

Rural Training Center – Thailand (RTC-TH)

REEEPP FOCUS

An innovative, non-traditional community-based environmental education program integrating math, science, geography, English language, and technology lessons for environmental stewardship using interactive experiential learning in outdoor settings at Ban Na Fa Elementary School, Nan Province, Thailand.



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Weather Observing: Measuring Rainfall



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W-5

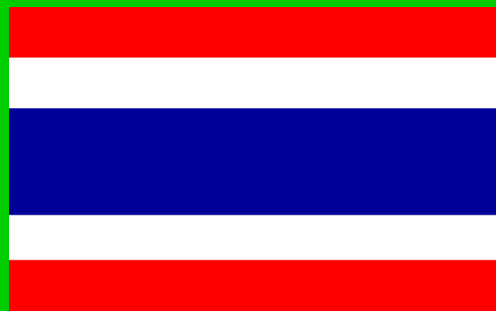


This lesson was originally created when the RTC-TH was a program of ESS I (Earth Systems Science, Inc.), a California educational non-profit organization co-founded by Gregory Lee. In 2006, the RTC-TH was co-founded by Gregory and Saifon Lee as a separate organization.



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This is an English Language Training module of **REEEPP**

Rural Environmental Education Enhancement Pilot Program
presented by
The Rural Training Center-Thailand

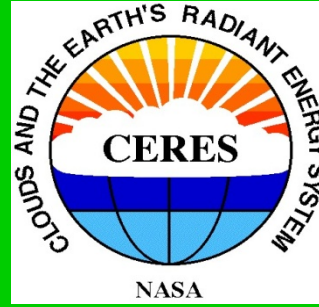
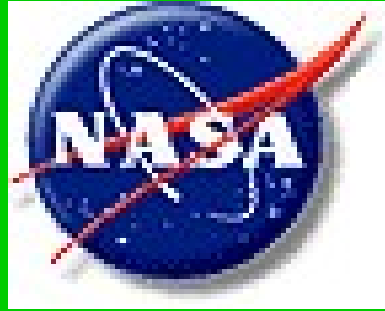
E-mail: rtc2k5@gmail.com

www.neighborhoodlink.com/org/rtcth



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The RTC-TH developed this lesson as part of the NASA CERES S'COOL Project component of REEEPP



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Precipitation is any form of solid or liquid water falling from a cloud.



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For Ban Na Fa, rain is the most common form of precipitation.



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A rain gauge is used to measure the rainfall in an area.



Put the rain gauge in an open level area far from buildings and trees.



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It can be put on the ground or on a pole.



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If put on the ground, the top of the rain gauge should be 50 cm above the ground.



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If put on a pole, the rain gauge should be above the top of the pole.



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This keeps water from the ground or pole splashing into the rain gauge.



Here are
two Thai-
style Na
Fa rain
gauges.



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Here are the basic parts of the rain gauge.

Collector Bottle

Collector Bottle Holder

Pole



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To measure
the rain in the
gauge, you
need a
graduated
cylinder.



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When the rain stops, remove the collector bottle from the rain gauge.



Use a graduated cylinder to measure the amount of rain you collected.

