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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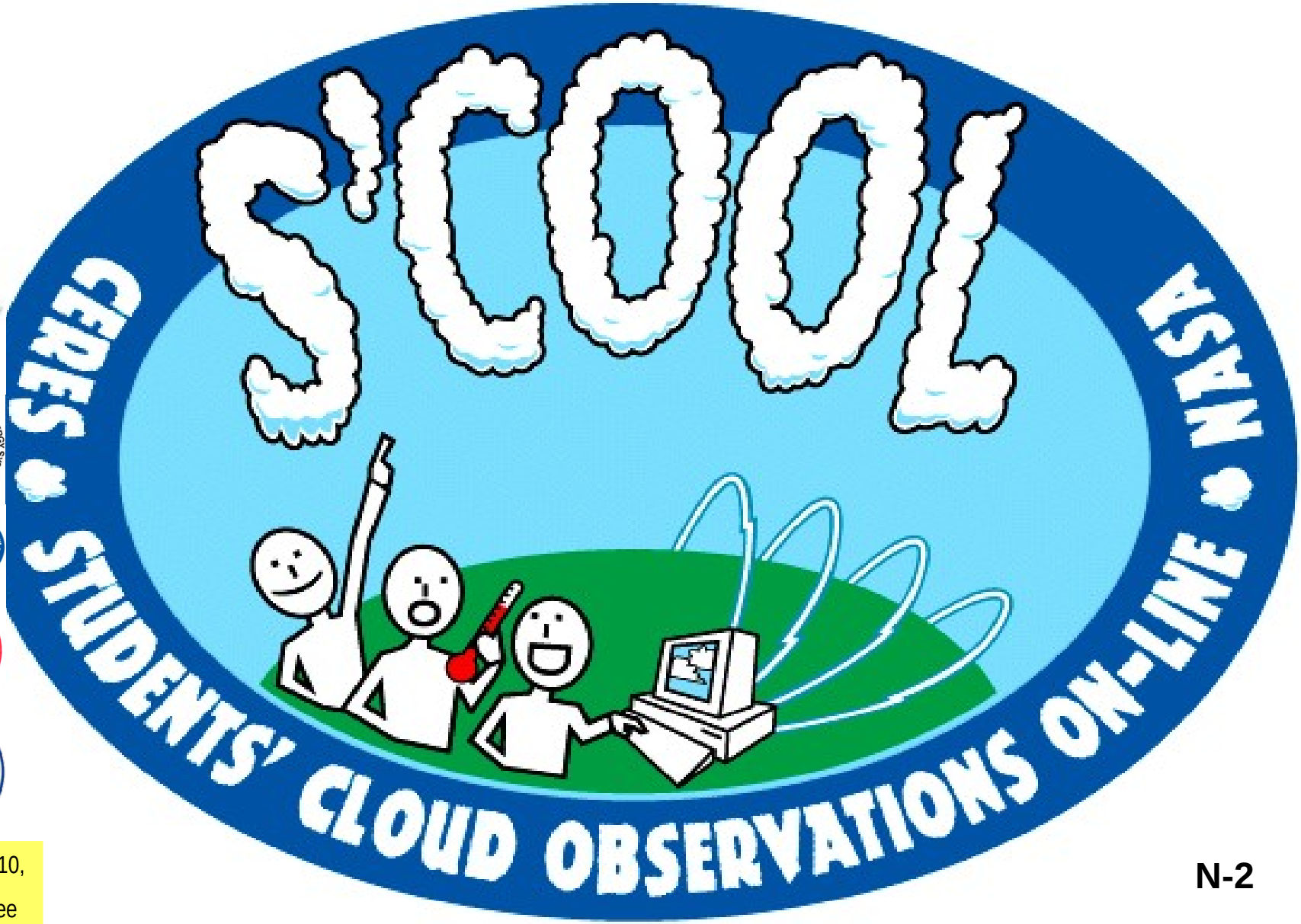
Visual Opacity



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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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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.

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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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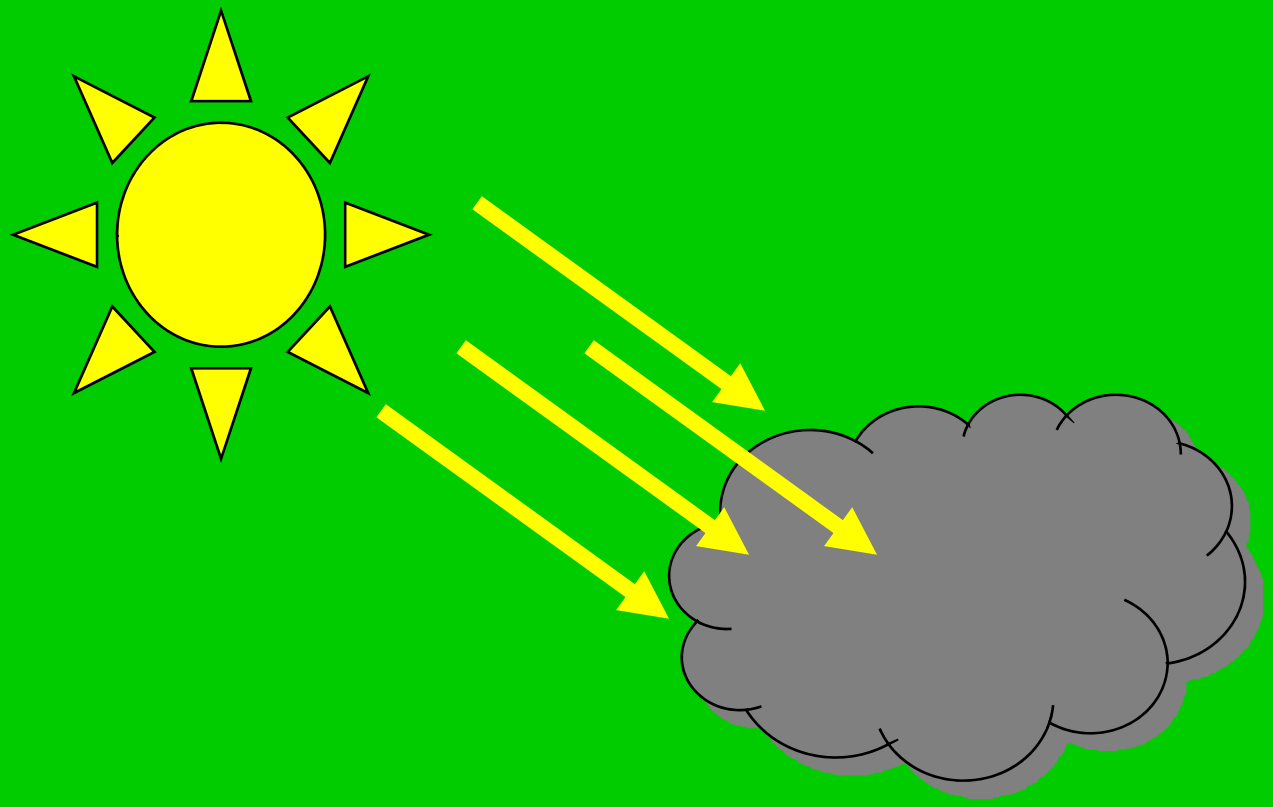
Opacity

is the ability of a cloud to block sunlight.



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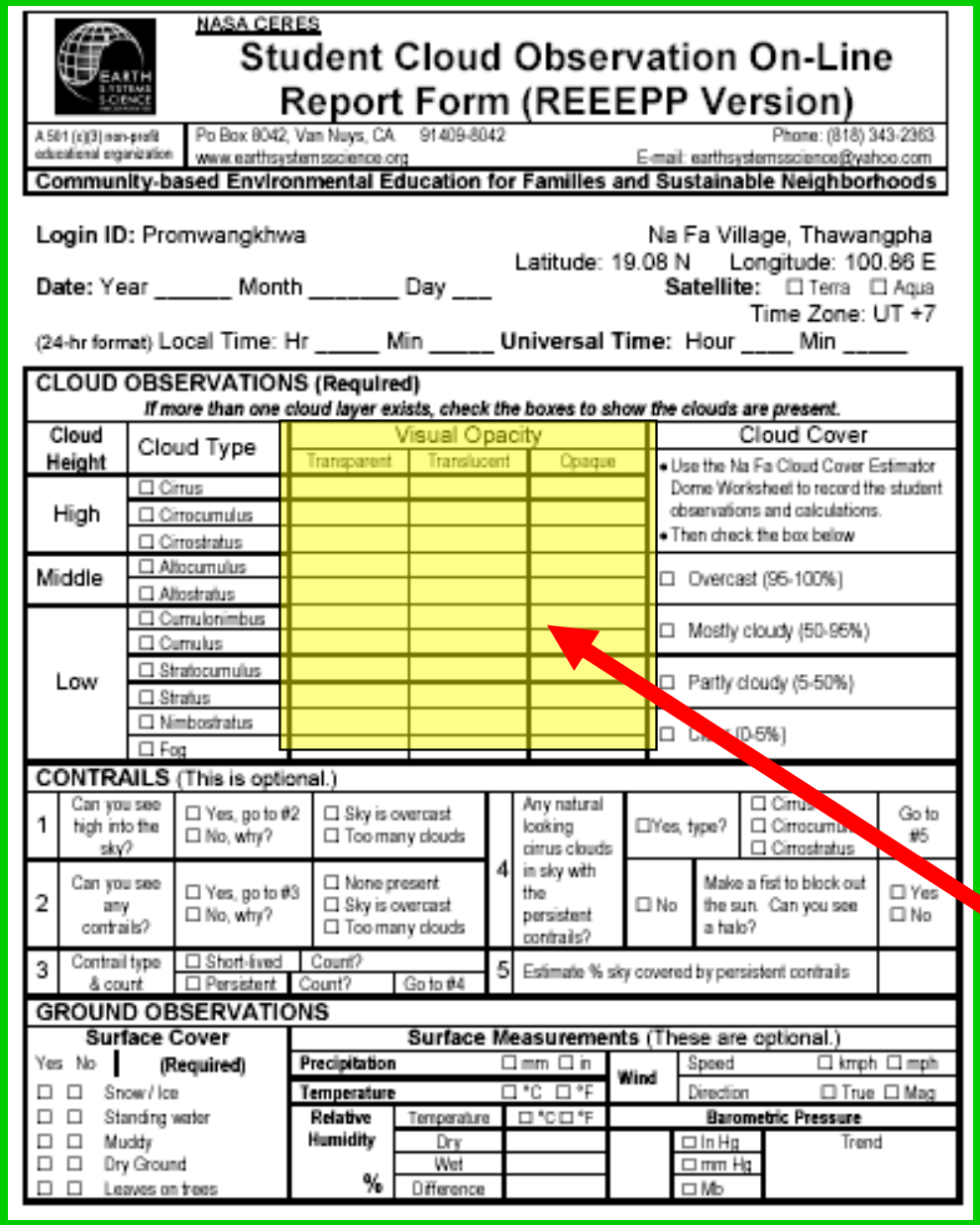

NASA CERES

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

A 501 (c)(3) non-profit educational organization

Po Box 8042, Van Nuys, CA 91409-8042 Phone: (818) 343-2363
www.earthsystemsscience.org E-mail: earthsystemsscience@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: Transparent	Visual Opacity: Translucent	Visual Opacity: Opaque
High	☐ Cirrus			
	☐ Cirrocumulus			
	☐ Cirrostratus			
Middle	☐ Altocumulus			
	☐ Altostratus			
Low	☐ Cumulonimbus			
	☐ Cumulus			
	☐ Stratocumulus			
	☐ Stratus			
	☐ Nimbostratus			
	☐ Fog			

Cloud Cover

- Use the Na Fa Cloud Cover Estimator Dome Worksheet to record the student observations and calculations.
- Then check the box below

☐ Overcast (95-100%)

☐ Mostly cloudy (50-95%)

☐ Partly cloudy (5-50%)

☐ Clear (0-5%)

CONTRAILS (This is optional.)

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

GROUND OBSERVATIONS

Surface Cover

Yes	No	(Required)
☐	☐	Snow / Ice
☐	☐	Standing water
☐	☐	Muddy
☐	☐	Dry Ground
☐	☐	Leaves on trees

Surface Measurements (These are optional.)

