is fluff, white like a thin plume or long, and may have circular light.



- **Serocumulus clouds** It has an average base height of 7,000 meters, with a thin, white or misty scaly shape adjacent to each other, some may be separated, but are lined up in an orderly, translucent way. The sun or the moon may be visible.



- **The Serostretus Cloud** has an average base height of 8,500 meters and has a continuous, white or pale blue translucent membrane covering the whole or part of the sky. It is a cloud that forms a white light orbit. Can be around the sun or the moon.



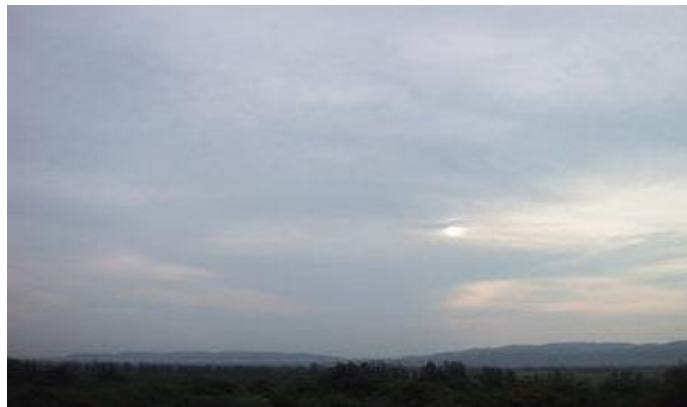
mediumcloud

Before heights between 6,500 and 16,500 feet (between 2,000 and 5,000 micrometers).

- **Altostratus Cloud** is clumpy, white, sometimes gray. They are arranged in rows or wavy, shading, clouds, scales, curls, may be two or more layers, there may be light.



- **Altostratus Cloud** Look like a thick sheet Uniform thin in the middle layer of the atmosphere Looks smooth, fluffy, or finely frayed, spreading out into waves, covering the sky. Available in gray or light blue And there may be some parts that are so thin that the sunlight can penetrate into the ground. There may be halo



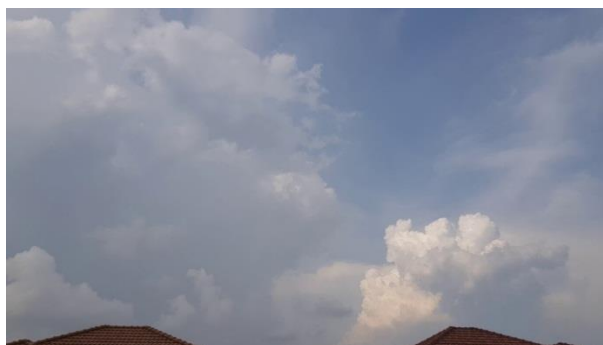
Low cloud

Forms at heights below 6,500 ft (2,000 m) and including cradle, storm clouds floating on the ground are called fog.

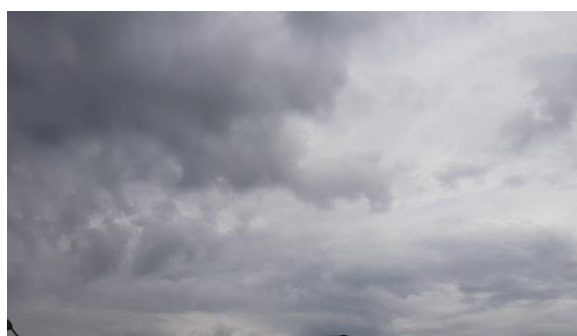
- **Stratus clouds** are thick sheets. Uniformly in the lower layers of the atmosphere Near the Earth's surface like fog, there is a gray color, unable to see the sun or moon Does not cause a circle of light Except when the temperature is very low, it can happen.



- The stratocumulus clouds are light gray. It looks like a sphere arranged both vertically and horizontally, making it visible as a continuous wave.



- Nimbostratus Cloud is a thick, gray-black sheet. Amorphous clouds produce rain, so they are called rain clouds. This cloud is free from lightning and thunder. Born only in temperate regions



Vertical cloud

It is a vertically formed cloud that gives the cloud a base height with an average cloud base height of 1,600 feet or 500 meters.

- Cumulus clouds form heavy clouds that move vertically. The outer edges are clearly visible. The base is black. They form cotton-like diffusers if they form patches or floats, indicating good weather conditions. Characteristics are localized rain.



- Cumulonimbus clouds look like large clouds. They form very large islands, often in heavy clouds, with lightnings and thunder, which may be scattered or combined. It rains frequently, this type of cloud is called "Thunderstorm Cloud".



From: Observe Clouds (scimath.org) Cloud Types and Types - webkroowitthayasat (google.com)

Documents related to the forecast

- A single 7×7.5 cm lattice is projected with 12 compartments and a total of 48 for determining cloud density (%) and cloud type.

