

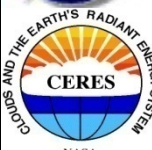
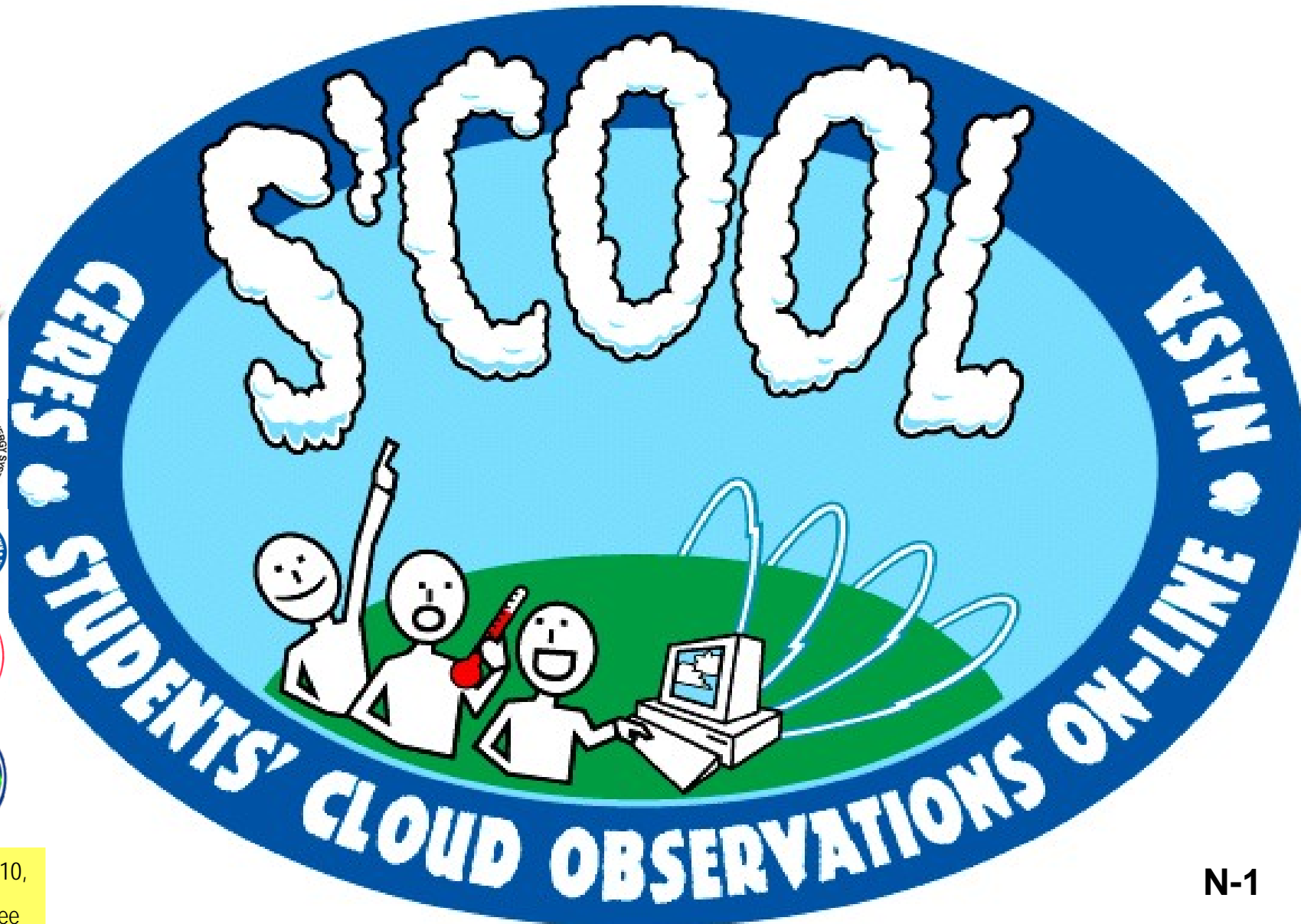
Rural Training Center – Thailand (RTC-TH) REEEPP

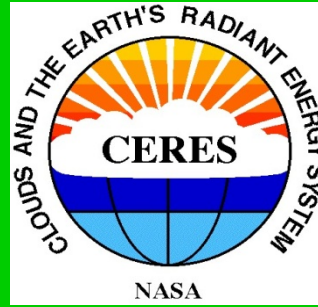
F OCUS

- 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.