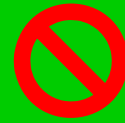


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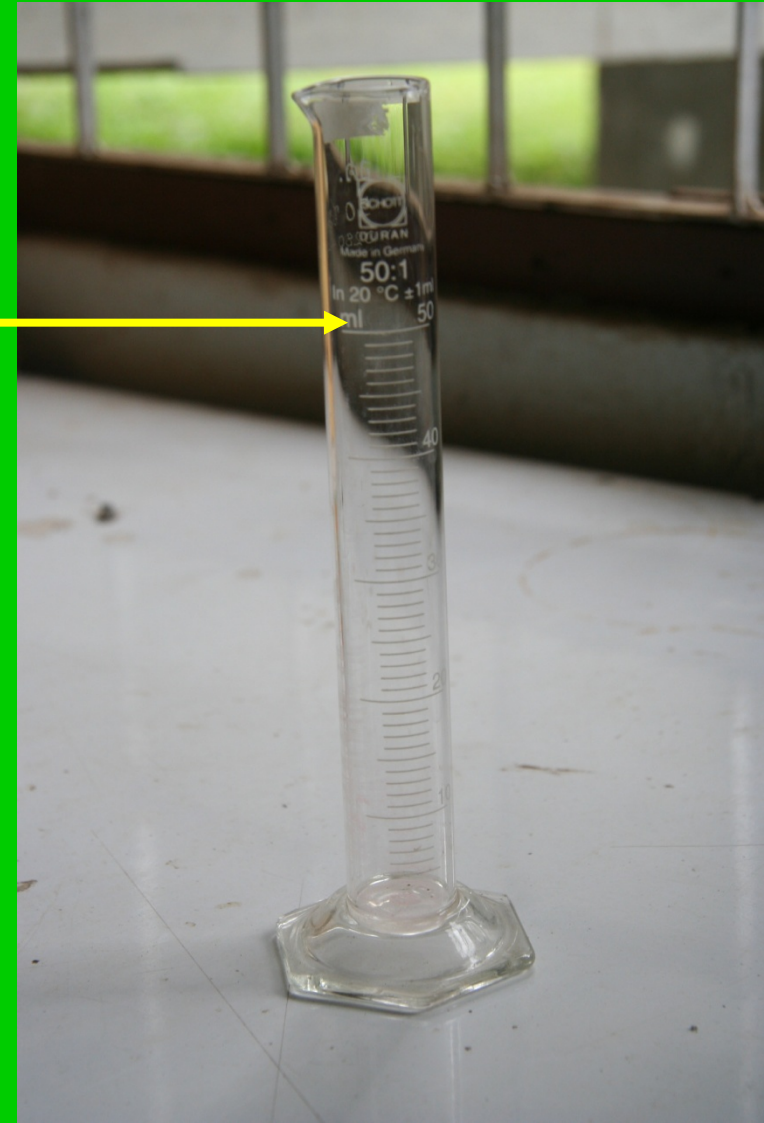
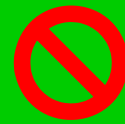
Watch carefully as you measure.

Fill the water
up to the
measuring
mark. Not
more, and
not less.



+

-

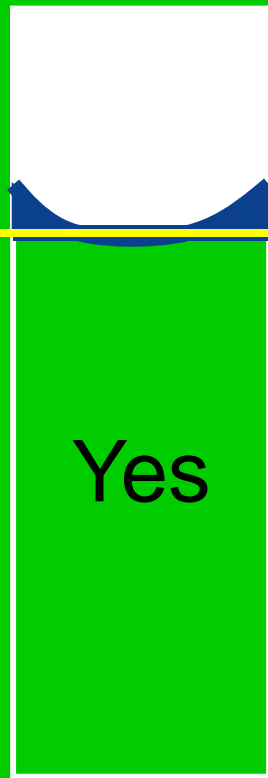


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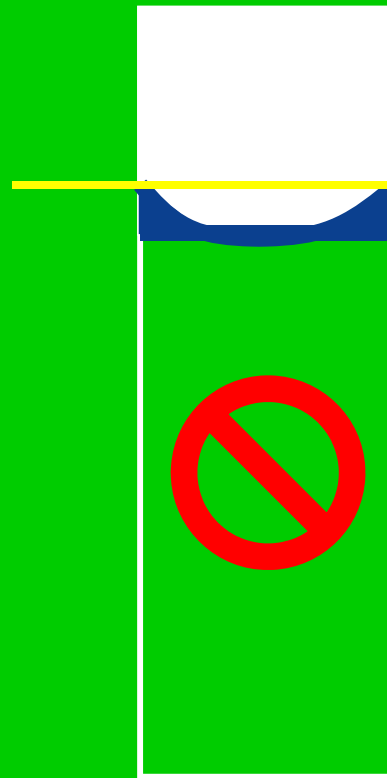
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It sounds easy, but the water does **NOT** stay flat.

