ITHACATION

Cornell Chapter of the American Meteorological Society

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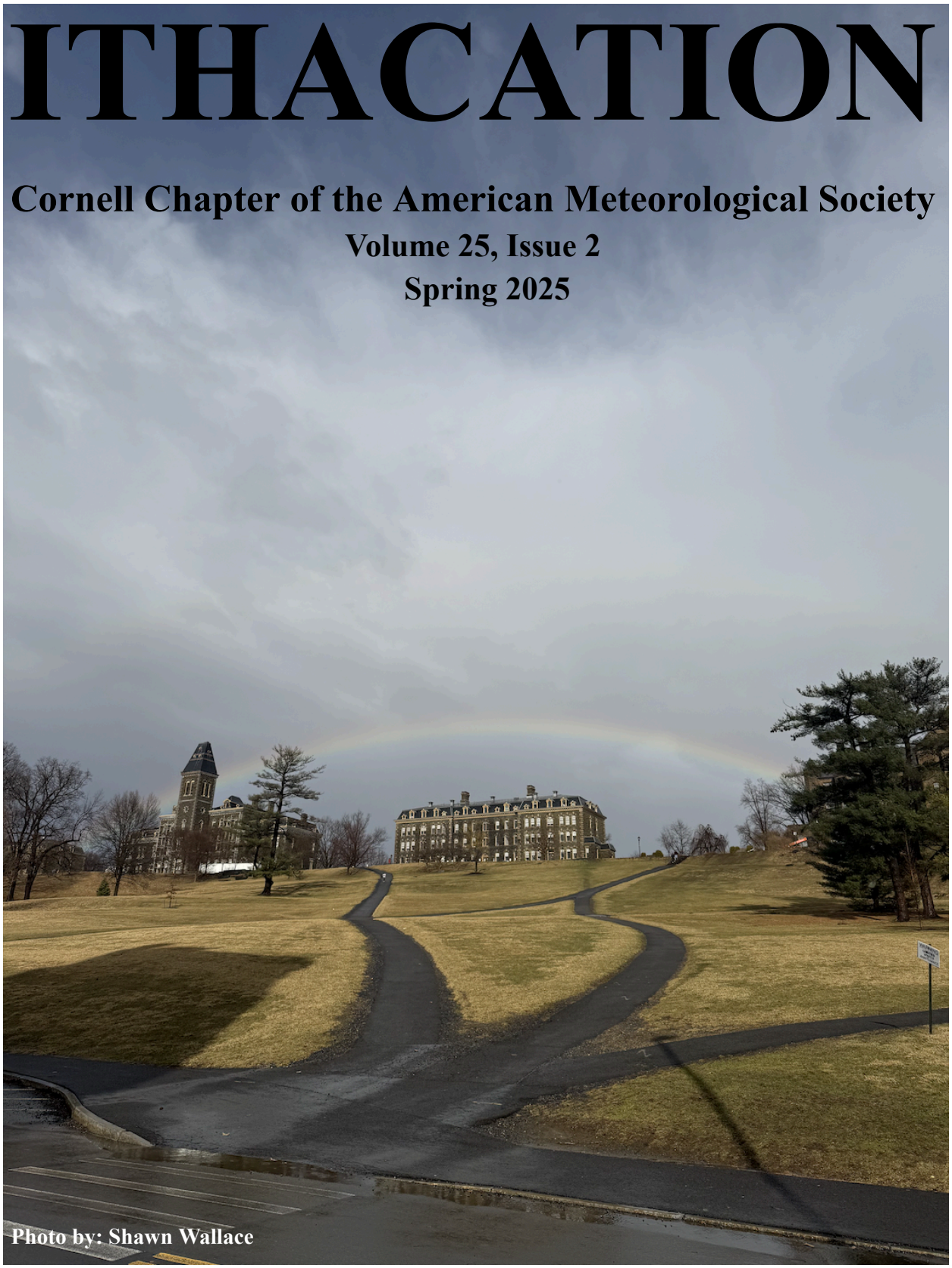


Photo by: Shawn Wallace

From the Editor

It is my pleasure to introduce this latest edition of *Ithacation*, where members of the Cornell Chapter of the American Meteorological Society (CCAMS) share their stories, insights, and research in the field of Earth and Atmospheric Sciences.

