

# I Just Saw A Hole-Punch Cloud Form, And How!

By Jesse Ferrell, AccuWeather meteorologist and senior weather editor

22 Oct, 2009 3:25 PM GMT



**UPDATE:** Photos have now also come in from this event from [Harrisburg, PA](#) and [Camp Hill, PA](#). Thanks for keeping your eye to the sky!

**UPDATE:** [This photo](#) shows a hole-punch cloud caused by cloud seeding, but if that's only one of several ways they can be caused then we can't be sure what caused the "[Russian UFO Cloud](#)" (by the way, we have written [an article](#) about the attempt to quell snow in Moscow via cloud seeding).

We also got some [more pics of the 2007 Louisiana event](#) on the Photo Gallery yesterday as a result of this blog. I think [this one from Georgia is the most interesting](#), as it shows both the long hole caused by a contrail falling on the cloud layer, and individual holes. You can see both on some of the satellite photos as well. Maybe the holes are really caused by planes punching through them while the elongated holes are caused by the contrails. I don't think we'll know for sure until somebody gets a video of it (my video yesterday was too far away to see a plane if there were one).

**UPDATE:** I've updated the video below with a quicker, longer timelapse; you can see a high-res version [on YouTube](#). There was another hole-punch cloud later in the day that the you can see in this set of [all AccuCam pictures from the event](#).

In unrelated news, we had some great lenticular formations in the evening. I'll be uploading some photos and video of those this weekend.

Also Scott B. from the [CIMSS Blog](#) offers up [this excellent satellite image](#) of hole-punch clouds to my southeast in the afternoon, saying in the Comments below *"In the false color image, clouds composed of ice crystals appear more cyan in color...so the aircraft distrails were glaciating, with the large ice crystals then falling out of the supercooled water droplet cloud layer from which they formed."*

## ORIGINAL ENTRY:

Here are photos, satellite shots and a timelapse video from what I just witnessed here at AccuWeather HQ - the formation of a hole-punch cloud ([fallstreak cloud](#))! Ironically I was just talking about [these being the "Russian UFO Cloud" earlier this week](#). Here's a photo near the end of the formation when it was almost overhead at 12:14 PM:

Here are [the rest of the pictures](#).

Here's a timelapse video from the AccuCam. First you can see the shadow from one of the contrails fading at left. Then about 20 seconds in you see the hole-punch cloud form as the trail falls onto the cloud deck.

Conventional wisdom (i.e. [Google](#)) and even [NASA](#) lists aircraft punching through the clouds as the cause, but in this case I wonder if a jet contrail may have fallen onto/through the cloud, touching off the process that causes the cloud to glaciate and fall out? Prior to this occurrence I had seen two jet trail shadows projected on to the cloud deck from above. You can see one of the shadows on the AccuCam image below and two fainter shadows on AccuCam2; half an hour later, I believe one of those contrails may have fallen to hit the cloud deck from above and caused the hole-punch cloud.

Ironically, the shadows were what caused me to start capturing a timelapse of the AccuCam (because timelapses of a cloud deck moving in one direction with shadows in another looks cool). It wasn't until 15-20 minutes later that the hole-punch cloud actually formed. If this hypothesis is true, it would more readily explain why hole punch clouds as viewed by satellite are often long trails.

But then why would only a hole form like in this case? I'm guessing that contrails aren't actually a straight line after they have had some time to start dissipating, they probably bend vertically like a snake so only part of it might touch the cloud as it falls, or even if the whole thing fell onto a cloud there might only be sufficient exhaust particles in one particular area to cause the hole. I think that [this satellite animation](#) from this afternoon may show a contrail forming a hole punch cloud in northern New York state.

Central PA wasn't the only place experiencing hole-punch clouds this morning -- more appeared over the northern part of the state in [this satellite animation](#) as I was observing mine... so I got Scott L. at [the CIMSS Blog](#) to send me some high-resolution satellite shots. The image below from the new GOES-12 satellite at 12:15 PM shows my hole punch cloud at the red arrow and the other longer hole-punch clouds in Northern Pennsylvania at the blue arrow.

A MODIS satellite shot from 11:40 AM shows the two jet contrails (whose shadows are shown in the AccuCam image above):

*Comments (10): Erica Dolinar:*

*That's awesome! I took some pictures of the hole punch cloud over Millersville, PA on the same day. The URL goes to my facebook page where I uploaded the photos.*

*Posted by Erica Dolinar | October 25, 2009 10:34 PM Mary Lapos:*

re" cloud seeding. I can understand using science for life saving measures but not for convenience. Snow especially in certain parts of the world in the basis for life in entire regions. I think what the lack of snow does to gardens, trees, weather cycles just in my backyard. To be thinking about fiddling with such a large and complex piece of the earth's atmosphere and its events seems a huge overstep on our part. The article titled, "can we prevent snow" was chilling. To be able to do something is one thing (think about it, know about it, think we understand it, etc) but to not ask the question "is it for the good of everything?" is a terrible oversight.

Posted by Mary Lapos | October 23, 2009 3:33 PM Carl Schaad:

What'd you call me?

Posted by Carl Schaad | October 23, 2009 2:29 PM Don:

Great story...wonderful timelapse...good job

Posted by Don | October 23, 2009 12:37 PM Supersteverino:

Nice post, Jesse and great follow-up, Scott! The sky yesterday here in SE PA, specifically Villanova, was ripe with fascinating cloud forms, pretty much from sunrise to sunset. I several several formations that were similar to cloud hole punches, but more elongated than as is typical.

Posted by Supersteverino | October 23, 2009 7:30 AM Susan Clark - Alexandria VA:

That is one of the coolest things I've ever seen. Thanks for sharing and for explaining what it is and how it happens.

Posted by Susan Clark - Alexandria VA | October 22, 2009 10:05 PM DavePa:

This is a neat vid. We have a hot tub on the deck , while relaxing, we have observed this type of cloud slit holing at night. First off we live a hair north of a major flight path through east central Pa, into the Newark, and New York airports. Really cool hole formations occur when the moon is full and near full. The skys are generally overcast with thin clouds (still able to see the moon). When the airbuses gradually descend through the cloud level, that trail magically (??) makes the clouds disappear. Leaving a clear thin streak of clear sky. Then an eerie dark shadow cascades under the cloud level, caused by the moonlight passing through the slit in the cloud. It is similar to a shadow seen of the sun's rays passing a cloud during the day. Unusual, but eerily neat.

Posted by DavePa | October 22, 2009 8:28 PM Elmo:

Very interesting, never thought of it that way. Thanks for sharing. I've only seen these once, almost three years ago. After reading your theory, looks like I may have the same thing (contrail falling thru) in this photo. Elmo

Posted by Elmo | October 22, 2009 6:24 PM Elmer Bauers:

I want to thank you for posting this, because just before 1pm I thought I saw a hole punch cloud over

Millersville University as I was walking to class. I said to myself, "Nah this can't be true." It didnt look as clear cut, but it was great to see your post to possibly confirm my sighting too. The sky was beautiful today.

Posted by Elmer Bauers | October 22, 2009 5:35 PM Scott Bachmeier:

Awesome! Great job capturing the ground-based photos and animation. Farther to your southeast, it was Hole Punch Clouds Gone Wild, with a number of larger aircraft distrails seen in the 250-meter resolution MODIS true color and false color imagery:

<http://tinyurl.com/yhwg24g>

In the false color image, clouds composed of ice crystals appear more cyan in color...so the aircraft distrails were glaciating, with the large ice crystals then falling out of the supercooled water droplet cloud layer from which they formed.

Posted by Scott Bachmeier | October 22, 2009 4:55 PM

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