

Spatial Variability of Temperature, Rainfall, and Wind Speed Across Cha-uat and Tha Sala Districts, Nakhon Si Thammarat, Thailand



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Srithammaratsuksa School

Introduction



During the flooding in Nakhon Si Thammarat from December 11-18, heavy runoff caused significant impacts on low-lying areas, affecting daily life and resulting in property damage.

In December, Nakhon Si Thammarat faced severe flooding, affecting many households, leaving them without electricity and food. Therefore, we should start paying more attention to and learning about climate change and disaster prevention.

Study site

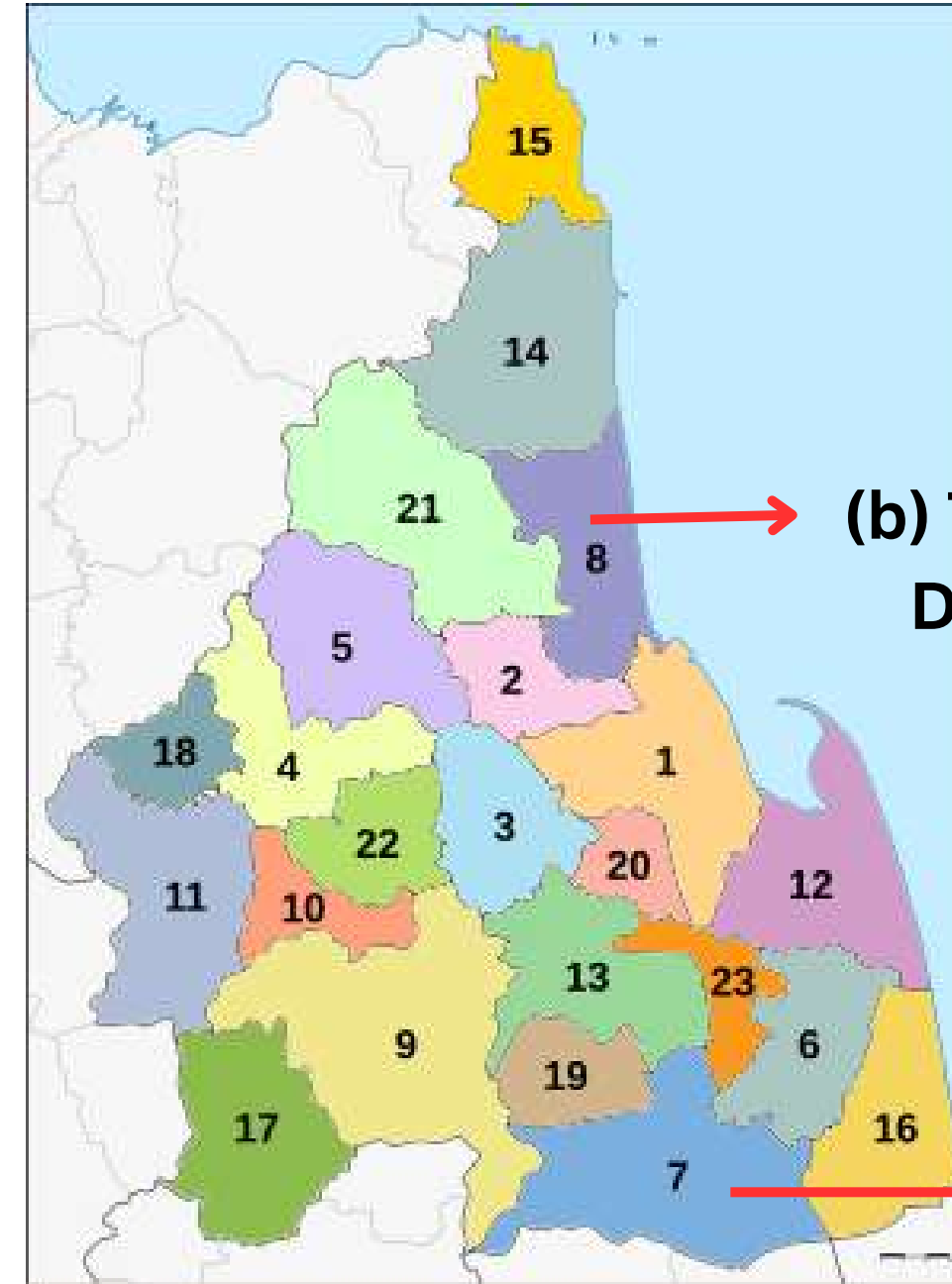
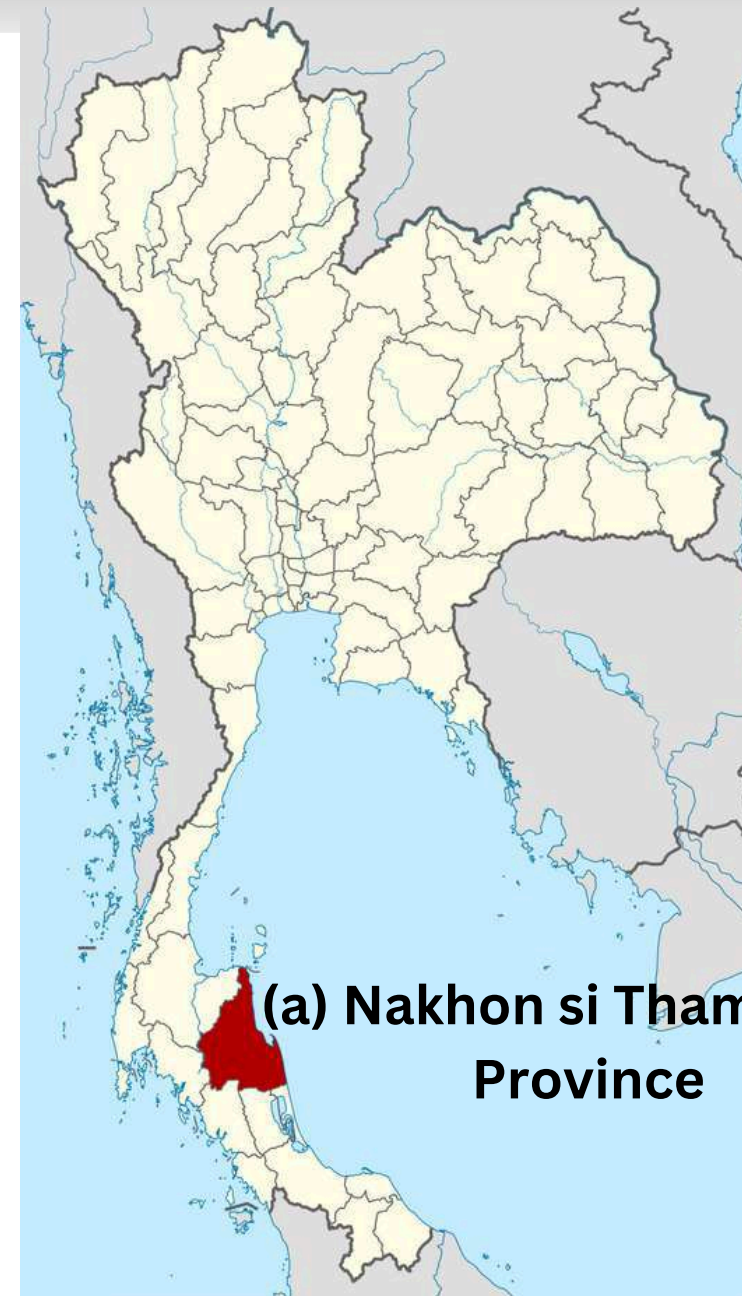