This issue captures a wide range of perspectives, from firsthand scientific experiences to reflections on the evolving role of weather and climate in our lives. Shawn Wallace (‘27) recounts the dramatic impacts of a recent severe thunderstorm that swept across the Cornell campus in mid-March, highlighting the power of extreme weather close to home. Jack Halberstadt (‘26) shares his experience participating in the STARDust field campaign in Arizona, offering a glimpse into the world of high-impact weather research. Meanwhile, Simran LaBore (‘27) pens a thoughtful op-ed on the challenges of predicting a rapidly changing climate, and I reflect on my own journey hiking across ancient ice fields in Iceland, a reminder of our planet’s fragile beauty.

This issue also features an overview of the Cornell Weather Conference, a milestone event for our community, and a spotlight on the newly founded Cornell Storm Chasers Club, where students are transforming their passion for severe weather into real-world learning and fieldwork.

Whether you’re a weather enthusiast or just curious about the atmosphere that surrounds us, I hope this edition inspires you to stay curious, stay connected, and keep reaching for the skies.

Sincerely,
Lucy Alcoba [Editor-In-Chief]

In This Issue

Mid-March Severe Thunderstorm Causes Significant Damage Across Campus

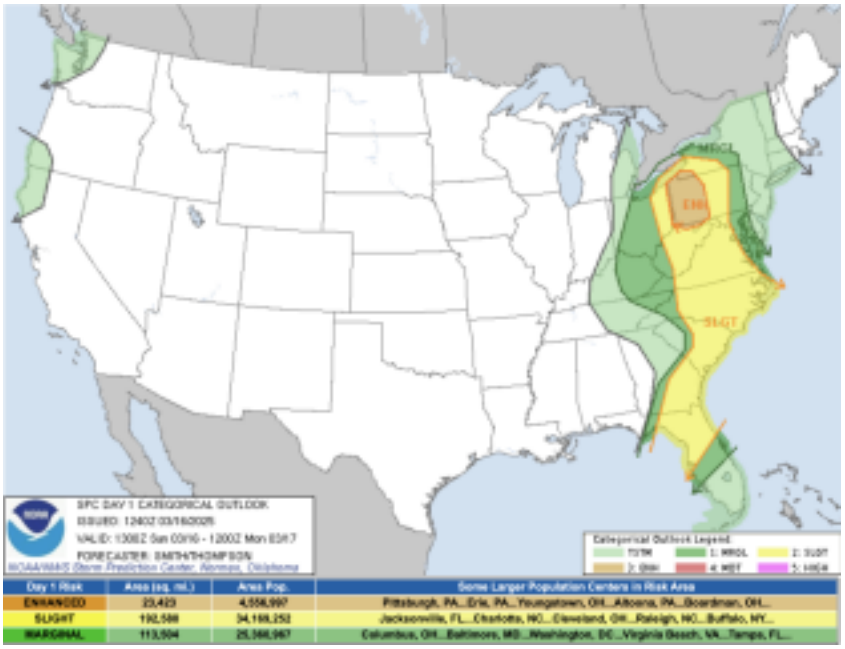
Shawn Wallace '27

Ben Moose and Shawn Wallace take storm observations during the peak of the storm. (Photo by Sunny Yang)

Severe storm season started with a bang in Ithaca this year, with the National Weather Service issuing a Considerable Thunderstorm Warning for the City in the early evening on Sunday, March 16th. As the storm approached, students in Atmospheric Science program quickly organized to spot and chase the storm, with Jayden Vogler, Ronnie Geiger, Gabby Quaranta, Will Cano, Packie Young, Jack Halberstadt, Kevin Rzepka, and Caleb Kohane choosing to head out to chase the storm. Meanwhile on Campus, Noah Bodner spotted the storm from Snee Hall while Sunny Yang, Ben Moose, and Shawn Wallace were soaked and battered by the heavy rain and strong winds on the slope.

What originally was a day predicted to bring a marginal threat for severe thunderstorms in Pennsylvania, forecasts dramatically changed by the morning on Sunday the 16th. By 9 AM, an enhanced risk for severe weather was predicted for most of Western Pennsylvania and far southwest New York. A slight risk for severe weather was issued for the Ithaca area by midday and a Mesoscale Discussion was issued by early afternoon regarding the possibility for a Severe Thunderstorm Watch.