Cloud Height and Type





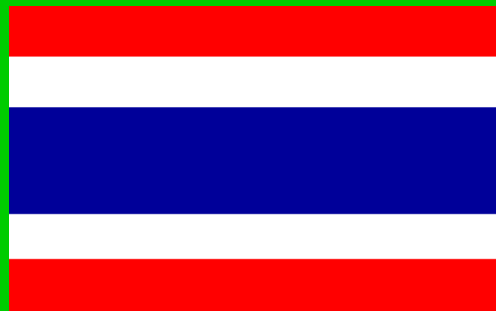
The RTC-TH developed this lesson as part of the NASA CERES S'COOL Project component of REEEPP





This lesson was originally created when the RTC-TH was a program of ESSi (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.





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





NASA CERES

Student Cloud Observation On-Line Report Form (REEEPP Version)

A 501 (c)(3) non-profit
educational organizationPo Box 8042, Van Nuys, CA 91409-8042
www.earthsystemscience.org

Phone: (818) 343-2363

E-mail: earthsystemscience@yahoo.com

Community-based Environmental Education for Families and Sustainable Neighborhoods

Login ID: Promwangkhwa

Na Fa Village, Thawangpha

Date: Year ____ Month ____ Day ____

Latitude: 19.08 N Longitude: 100.86 E

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"/> Overcast (95-100%) <input type="checkbox"/> Mostly cloudy (50-95%) <input type="checkbox"/> Partly cloudy (5-50%) <input type="checkbox"/> Clear (0-5%)
	<input type="checkbox"/> Cirrocumulus				
	<input type="checkbox"/> Cirrostratus				
Middle	<input type="checkbox"/> Altostratus				
	<input type="checkbox"/> Altostratus				
Low	<input type="checkbox"/> Cumulonimbus				
	<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	4	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	Go to #5
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"/> No	Make a fist to block out the sun. Can you see a halo?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3	Contrail type & count	<input type="checkbox"/> Short-lived <input type="checkbox"/> Persistent	Count? <input type="text"/> Go to #4	5	Estimate % sky covered by persistent contrails		

GROUND OBSERVATIONS

Surface Cover		Surface Measurements (These are optional.)					
Yes	No	Precipitation <input type="checkbox"/> mm <input type="checkbox"/> in	Temperature <input type="checkbox"/> °C <input type="checkbox"/> °F	Relative Humidity Temperature Dry Wet %	Wind Speed Direction	Barometric Pressure <input type="checkbox"/> In Hg <input type="checkbox"/> mm Hg <input type="checkbox"/> Mb	Trend
<input type="checkbox"/>	<input type="checkbox"/>						
<input type="checkbox"/>	<input type="checkbox"/>						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Report
the Cloud
Height
and Type
on this
part of
the form.



Cloud Height & Type

Clouds are classified by their height above the ground and by their basic shape.



Cloud Height

Cloud height is measured above the surface.

- High = 6,000 m to 12,000 m
- Middle = 2,000 m to 6,000 m
- Low = surface to 2,000 m



Cloud Height

High	12,000 m 6,000 m	Vertically Developed Clouds 12,000 m 500 m
Middle	6,000 m 2,000 m	
Low	2,000 m surface	



Basic Cloud Shapes

- Cirroform (curly)



- Stratiform (flat)



- Cumuloform (lumpy)



- Fog (no shape)



Cloud Heights & Types

High	Cirrus	Vertically Developed Clouds
Middle	Altostratus Alto cumulus	
Low	Stratus Cumulus	Cumulonimbus Nimbostratus



There may be more than one height and type of cloud in the sky at the same time.