Precipitation	☐ mm ☐ in	**Wind**	Speed ☐ kmph ☐ mph
Temperature	☐ °C ☐ °F		Direction ☐ True ☐ Mag
Relative Humidity	Temperature ☐ °C ☐ °F	**Barometric Pressure**	
	Dry		☐ In Hg
	Wet		☐ mm Hg
%	Difference		☐ Mb

Trend

Report the Visual Opacity on this part of the form.

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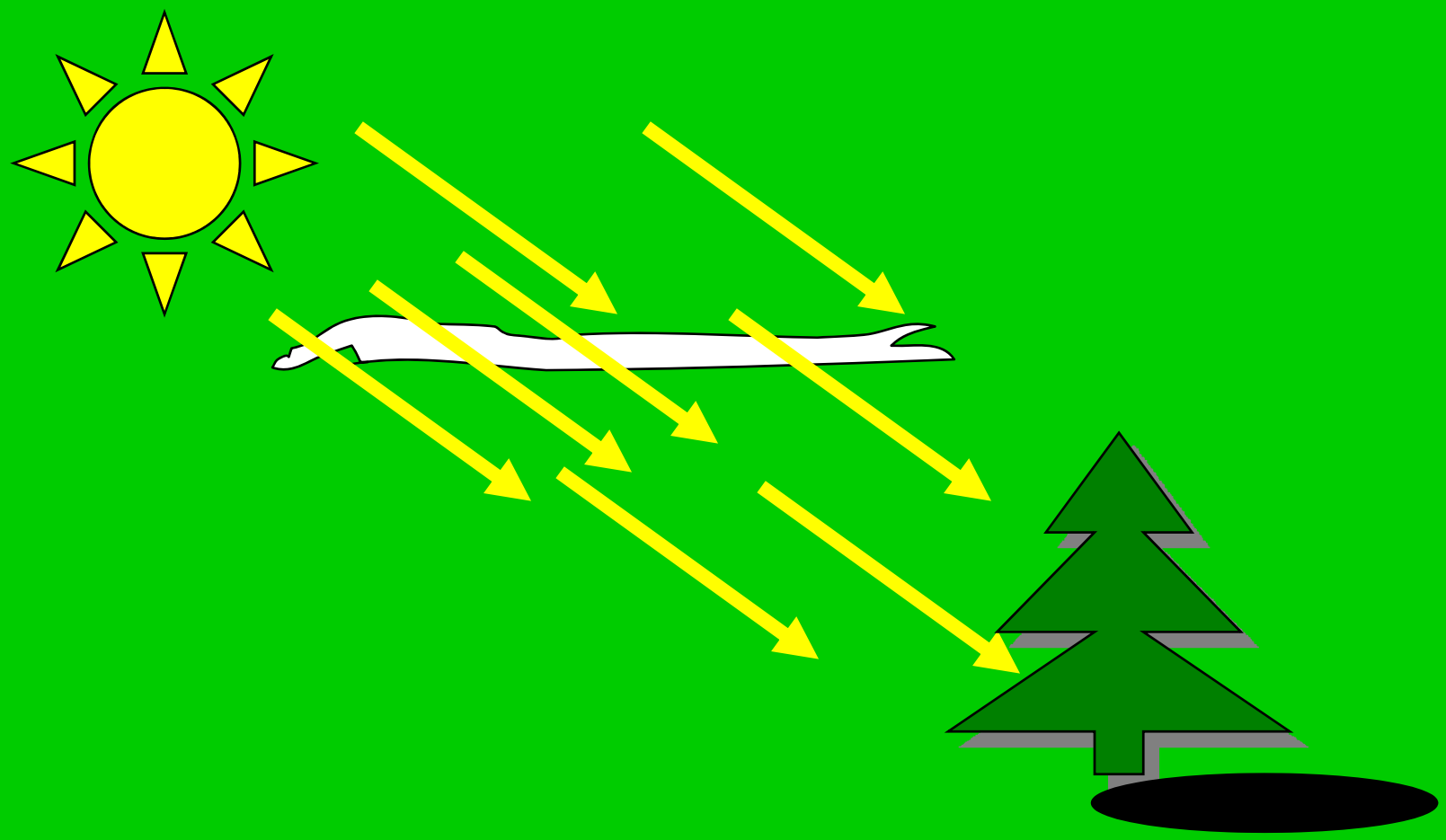
Some clouds are transparent.



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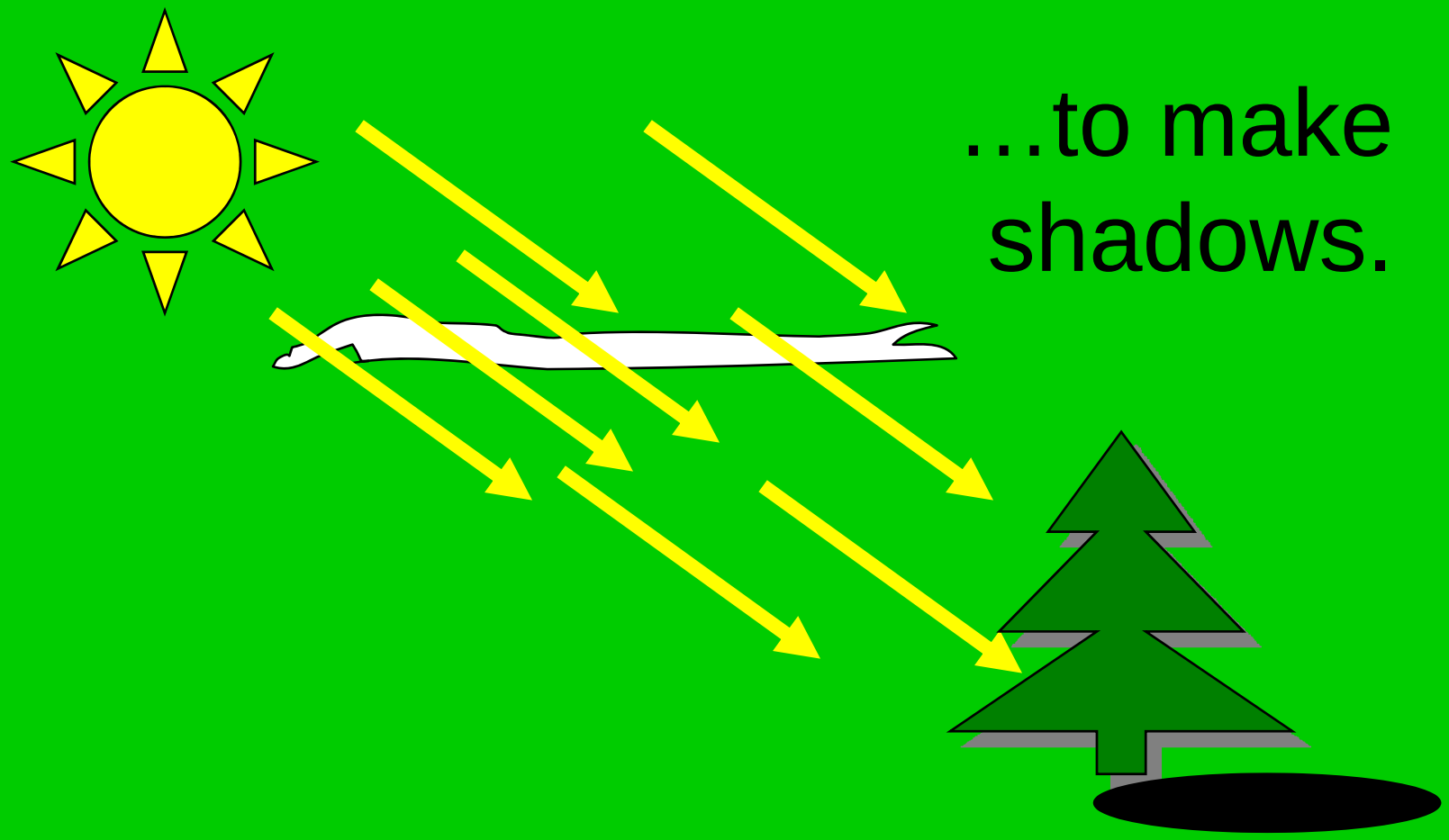
These clouds are very thin and let sunlight go through them…



…to make shadows.

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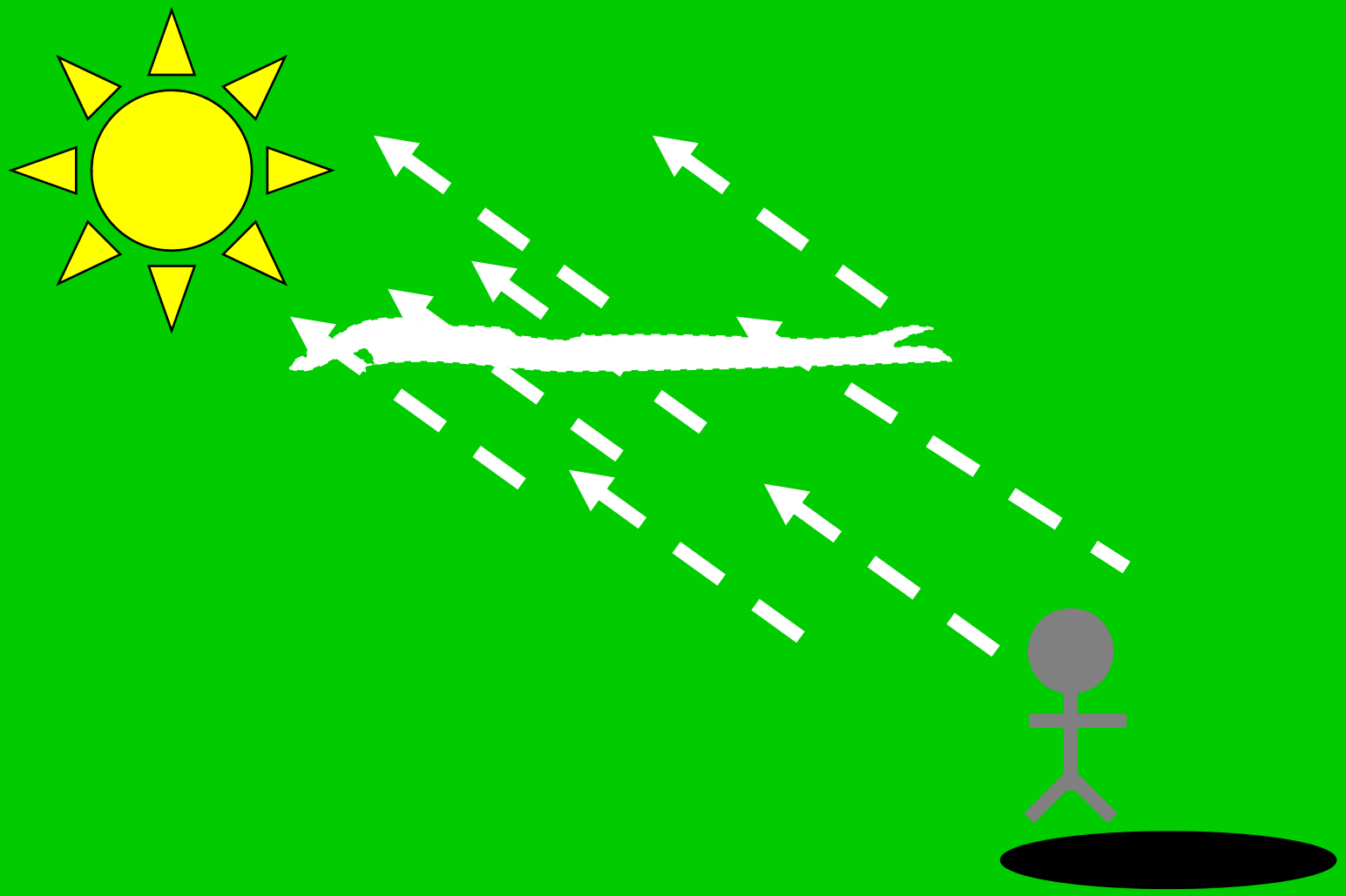
These clouds are so thin you can see through them.