The event was headlined by a severe weather outbreak over the previous two days on Friday and Saturday in Tornado Alley and the deep South. Forecasters were busy tracking powerful storms capable of all hazards that produced plenty of dangerous and deadly tornadoes, as well as significant wind and hail damage.



Screenshot of the Categorical Outlook Graphic from the Day 1 1300Z Convective Outlook. (NWS SPC)

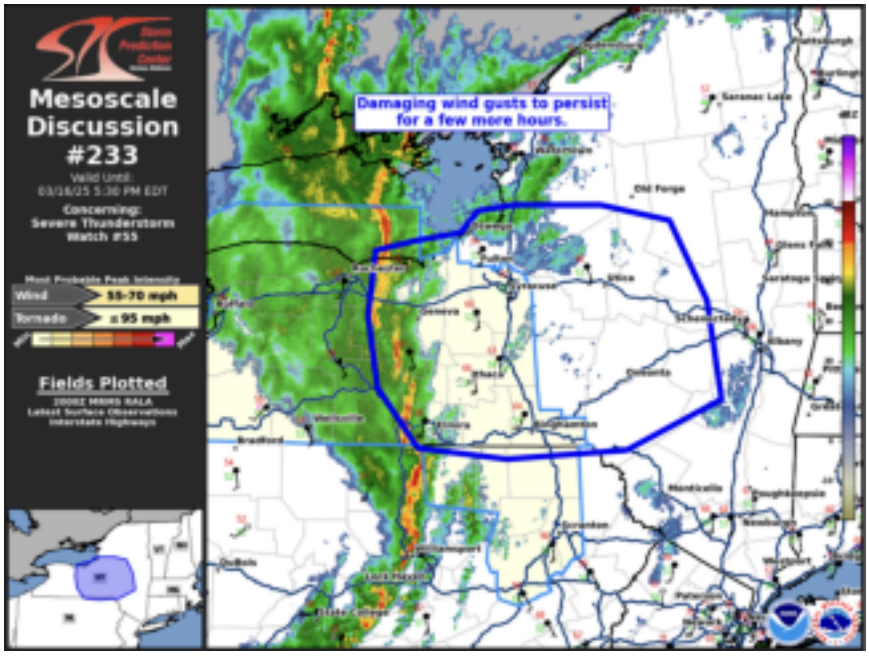
As of Sunday morning, the National Weather Service Storm Prediction Center had observed that a deep trough had dug in over the Ohio Valley, drawing strong 500mb level winds of greater than 110 knots and lifting them to the northeast. A surface low was lifting up a moist, but rather weak unstable warm sector ahead of the cold front draped behind it. Meager surface heating was forecast to allow MLCAPE (Mixed Layer Convective Available Potential Energy) values to max out between 200-500 J/Kg in the enhanced and slight risk areas outlined by the 1300Z SPC Convective Outlook. The anticipated storm mode was a squall line moving from West to East, travelling through Pennsylvania and through New York by late evening. This squall line was forecast to be supportive of strong gusts between 55-70 mph, with the potential for a quick spin up tornado on the Southern end of the enhanced region.

By 1600Z (12:00 PM EST), the SPC's convective outlook had been updated once again to include most of western and parts of central New York in the slight risk area. Uncertainty still remained regarding the overall threat level for the eastern extent of the outlook. Ahead of the line of low topped convective storms beginning to move East, cloud cover was limiting daytime heating and dew points were only found to be in the low 50's. However, observations began to indicate that the threat could shift East, mostly due to weakening cloud cover.
At 2000Z (4:00 PM EST), yet another update to the SPC's categorical outlook was posted, increasing the chances for wind damage to 15%, tornado chances to 5%, and hail chances to 5%

within 25 miles of a given point surrounding the Ithaca area. At this point, a strong squall line had formed and was causing significant wind damage and gusts up to 70 mph in PA and Western NY. Confidence was high that the storm would be able to sustain itself well into New York. It was noted that by the time the sun began to set, lingering cloud cover as well as low moisture levels limiting buoyancy were expected to limit the advance of the severe portion of the squall line in the Central New York and Hudson Valley region, where it did eventually fall apart as forecast.

Storm Impact and Observations

At 4:02 PM, a Severe Thunderstorm Watch and Mesoscale Discussion were officially issued by the National Weather Service Storm Prediction Center for Tompkins County and Ithaca. At this point, Tompkins County and Ithaca were already under a Considerable Severe Thunderstorm Warning. Threats from the storm included 70 mph wind gusts, quarter size hail, and the potential for a quick spin up tornado. The storm was traveling at 65 mph.