Figure 1. (a) Map of Nakhon Si Thammarat, Southern Thailand
(b) Map of Tha Sala District and (c) Map of Cha-Uat District

Davis WeatherLink



Date & Time ↑	CX001.Samsen										
	WLL Inside Temp/Hum								WLL Barometer		
	Inside Temp °C	High Inside Temp °C	Low Inside Temp °C	Inside Hum %	High Inside Hum %	Low Inside Hum %	Inside Dew Point °C	Inside Heat Index °C	Barometer mb	High Bar mb	Low Bar mb
12/11/2024 - 00:00	27.5	27.6	27.4	58.8	59.0	58.6	18.7	28.4	1015.7	1015.7	1015.7
12/11/2024 - 00:05	27.4	27.6	27.4	59.0	59.0	58.6	18.7	28.3	1015.6	1015.7	1015.6
12/11/2024 - 00:10	27.4	27.5	27.4	58.8	59.0	58.6	18.7	28.3	1015.7	1015.7	1015.6
12/11/2024 - 00:15	27.4	27.6	27.3	58.8	59.2	58.7	18.7	28.3	1015.6	1015.7	1015.6
12/11/2024 - 00:20	27.4	27.4	27.4	59.0	59.0	58.5	18.7	28.3	1015.6	1015.6	1015.5
12/11/2024 - 00:25	27.3	27.4	27.3	58.7	59.0	58.7	18.6	28.2	1015.5	1015.6	1015.5
12/11/2024 - 00:30	27.3	27.4	27.3	58.9	59.0	58.5	18.6	28.2	1015.5	1015.6	1015.5
12/11/2024 - 00:35	27.3	27.4	27.3	58.9	59.0	58.7	18.6	28.2	1015.5	1015.5	1015.4
12/11/2024 - 00:40	27.3	27.4	27.3	58.9	59.1	58.5	18.6	28.2	1015.4	1015.5	1015.4
12/11/2024 - 00:45	27.3	27.4	27.3	58.9	59.2	58.7	18.6	28.2	1015.4	1015.4	1015.4
12/11/2024 - 00:50	27.3	27.3	27.2	59.1	59.1	58.7	18.7	28.2	1015.3	1015.4	1015.3
12/11/2024 - 00:55	27.2	27.4	27.2	58.9	59.1	58.7	18.5	28.0	1015.2	1015.3	1015.2
12/11/2024 - 01:00	27.3	27.3	27.2	59.1	59.1	58.7	18.7	28.2	1015.2	1015.3	1015.2
12/11/2024 - 01:05	27.3	27.4	27.2	59.1	59.1	58.7	18.6	28.1	1015.1	1015.2	1015.1
12/11/2024 - 01:10	27.3	27.3	27.2	58.5	59.1	58.5	18.4	28.1	1015.1	1015.1	1015.1
12/11/2024 - 01:15	27.3	27.3	27.2	58.7	58.7	58.5	18.5	28.1	1015.0	1015.1	1015.0
12/11/2024 - 01:20	27.2	27.3	27.2	58.7	59.1	58.7	18.4	28.0	1015.0	1015.0	1015.0
12/11/2024 - 01:25	27.2	27.3	27.2	58.9	58.9	58.5	18.5	28.0	1014.9	1015.0	1014.9
12/11/2024 - 01:30	27.2	27.3	27.1	58.7	58.9	58.5	18.4	28.0	1014.9	1014.9	1014.8
12/11/2024 - 01:35	27.2	27.3	27.2	58.5	58.9	58.5	18.3	27.9	1014.8	1014.8	1014.8
12/11/2024 - 01:40	27.2	27.3	27.1	58.5	58.7	58.5	18.3	27.9	1014.7	1014.8	1014.7



The app will collect data 15 minutes according to the schedule. In the app information on the spatial variability of temperature, rainfall, and wind speed will be provided