Altostratus

Altostratus

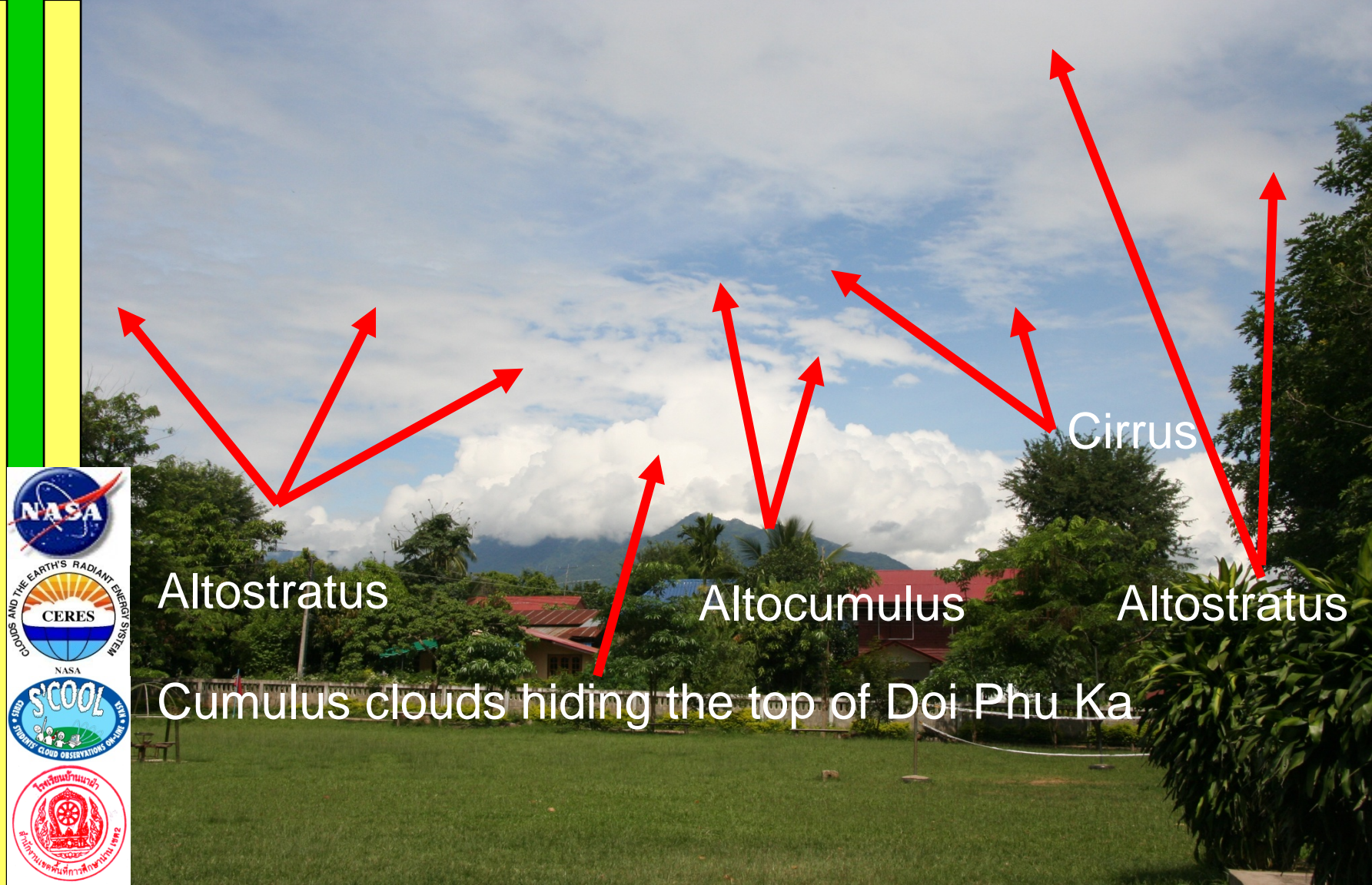
Cirrus

Cumulus



If a cloud touches Doi Phu Ka, it must be a type of low cloud.





Altostratus

Altocumulus

Cirrus

Altostratus

Cumulus clouds hiding the top of Doi Phu Ka

Then look for other clouds that are above the low clouds or have a different shape.