A screenshot of the graphic from the Mesoscale Discussion issued for the line of storms. (NWS SPC)

It was around the 4 PM time frame that students in the Atmospheric Science program began to either head out to chase the storm, or observe from Libe Slope on Campus as I did. Prior to the storm's arrival, temperatures on campus were well into the 60's and the air was noticeably moist. Wind was strong out of the South, with my handheld anemometer recording gusts of 30-45 mph frequently while on the slope. I was even blown over by one unexpectedly strong gust, which caught me off guard and gave a laugh to nearby onlookers. I was eventually joined on the slope by fellow Atmospheric Science major Ben Moose, as well as CCAMS member Sunny Yang.

By 4:25, the storm was on the horizon. Sunny skies gave way to the anvil of the storm as it approached. Wind also died down and began to switch directions, angling from the West. The shelf cloud soon appeared on the horizon with its rain drafts evident from miles away. At first glance, the storm appeared to be relatively disorganized based on the structure we could see. Using radar, we could also see that Ithaca would be struck by a kink in the line of storms, raising tornado possibilities due to storm inflow and outflow interactions. At this point, most lightning along the line had ceased.

A view of the storm from the slope at 4:25 PM prior to impact. (Photo Credit: Shawn Walace)

From our view on the slope, we watched impressed as the sheets of wind driven rain crossed the Cayuga Lake Basin. At 4:30 PM, the storm struck campus. We were immediately hit by a wall of strong wind and rain. Those caught unprepared walking on and up the slope were quickly soaked. We watched as trees on the slope were bent over, with large limbs and branches snapping off like toothpicks. The American flag at the War Memorial building on West Campus was holding on for dear life before the metal cable holding it to the pole eventually snapped, sending it to the ground. My handheld anemometer recorded a gust of 55 mph before malfunctioning, although we could estimate that guests were at least 60-65 mph. After several minutes of standing in the wind driven rain, we retreated into the library to make storm reports to the NWS Binghamton Forecast Office. By 4:41 the storm had passed, leaving a rainbow in its wake.

The rainbow left behind by the departing storm as it continues East. (Photo Credit:Shawn Wallace)

Post Storm Damage Observations

Following the passage of the storm, I decided to walk around campus to record any damage on both West and parts of lower North campus so that I could also report it to the National Weather Service for their database. Ben Moose also joined me for the survey and we were shocked by just how much damage we saw. In total, over 8 mature trees had either been uprooted or snapped at the base. In one instance, a tall white pine ended up crushing the trash and recycling shed of a fraternity. Another white pine snapped at the base and ended up falling into the Southside of Beebe Lake. The top of another white pine snapped off leaving a 30ft section of it in one of the side roads on North campus as well, resulting in a minor power outage. Most surprisingly, a stop sign was snapped off at the base at one of the intersections on West Campus. Dozens of healthy branches larger than 2 inches in diameter were found all over the place, as well as several large limbs between 4-8 inches or more.

Just some of the damage found near and on campus following the storm. (Photo Credit: Shawn Wallace)

In other areas across town and in Tompkins County, emergency vehicles could be heard responding to other tree related damage, as well as several major power outages that left some homes and businesses in the dark for hours. The crew of storm chasers that left campus to view the storm just to the southeast of Ithaca also reported a small period of pea to dime size hail.

While no significant damage or reports of injuries or deaths were reported near campus, this storm was an important reminder to many of how quickly the weather can change and its potentially dangerous impacts. It begs the question of why people on campus aren't alerted by the University for severe weather events such as Severe Thunderstorm Warnings, or if they are

supposed to be why they weren't, especially since this storm caught most students off guard. Most students I spoke to after the storm were totally unaware of its strength or that it was even going to occur. They only knew about the storm from the wind and rain as the storm arrived. Had someone been caught underneath one of the numerous cases of tree damage, a more serious situation could have occurred.

Sources:

https://www.spc.noaa.gov/archive/
https://www.weather.gov/
https://www.spc.noaa.gov/

Cornell EAS Undergraduate & PhD STARDust Field Campaign in Arizona

Jack Halberstadt '26

This spring, members of Cornell University's CU Geodata project team and several other Cornell students traveled to Flagstaff, Arizona, to collaborate with Northern Arizona University (NAU) on a dust-focused field campaign. The trip brought together a total of seven undergraduate and two PhD students in an effort to test new tools for atmospheric sampling, explore local air quality, and connect with community members through place-based science.