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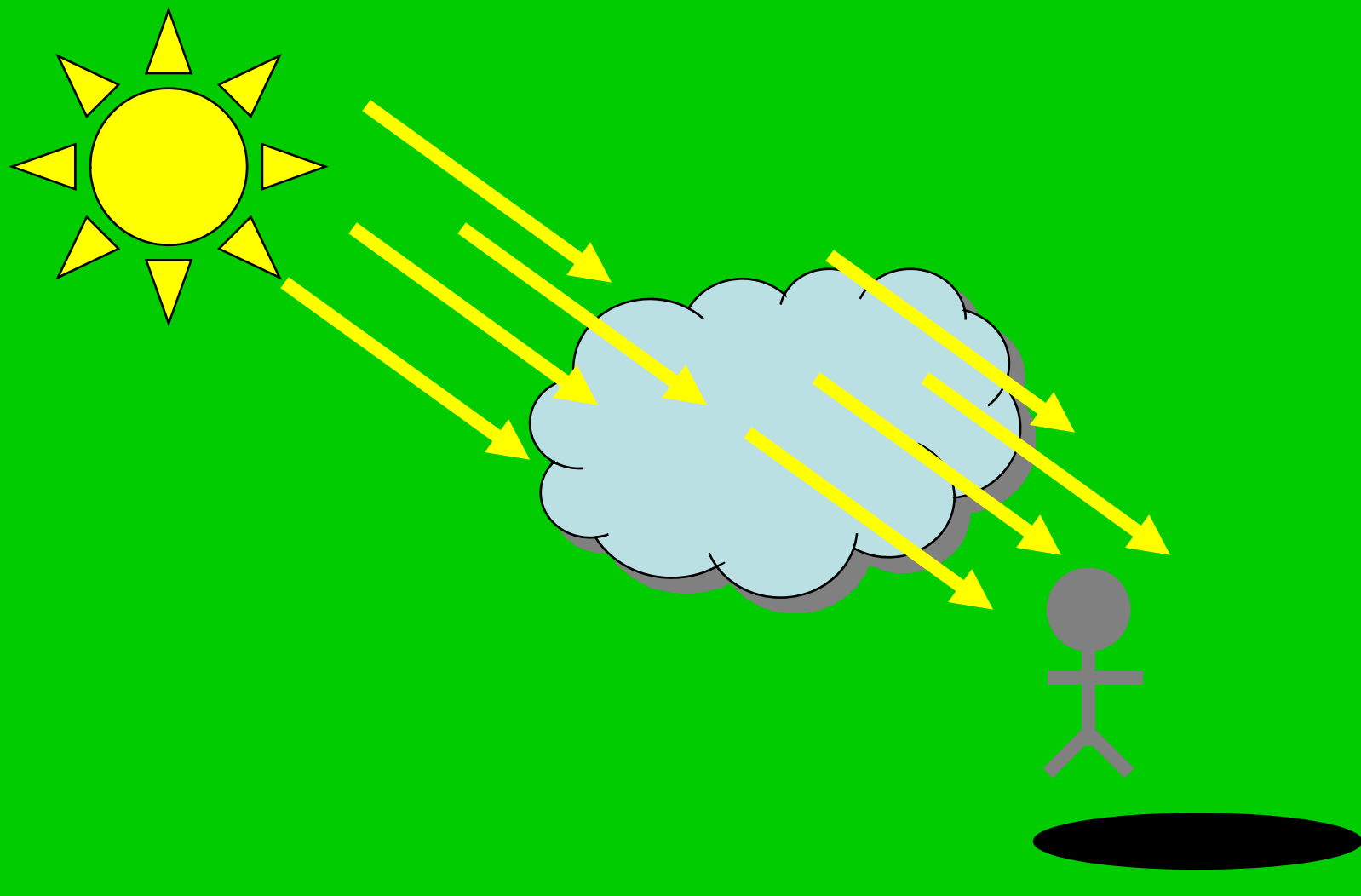
Some clouds are translucent.



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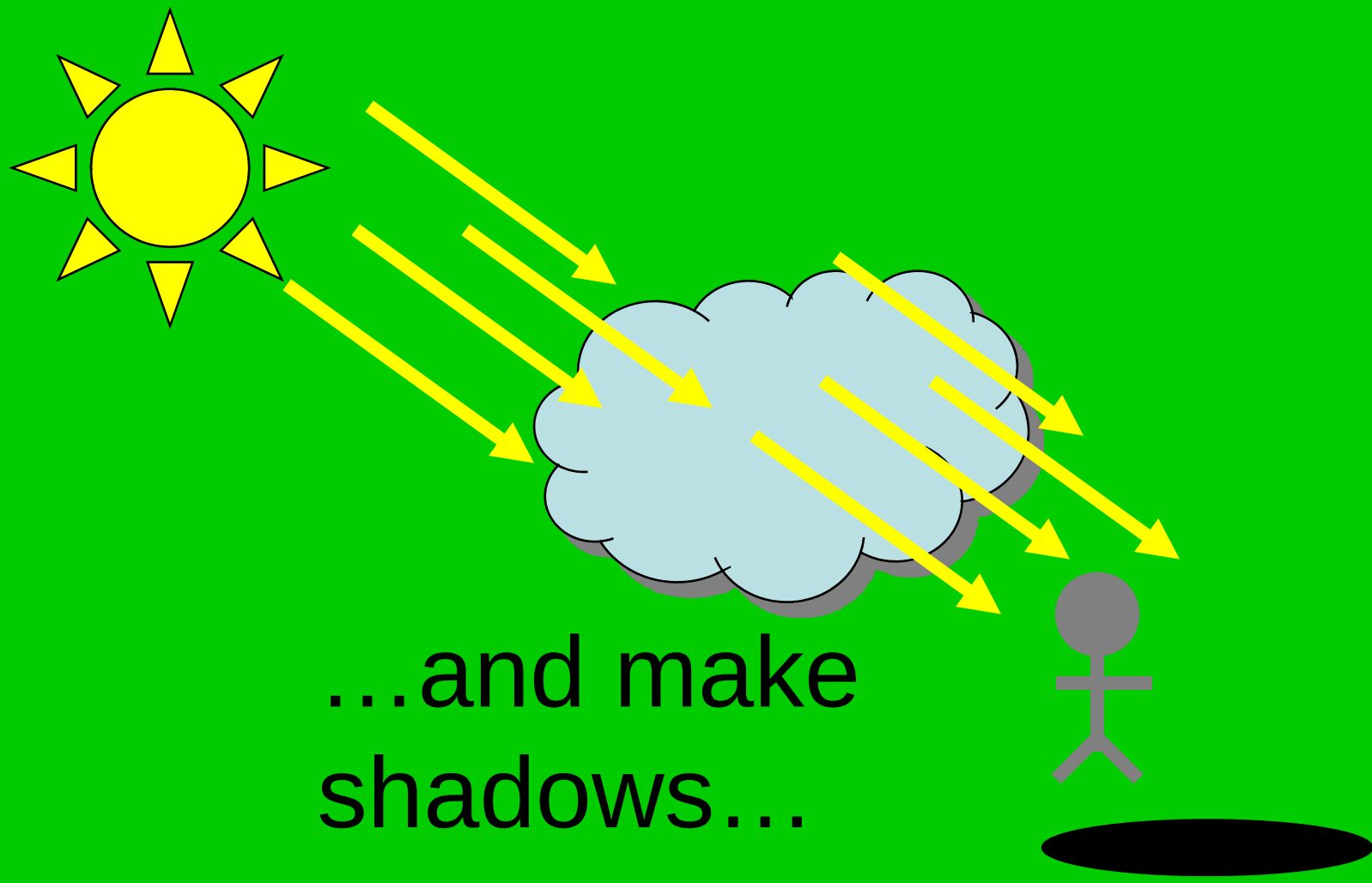
They let light through them…



…and make shadows…

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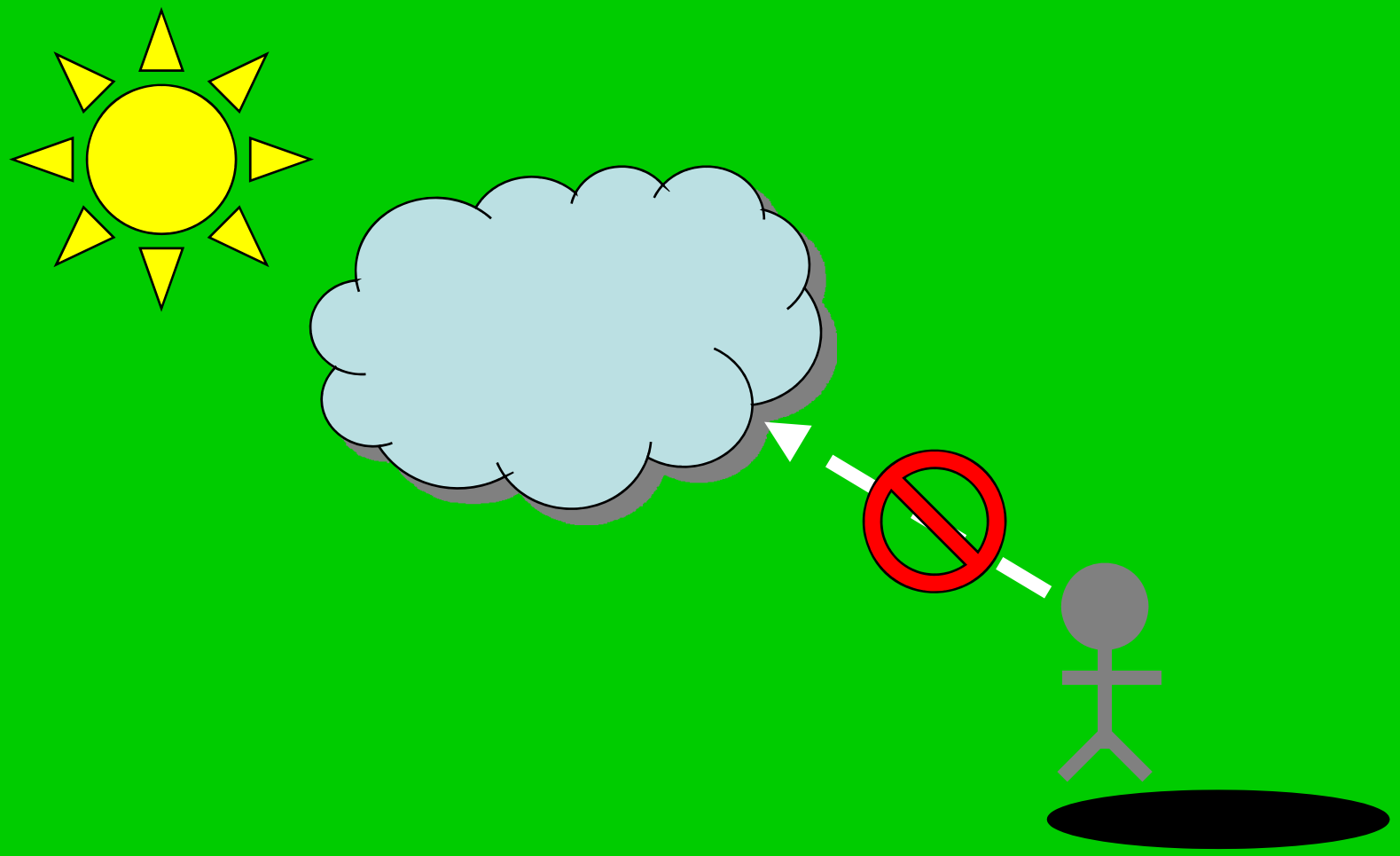
…but you cannot see through them.