1. Lift the wooden frame in front of the head in all 4 directions.

2. Observe the cloud type through the inner space of the wooden frame in each direction.

3. The results of cloud type observations were drawn on paper simulated in a wooden frame.

4. Measure the temperature with a thermometer in the middle of a football field at Bueng Khong Long Witthayakhom School.

Chapter 3

Research method

Research on the relationship between air temperature and cloud type and cloud density during 12.30 - 13.00 hrs. At Bueng Khong Longwitthayakhom School football field.

3.1. Research plan

- This research is a quantitative research.
- Objective: To find the relationship between temperature and air, cloud type and density. Of clouds in the sky

3.2. Population / Sample

- Population: Research on Mek, Bueng Khong Long Witthayakhom School
- Sample group: Cloud types at Bueng Khong Long Wittayakhom School

3.3. Research tools

- thermometer
- Wood frame that is a grid of 12 tiles per square of 4x4 centimeters.
- Wooden frame simulated in a sheet of paper

3.4. The process of creating each type of tool

- Measure the air temperature in the middle of a football stadium, 4 people, these 4 people will stand in different directions.

Facing outward, stand with your shoulders closer, then the center of your arms up 45 degrees and observe.

Look at the clouds and take pictures of the clouds they find there.

The survey runs from 20 - 26 February 2021, from 12:30 to 1:00 PM.

3.5 Conduct research and collect data.

- Measure temperature and observe cloud types and cloud condensation
- Position latitude 17.963879
- Location Longitude 104.047209
- Duration 20 February 2021 to 26 February 2021
- During 12.30 - 13.00

3.6. Data analysis

In this research study To find the relationship between temperature and cloud types and the density of the clouds found.

The researcher has performed various analyzes as follows.

- Study the types of clouds and their characteristics.
- Started a research operation by measuring the air temperature in the middle of a football field.

Using the number of people 4 people, all 4 people will stand in different directions, facing outwards, standing with their shoulders close together.

On all 4 sides, the middle arms rise 45 degrees, observe the clouds and take pictures of the clouds found at the surveyed point.

- Analyze the nature of the clouds that were found to be any kind of cloud.
- Collect data and save the results to a table

Chapter 4

Research results

Research results by objective To study the relationship between temperature at which cloud types are formed By presenting the data in the table in order The results were as follows.

Found the cloud type as shown in the table.

Day/month/ year	Time period	temperatu re	Cloud type	Cloud density
20 / Feb / 2021	12:30 PM - 1: 00 PM.	27°C	-	0
21 / Feb / 2021	12:30 PM - 1: 00 PM.	30°C	Cirrostratus Cs High clouds	100%
22 / Feb / 2021	12:30 PM - 1: 00 PM.	31°C	Cirrostratus Cs High clouds	100%
23 / Feb / 2021	12:30 PM - 1: 00 PM.	32°C	Cirrostratus Cs High clouds	100%
24 / Feb / 2021	12:30 PM - 1: 00 PM.	32°C	Cirrostratus Cs High clouds	100%
25 / Feb / 2021	12:30 PM - 1: 00 PM.	25°C	Altostratus As Middle cloud	100%
26 / Feb / 2021	12:30 PM - 1: 00 PM.	35°C	Cirrostratus Cs High clouds	100%

Research Survey Record Table

* Cloud density As a percentage (%)

Discussion of research findings

From the above table From a research survey Air temperature affects the type of clouds. In this survey, air temperature gauges and lattice wooden frames measuring 7 × 7.5 centimeters were used, four wooden frames, one wooden frame, 12 compartments, a total of 48 compartments. The survey results of the relationship between air temperature and cloud type and cloud density from 12:30 to 1:00 PM, the survey found that temperature has an effect on cloud type. But temperature has no effect on the density of the clouds.

The types of clouds found on a daily basis. Can indicate the weather conditions within that day To prepare for the weather each day