The group of all 7 undergraduate students and one of the two PhD students on the field campaign. This was taken at Mayan Winds Cafe in Flagstaff, Arizona.

The centerpiece of the campaign was the *Thunderbird*—a low-cost, highly maneuverable kitesonde system designed to collect vertical profiles of meteorological data and airborne particulates. Throughout the trip, the team launched the kite in a range of wind conditions to test its capabilities during developing dust events. Although strong winds made control difficult at times and limited dust was observed due to vegetative ground cover, generally good air quality (~1.8 $\mu g/m^3$), and even some rain and snow, the *Thunderbird* proved operable in adverse environments, validating its design for future field use.

Members of the dust field campaign attempting to launch the kitesonde system in high winds.

Also field-tested was the *Saguaro*, a novel, 3D-printed dust collection device developed by CU Geodata member Helena Tsigos. Compact, modular, and easily repairable, the *Saguaro* is capable of supporting a range of analyses—from geochemical and flux studies to PCR-based pathogen detection. The successful deployment of this tool highlighted the growing potential of low-cost, customizable equipment for expanding access to field-based science.

Undergraduate student Helena Tsigos and Saguaro that she designed and 3D-printed.

Beyond the science, the Flagstaff campaign was deeply shaped by its community-focused goals. Students spent time learning about Indigenous knowledge systems, environmental relationships, and the lived impact of dust on local communities. The experience was a reminder that science is not just a technical pursuit—but a collaborative, community-oriented one.

Looking ahead, CU Geodata and the other undergraduate and PhD students involved in this dust field campaign plan to continue this research into future semesters. Members plan to attend conferences in the fall to present research as well as hopefully fly back out to Arizona before then to test new kitesonde systems and collect more dust for compositional analysis.

OP-ED: An Uncertain Future- Weather, Climate and Prediction

Simran LaBore '27

From raging wildfires and their concomitant bank-breaking, or rather insurance-banking impact, to severe weather outbreaks and resultant catastrophic flooding in the Midwest, and an ominous forecast for the coming hurricane season, 2025 is already shaping up to be a year of unparalleled natural disasters. This year is on track to follow the ironically increasingly predictable pattern of being worse than the one before. While the human and economic cost of these events cannot be understated, it is clear to any reasonable US citizen that weather forecasts provided by both public entities such as the National Weather Service (NWS) and The National Oceanographic and Atmospheric Administration (NOAA), as well as private corporations such as The Weather Channel have saved hundreds of lives and prevented millions, if not billions of dollars in property damage.

If personal experience or anecdotal evidence aren't convincing enough, over a century's worth of data tells the story loud and clear, at least for now. Given this context, one must ask themselves: what's the rationale behind cutting 20% of NOAA's staff, especially when *nearly half* of NWS offices are already critically understaffed, according to PBS News? Out of 122 weather field offices, eight are missing more than 35% of their staff, including those in Arkansas and Kentucky, states that have been devastated by record-breaking severe weather and tornado outbreaks. Tornado damage surveys, which are essential for improving future forecasts and warnings, are unable to be conducted. As Brad Coleman, former president of the American Meteorological Society, laments, "It's a crisis situation." Rep. Eric Sorensen, Illinois Democrat and the only meteorologist in Congress, warns, "Going forward with these types of cuts, we can't guarantee that people are going to be as safe as they were." The lack of technicians to repair radar and other equipment puts lives at risk, as well as aviation safety. "The burden is going to kill us," says Sorensen.

The cuts, which stem from the Department of Governmental Efficiency (DOGE) under Elon Musk's administration, are part of a broader effort to streamline government spending. But at what cost? The average taxpayer contributes roughly $3 to $4 annually to keep NOAA and similar agencies operational. In comparison, each taxpayer pays around $5,484 every year in interest on the national debt. Meanwhile, many of the most vocal supporters of these cuts come from the ranks of private, for-profit weather companies, some with strong ties to the Trump administration. However, the idea that private companies could replace NOAA in forecasting is a dangerous misconception. The weather apps on your phone, or the forecasts you see on TV, rely heavily on NOAA's data and the coordinated efforts of public and private agencies to compile and distribute that information.