50 ml
mark



50 ml
mark



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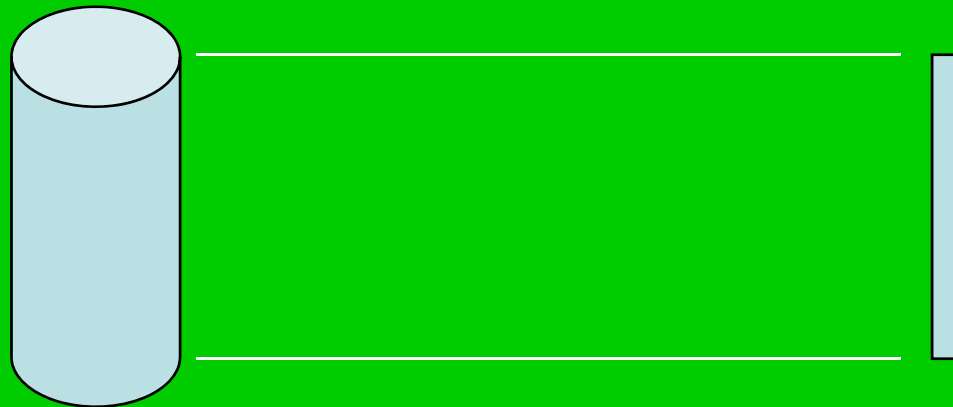
Record the total number of milliliters of rain.



Now do some arithmetic.

You measured the volume of water and
need to report rainfall in linear units.

1 milliliter of water = 0.001 mm of rainfall



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NASA CERES
Student Cloud Observation On-Line
Report Form (REEPP Version)

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 www.earthsystemscience.org | E-mail: earthsystemscience@yahoo.com

Community-based Environmental Education for Families and Sustainable Neighborhoods

Login ID: Promwangkhwa | Na Fa Village, Thawangpha
 Latitude: 19.08 N | Longitude: 100.86 E
 Date: Year ____ Month ____ Day ____ | Satellite: ☐ Terra ☐ Aqua
 Time Zone: UT +7
 (24-hr format) Local Time: Hr ____ Min ____ | Universal Time: Hour ____ Min ____

CLOUD OBSERVATIONS (Required)
 If more than one cloud layer exists, check the boxes to show the clouds are present.

Cloud Height	Cloud Type	Visual Opacity			Cloud Cover
		Transparent	Translucent	Opaque	
High	<input type="checkbox"/> Cirrus				• Use the Na Fa Cloud Cover Estimator Dome Worksheet to record the student observations and calculations. • Then check the box below
	<input type="checkbox"/> Cirrocumulus				
	<input type="checkbox"/> Cirrostratus				
Middle	<input type="checkbox"/> Altostratus				<input type="checkbox"/> Overcast (95-100%) <input type="checkbox"/> Mostly cloudy (50-95%)
	<input type="checkbox"/> Altostratus				
Low	<input type="checkbox"/> Cumulonimbus				<input type="checkbox"/> Partly cloudy (5-50%) <input type="checkbox"/> Clear (0-5%)
	<input type="checkbox"/> Cumulus				
	<input type="checkbox"/> Stratocumulus				
	<input type="checkbox"/> Stratus				
	<input type="checkbox"/> Nimbostratus				
	<input type="checkbox"/> Fog				

CONTRAILS (This is optional.)

