



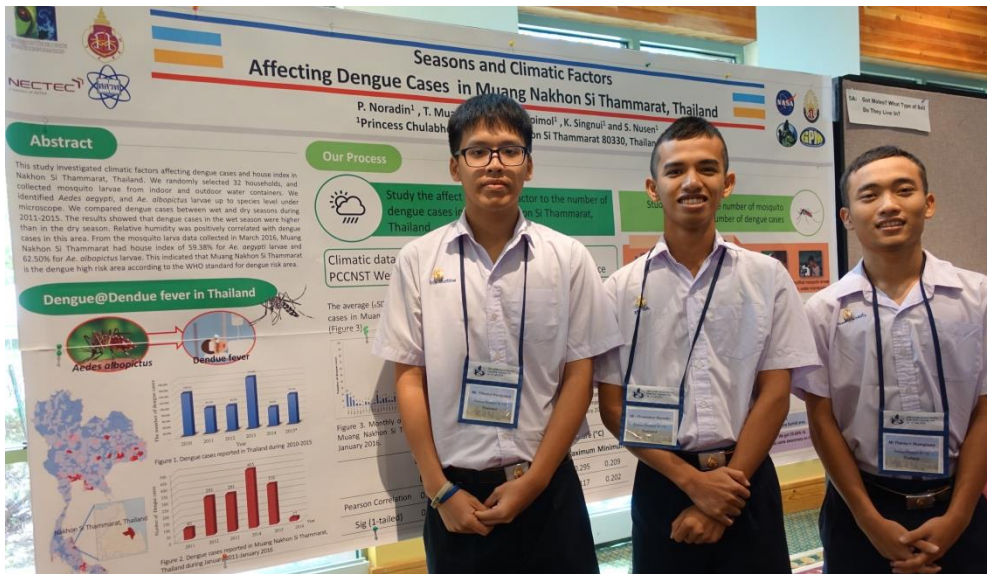
The Students' Experience for the GLOBE International Science Symposium Preparing

Mr. Phuwadon Noradin

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**Princess Chulabhorn Science High School
Nakhon Si Thammarat (PCSHS NST), Thailand**



PCSHS NST Science Project & GLOBE Project

GLOBE Project

Grade 10 : 1stSemester

Project proposal & Project pre-study

**We are already progress.....Project planning
Project experiment**

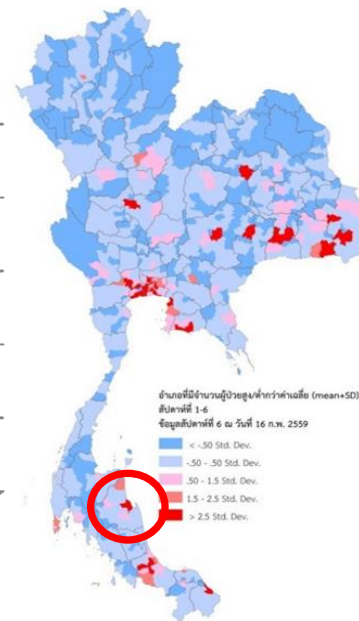
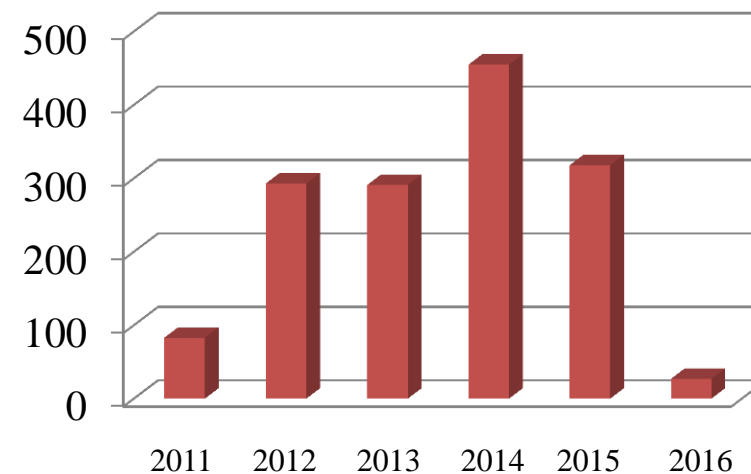
**The Effect of Climate Change on
Dengue Incidence in Muang Nakhon
Si Thammarat, Thailand**



Mosquito lavea data



weather data



The GLOBE International Science Symposium preparing

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2016 GLOBE International Virtual Science Fair

The GLOBE Program is pleased to announce the 2016 GLOBE International Virtual Science Fair for students around the world. With GLOBE, students learn the practices of science through hands-on investigations in their own communities, sparking their curiosity and interest in science. This often leads to inquiries that help solve real-world problems and further understanding of our global environment. Now it's time for your students to show the world what they've learned!

