

## *A Future for Clean Energy?*

*By: Xavier Wilson*

On December 21, 2023, Laura Paddison, a senior climate and environment journalist for CNN, published an article about the successful third attempt of scientists in California recreating nuclear fusion. Paddison said, "This reaction was replicated for the third time by shooting nearly 200 lasers at a cylinder holding a fuel capsule the size of a peppercorn..." For those who do not know what nuclear fusion is or what this means I will explain.

As stated by Paddison, "Nuclear fusion, the reaction that powers the sun and other stars, involves smashing two or more atoms together to form a denser one, in a process that releases huge amounts of energy." This reaction takes place in the 4th state of matter called plasma, which according to the International Atomic Energy Agency (IAEA) is, "a hot, charged gas made of positive ions and free-moving electrons with unique properties distinct from solids, liquids, or gasses."

The reason this is so important is because the reaction makes more energy than it produces. It is quite literally free energy. Not to mention the energy produced is clean and there's no nuclear waste because nuclear fusion produces helium, which is an inert gas. So what does this say for our future? According to the IAEA, "if nuclear fusion can be replicated on an industrial scale it could provide virtually clean, safe, and affordable energy to meet the world's demand." We can have a future of clean, free energy and never have to pay for power again. The ozone layer will not be destroyed by fossil fuels anymore and hopefully we can increase the longevity of our planet.

Paddison, Laura. "With 200 Lasers and a Peppercorn-Sized Fuel Capsule, Scientists Inch Closer to Mastering Fusion Energy." *CNN*, Cable News Network, 21 Dec. 2023.  
[www.cnn.com/2023/12/20/climate/nuclear-fusion-energy-breakthrough-replicate-climate/index.html](https://www.cnn.com/2023/12/20/climate/nuclear-fusion-energy-breakthrough-replicate-climate/index.html).

Barbarino, Matteo. "What Is Nuclear Fusion?" *IAEA*, IAEA, 3 Aug. 2023.  
<https://www.iaea.org/newscenter/news/what-is-nuclear-fusion>



## *Less Snow Everywhere*

*By: Gracie Lawrence*

In recent years, Dickenson County has not been getting nearly as much snow as it has in years before. As a child I remember sledding and making snowmen; now that I have grown into a young adult, I can hardly remember the last time we had enough snow to go sledding until this past week. In Hobson's article "Enjoy it while it lasts – snowy winters are getting rarer," she explains the cause of less snow, and it is going to affect not only us but our environment.

Why has Dickenson County, and other areas, not gotten snow like we once did? Hobson explains that it is because the world is warming up. To have snow form you need moisture and cold air; while the hot air is forming more moisture, it is not giving us the cold air we need for snow. Since the climate is getting hotter, we are having much more moisture than we need, but when our air does turn cold, we will be packed into the snow because of the extra moisture in the atmosphere.

If you hate winter this might sound amazing, but in truth it is impacting our environment negatively. Wildlife, like deer, are going to have a hard time grazing on grass when it is frozen due to rain not snow. Also, snow owls and other animals that camouflage in the snow are going to be at risk for extinction. Wildfires have the possibility to spike too, because when air temperatures warm, trees release water through a process called evapotranspiration. When there is no snow, the soil will not be able to replace the lost moisture. This causes forests to experience more heat, making wildfires likely. The biggest impact for humans is reduced water. Approximately 1.9 billion people in the world rely on snowpacks for water, because snow melts slowly into streams, where water rushes through and can be wasted.

We can fix our mistakes by slowly stopping the burning of fossil fuels, but it will be a difficult challenge. If global warming is not slowed down, many places in the world will have snow-free winters by 2100. While winter is my least favorite season of all, it is important to our environment that we have snow. People will argue and say that global warming might not be real, but I know that I can see a huge difference in our winters from today and just ten years ago.

Melissa Hobson's "Enjoy it While it Lasts – Snowy Winters are Getting Rarer."  
National Geographic, 2024.

Hobson, M. (2024, January 17). Enjoy it while it lasts—snowy winters are getting rarer.  
*Environment*.  
<https://www.nationalgeographic.com/environment/article/climate-change-warming-winter-snow-weather>



## Careers in Environmental Science

By: Jacob Hill

On December 21, 2023, Laura Paddison, a senior climate and environment journalist for CNN, published an article about the successful third attempt of scientists in California recreating nuclear fusion. Paddison said, "This reaction was replicated for the third time by shooting nearly 200 lasers at a cylinder holding a fuel capsule the size of a peppercorn..." For those who do not know what nuclear fusion is or what this means I will explain.

Especially in our area with mining, you can find a career in reclamation, natural resources management, and even in labs that process the coal that is mined. It takes about 4 years to acquire a bachelor's degree in this subject, so if you enjoy working outdoors and want to help solve nature's problems, a career in environmental science may be for you.