Figure 2 shows sample data collected from both devices

Data collection



Davis WeatherLink

8 Day (11-18 December 2024)

Tha Sala District

Cha-uat District

Davis WeatherLink
•Rain Rate
•Temperature
•Relative Humidity
•Wind Speed

Davis WeatherLink
•Rain Rate
•Temperature
•Relative Humidity
•Wind Speed

GLOBE Protocol
Temperature

GLOBE Protocol
Temperature

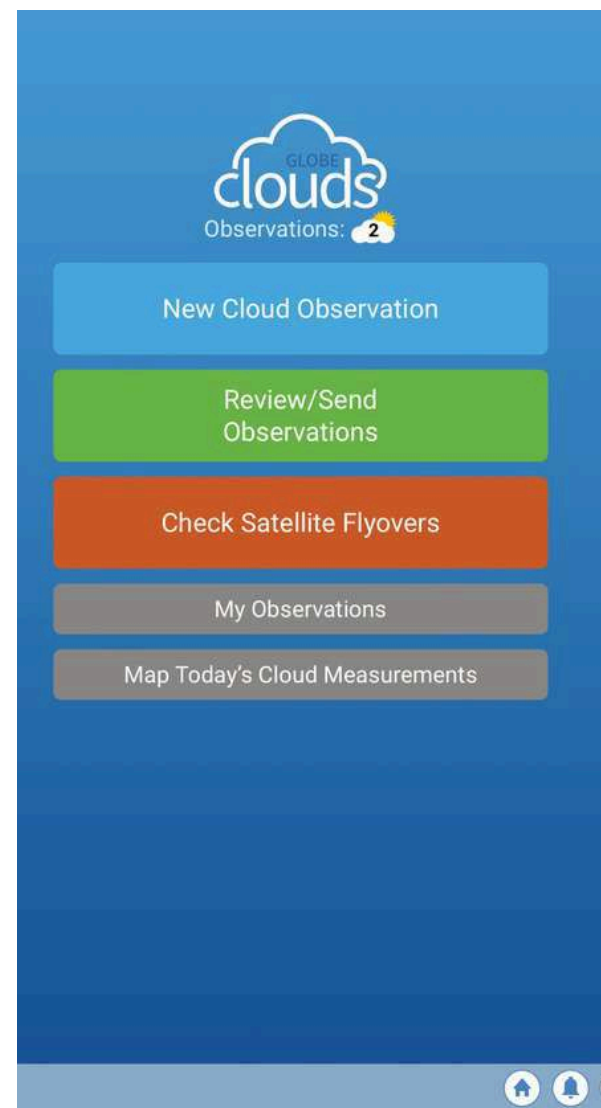
Materials and methods



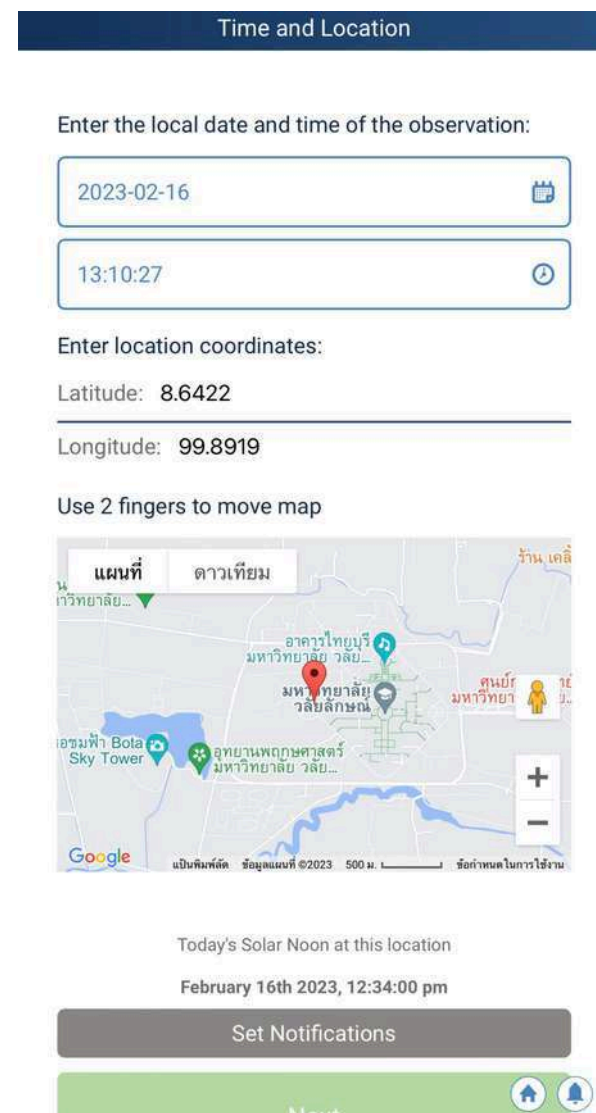
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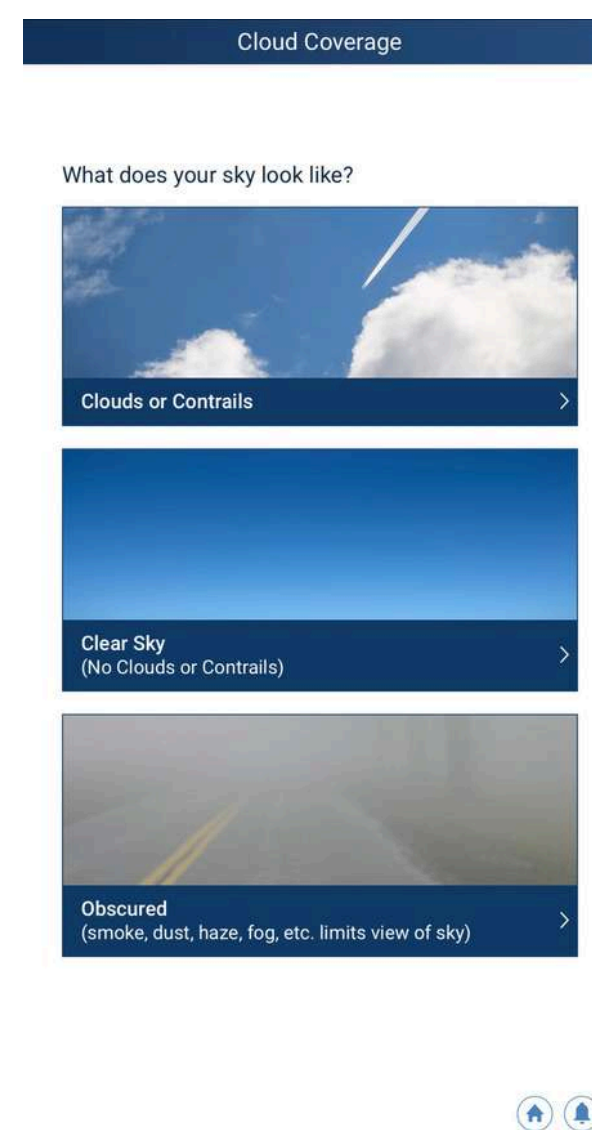
2