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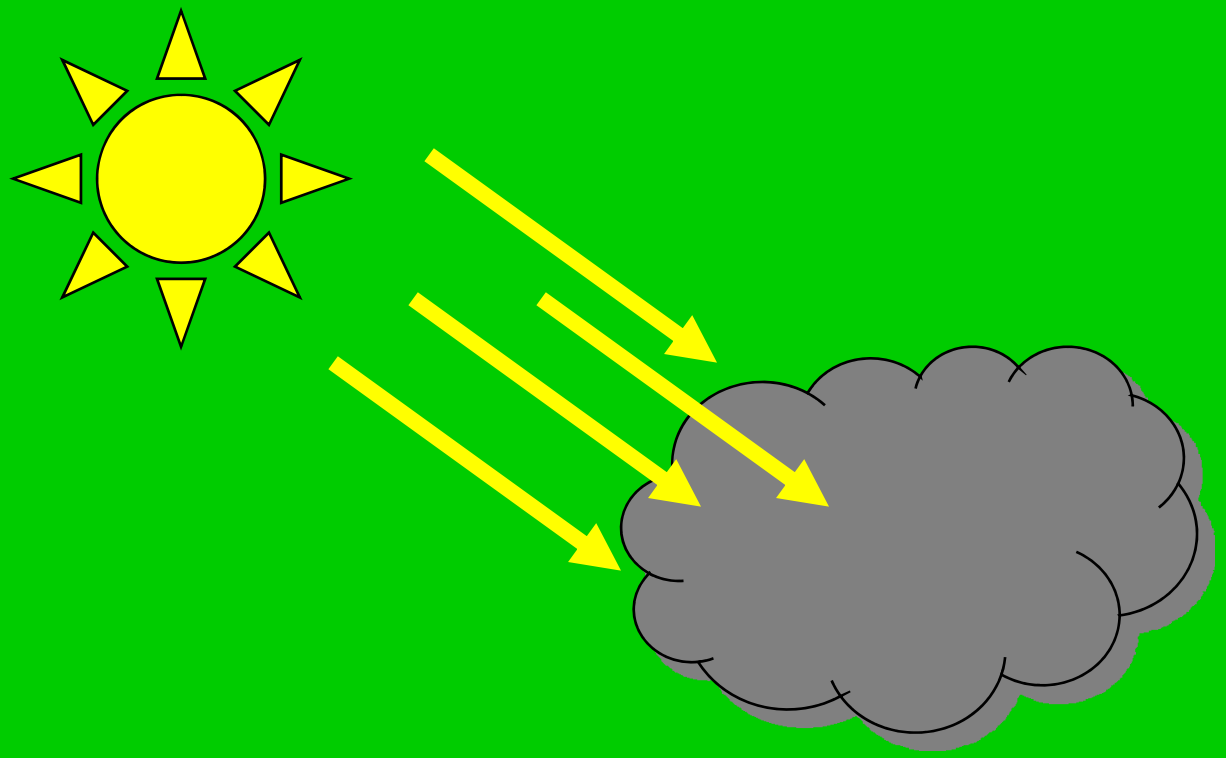
Some clouds are opaque.



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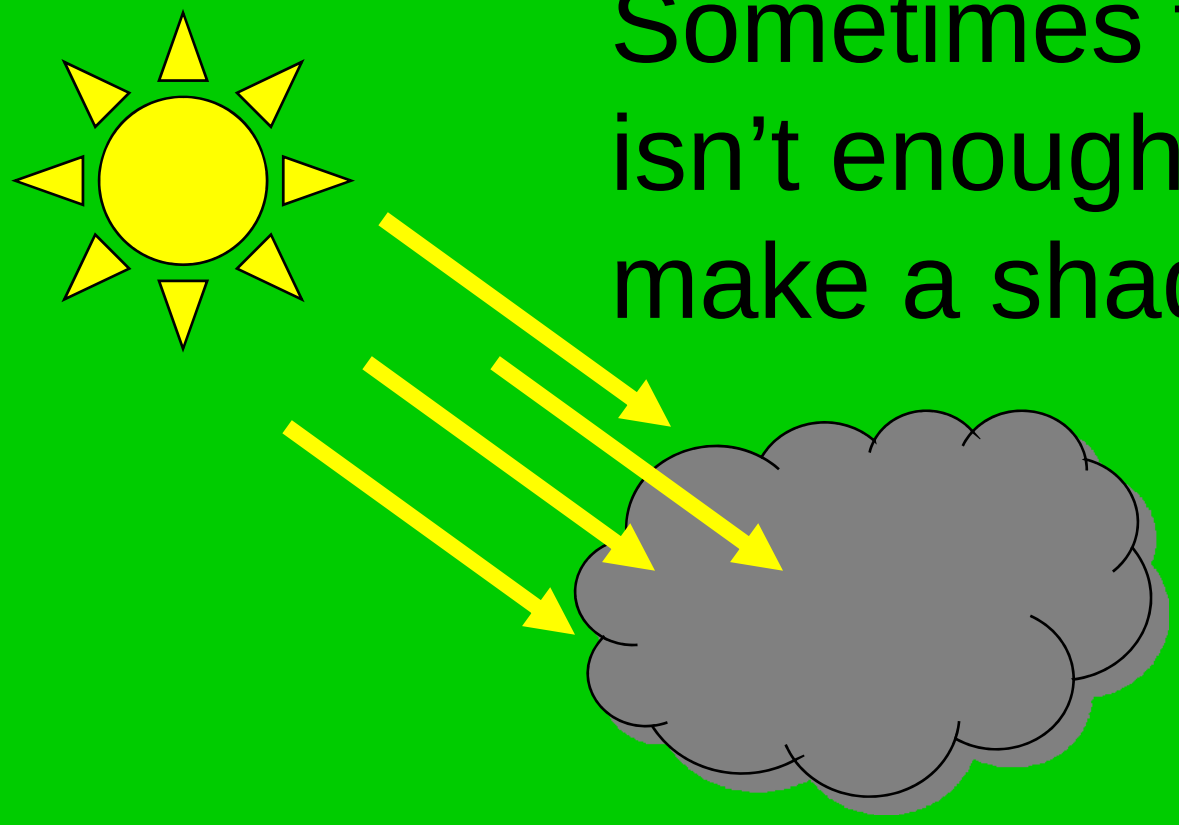
They are very thick and do not let light go through them.



Sometimes there isn’t enough light to make a shadow.

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Here is a visual opacity guide you can use.

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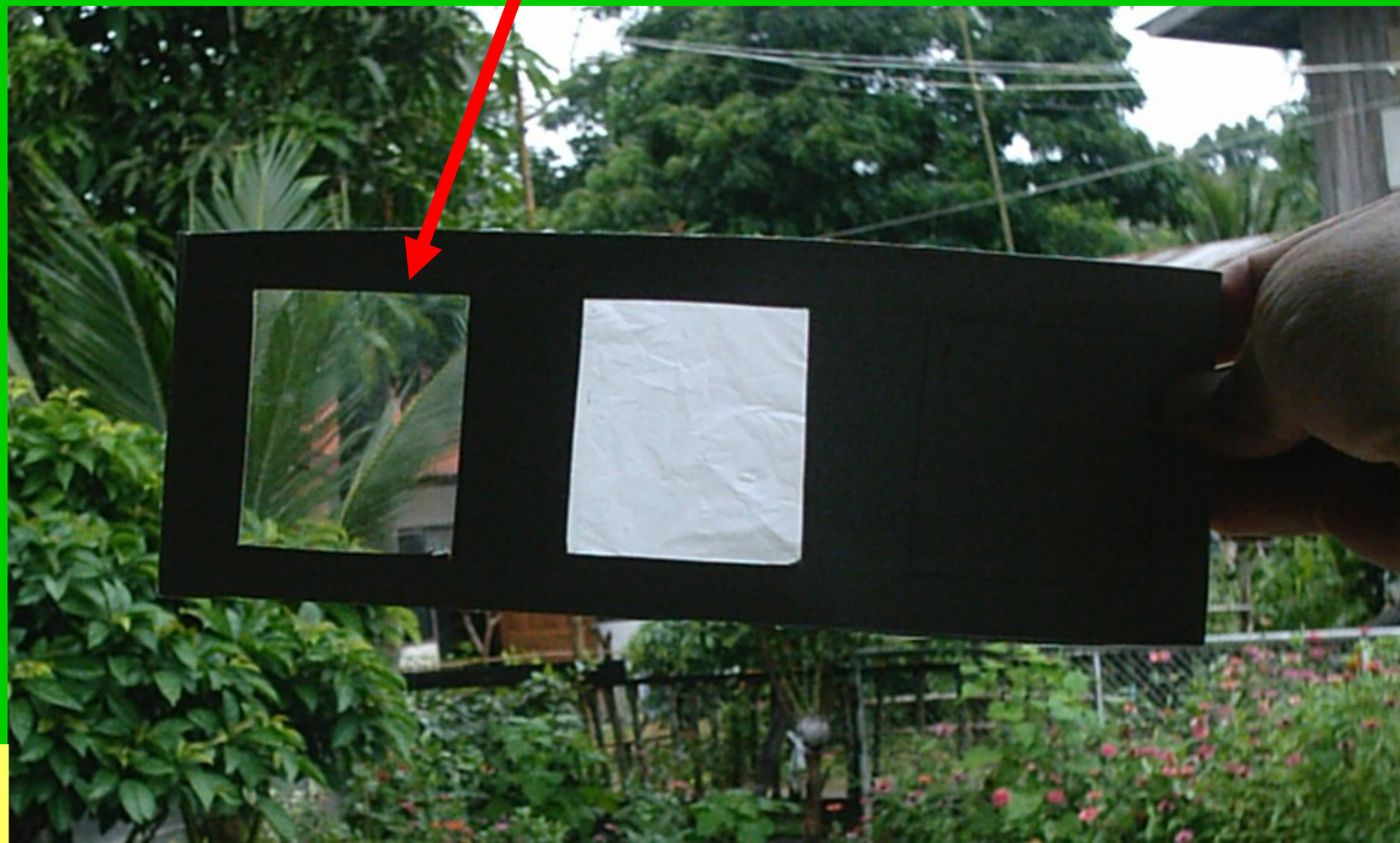
This part is transparent. Light comes through it AND you can see through it.



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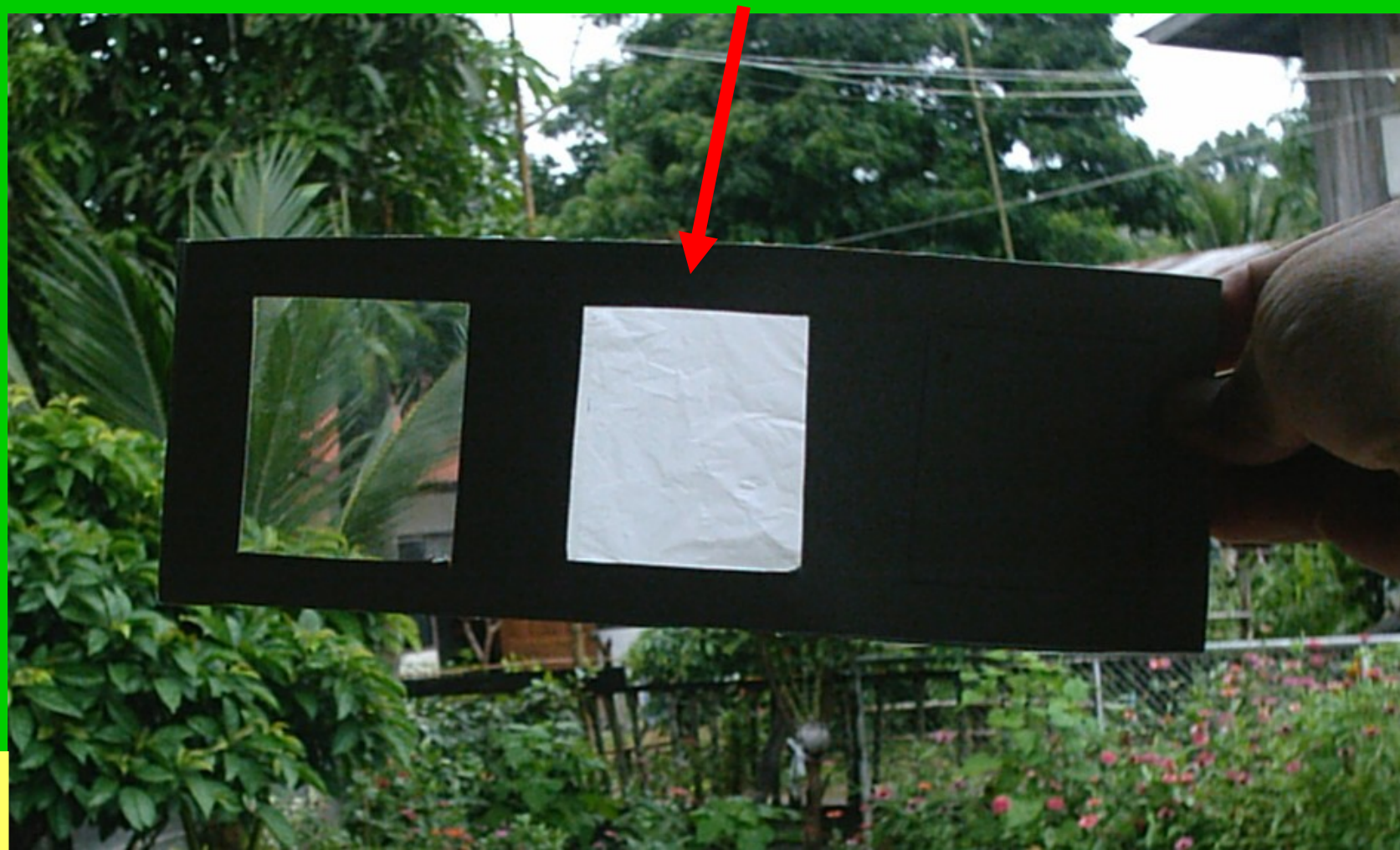
This part is translucent. Light comes through, but you cannot see through it clearly.