## Pros of Deforestation

By: Tristan Stevens & Landon Mullins

A huge controversy in environmental science is deforestation. Should it happen or should it not? Yes, in my opinion, deforestation has many positive effects, like providing jobs for those who work in the industry; the construction of new roads built for easier access for work and traveling; the production of useful items like paper; create space for new homes; clearing acreage for more crops to be grown; and the biggest one for our area is making more room for grazing animals which then can become food for us, like deer. While there are also negative effects of deforestation, such as soil erosion and the destruction of animals' habitats, these impacts can be minimized as long as we do not overuse the process. Here in Dickenson County, the results of deforestation are evident as we drive past once heavily wooded areas that are now being logged. As a result of logging, people have more job opportunities, and the cut timber can be used to warm homes. Keeping a balance of healthy timber with clearcut areas is key to a thriving partnership between Mother Nature and all living things.



## Science in Our School

By: Brett Childress

Science is a core class, meaning that from the time they start school, students learn about the importance of science throughout elementary and secondary school and into college, if they choose. One of the most fun ways for students to learn about science is to conduct experiments. A strong science department allows Ridgeview High School to allow students to conduct research through experimentation. This month's Chemistry 2 lab was an experiment questioning a study found in the textbook. The textbook's value of Copper(II) Sulfate Pentahydrate was 36% and according to the experiment performed, most groups found a similar value, varying from 34% to 40%. So, most groups' experiments corresponded to the information found in the textbook.

## Interesting Science Fact

By: Harmony OQuinn

*The oceans produce the majority of the oxygen on Earth.*

According to the National Oceanic Service, it is the plant-based marine organisms we can thank for all of that fresh air. More than half of the world's oxygen is produced by plankton, seaweed, and other photo-synthesizers.

<https://byjus.com/chemistry/scientific-facts-we-see-everyday/#:~:text=The%20oceans%20produce%20the%20majority.%2C%20seaweed%2C%20and%20other%20photosynthesizers.>

## Memories from the 1993 Storm of the Century

By: Landon Couch

Snowstorms are a yearly fact of life here in the United States. Each fall, we wonder about the severity of the upcoming winter. Some storms are so severe, so impactful, that they stay in the memory of everyone who lived through them. Some storm complexes are so powerful and large they can impact millions of people at a time. One such storm was the 1993 Blizzard, also known as the "Storm of the Century." The storm is infamous for its record breaking intensity and snowfall. The storm was more powerful and impactful than most landfalling hurricanes. With central low pressure equal to a category 3 hurricane, the storm drowned the U.S. East Coast in snow from March 12-14. (On, 1). The highest snowfall record was 56 inches at Mount LeConte, Tennessee (On,1). The storm was also revolutionary in forecast technology. The storm's intensity was predicted 5 days in advance, a remarkable feat for the technology of the time (The, 1).

I interviewed my grandparents, Hank and Teresa Fields, to ask them about what they remembered about the Storm of the Century and its impact on Dickenson County. From their memory, the Superstorm was a fairly routine blizzard. I asked them if it was a unique storm in their memory. Hank said,

"Not in my memory no, there have been worse storms. Especially in 97 and 09."

I asked them about the lead up to the storm and what they remembered. Teresa said "I don't remember much sadly, just that there was going to be a big storm."

I asked them if they had any specific memories of the storm. Teresa told me stories about how John, my uncle Bill's friend, was snowed in the house with them. I went on to ask them about the mood of everyone in the house. Teresa said, "Grouchy, Bill was hyper, your mom and aunt stayed out of the way, and Hank was away at work."

To my surprise, they said that they had power throughout the storm. They also told me that road conditions were normal for a snowstorm. They recalled that barely any trees fell down, in contrast to storms like 2009. Teresa remembered snow drifts that got as high as hip level. The main weather that stood out to them were the howling winds.

I asked them about the reaction of the community to the snowstorm. They told me that there were people on the roads testing the drivability of them. People walked up and down the road asking about the conditions at different houses. Though not special to the 93 storm, those actions by the people who lived on the road show that it was a different world before social media. Now, I see people on Facebook asking those questions online that 20 years ago would be asked in person. The Superstorm also did not keep them trapped in the house very long. Teresa worked at Haysi Drugstore at the time and commented "People need their medicine, you can't keep the pharmacy closed for very long." She went on to work during the storm.

For my final question, I asked them if the storm deserved the titles, "Superstorm" and "Storm of the Century."

## *In Search of the Most Sustainable Nation?*

*By: Caitlin Hill and Logan Sutherland*

As research shows, the number one country for sustainable development is Sweden. Sweden is known for its sustainability efforts, which include a focus on renewable energy, waste management, and environmental policies. The country invests in renewable energy sources like wind and hydropower, promotes recycling and waste-to-energy programs, and implements strict environmental regulations. Additionally, Sweden encourages public transportation and has a strong commitment to reducing carbon emissions. These factors contribute to Sweden's reputation as a sustainable and environmentally conscious nation.