3



4



1. choose Cloud App.

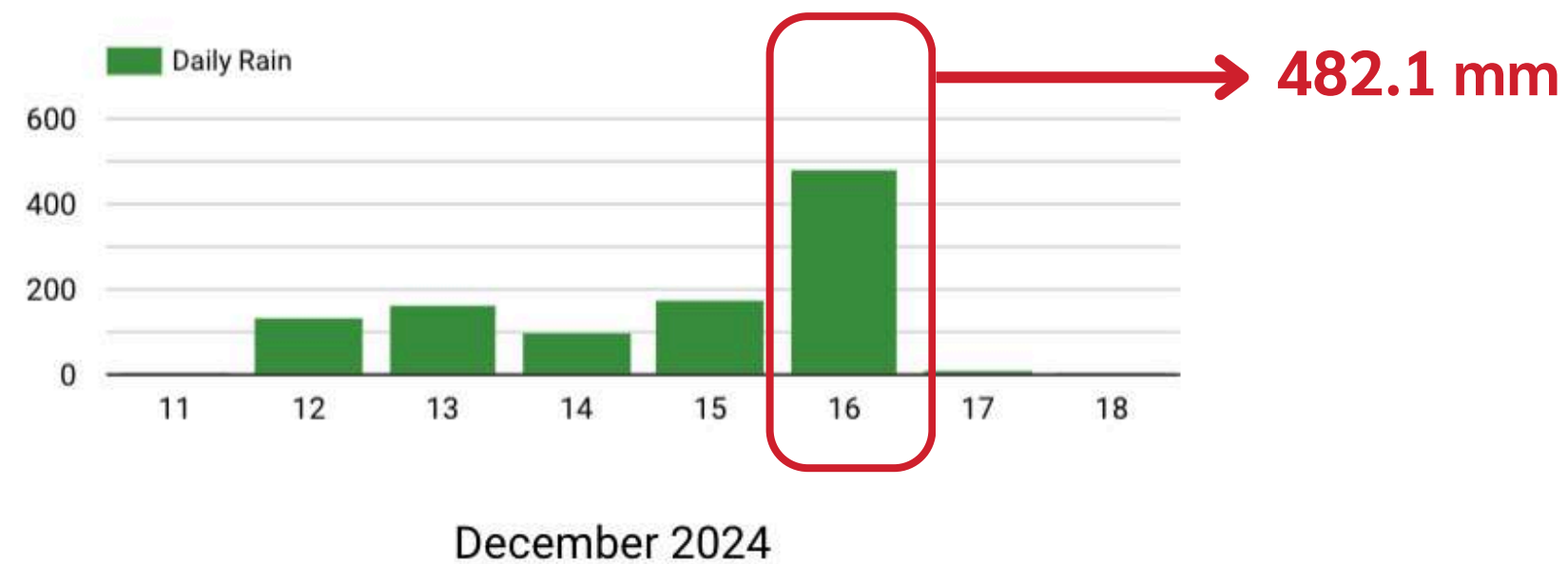
2. choose New cloud observation.

3,4 Observe the sky, the clouds, and don't forget the clouds at the edge of the clouds.

Fig3.GLOBE Observer: Cloud App.