High Cloud Names

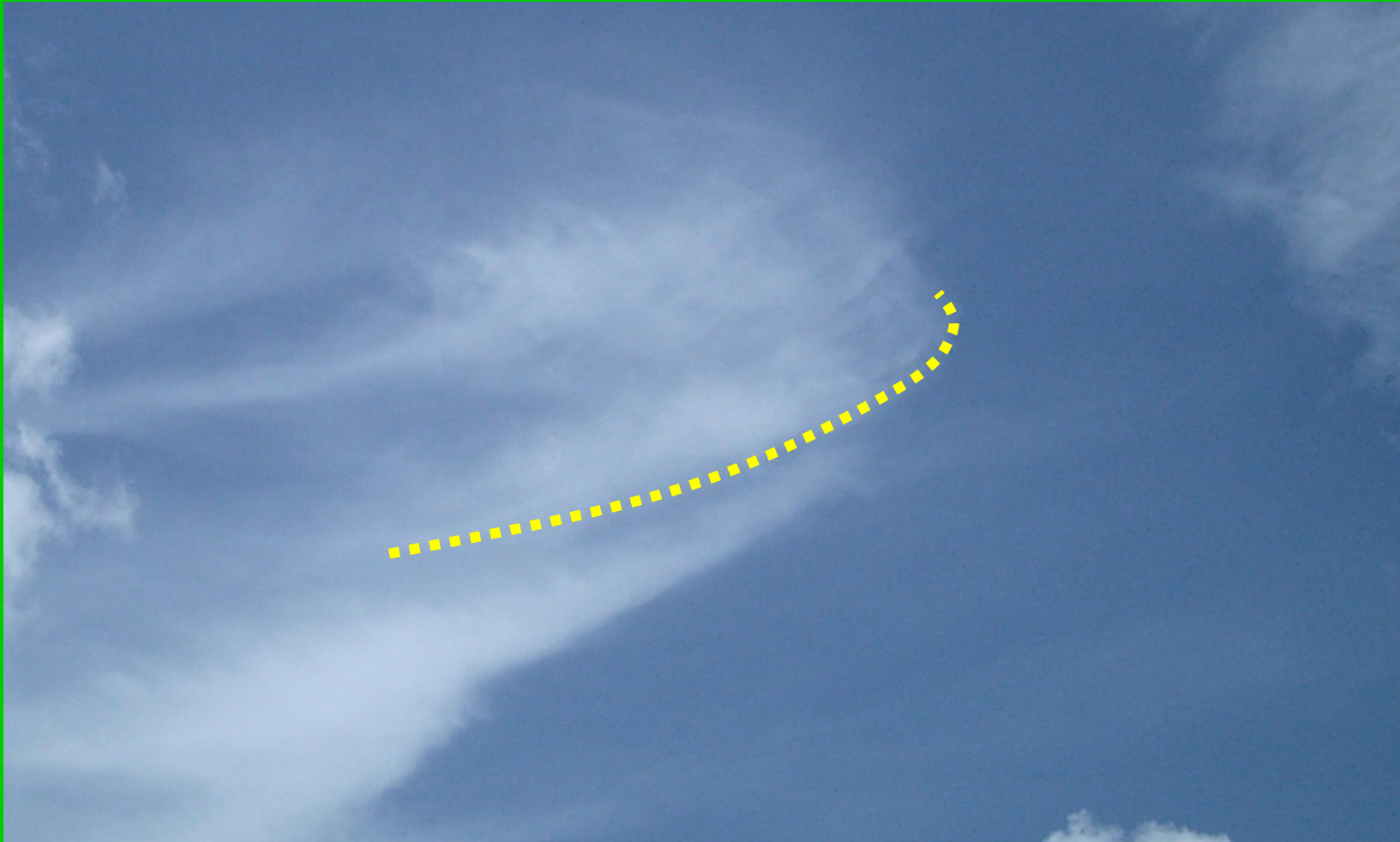
Cirrus = high curly clouds

Cirrocumulus = high lumpy clouds

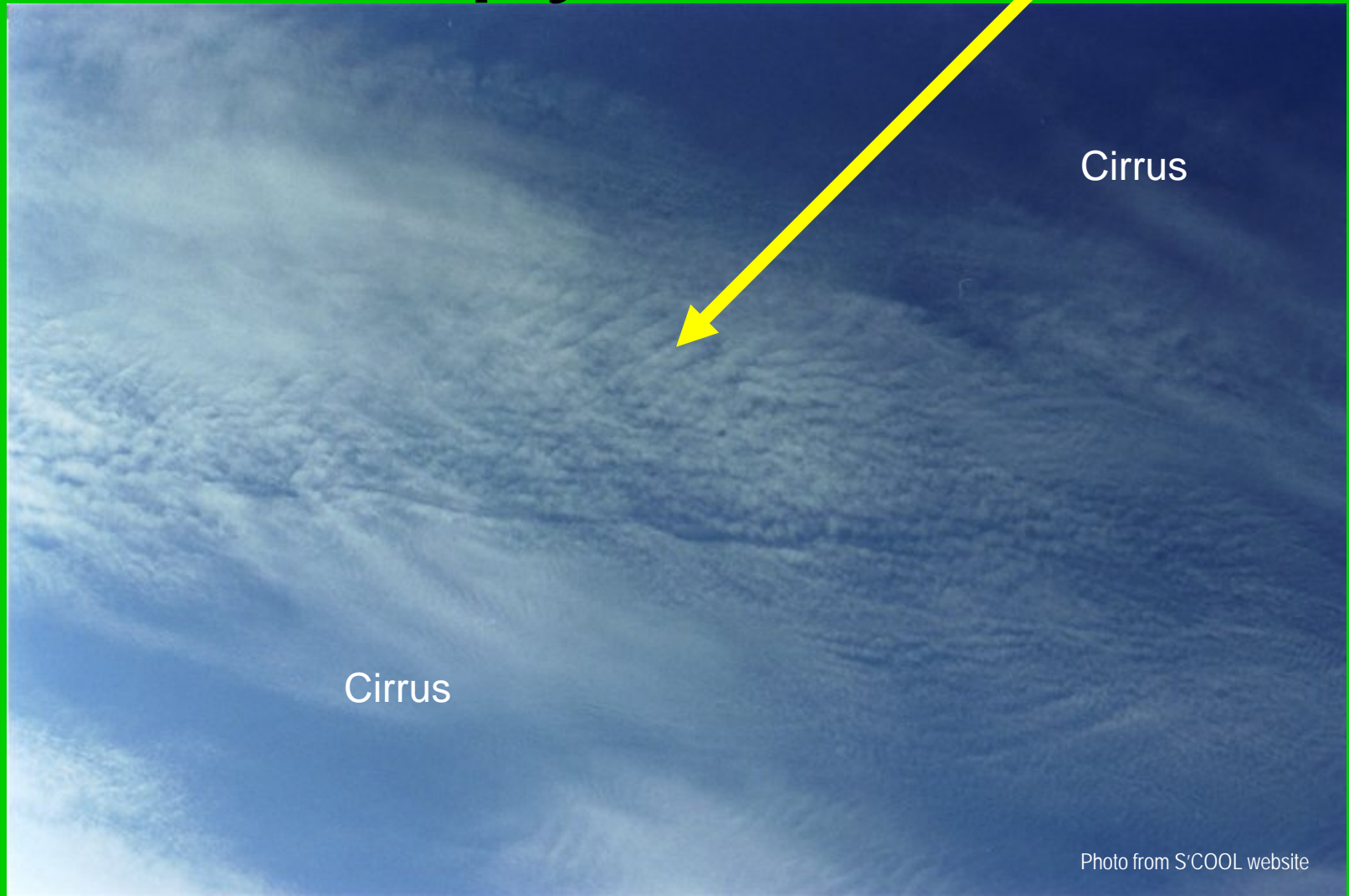
Cirrostratus = high flat clouds