Many of my peers, myself included, are grappling with overwhelming uncertainty about our future careers. Beyond tangible setbacks of losing internships due to funding cuts or facing dwindling graduate school opportunities, there is an immense and growing frustration, an anger rooted in watching those in power make reckless, shortsighted decisions that threaten not just our futures, but undermine the very urgency of addressing climate change. This sentiment is echoed by Dr. Ault, Dr. Visioni, and Dr. Hitchcock in their Op-Ed: *Forecast for Weaker Weather Service: Americans Will Die, Businesses Will Lose Billions* published in the *Bulletin of the Atomic Scientists*.

It is disheartening to feel so powerless in the face of such indifference. We will continue to push forward, to educate, to advocate and stand firm within our communities, but it is unbearable to simply watch as time runs out on our climate, knowing that science is being sidelined for political gain and profit. For so many of us in meteorology, this is more than a career, it is a passion we've nurtured since childhood. To see that passion jeopardized by those with the power to act, but who instead choose to dismantle what we hold dear, is beyond infuriating.

When will we, as a nation, decide to do what is right? The attack on science and the larger state of our government is not just disappointing, it is devastating.

Hiking Across Ice and Time: My Glacier Adventure in Iceland

Lucy Alcoba '27

This semester, I've been studying abroad in Copenhagen, Denmark—a city full of charm, culture, and opportunities to explore the broader Scandinavian region. While my time in Copenhagen has been enriching in countless ways, one of the most unforgettable chapters of this experience took place hundreds of miles northwest, on the icy and volcanic island of Iceland.

As part of a course titled *Climate, Glaciers, and Human Impact*, I had the opportunity to travel to Iceland with a group of classmates for a week-long field study. Our focus was on understanding the physical and human systems shaping Iceland's dramatic environment—something no classroom or textbook could fully capture. From the moment we landed, it was clear we were stepping into a different world. Steam rose from the earth, waterfalls gushed from green cliffs, and mountains disappeared into low-hanging clouds. But the most transformative part of the trip was, without a doubt, hiking on a glacier.

We traveled to the southern region of the country, where the landscape is dominated by Vatnajökull National Park. There, we strapped on crampons, picked up ice axes, and followed our guide onto the glacier's frozen surface. The sensation of walking on ancient ice—ice that has existed for centuries—was humbling. With every crunch beneath our boots, we were walking across a record of Earth's climate history.

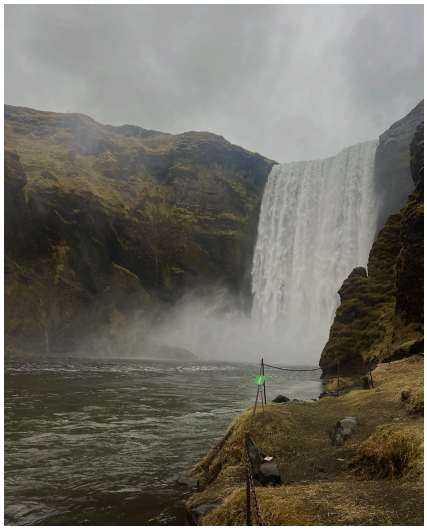
All geared up with crampons, a helmet, a harness and an axe for our hike.

As we made our way over the glacial terrain, we encountered striking features: jagged crevasses, blue meltwater pools, and towering seracs that looked like frozen waves. Our guide taught us how to read the glacier's surface like a storybook—showing where volcanic ash had settled years ago, pointing out signs of recent melt, and explaining the patterns of glacier flow. The deeper we went, the quieter the world around us became, broken only by the occasional drip of melting ice or a distant cracking sound echoing from below.

Pictures that highlight the anatomy of the glacier we hiked on.

What struck me most was the duality of the experience. The glacier was powerful, immense, and beautiful—but also clearly changing. Our guide showed us where the glacier's edge had once reached, a line now hundreds of meters from where we stood. It was a sobering reminder of the effects of global warming, and how tangible those impacts are in a place like Iceland. It made everything we were learning in our course feel immediate, urgent, and deeply relevant.

