

How To Help Prevent Global Warming On Your Roof

by Michael Graham Richard, Ottawa, Canada on 12.16.05



We have covered green roofs extensively (see the many links at the bottom) but quite as much coverage to white roofs, which is unfortunate because it's crucial to make a big difference. New Scientist has a little piece on the subject: "What can we do to reverse the greenhouse effect by painting roofs of buildings white to reflect sunlight?" To answer that question, the Earth Institute at Columbia University's Global Rural Urban Mapping Project (GRUMP). Its results show that roughly 1% of the Earth is covered with buildings.

The Earth has an albedo of 0.29, meaning that it reflects 29 per cent of the incoming solar radiation. If the albedo of 0.1, towns absorb more sunlight than the global average. Painting roofs white could raise Earth's albedo from 0.29 towards 0.30. According to a very simple "zero-dimensional" model of the Earth, this would result in a **temperature of up to 1 °C, almost exactly cancelling out the global warming that has taken place since the industrial revolution.** A zero-dimensional model, however, excludes the atmosphere and, crucially, the role of clouds. **If more sophisticated models predict a similar magnitude of cooling.**

Of course, doing that would only be a way to gain a bit of time. On its own, it is no cure for our pollution and greenhouse gas emissions.

A better use of roofs would be to use them as mini power stations by installing photovoltaic tiles. This would help reduce the fossil carbon that we emit without relying on perturbing the Earth's delicate and complex climate system. It's an uncertain cure.

So next time you replace the tiles on your roof or buy a new house, you know what to do (if you can't/won't get solar, at least try to get a light color).

More global warming prevention tips & green roof info

[Ways to Prevent Global Warming On Your Vacation](#)

[New Scientist](#)

[Cool Roofs](#)

[Green Roofs: A primer](#)

[Inhabitat on Green Roofs](#)


[First-ever analysis of green roofs' ability to keep buildings warm in winter](#)

[Yet more on Green Roofs](#)

[Green Roofs by Earth Pledge Foundation](#)

Visit [TreeHugger](#) to see what's new. 30+ fresh, green stories every day!

Join the discussion!



Add a comment...

Post to Facebook

Posting as [Guy Lane](#) (Change)

Comment

Facebook social plugin

Previous Discussion

**MGR**

"How do you model global warming without modeling the atmosphere? Answer: You can't.

Energy that's reflected by roofs passes through two different air masses. How's that going to decrease g

I think you're under the impression that these scientists claimed things that they haven't (yet) claimed;

Their model was for how much light is reflected off the planet, and how white roofs could increase that a
light reflected could have an impact on global warming. They never claimed to have incorporated their v
model (but they are working on it).

5 years ago 1 Like

**ARI BHAI**

white color ceramic wall tiles is very good option due to low cost, long life and reflectivity is more than 90

1 year ago

**ARI BHAI**

white ceramic wall tiles is very good option/ low cost and more than 90 percent reflectivity is there.

1 year ago

Michaelc

While the idea of substituting solar panels for white roofs is valid, it ignores the second most important t
that it works), white roofs are cheap. For less than 1/100th of the cost of solar panels we can make a sig

There are other advantages:

It is quick to do

It is easy, requiring little in the way of training or equipment

Roofs already need to be painted so painting them white is a no brainer.

We already have the capacity to make the paint and brushes.

You can see who has done it on google earth.

It can work on almost any building without modifying it.



The carbon footprint of implementing it is low.

It reduces the cost of AC in the summer.

White is not red or blue, so there is no political affiliation.

And did I mention it is cheap?

Once we are done with the roofs, maybe coming up with a way to make white asphalt is a good next step.

2 years ago



Ted

Obamites like to whitewash issues.

The brush continued to move.

“Like it? Well, I don’t see why I oughtn’t to like it. Does a boy get a chance to whitewash a fence every c

2 years ago



Roy Masters

The emissivity of a painted surface only changes slightly between black and white paints. The best coat coat metal roofs, but could probably be adapted for other roofing materials). Zinc plated steel has a similar work well too. In cold climates, the sun hitting a dark roof might help to heat though.....so I would say that suited to climates where heat isn't used for much of the year. I'm an engineer in Michigan with a black roof year, then ac for a couple of months in the summer. My pole barn happens to already have an aluminum cooler inside during the day if the doors are kept shut.

2 years ago



Lee Gibson

How do you model global warming without modeling the atmosphere? Answer: You can't.

Energy that's reflected by roofs passes through two different air masses. How's that going to decrease g

People who want to decrease the impact of humans on Earth need to understand science.

5 years ago

**SC**

Even though solar panels convert some of the energy to electricity, they still get quite hot - around 30 degrees Celsius. However, you could take advantage of this through coupling solar panels with running pipes underneath the solar panels, for example. This puts the heat to good use while reducing the need for heating (which is an added bonus since solar panel efficiency is negatively affected by higher temperatures) and

But if you don't have the \$\$\$, white (or green) roofs are certainly a nice path ;)

5 years ago

**Jim**

Are copper and zinc roofs also highly reflective? If so, they might be an attractive alternative to white roofs if they are historically appropriate.

5 years ago

**Rita**

I grew up hearing that roofs in colder climates were traditionally dark to absorb heat to lessen the amount of the additional added energy needed to heat the house to the same degree is not from a green source which would offset global warming more than detract from it. White roofs in hot climates and buildings are very sensible for hot climates.

5 years ago

**Anonymous**

The study also neglects the secondary effects of such a plan. Where's the greatest concentration of roofs? Where's the most electricity for mechanical cooling? Same place. Painting the rooftops white instead of tar black or other dark colors around the city see a cooling change, it would also reduce the energy needed to cool the house itself.

I've speculated on this riding the elevated mass transit system here in Philly, looking at all the tar-covered roofs on this topic, I'd like to see one that just considers an individual major city.

5 years ago

**Sverrir**

This is true where cooling houses is an issue. In colder climates the effect is at worst adverse at best hardly noticeable. I have the multi colored corrugated iron roofs of Reykjavik any day before painting them white.

5 years ago

MGR

Nessie,



Toward the end of the post solar panels are mentioned.

As for Green roofs, they have many benefits, though not quite the same as white roofs. They help with heat, filter some of the pollution in the air and such.. But they are not as reflective as white roofs.

But either a white or green roof (with solar panels, in the best case) would much better than the dark roof.

5 years ago



odograph

All automobiles should be white as well ;-)


5 years ago



Nessie

Wouldn't a green roof or solar panels also have the same heat-nullifying effect? Only instead of bouncing it off?

5 years ago

 [Subscribe by email](#)  [RSS](#)

Trackback URL

Search suggestion

Maybe you also want to read about green roofs?

[Read More »](#)

Close