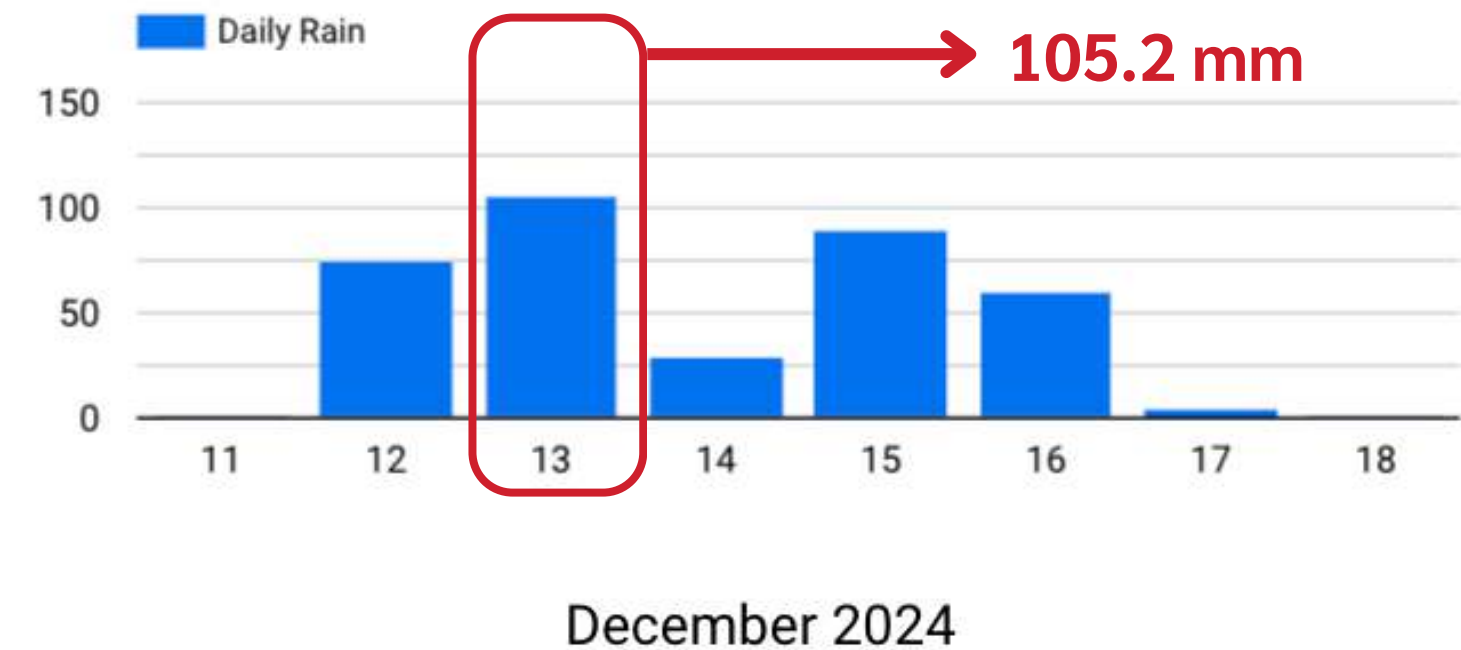
Rain fall

Tha Sala District



(a) Rain (mm)

Cha-uat District

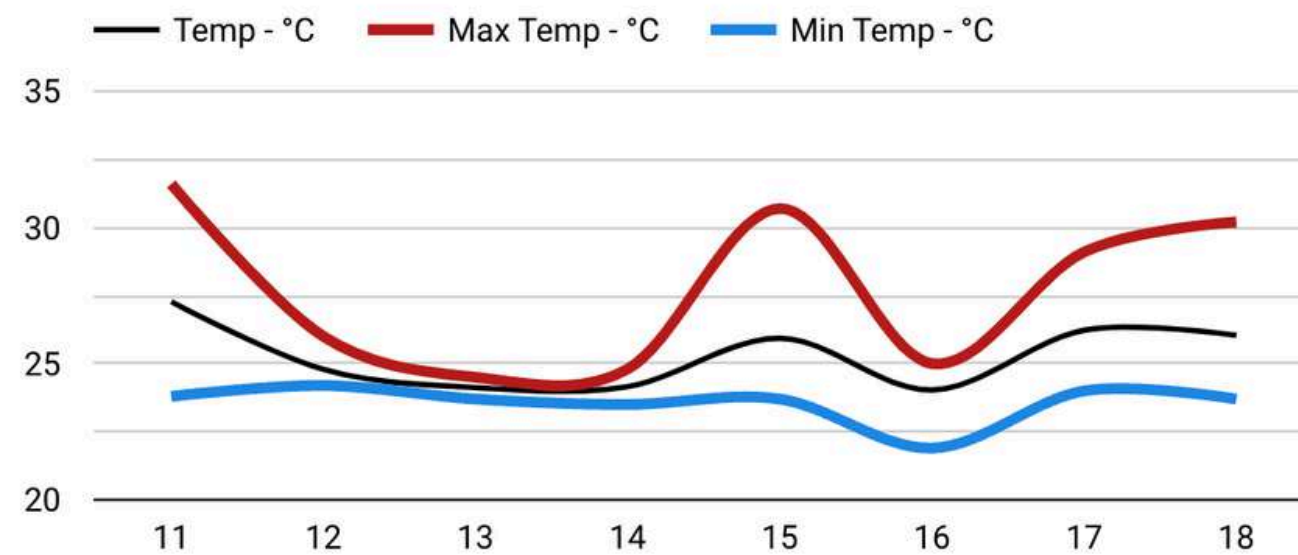


(b) Rain (mm)

Tha Sala District has more than amount of rain than Cha-uat 4.6 times

Between December 11–18, 2024, Tha Sala District recorded a maximum rainfall of 482.1 mm, while Cha-uat District had a maximum of 105.2 mm. On December 16, Tha Sala experienced extremely heavy rainfall, leading to severe flooding, whereas Cha-uat had continuous rain but at lower levels.

