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NASA Rocket to Create Clouds Tuesday

By **Clara Moskowitz**, Staff Writer
posted: 14 September 2009 12:21 pm ET

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A rocket experiment set to launch Tuesday aims to create artificial clouds at the outermost layers of Earth's atmosphere.

The project, called the Charged Aerosol Release Experiment (CARE), plans to trigger cloud formation around the rocket's exhaust particles. The clouds are intended to simulate naturally-occurring phenomena called [noctilucent clouds](#), which are the highest clouds in the atmosphere.

"This is really essentially at the [boundary of space](#)," said Wayne Scales, a scientist at Virginia Tech who will use computer models to study the physics of the artificial dust cloud as it's released. "Nothing like this has been done before and that's why everybody's really excited about it."

The experiment is the first attempt to create artificial noctilucent clouds. A [previous spacecraft](#), called Aeronomy of Ice in the Mesosphere (AIM), launched in 2007 to observe the natural clouds from space.

CARE is slated to launch Tuesday between 7:30 and 7:57 p.m. EDT (2330 and 2357 GMT) from NASA's Wallops Flight Facility in Virginia.

Noctilucent means "[night shining](#)" in Latin. Although difficult to spot with the naked eye, the clouds are [best visible](#) when Earth's surface is in darkness and sunlight from below the horizon illuminates the high-altitude clouds.

These clouds, also known as polar mesospheric clouds, are made of ice crystals. The natural ones tend to hover around 50 to 55 miles (80 to 90 km) above the Earth. CARE will release its dust particles a bit higher than that, then let them settle back down to a lower altitude.

"What the CARE experiment hopes to do is to create an artificial dust layer," Scales told SPACE.com. "Hopefully it's a creation in a controlled sense, which will allow scientists to study different aspects of it, the turbulence generated on the inside, the distribution of dust particles and such."

CARE is a project of the Naval Research Laboratory and the Department of Defense Space Test Program. The spacecraft will launch aboard a NASA four-stage Black Brant XII suborbital sounding rocket.

Scientists will study its progress from ground based instruments as well as the STP/NRL STPSat-1 spacecraft in Earth orbit. Researchers will track the CARE dust cloud for days or even months to study its behavior and development over time.

Because the optical observations are crucial, the launch can only take place if the weather is clear both at the launch site and at multiple observation stations along the Atlantic coast and in Bermuda.

If CARE cannot launch Tuesday, the team can try again between Sept. 16 and Sept. 20.

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This image shows one of the first ground sightings of noctilucent clouds in the 2007 season over Budapest, Hungary on June 15, 2007. Credit: Veres Viktor

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 **MeteorWayne** wrote: posted 14 September 2009, 1:33 pm ET
 Here's a link to the Wallops site (which is not in the article :(:
<http://www.nasa.gov/centers/wallops/CARE.html>
 And the Webcast (Also not in the article :(:
<http://sites.wff.nasa.gov/webcast/>
 And the Launch Status Twitter:
http://twitter.com/NASA_Wallops

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 **John_with_a_B** wrote: posted 14 September 2009, 1:33 pm ET
 Why?
 The lack of any clear stated purpose to this project makes me feel compelled to assume it is for the only purpose I have ever heard of this being "useful" for. Climate modification on a global scale. Do this enough to create a reflective layer to reject sunlight before it reaches the ground, producing some artificial global cooling. Scary stuff! I don't know how anyone can presume to take this on as THEIR responsibility. I understand that it is a small scale experiment to check out the method, but I fear it will soon lead to calculations on how much this "needs" to be done to balance a million tons of CO2 in the atmosphere, thereby abrogating the responsibility to be decent stewards of the planet.
 I am surprised that the article made no mention of the actual purpose of this research. It is as if it is just to see if they can make some pretty clouds to stare at. This method has long been suggested by some as a means of trying to dodge the global warming problem without having to change emission levels.
 In some fiction of the recent past, this sort of thing is done by rogue states in Asia trying to prevent sea level rise out of desperation. It is most often referred to as Eco-terrorism.
 What if the results are not as intended on the larger scale even if it seems to work in a small test? What if this encourages some people to do this on a larger scale only to find it has the opposite effect, or even some other unexpected result that cannot be predicted or anticipated? At what point are the citizens of the world consulted and a consensus reached to go ahead with this on a larger scale? Will the perpetrators of this scheme check out other side effects of processes and phenomena already going on up there, like the ozone layer and the Heaviside layer?
 Does might make right? Is any nation or group permitted to play around like this simply because they CAN? The US Military surely seems to think that that is a given. Will this eventually be presented to the rest of the plebes on the planet as being what is "best" for us all? I think there are a lot of points to consider beyond the science of this and the determination of whether it is possible. A better question to ask is whether this is desirable, I think. Once enough money and research effort is put into this sort of thing, things tend to snowball, and the millions of dollars spent to find out will be the reason to proceed with it, just to make that investment all worth it, regardless of whether it will be beneficial. I fear that just because something like this is done "up in space" there will not be seen to be any need for any sort of environmental impact study that would be required for almost anything that would be proposed on the surface.
 I have to admit, the acronym is a stroke of genius that would make George Orwell proud. The real CARE I see is the care the people involved have about the fat research grant they hope to live off until retirement. It could just as well stand for Can't Always Respect the Environment. Maybe HELP would be as good, Hold Environment as Low Priority.
 I really wish the article addressed my first question, Why?