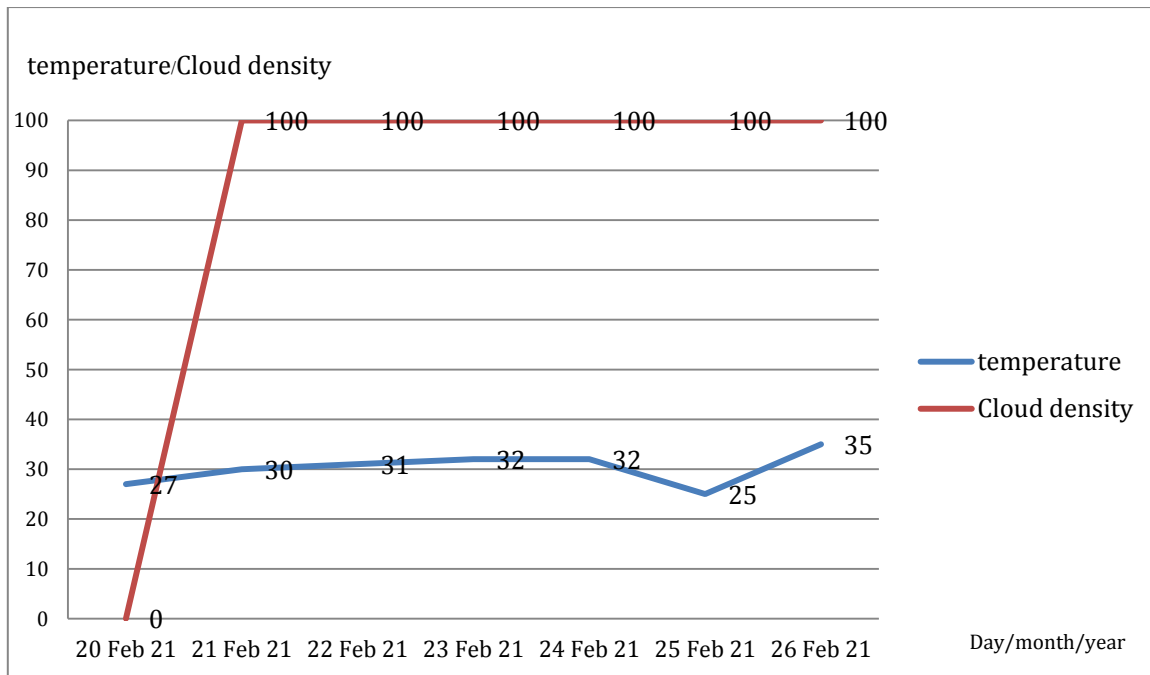
Chapter 5

Conclusions and recommendations

This research is quantitative research. Is intended to

Data display table

Day/month/ year	Cloud density	temperature
20 / Feb / 2021	0	27°C
21 / Feb / 2021	100%	30°C
22 / Feb / 2021	100%	31°C
23 / Feb / 2021	100%	32°C
24 / Feb / 2021	100%	32°C
25 / Feb / 2021	100%	25°C
26 / Feb / 2021	100%	35°C



Research findings

From the information in the table above It was found that air temperature influences the formation of clouds. When the air temperature rises, serostretus clouds are found. (cirrostratus), which is a high cloud. And when the temperature of the air is lower, altostratus clouds are found. (Altostratuss), which is the middle cloud. And air temperature had no effect on cloud density.

Suggestion

1. Suggestions for this research

- 1.1 Should be surveyed for a longer period of time More than this
- 1.2 Should have more research instruments More than this.
- 1.3 More information should be studied More than this.

2. Suggestions for the next research

- 2.1. More should be studied about cloud types and their density More than this.
- 2.2. Utilization of cloud type and cloud density should be studied in more detail More than this.
- 2.3. Should study methods. About cloud types and their density Give more.

bibliography

Jiraporn Pakorn (2017 Monday, 06 November). Observe the clouds. (Online). Accessed from:

<https://www.scimath.org/article-science/item/7574-2017-10-17-02-04-19>.

(Search date: 19 May 2011).

VC Technology Company Limited. Clouds tell the weather. (Online) .Accessed from:

<http://www.vc-tech.com/index.php?lay=show&ac=article&id=539717989&Ntype=9>

(Search date: 19 May 2011).

LESA. (2012). Clouds. [Online]. Accessed from:

<http://www.lesa.biz/earth/atmosphere/cloud>.

(Date of search: 19 May 2011).

Bangkok Business. (2021, Wednesday March 10) Observe the 'Cloud' to be aware of the weather conditions. [Online].

Accessible from: <https://www.bangkokbiznews.com/news/detail/892728>.

(Search date: 19 May 2011).

Sanook. (2013). Clouds. [Online]. Accessed from: <https://guru.sanook.com/4310/>.(Search

date: June 19, 2011).

Annex

Equipment



The wooden frame is a mesh size 7×7.5 cm.

Take 4 wooden frames.

One wooden frame has 12 squares for a total of 48.



Thermometer device

Survey method for collecting data



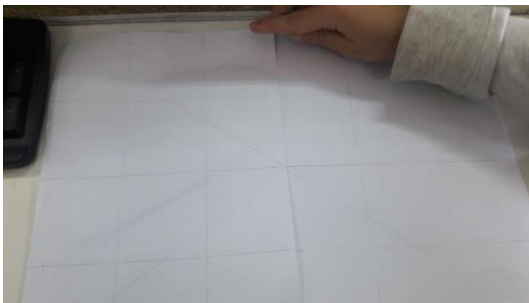
1. Lift the wooden frame in front, above the head in all four directions.

2. Observe the cloud type through the gap inside the frame.

Wood in each direction



3. Draw the result of cloud type observation on . The paper is simulated into the sky.



4. Record the results in the table.