Tha Sala District

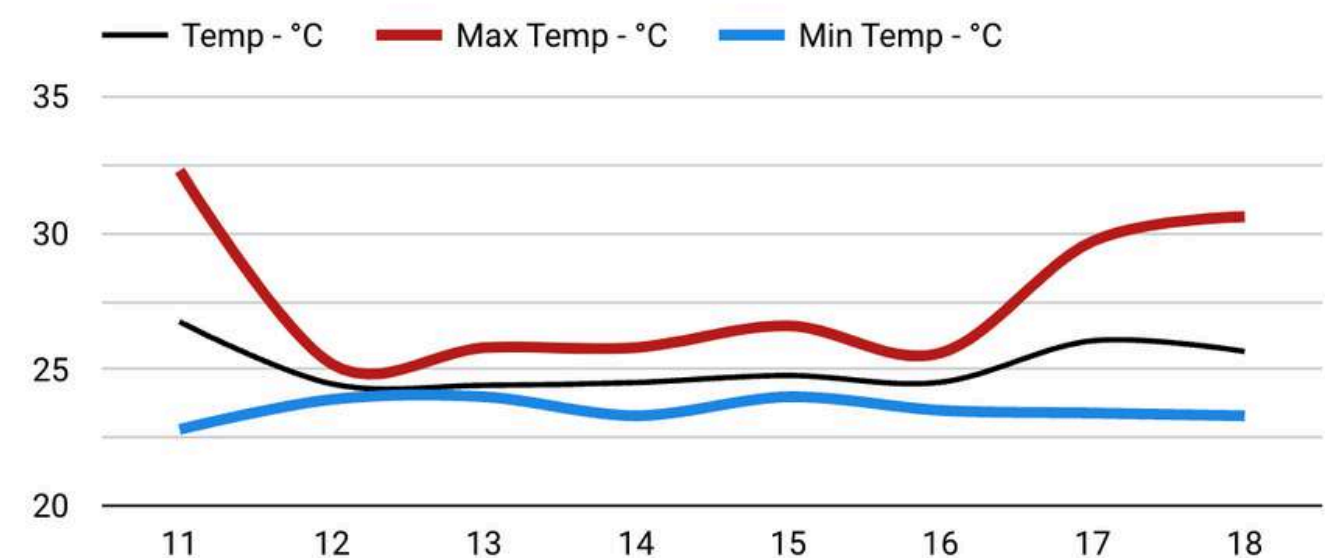


December 2024

(C) Temperature

Temperature

Cha-uat District



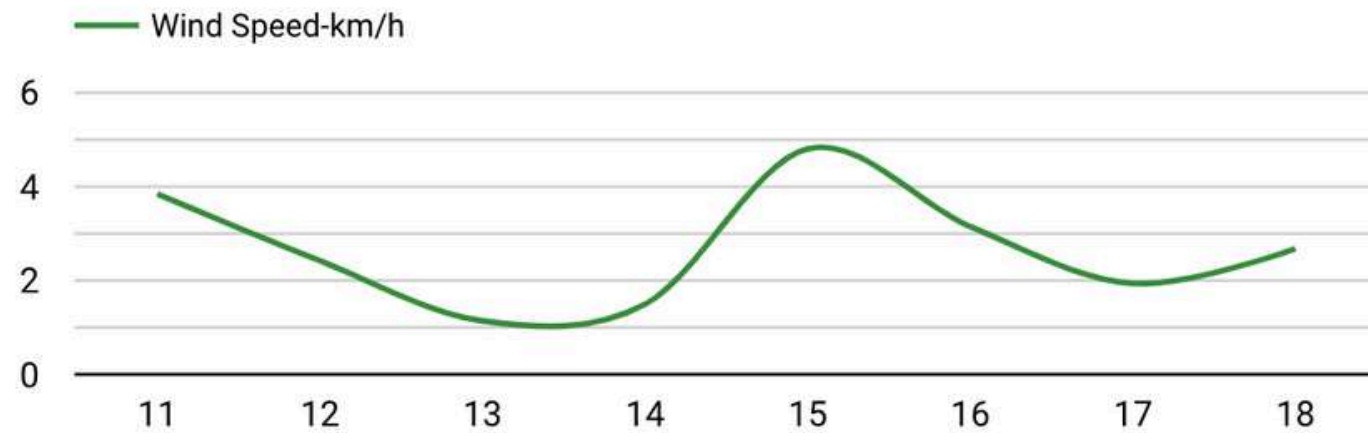
December 2024

(d) Temperature

In December 2024, Chaloeet and Tha Sala had peak temperatures on December 11 and 18. Heavy rainfall occurred between December 12 and 16, with Tha Sala receiving 482.1 mm on December 16. Temperature and rainfall showed no clear correlation due to other influencing factors.

Wind Speed

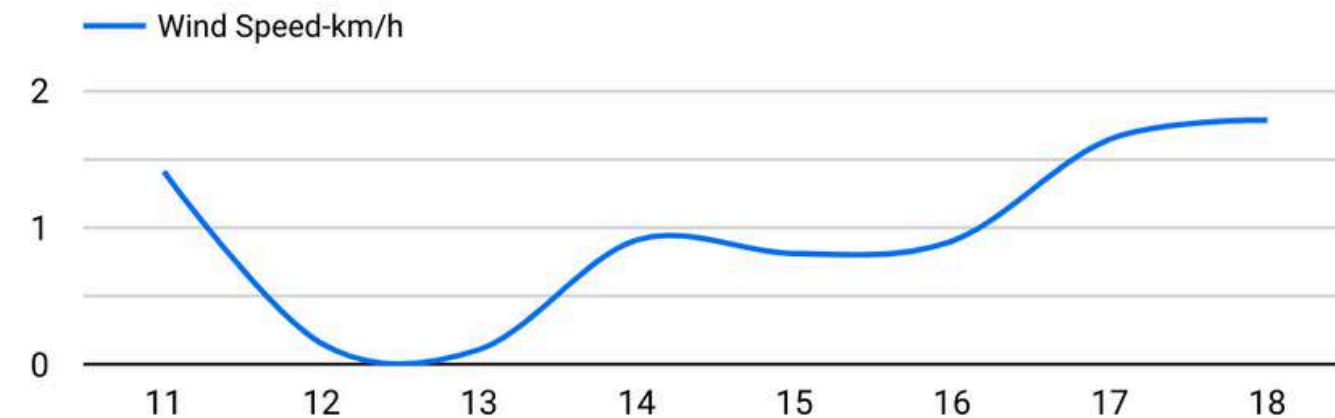
Tha Sala District



December 2024

(e) wind speed (km/h)

Cha-uat District



December 2024

(f) wind speed (km/h)

