

# Retired scientists try to save world: invention may fight global warming

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Aqua Metrology Systems' Armand Neukermans, 73, poses for a portrait behind a cloud condensation nuclei spraying system prototype at Aqua Metrology Systems in Sunnyvale, California, June 24, 2015. Photo: LiPo Ching/Bay Area News Group

Scientists around the world are trying to find answers to climate change. It is a very difficult problem to solve. The temperature of planet Earth is increasing and if it keeps rising, the lives of plants, animals and humans will change. Scientists are trying to find ways to control the temperature.

Some scientists in California are working together to design a device to help control climate change. This is no ordinary group though. The team is made up of retired technology engineers and scientists who range in age from 60 to 79 years old. They are trying to do something that has never been done. They hope to build a "cloud whitener."

## **A Cool Machine For A Cooler World?**

The "cloud whitener" would help cool the temperature of the planet. It would shoot tiny droplets of seawater into the sky. The water would form clouds or fog. The goal is to help increase the brightness of clouds, which would then reflect rays of sunlight back into space.

The scientists are part of a new branch of science called "geoengineering." In this new approach scientists try to change the weather patterns of planet Earth to stop climate change.

Jack Foster is one of the scientists in the group. He is 79 years old. Foster says the scientists do not want to use the cloud-whitener unless it is necessary. However, they would like to have it ready just in case.

## **Geoengineering: Can This Work?**

Not all scientists think geoengineering is a good idea. Some people think it might be dangerous to change nature.

They also worry that if the cloud-whitener works, people might think the climate change problem is solved and go back to their bad habits. People might keep burning oil, coal and natural gas. Burning these fuels emits carbon dioxide into the atmosphere, causing temperatures to rise.

"Personally, I doubt that the world is ready for this," said Professor Stephen Gardiner from the University of Washington. He says geoengineering needs to be studied more.

The California scientists say the world might not have a choice. We need to test this technology now, said 74-year-old project leader Armand Neukermans.

None of the men in the group will be alive by the end of this century. By then temperatures are likely to be so high they will harm ecosystems and human health.

## **Children Or Grandchildren Could Benefit**

The scientists in the team may not be around to see it, but all of them "have children or grandchildren," Neukermans said. "We've got to preserve the future."

The team are all old friends. Other people their age are out playing golf, but they would rather invent things instead.

To get the tools they needed the team had to "beg, borrow and steal," retired scientist Gary Cooper said.

Some of their tools came from universities. Others came from NASA, the U.S. space agency. Many tools came from their own garages.

## **Shooting Out Tiny Drops Of Water**

The scientists are designing and building a faucet for the cloud-whitener. It will release tiny amounts of water into the air. To give an idea of just how small the water drops are, they would measure about one-tenth the size of the period at the end of this sentence.

The team are making progress. They are having some difficulty finding the money they need to keep the project going though. It is a very expensive project.

The technology could be used to help cool down overheated redwood forests. The team says it could be used on overheated coral reefs too.

The scientists say they will be very happy if their project succeeds, but it would be even better to simply have a future without global warming.

“We would be perfectly happy if our method works beautifully and it never needs to be used, ” said Cooper.

## Quiz

- 1 Which of the following details from the article is MOST important to include in its summary?
- (A) Jack Foster is one of the scientists in the group. He is 79 years old.
  - (B) The California scientists say the world might not have a choice. We need to test this technology now, said 74-year-old project leader Armand Neukermans.
  - (C) Some of their tools came from universities. Others came from NASA, the U.S. space agency. Many tools came from their own garages.
  - (D) To give an idea of just how small the water drops are, they would measure about one-tenth the size of the period at the end of this sentence.
- 2 Which sentence from the article BEST represents the main idea?
- (A) Scientists around the world are trying to find answers to climate change.
  - (B) The temperature of planet Earth is increasing and if it keeps rising, the lives of plants, animals and humans will change.
  - (C) Some scientists in California are working together to design a device to help control climate change.
  - (D) They also worry that if the cloud-whitener works, people might think the climate change problem is solved and go back to their bad habits.
- 3 All of the following answer choices describe the perspective of the scientists in California EXCEPT:
- (A) They want their children and grandchildren to not have to worry about global warming.
  - (B) They would like global warming to not be a problem so the machine does not have to be used.
  - (C) They want to live long enough to see the cloud whitener machine work to help the Earth.
  - (D) They want an option in the future that will help prevent the harmful effects of global warming.

- 4 Based on the section "Geoengineering: Can This Work?" do other scientists disagree with the California scientists methods. Why or why not?
- (A) No, because they all want to end global warming.
  - (B) No, because they admire the skill and intellect of the California scientists.
  - (C) Yes, because they believe the cloud whitener could cause problems with natural weather patterns.
  - (D) Yes, because they believe that the scientists do not know enough about how hot the world will become in the future.