Upload your research report

Overview:

The 2016 GLOBE International Virtual Science Fair takes place online, and students from any GLOBE country may participate. GLOBE students should use the GLOBE data they entered into the database and



**How and What to Submit:
Report.
Presentation Clip.**

Scoring:

Timeline:

Research Report

Seasons and Climatic Factors Affecting Dengue Cases in Muang Nakhon Si Thammarat, Thailand

Students: Phuwadon Noradin*, Thiranai Keatpimol, Thanayot Muangkeaw

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Teacher: Mrs. Kanokrat Singnui and Mr. Sutep Nusen

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8 March 2016

ABSTRACT

This study investigated climatic factors affecting dengue cases and house index in Nakhon Si Thammarat, Thailand. We randomly selected 32 households, and collected mosquito larvae from indoor and outdoor water containers. We identified *Aedes aegypti*, and *Ae. albopictus* larvae up to species level under microscope. We compared dengue cases between wet and dry seasons during 2011-2015. The results showed that dengue cases in the wet season were higher than in the dry season. Relative humidity was positively correlated with dengue cases in this area. From the mosquito larva data collected in March 2016, Muang Nakhon Si Thammarat had house index of 59.38% for *Ae. aegypti* larvae and 62.50% for *Ae. albopictus* larvae. This indicated that Muang Nakhon Si Thammarat is the dengue high risk area according to the WHO standard for dengue risk area.

Keywords: dengue cases, atmospheric measurement, GLOBE, Thailand, Nakhon Si Thammarat

The Effect of Climate Change on Dengue Incidence in Muang Nakhon Si Thammarat, Thailand

Data analysis and conclusion

Scientific methods were checked by the teacher and GLOBE trainer

Paper Template : Research report

Presentation

YouTube



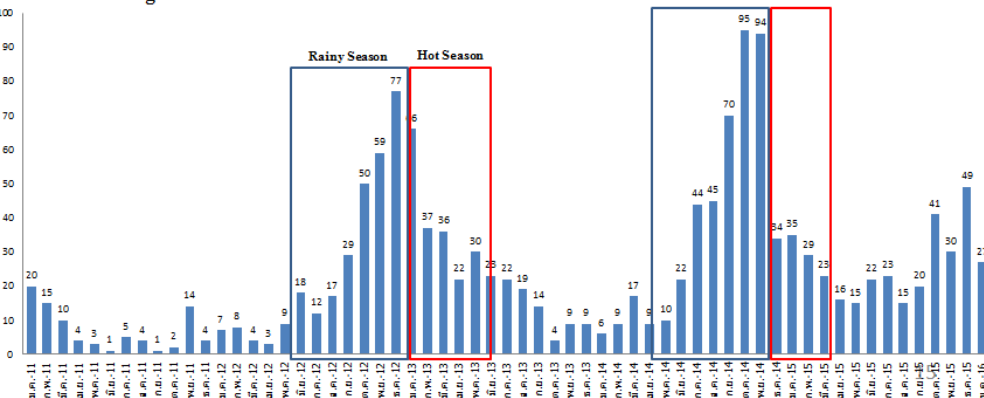
Seasons and Climatic Factors Affecting Dengue Cases in Muang, Nakhon Si Thammarat, Thailand

<https://www.youtube.com/watch?v=QrnAzPnd3RQ>

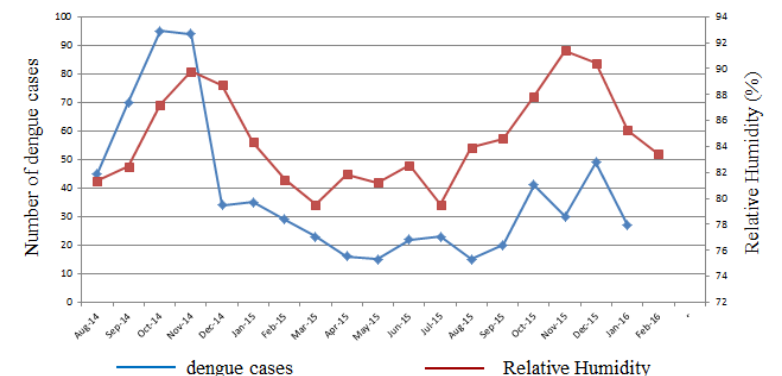
Uploaded presentation video

Data Summary and Analysis

The number of dengue cases



The number of dengue cases and Relative Humidity, Nakhon Si Thammarat, August 2014 to February 2016