Cirrus = high curly clouds



Cirrocumulus = high lumpy clouds



Cirrostratus = high flat clouds

Cirrus



Seen from
an airplane
at about
11,000 m
above the
ground

Altostratus

Alto cumulus



Middle Cloud Names

Alto cumulus = middle lumpy clouds

Alto stratus = middle flat clouds



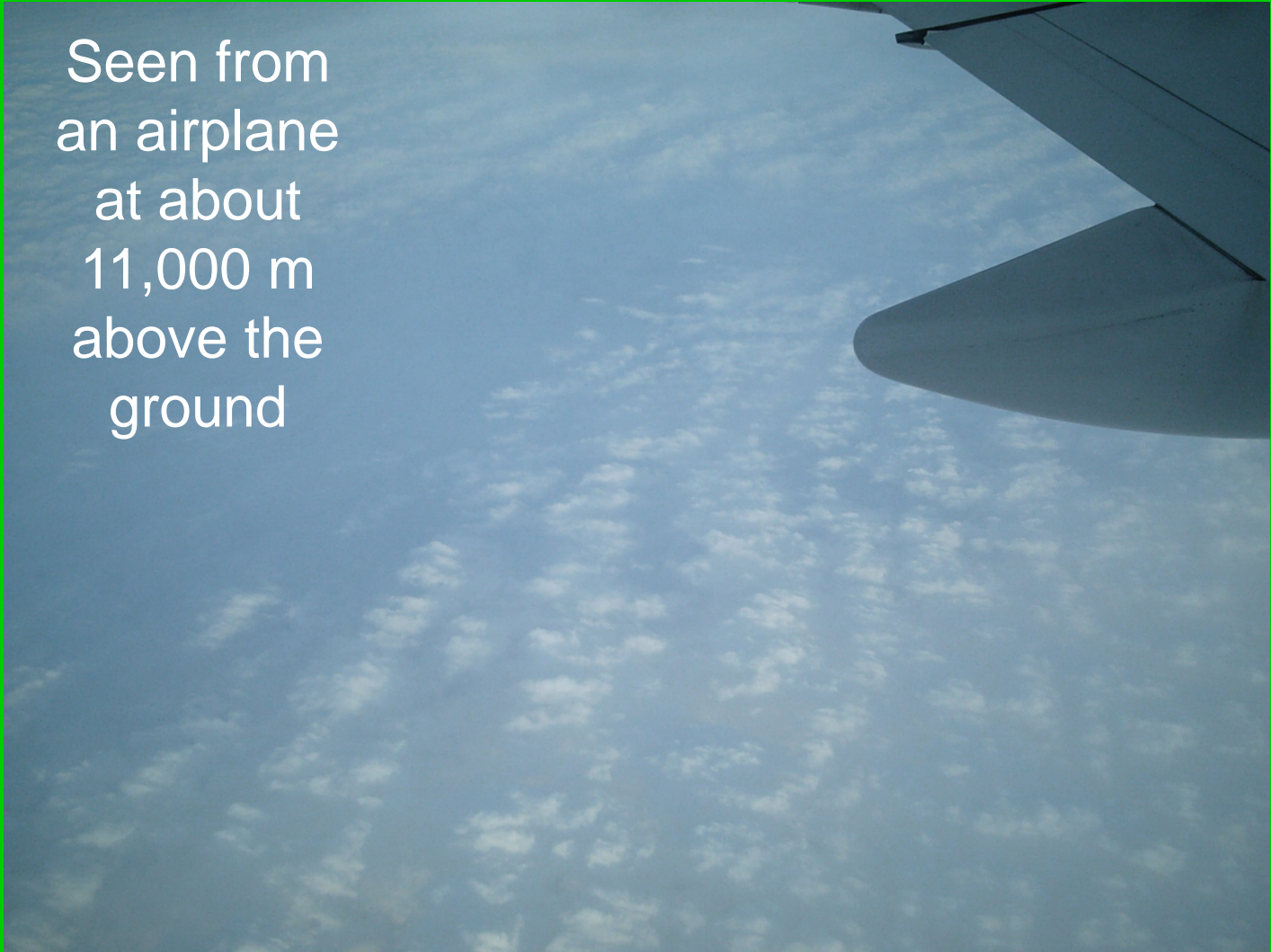
Alto cumulus = middle lumpy clouds



Looking up from the ground.