Swedes adopt a lifestyle that contributes to sustainability by emphasizing eco-friendly practices. This includes a strong culture of recycling, energy-efficient housing, and a preference for public transportation and cycling. The country also promotes a mindful approach to consumption, with an emphasis on quality over quantity. Sustainable food practices, such as organic farming and locally sourced produce, are encouraged. Overall, Sweden's sustainable lifestyle is rooted in a combination of individual choices, government policies, and a cultural commitment to environmental responsibility.

## *“The Father of National Parks”*

*By: Terran Owens*

John Muir, often referred to as the “Father of National Parks,” made a significant impact as an environmental scientist through his relentless advocacy for the preservation of wilderness in the United States. Born in Scotland and raised in Wisconsin, Muir developed a deep love for nature at an early age. His explorations of the Yosemite Valley in California led him to develop theories about how the area’s landscapes were formed, challenging the prevailing thought of the time. His writings about the beauty and importance of such places led to a greater public appreciation of the outdoors and the need for conservation.

Muir’s efforts extended beyond just appreciation for nature. He worked to ensure the protection of these wilderness areas. His lobbying efforts were instrumental in the creation of Yosemite, Sequoia, Mount Rainier, Petrified Forest, and Grand Canyon National Parks. He also co-founded the Sierra Club in 1892, an organization dedicated to promoting the conservation of the environment. His work and passion for nature made him a pioneer in the world of environmental science, and his legacy continues to influence environmental conservation efforts today.

[https://en.wikipedia.org/wiki/John\\_Muir](https://en.wikipedia.org/wiki/John_Muir)  
<https://www.nps.gov/jomu/index.htm>  
<https://www.nps.gov/yose/learn/historyculture/muir.htm>

“Not in our area. The storm in 2009 definitely impacted more people in the area and did more damage.”

Though the storm may have been one of the most powerful and notable storms to strike the East Coast, Dickenson County was luckily spared most of its wrath. Dickenson County has seen many storms, but the Storm of the Century seems to have been a snoozer. Nevertheless, the memory of the storm is important because it shows perspective. Just because a storm is large, it doesn’t mean that each area will be impacted the same. Each storm is different and although the 1993 Superstorm should and will be remembered, just maybe not in Dickenson County.

If you would like to read more about the Storm of the Century, NOAA and various NWS stations have articles about the storm pertaining to their area.  
<https://www.ncei.noaa.gov/news/1993-snow-storm-of-the-century>  
<https://www.weather.gov/ilm/Superstorm93> (NWS Wilmington, NC)  
<https://www.weather.gov/tbw/93storm> (NWS Tampa Bay Area, FL)

“On This Day: The 1993 Storm of the Century.” *National Centers for Environmental Information (NCEI)*, 13 Mar. 2023, [www.ncei.noaa.gov/news/1993-snow-storm-of-the-century](http://www.ncei.noaa.gov/news/1993-snow-storm-of-the-century).

“The 1993 Storm of the Century.” *The 1993 Storm of the Century*, NOAA’s National Weather Service, 12 Mar. 2023, [www.weather.gov/tbw/93storm](http://www.weather.gov/tbw/93storm).

## *Why Soft Robotics Could be the Future of Invasive Surgery*

*By: David Farmer*

### **A New Technology in Medical Soft Robotics**

Soft Robotics, a subfield of robotics centered around the use of compliant materials and designs, could be the path ahead in the field of invasive surgery. The potential value of soft robotics in surgery comes from the ability of a soft robot to navigate around the structure of the human body without causing damage to sensitive tissue. Despite potential benefits, the development of this field has been slowed by a crucial question: how will the robots be powered? The answer to this question could come in the form of squishy, metal-free magnets developed by a cohort of researchers at the University of Michigan and the Max Planck Institute for Intelligent Systems in Stuttgart, Germany. According to Today’s Medical Developments, “The material is the first in which carbon-based, magnetic molecules are chemically bonded to the molecular network of a gel, creating a flexible, long-lived magnet for soft robotics.” Unlike metallic magnets, this new gel poses no risk of toxicity as, with further improvement, it may become able to biodegrade within a patient’s body.

### **Potential Applications**

This new technology could have a myriad of applications in today’s ever advancing medical field. For example, “Such biodegradable magnets could be used in capsules that are guided to targeted locations of the body to release medicine,” states Today’s Medical Developments. Furthermore, the gel’s magnetism is weak enough to be safely viewed on MRI without harming patients or distorting the image.

Special thanks to Dr. Muncy for editing and helping the students with their articles.  
Also special thanks to Miranda White for helping with layout.