The GLOBE International Science Fair Poster



Seasons and Climatic Factors Affecting Dengue Cases in Muang Nakhon Si Thammarat, Thailand

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Abstract

This study investigated climatic factors affecting dengue cases and house index in Nakhon Si Thammarat, Thailand. We randomly selected 32 households, and collected mosquito larvae from indoor and outdoor water containers. We identified *Aedes aegypti*, and *Ae. albopictus* larvae up to species level under microscope. We compared dengue cases between wet and dry seasons during 2011-2015. The results showed that dengue cases in the wet season were higher than in the dry season. Relative humidity was positively correlated with dengue cases in this area. From the mosquito larva data collected in March 2016, Muang Nakhon Si Thammarat had house index of 59.38% for *Ae. aegypti* larvae and 62.50% for *Ae. albopictus* larvae. This indicated that Muang Nakhon Si Thammarat is the dengue high risk area according to the WHO standard for dengue risk area.

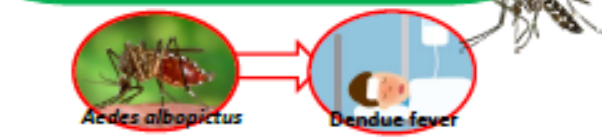
Our Process

Study the affect of climatic factor to the number of dengue cases in Muang Nakhon Si Thammarat, Thailand.

Climatic data : PCCNST Weather Station
 Dengue cases data : NST Provincial Health Office

Study the affect of the number of mosquito larvae to number of dengue cases

Dengue@Dendue fever in Thailand



The average (\pm SD) dengue cases in wet and dry seasons were 32.16 \pm 28.65 and 17.72 \pm 14.70. Dengue cases in Muang Nakhon Si Thammarat in the wet season were higher than in the dry season (Figure 3).

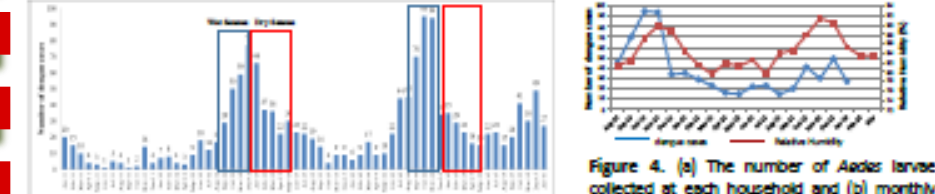


Figure 3. Monthly dengue cases in wet and dry seasons in Muang Nakhon Si Thammarat, Thailand for January 2011-January 2016.

	Rainfall		Rainy days (days)	Temperature (°C)		
	(mm)	Relative Humidity (%)		Mean	Maximum	Minimum
Pearson Correlation	0.306	0.448	0.351	-0.364	-0.295	0.209

Data collection

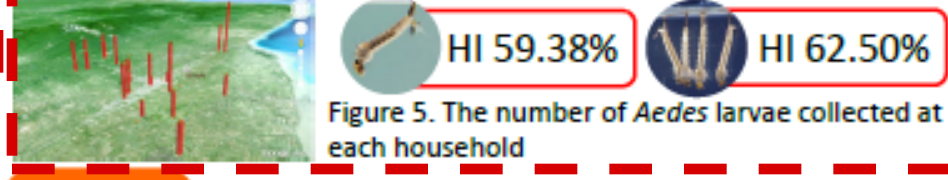
- Samples
 - 2 houses/sub-district
 - 16 sub-districts
 - Total 32 households
- Collected all mosquito larvae from both indoor and outdoor containers
- Placed mosquito larvae in plastic bags
- Preserved them in 70% alcohol
- Identified mosquito larvae app. under microscope

Data analysis

House Index (HI) The percentage of positive houses for *Aedes* larvae

$$HI = \frac{\text{No. of house positive for } Aedes \text{ larvae}}{\text{No. of houses inspected}} \times 100 \%$$

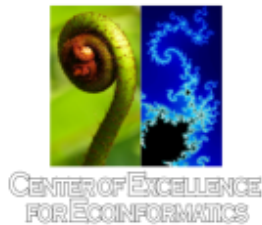
%HI =



Conclusion

- Relative humidity strongly correlated with dengue cases ($P < 0.05$).
- This indicates that mosquito eggs tend to be more viable in more humid area.

As WHO classified dengue risk area with HI greater than 5%. We got 59.68% HI. So we are thinking about launching some campaign to raise some awareness on mosquito larvae in



Acknowledgement

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Thank you