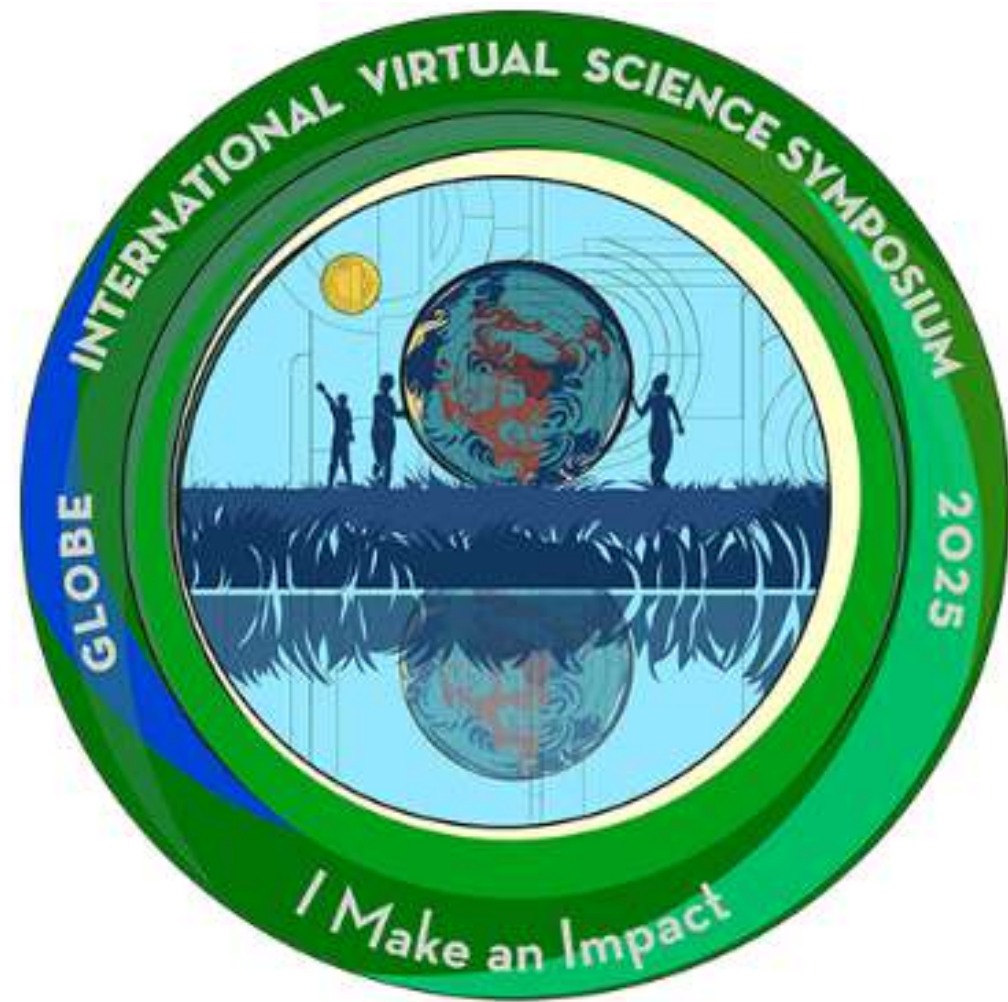
On December 11, Cha-uat and Tha Sala had high wind speeds of 1.41 km/h and 3.84 km/h, respectively. Wind speeds in both districts decreased on December 12-13, then fluctuated between December 14-18. Tha Sala saw a peak of 4.81 km/h on December 15, while Cha-uat wind speed gradually increased.