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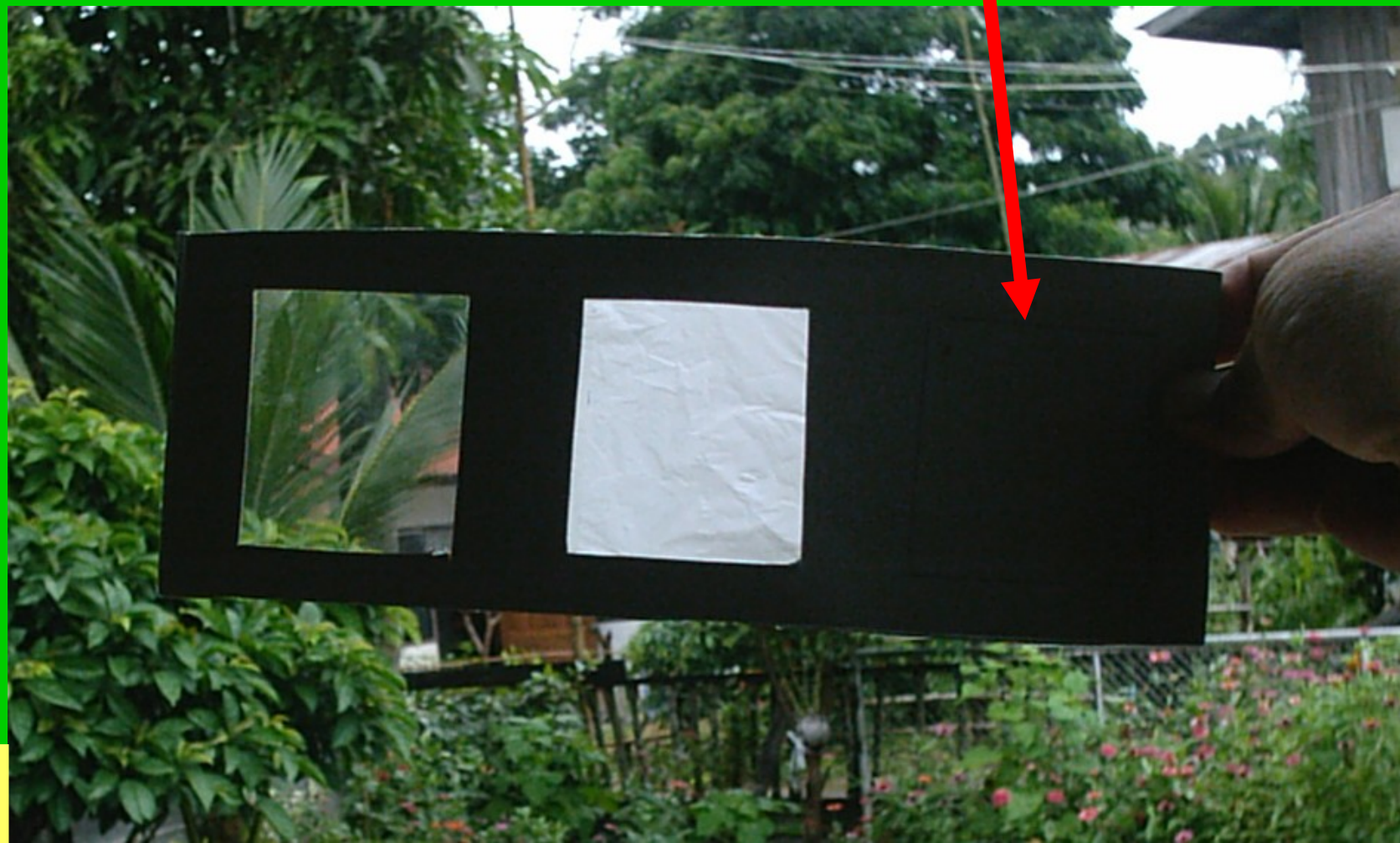
This part is opaque. No lights comes through it AND you cannot see through it.



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Visual Opacity Summary Table

	Light comes through it	You can see clearly through it
Transparent	Yes	Yes
Translucent	Yes	No
Opaque	No	No

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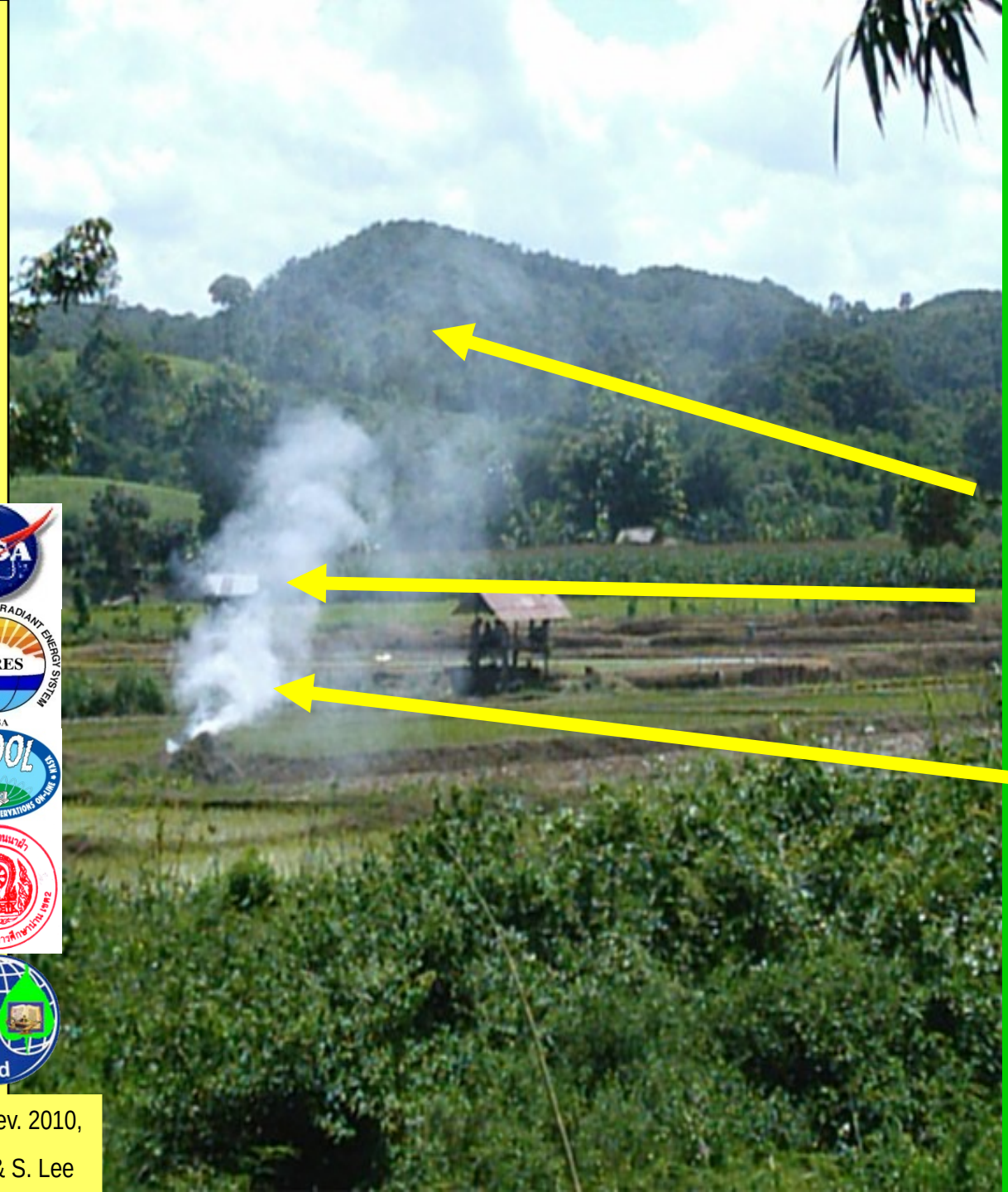

Parts of the smoke are transparent, translucent, and opaque.

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What is the visual opacity of this cloud?

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It is mostly transparent

You can see blue sky through the cloud.

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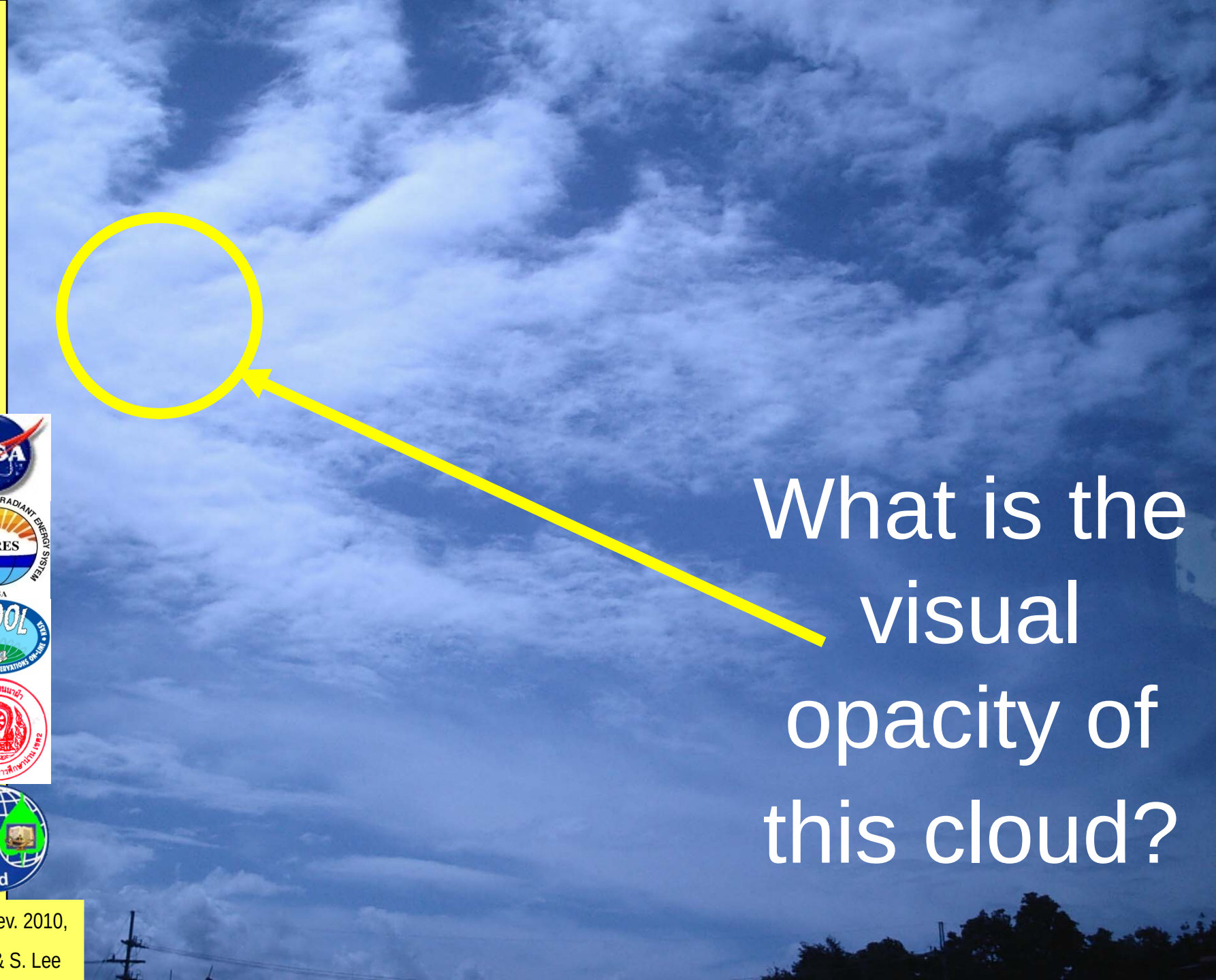

What is the visual opacity of this cloud?