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 **Aerospace_Cadet** wrote: posted 14 September 2009, 2:25 pm ET
 Any project that is funded by the DOD will have it's purpose related to the defense (or offense) of the United States. It's not going to be a global warming test. If it is then the DOD is getting it's budget skimmed by non-defense related projects.
 George Norey is going to have a field day on this tonight!

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rdmurphy817 wrote: posted 14 September 2009, 2:56 pm ET




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It seems just as likely to be an experiment to see what the impact would be of a suborbital hypersonic aircraft. Either "Will our hypersonic bombers draw a line in the sky making them easy to spot and shoot down", or " Will commercial hypersonic travel cause a major pollution problem and get us sued".

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IxSonicx1 wrote: posted 14 September 2009, 3:04 pm ET

Actually, it's more likely to prove that the clouds that have been showing up in places where they don't belong are a direct result of launches from shuttles and rockets. This is more to quell those who are touting the end of the world due to the recent appearances of these types of clouds outside of the polar regions, where they typically only form.

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GodisScience wrote: posted 14 September 2009, 3:05 pm ET

If I remember correctly, back in the early and mid-70s, sounding rockets were launched from Eglin AFB near Ft. Walton Beach, FL. These rockets carried canisters of barium which would form ionized clouds in the lower ionosphere. These were beautiful, and visible all over the southeast. I was in Alabama about 60 miles north of Mobile at the time. The display was shades of red or green and looked like pictures I'd seen of aurora, but I knew it was in the wrong direction! The purpose of those tests were to get a better understanding of radio wave reflection and interference with charged particles high in the atmosphere. I think the military was experimenting with a way to set up an artificial communications reflector in the upper atmosphere, not unlike the "skip" used by CB and Ham radio operators. Another account said a later test was to see if a satellite broadcast could be jammed or blocked by such a cloud in the atmosphere below its orbit.

I suspect the new experiments might be an outgrowth of those earlier studies. There is some interesting basic science here to be learned. Everything we know about cloud formation (particulation) helps with the accuracy of climate change models, and gets a finer edge on the data concerning the thermal balance of the atmosphere. I think a previous poster was overly concerned about possible nefarious uses of such knowledge.

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MeteorWayne wrote: posted 14 September 2009, 3:10 pm ET

Wow, some really paranoid folks here!!

It's basic science, learning more about processes that take place in the stratosphere!!

Sheesh.

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dustymomo wrote: posted 14 September 2009, 3:33 pm ET

Oh wow, that's pretty cool but what exactly do we gain from this?

RT
www.anonymous-web.be.tc

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lwblack wrote: posted 14 September 2009, 3:50 pm ET

This reminds me of that adage, 'just because we can do a thing doesn't necessarily mean we should'. For instance, there are enough nukes in the world to totally obliterate it. Does that mean we should just because we can? We can already witness what kind of irresponsibility scientist can show with all the junk floating around in orbit. And I am sure some kind of reasoning can be associated with over 90% of it. But in that case as well as this one, does the end justify the means?

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Bill_Wright wrote: posted 14 September 2009, 4:05 pm ET

There is a UN law against climate modification, which is ignored by most. It came about when we were in Viet Nam trying to make it rain on the "trail".

Worrying about unintended effects is not paranoia, just good science. Besides id you aren't a little paranoid you are just plain crazy.

:~)
-- Bill

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