Alto cumululus = middle lumpy clouds

Seen from
an airplane
at about
11,000 m
above the
ground



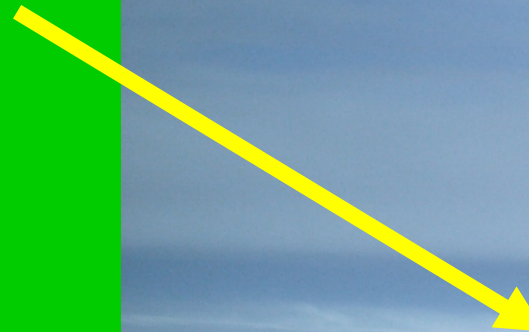
Altostratus = middle flat clouds

Seen from
an airplane
at about
11,000 m
above the
ground



Cirrus

Cirrostratus



Altostratus



Low Cloud Names

Cumulus = low lumpy clouds

Stratus = low flat clouds

Stratocumulus = low flat
clouds with some lumps

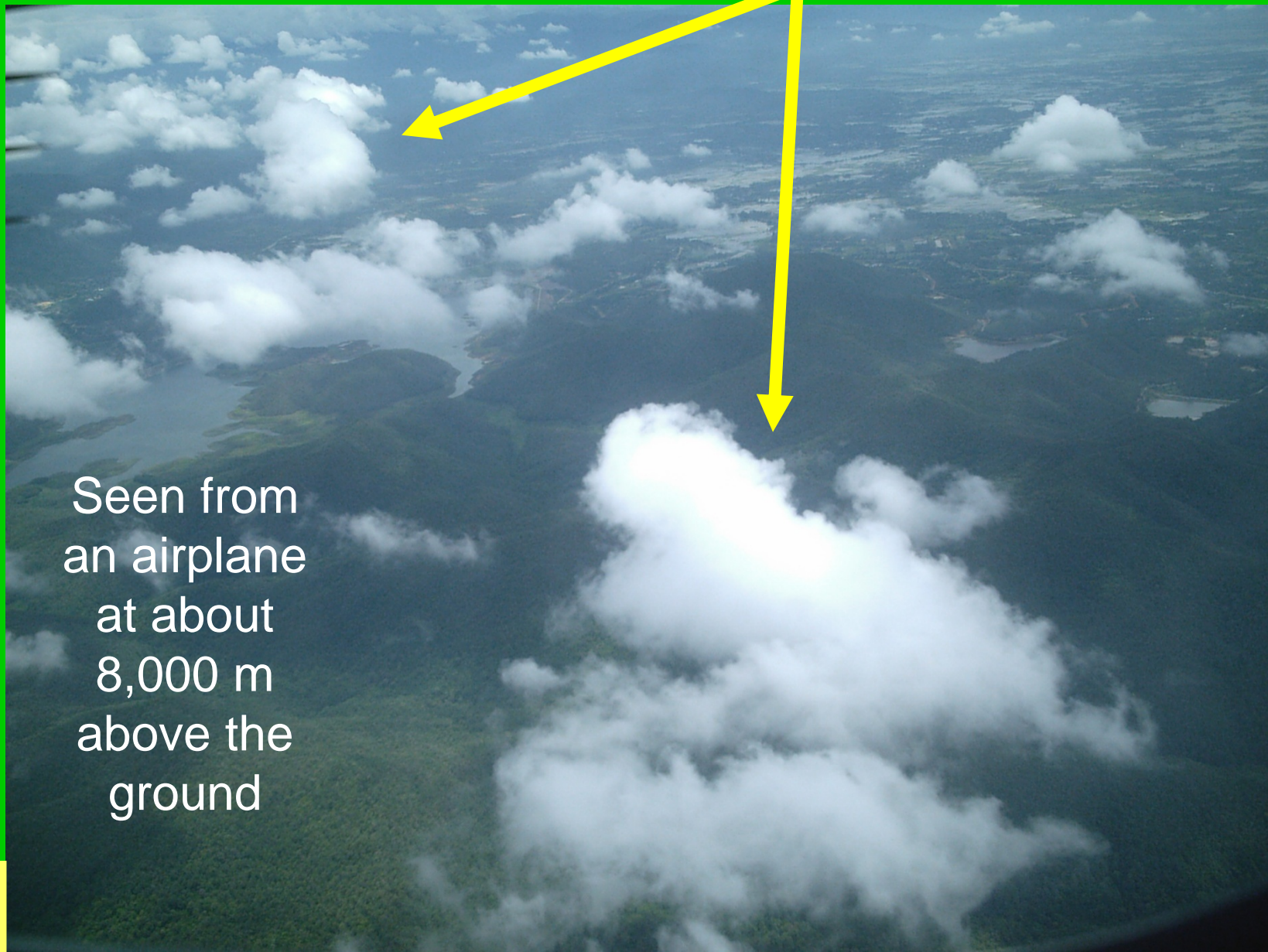
Nimbostratus = low flat clouds
with rain



Cumulus = low lumpy clouds



Cumulus clouds seen from above



Seen from
an airplane
at about
8,000 m
above the
ground



Stratus = low flat clouds



Stratus clouds seen from the side and from above



This photo was taken from an airplane about 5,500 m above the ground.

Nimbostratus = flat clouds with rain



Fog is a special kind of low cloud.

It is at ground level, so it has no shape we can easily see.



Vertically Developed Clouds

Cumulonimbus = towering lumpy clouds with heavy rain

Cumulus = towering lumpy clouds

For S'COOL these are low clouds.