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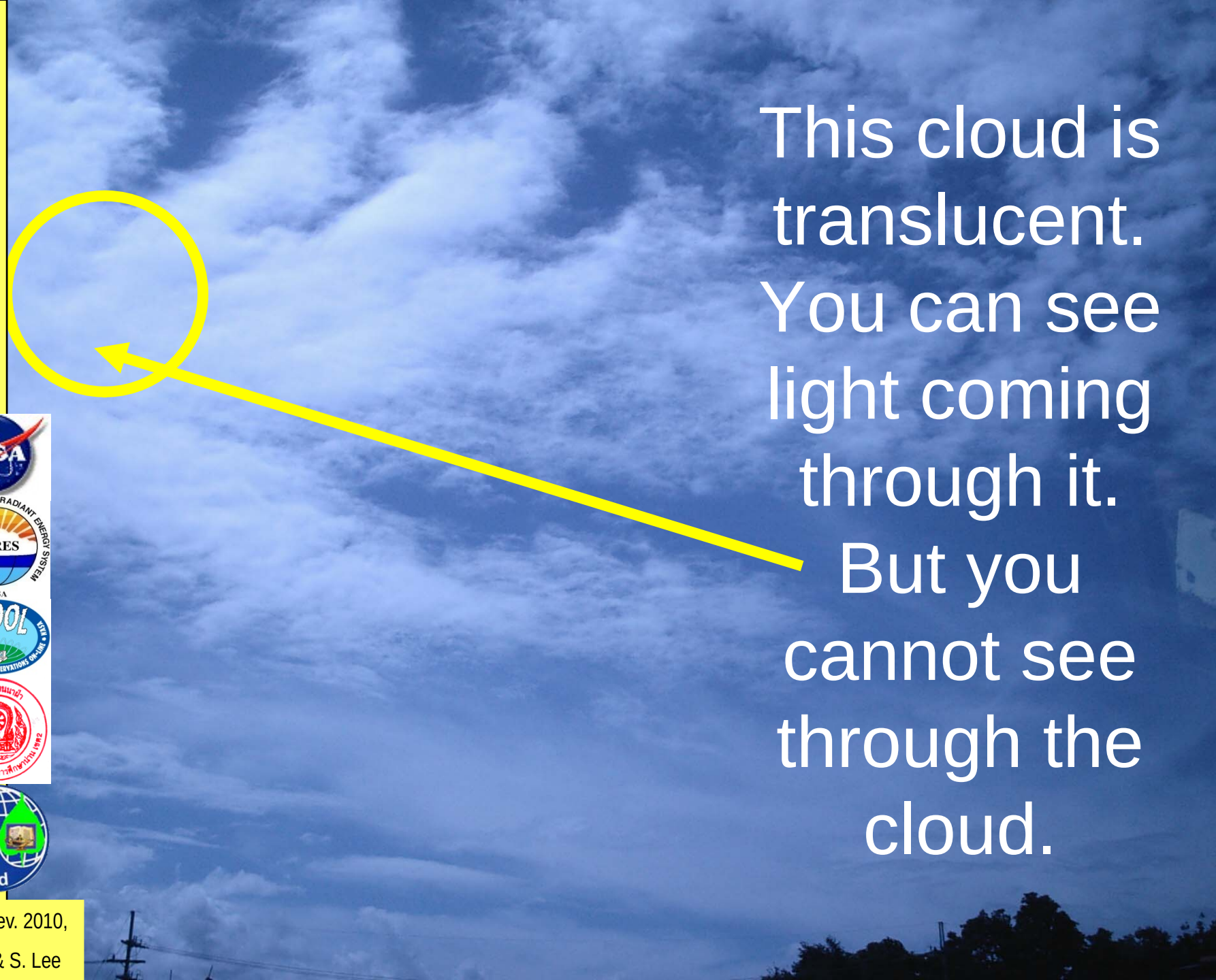

This cloud is translucent. You can see light coming through it. But you cannot see through the cloud.

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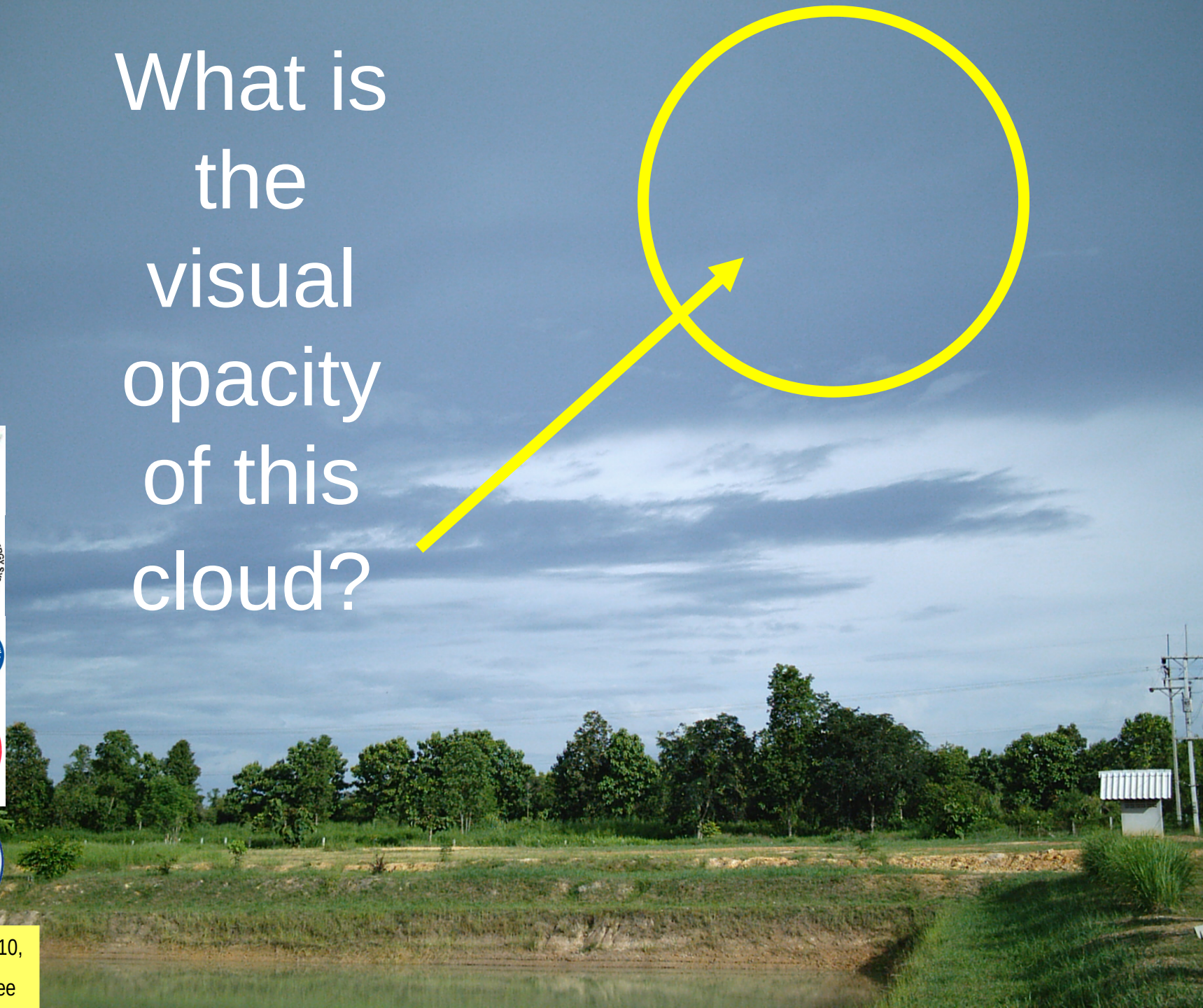
What is the visual opacity of this cloud?



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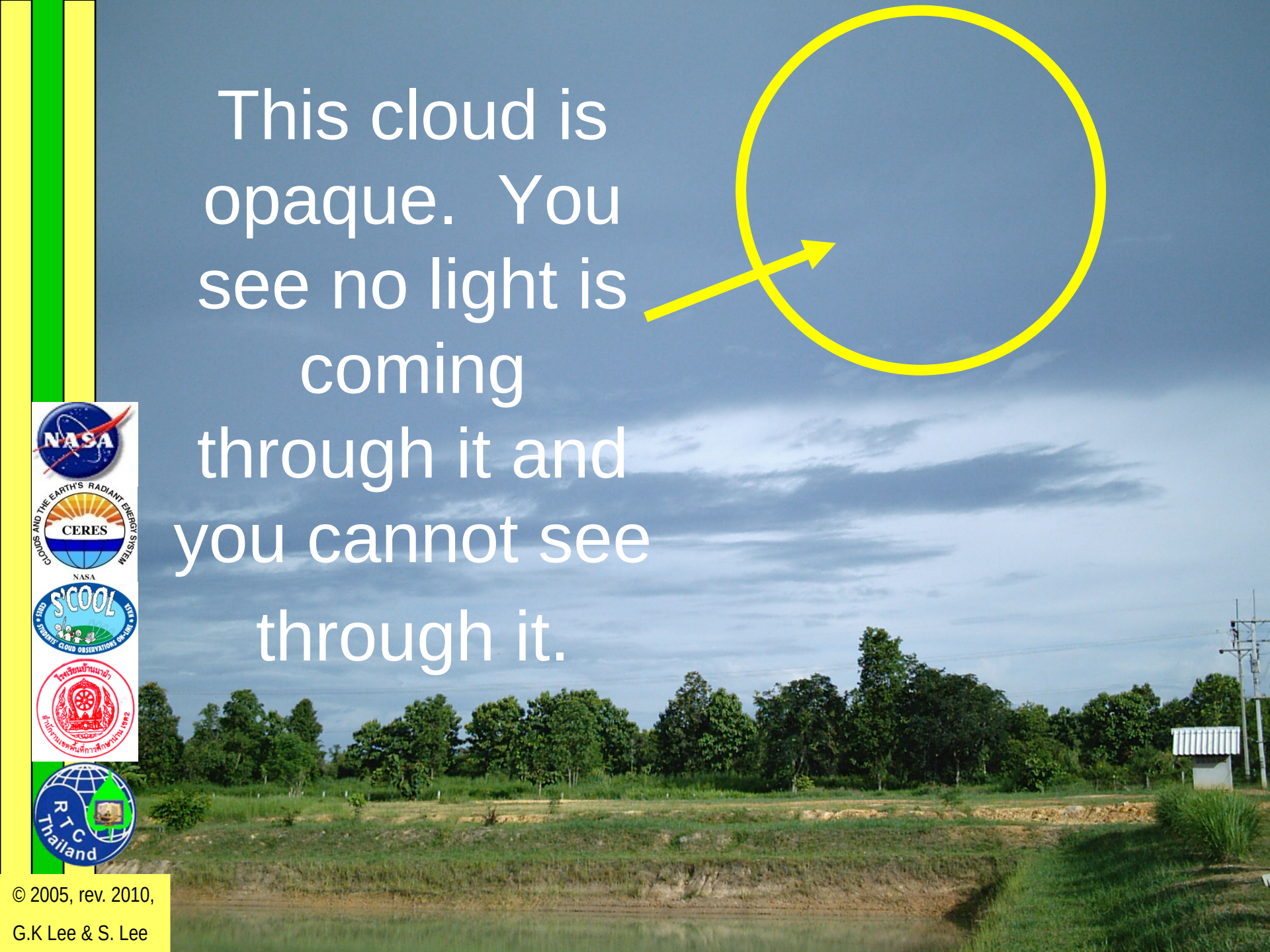
This cloud is opaque. You see no light is coming through it and you cannot see through it.