Conclusion

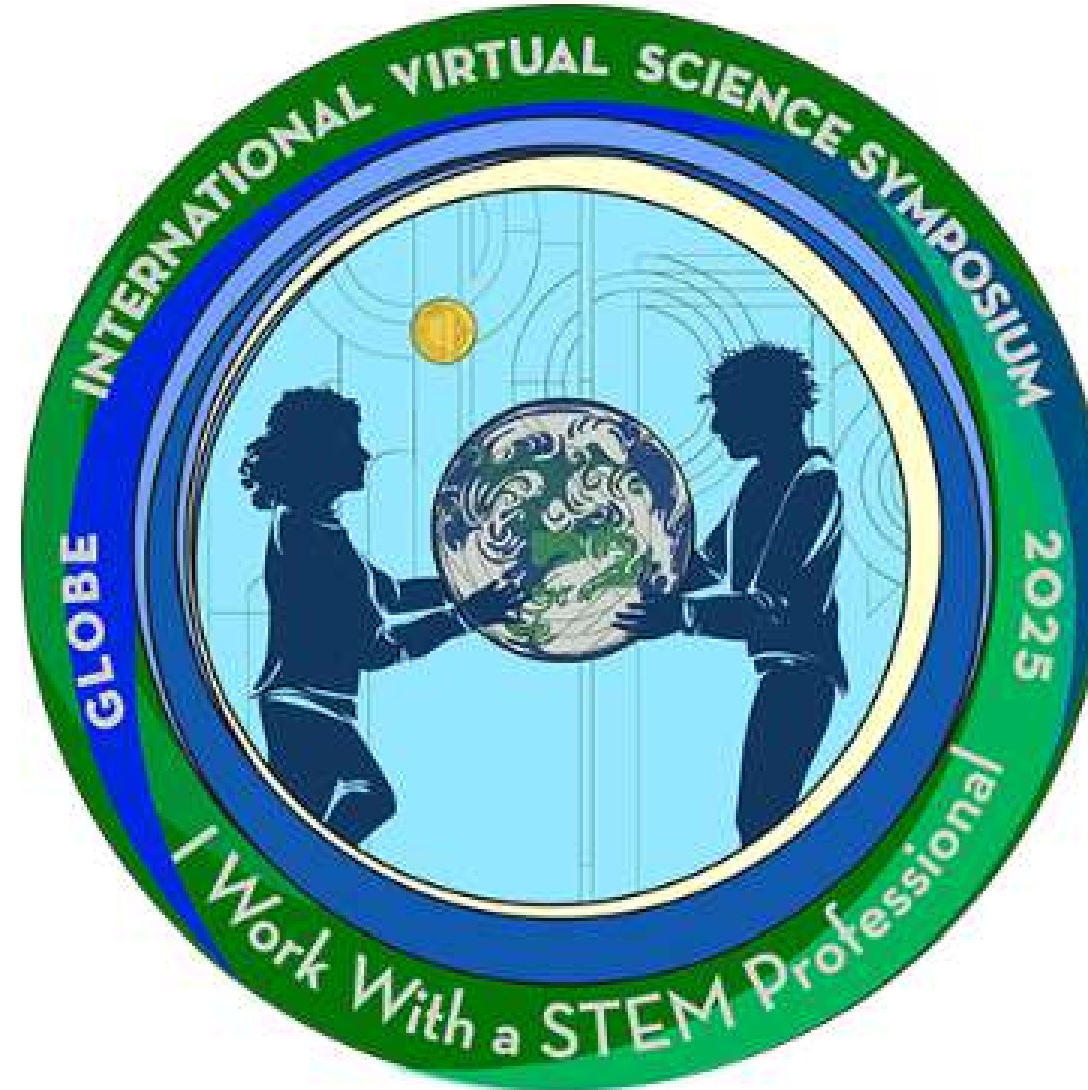


- In December 2024, Cha-uat received 5-105.2 mm of rain, while Tha Sala saw up to 482.1 mm on December 16, causing flooding. Tha Sala's mountainous terrain contributed to the heavier rainfall.
- Temperatures ranged from 25.66°C to 26.75°C in Cha-uat and 24.03°C to 27.28°C in Tha Sala, with no direct link between temperature and rainfall.
- Wind speeds varied, with Cha-uat peaking at 1.41 km/h and Tha Sala at 3.84 km/h, highlighting the differences in local weather patterns.

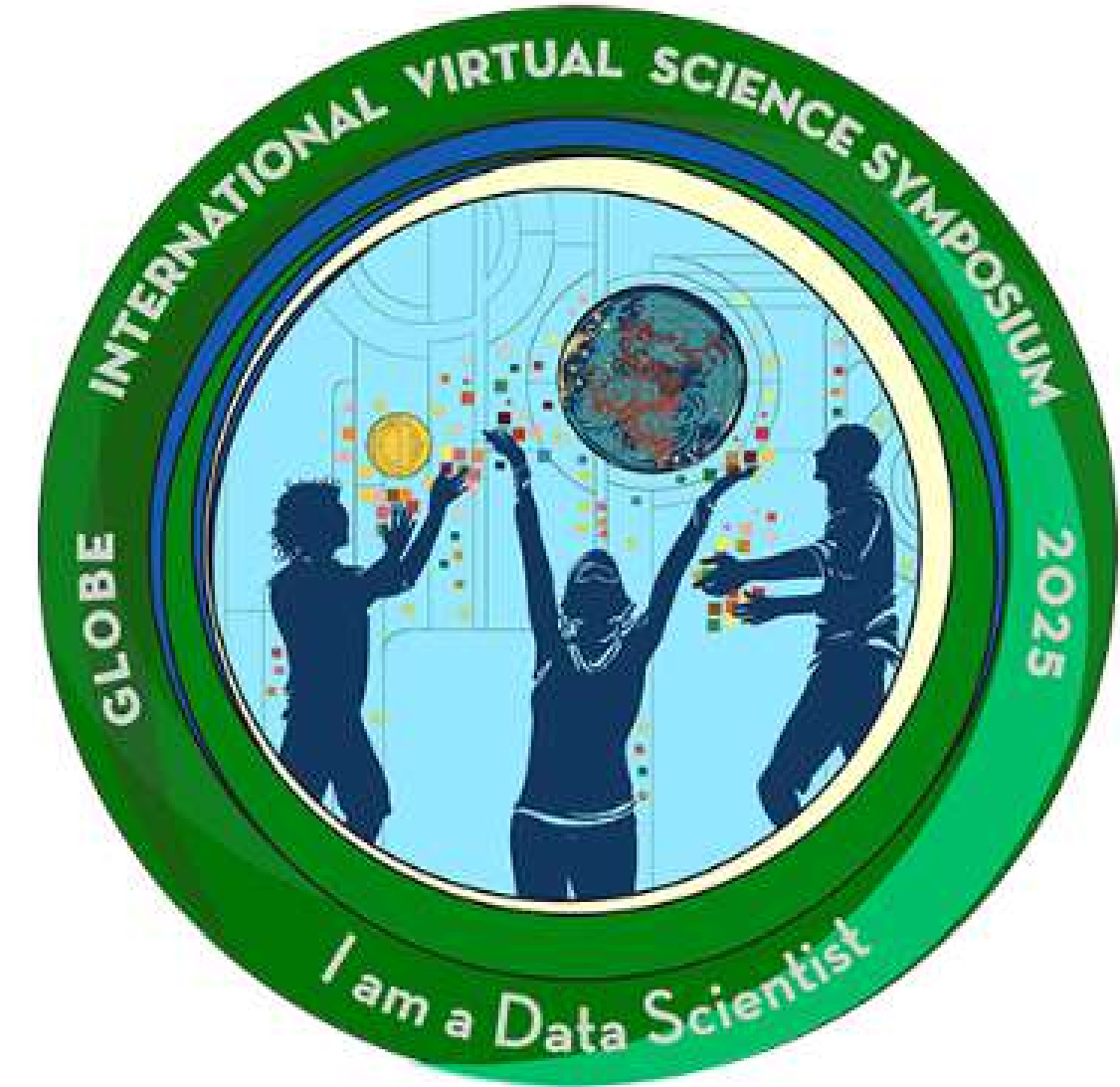
IVSS badges



I make an impact



I am a STEM professional



I am a data scientist

References



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Acknowledgements



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Thank You