1	Can you see high into the sky?	<input type="checkbox"/> Yes, go to #2 <input type="checkbox"/> No, why?	<input type="checkbox"/> Sky is overcast <input type="checkbox"/> Too many clouds	Any natural looking cirrus clouds in sky with the persistent contrails? <input type="checkbox"/> Yes, type? <input type="checkbox"/> Cirrus <input type="checkbox"/> Cirrocumulus <input type="checkbox"/> Cirrostratus <input type="checkbox"/> No	Make a fist to block out the sun. Can you see a halo? <input type="checkbox"/> Yes <input type="checkbox"/> No
2	Can you see any contrails?	<input type="checkbox"/> Yes, go to #3 <input type="checkbox"/> No, why?	<input type="checkbox"/> None present <input type="checkbox"/> Sky is overcast <input type="checkbox"/> Too many clouds		
3	Contrail type & count	<input type="checkbox"/> Short-lived <input type="checkbox"/> Persistent	Count? <input type="checkbox"/> Go to #4	5	Estimate % sky covered by persistent contrails

GROUND OBSERVATIONS

Surface Cover (Required)		Surface Measurements (These are optional.)	
Yes	No	Precipitation <input type="checkbox"/> mm <input type="checkbox"/> in	Speed <input type="checkbox"/> kmph <input type="checkbox"/> mph
<input type="checkbox"/> Snow / ice		Temperature <input type="checkbox"/> °C <input type="checkbox"/> °F	Direction <input type="checkbox"/> True <input type="checkbox"/> Mag
<input type="checkbox"/> Standing water		Relative Humidity	Barometric Pressure
<input type="checkbox"/> Muddy		<input type="checkbox"/> Dry <input type="checkbox"/> Wet	<input type="checkbox"/> In Hg <input type="checkbox"/> mm Hg
<input type="checkbox"/> Dry Ground		% Difference	Trend
<input type="checkbox"/> Leaves on trees			

Multiply to
total number
of milliliters
by 0.001

Report the
precipitation
amount on this
part of the form



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Do you know how to measure precipitation?



Try to answer these questions.



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Do you know the parts of a rain gauge?

What is this?

- A) The pole
- B) The collector bottle holder



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A) It is the Pole.



What is this?

- A) The collector bottle
- B) The collector bottle holder



A) It is Collector Bottle



What is this?

- A) The collector bottle
- B) The collector bottle holder



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B) It is Collector Bottle Holder



How do you measure the rain water you collected?



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Use a graduated cylinder to measure the amount of rain you collected.



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What is the first measurement you record?



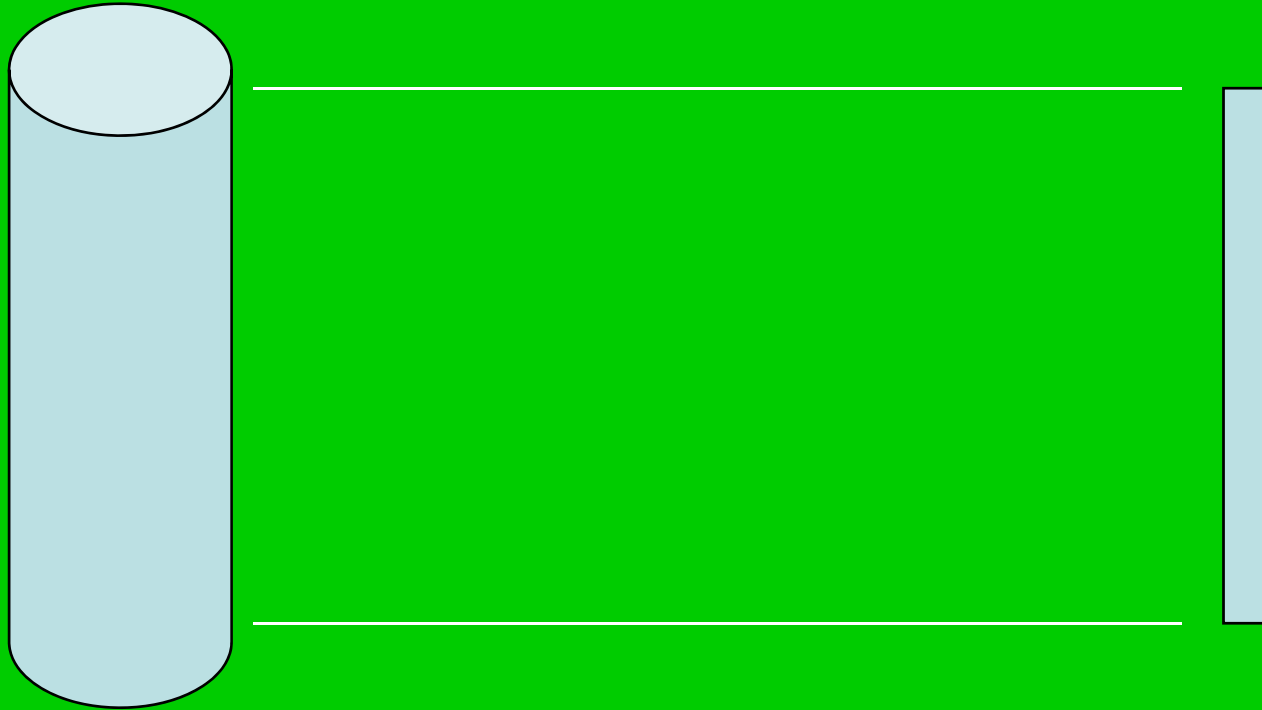
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Record the total number of milliliters of rain.