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Do you know about visual opacity?

Try to answer these questions.

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What is the visual opacity of this?

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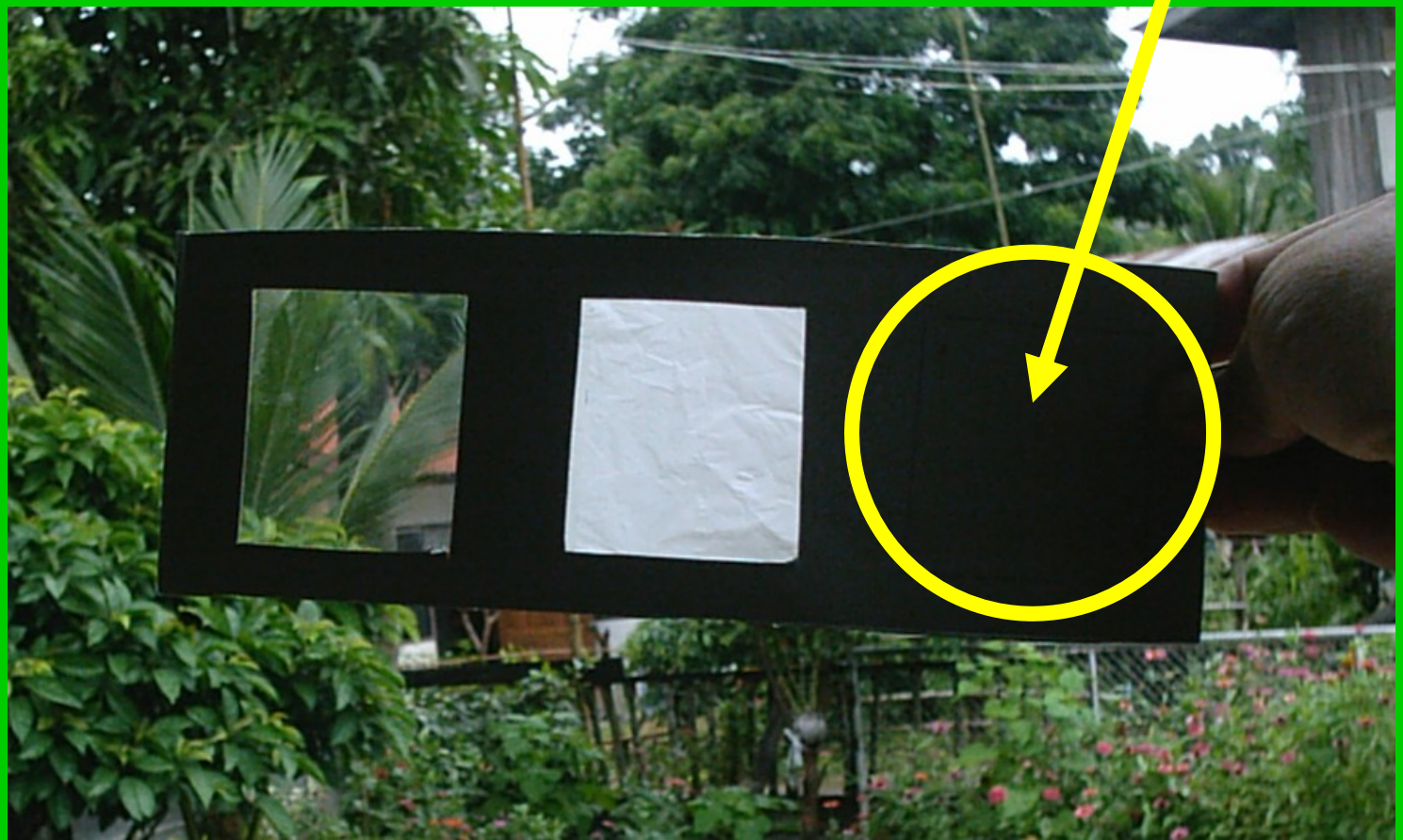
It is opaque because light does not come through and you cannot see through it.



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What is the visual opacity of this?

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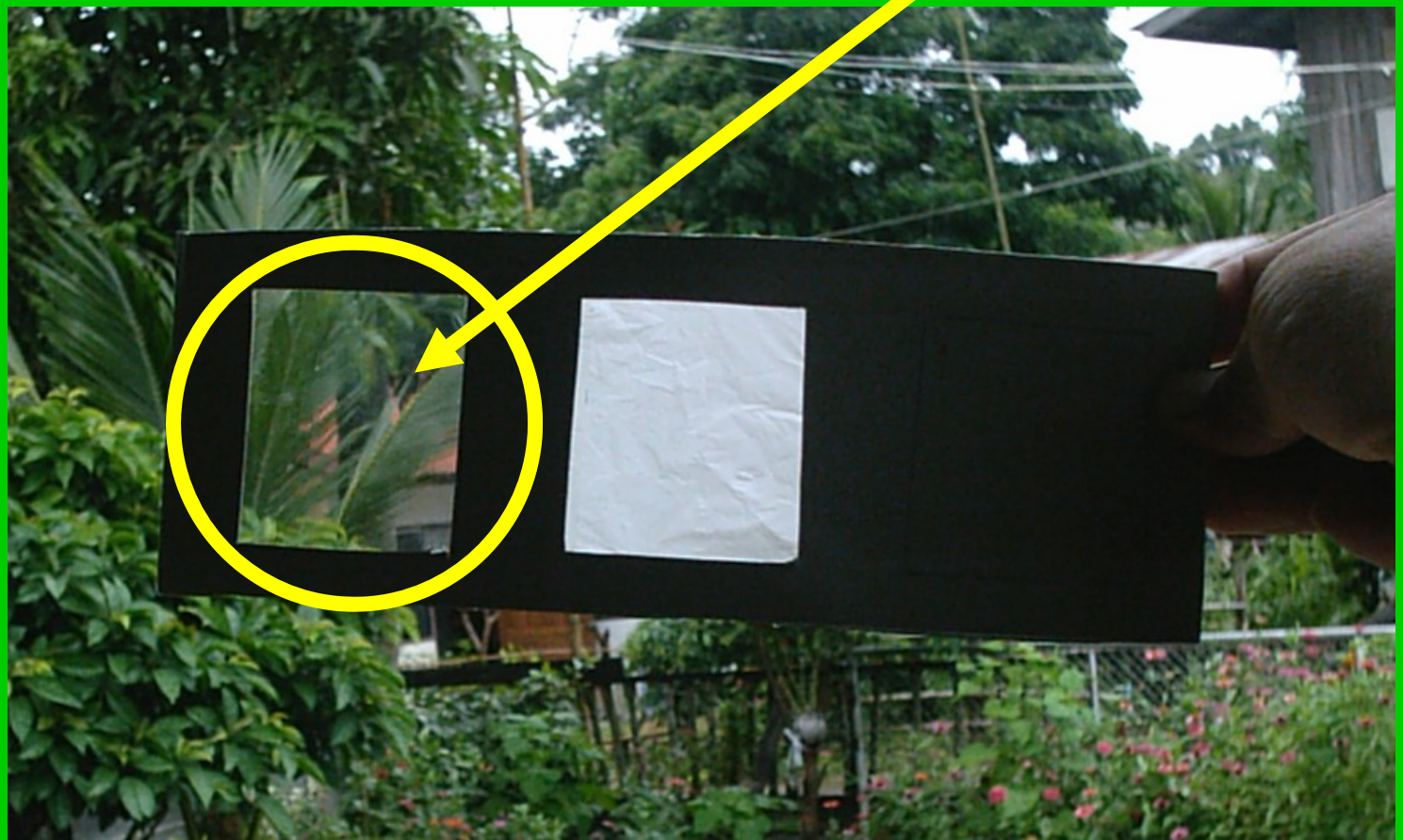
It is transparent because light comes through it and you can see through it.



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What is the visual opacity of this?

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This is translucent because light comes through it, but you cannot see through it.

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What is the visual opacity of this cloud?

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It is transparent because light comes through it and you can see through it.

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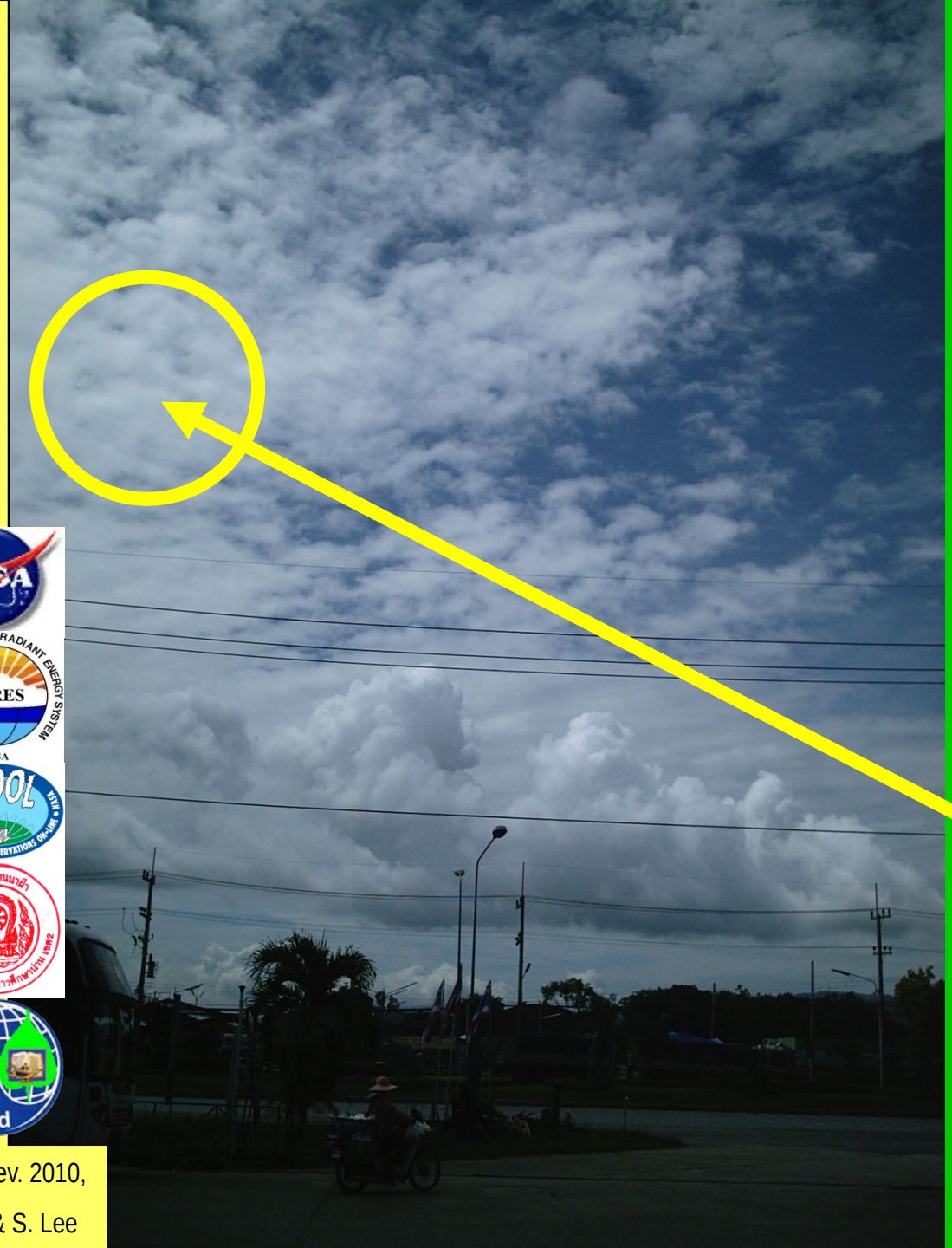

What is the visual opacity of this cloud?