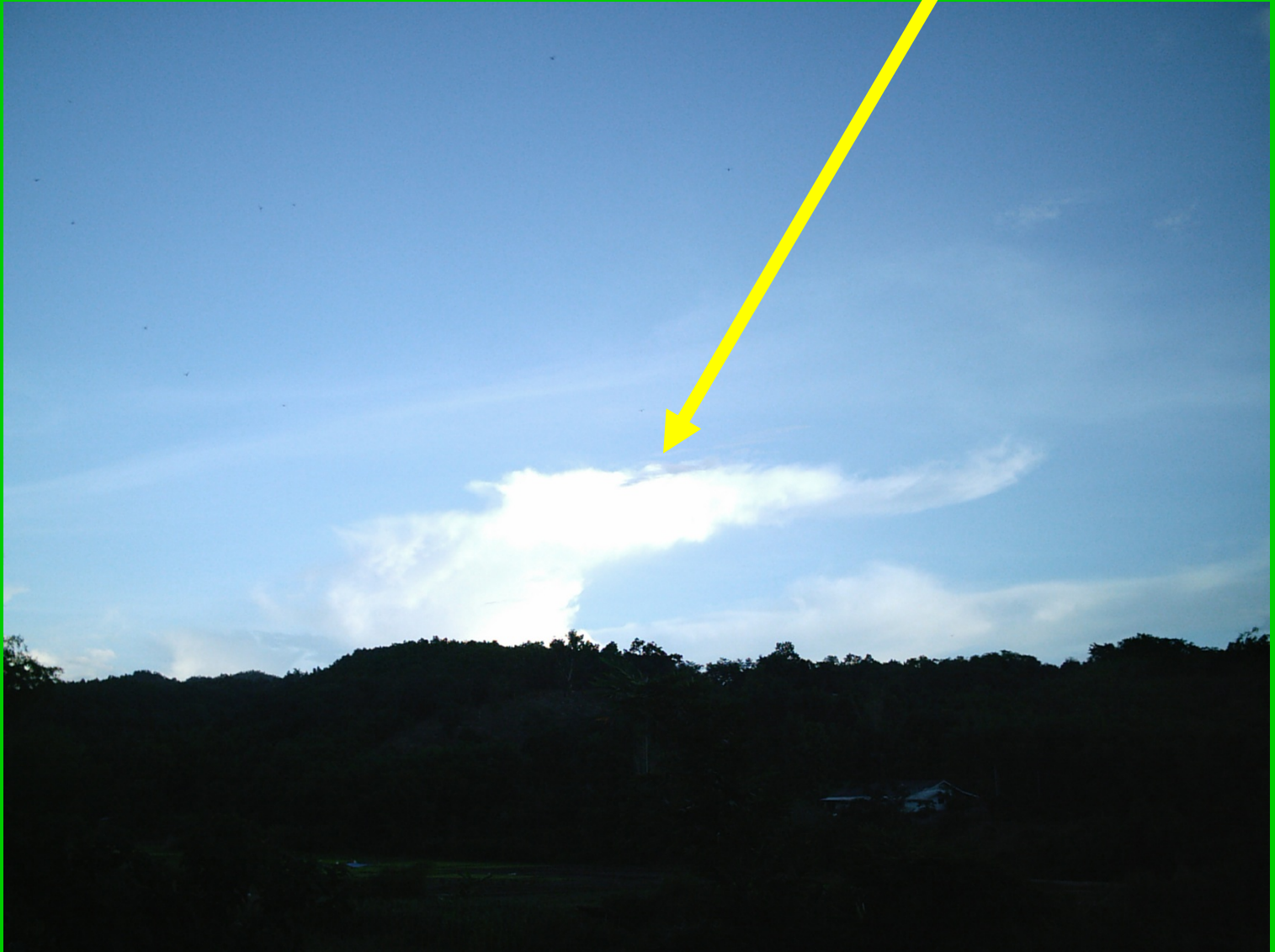
Cumulonimbus = towering lumpy clouds; heavy rain



Seen from an airplane at about
13,000 m above the ground



Some cumulus clouds can grow very tall.



These clouds
are listed as
low clouds
because you
usually only
see the lower
(bottom side)
of them.



Now you know how to identify and name clouds.



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





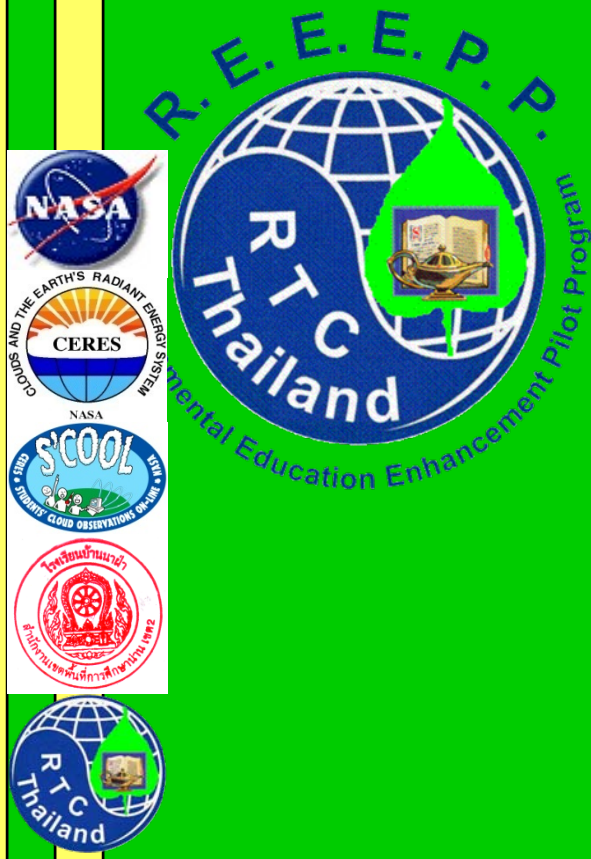
The RTC-TH was created to honor the memory of Mr. Tang Suttisan, a father, a farmer, and a man who valued education and used it in starting his family farm



REEEPP

Rural Environmental Education Enhancement Pilot Program

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The End