Outside of the glacier, we explored some of Iceland's other natural wonders. We hiked across moss-covered lava fields formed by ancient eruptions, bathed in geothermal hot springs heated by volcanic energy, and stood at the foot of thunderous waterfalls like Skógafoss and Seljalandsfoss. We learned about Iceland's unique geology and how it drives everything from its renewable energy infrastructure to the cultural mythology surrounding elves and trolls. We also met with locals who shared how communities are adapting to changing weather patterns, melting permafrost, and the increasing unpredictability of the land they live on.




Skógafoss waterfall and "the" glacial lagoon in Iceland.

Each day offered new insight into the relationship between people and nature in this part of the world. I came away from the trip not only with awe for Iceland's landscape but with a deeper understanding of how climate science, sustainability, and local knowledge intersect in meaningful ways.

This glacier hike—and the entire week in Iceland—was more than an academic field trip. It was a chance to experience the front lines of climate change, to connect with the physical world in a way that few people ever get to, and to return to Copenhagen with a renewed sense of purpose. Iceland reminded me that even the most solid-seeming places—like glaciers—are vulnerable. But it also reminded me that knowledge, awareness, and action have power.

The Cornell Weather Conference

Cornell University is set to launch its first-ever **Cornell Weather Conference** this upcoming semester, marking a major milestone for the Cornell Chapter of the American Meteorological Society (CCAMS). The event will bring together students, researchers, and professionals from across the atmospheric sciences to engage in a weekend of talks, panels, and networking. Featured speakers include hurricane expert Andy Hazelton, Doppler on Wheels pioneers Josh Wurman and Karen Kosiba, and seasoned storm chaser Ronald Stenz. With topics ranging from extreme weather communication to climate resilience, the conference aims to foster meaningful dialogue and collaboration while establishing a new platform for meteorological learning and outreach at Cornell.

Introducing the Inaugural Cornell Weather Conference

Hosted by the Cornell Chapter of the American Meteorological Society (CCAMS), this groundbreaking event aims to bring together students, researchers, and professionals in atmospheric science for a weekend of discovery.

Attendees will explore the various fields of meteorology through expert-led presentations, hands-on workshops, and networking sessions. These include — but are not limited to — a storm chasing 'How To' guide from Ronald Stenz, hurricane research presented by Andy Hazelton, and a dive into the history of *Doppler on Wheels* (DOW) with Josh Wurman and Karen Kosiba.

The Cornell Weather Conference marks an exciting step forward for our atmospheric sciences program—laying the foundation for a new tradition of academic and professional exchange at Cornell.

We can't wait to see you!

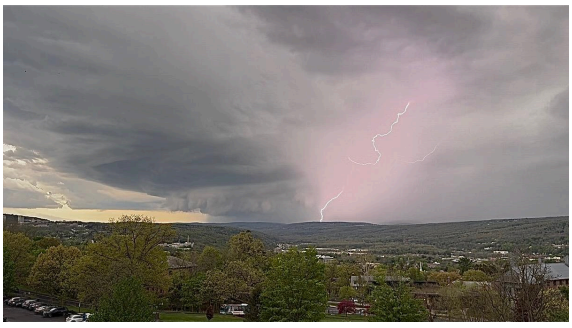
The Cornell Weather Conference Committee

Cornell Storm Chasers Club

This semester also marks the launch of the **Cornell Storm Chasers Club**, a new student-led organization dedicated to making weather forecasting and storm chasing accessible to all. Founded with the mission of educating anyone and everyone interested in meteorology, the club provides hands-on training in forecasting techniques and explores how these skills apply to real-world storm chasing and atmospheric data collection. The cornerstone of the club's programming is an ambitious end-of-year storm chase expedition, where members will travel to the Midwest and Great Plains for 7–10 days after finals to observe and study severe weather phenomena firsthand. By combining education, adventure, and scientific exploration, the Cornell Storm Chasers Club hopes to inspire a new generation of weather enthusiasts.

Cornell Storm Chasers Club members enjoying a meal after a day of storm chasing in upstate NY on April 30th.

Packie Young, one of the founders of the **Cornell Storm Chasers Club**, reflected on the inspiration behind the group: *"I've always wanted to offer students a free and accessible way to learn about and get excited by weather the way I am. During my sophomore year, I noticed that other meteorology programs had storm chasing clubs. I realized that starting one here would be a fun and hands-on way to learn forecasting, peer-to-peer, and to see our forecasts directly shape real-time decisions out in the field."*



Lightning striking in the distance as seen from Cornell Campus. Photo Credit: Shawn Wallace

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