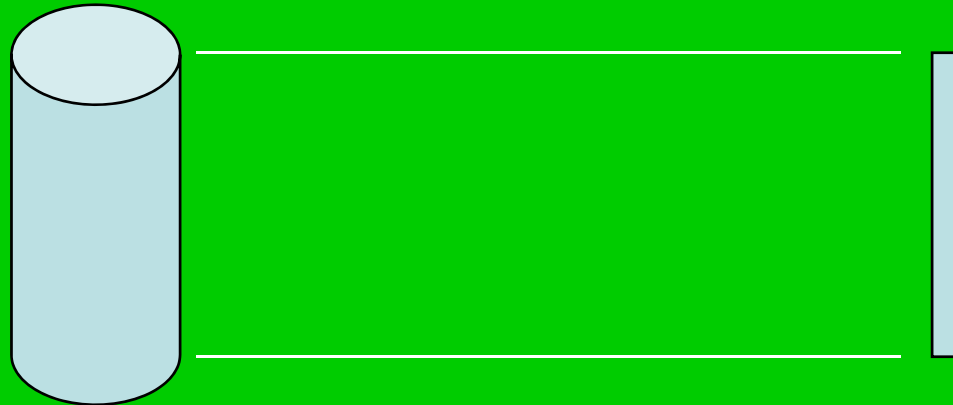
What do you do next?



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2	Can you see any contrails?	<input type="checkbox"/> Yes, go to #3 <input type="checkbox"/> No, why?	<input type="checkbox"/> None present <input type="checkbox"/> Sky is overcast <input type="checkbox"/> Too many clouds		<input type="checkbox"/> Yes <input type="checkbox"/> No
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<input type="checkbox"/>	<input type="checkbox"/>	Temperature	<input type="checkbox"/> °C <input type="checkbox"/> °F	Direction	<input type="checkbox"/> True <input type="checkbox"/> Mag
<input type="checkbox"/>	<input type="checkbox"/>	Relative Humidity	Temperature <input type="checkbox"/> °C <input type="checkbox"/> °F Dry <input type="checkbox"/> Wet <input type="checkbox"/> Difference	Barometric Pressure	
<input type="checkbox"/>	<input type="checkbox"/>	%		<input type="checkbox"/> in Hg	Trend
<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/> mm Hg	

Multiply to
total number
of milliliters
by 0.001

Report the
precipitation
amount on this
part of the form



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Now you know how to measure precipitation.



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RTC-TH

Rural Training Center-Thailand

is dedicated to providing
community-based
environmental education
for the self-sufficiency
and sustainability of
small rural family farms



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The RTC-TH was created to honor the memory of Mr. Tang Suttisan, a father, a farmer, and a man who valued education and used it in starting his family farm



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REEEPP

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An innovative, non-traditional community-based environmental education program integrating math, science, geography, English language, and technology lessons for environmental stewardship using interactive experiential learning in outdoor settings at Ban Na Fa Elementary School, Nan Province, Thailand..



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The End



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