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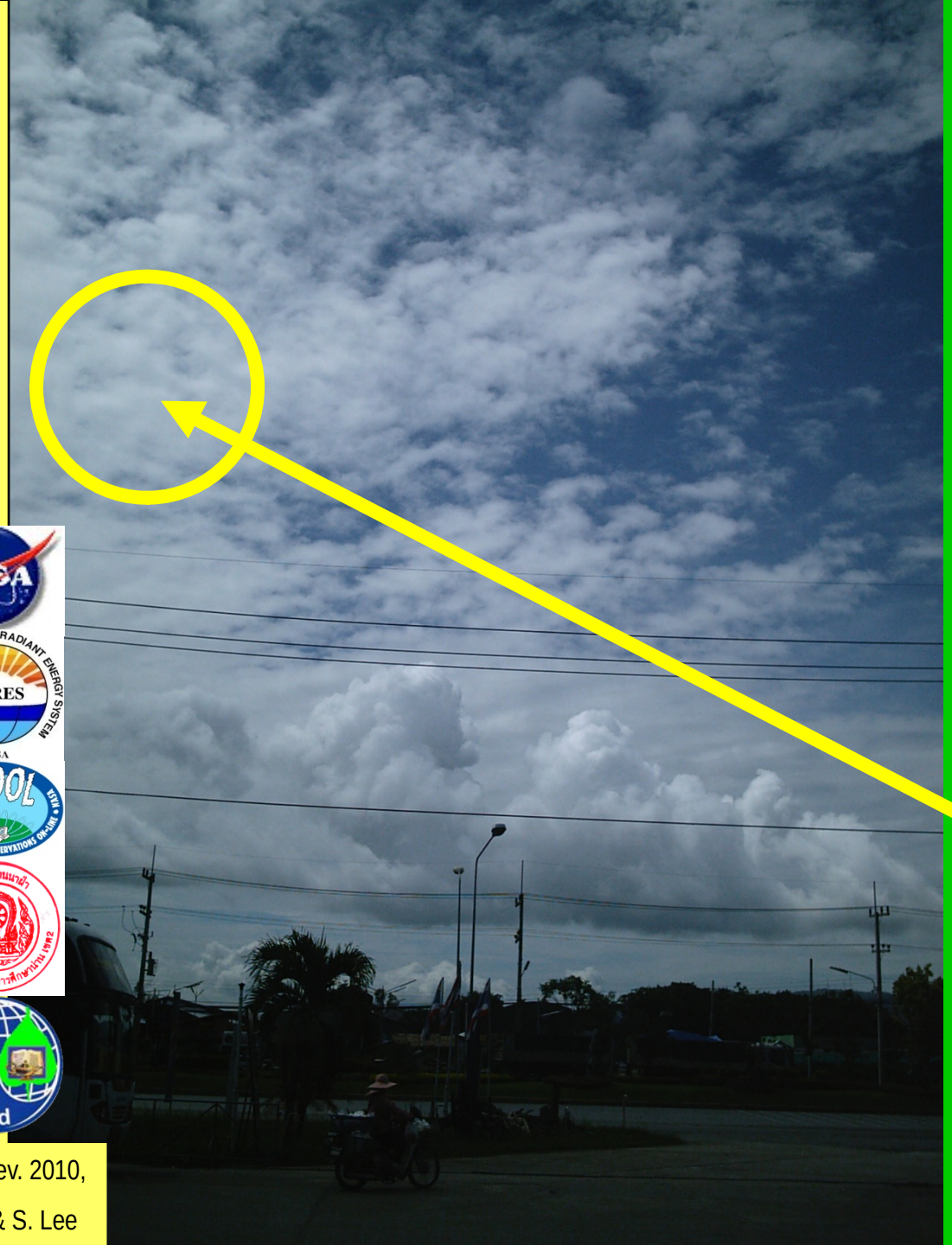

It is translucent because light comes through it but you cannot see through it.

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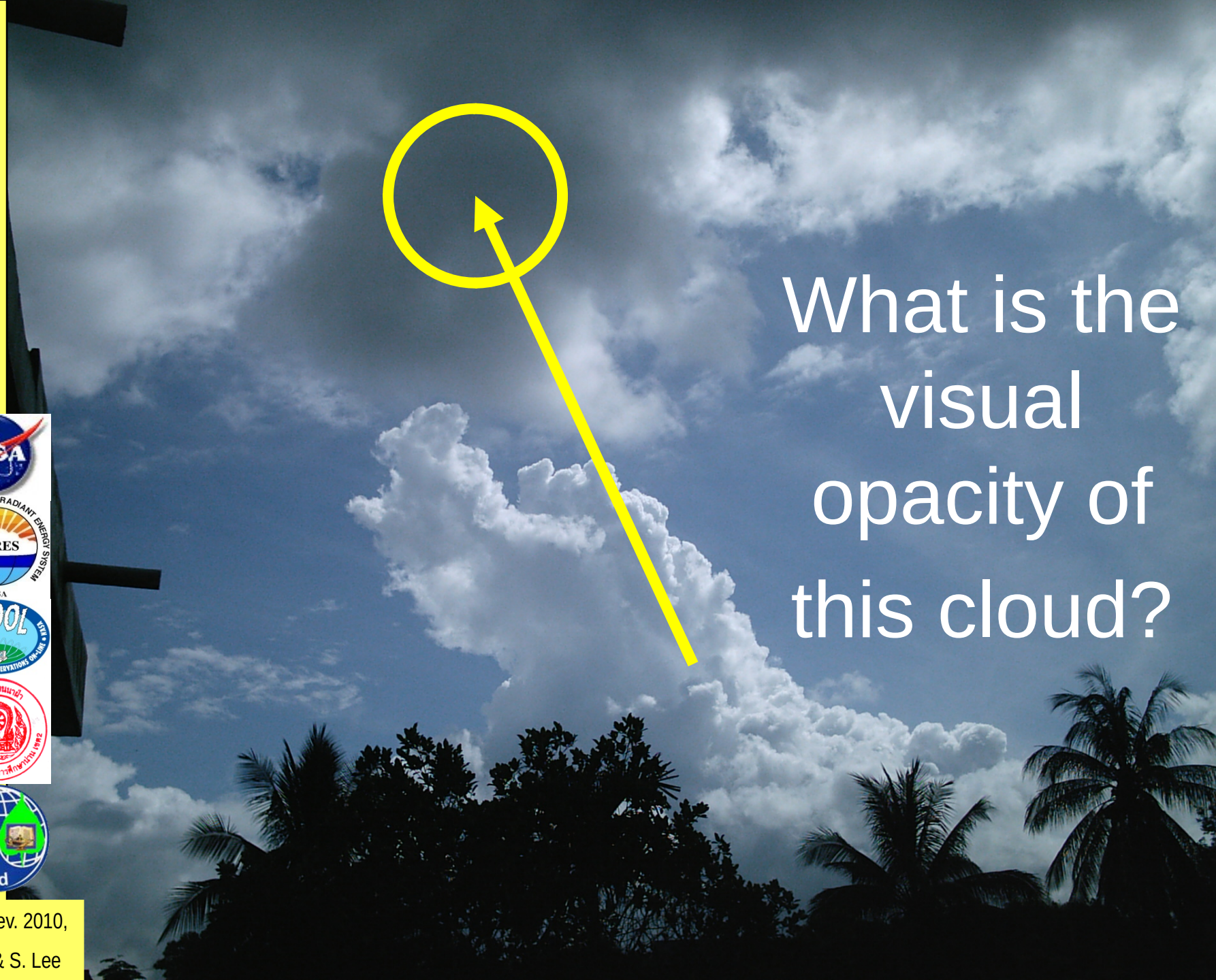

What is the visual opacity of this cloud?

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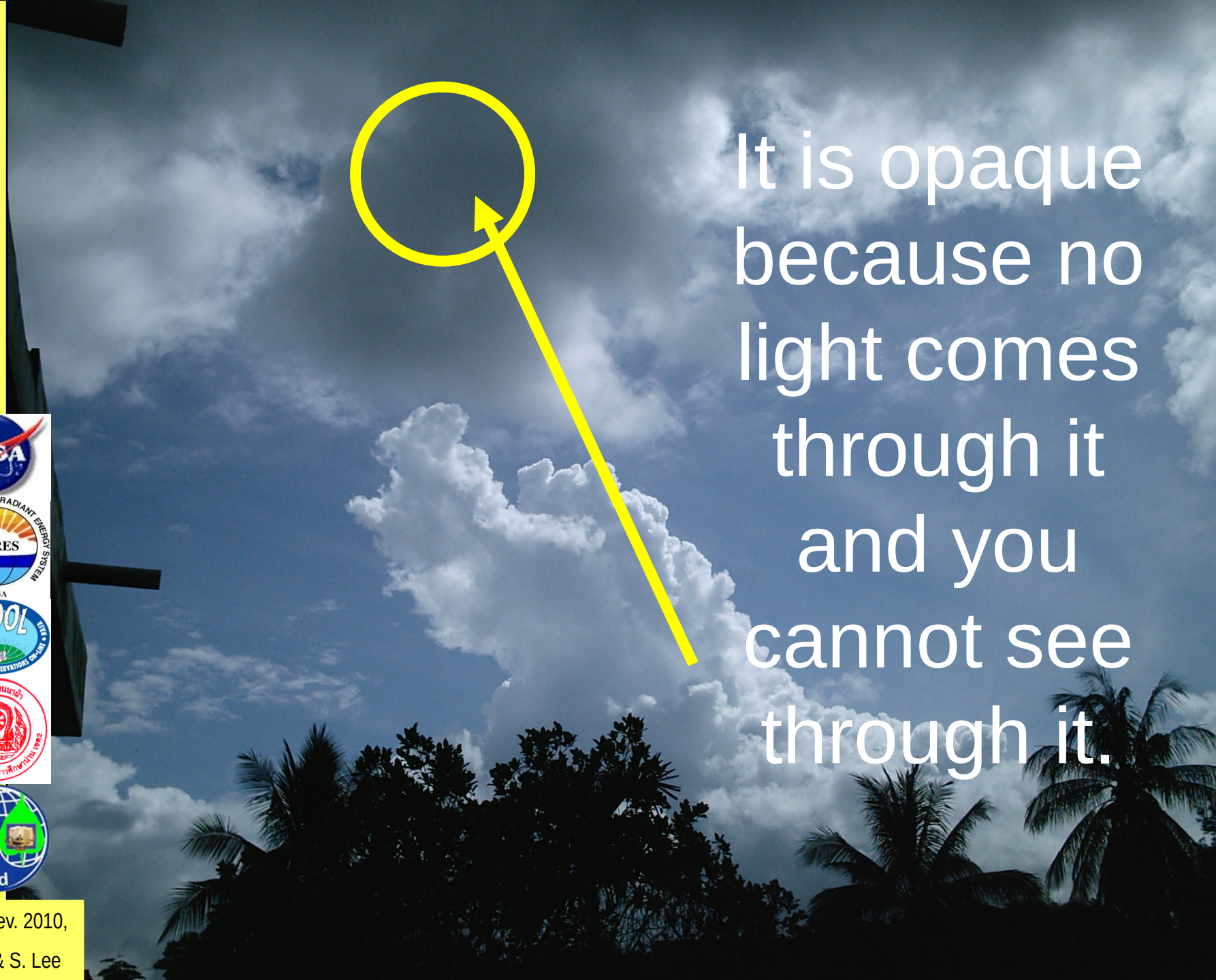

It is opaque because no light comes through it and you cannot see through it.

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You can practice looking at clouds. You know how tell the visual opacity of the clouds.

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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

Rural Environmental Education Enhancement Pilot Program

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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