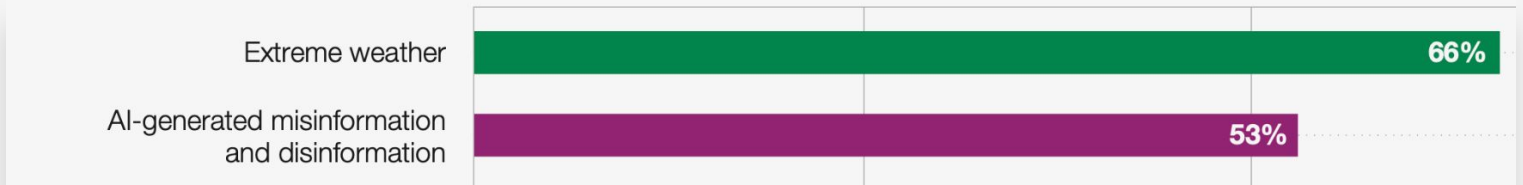


# **World Economic Forum 2024 Global Weather Risk Report for Business**

January 2023

# You Are Not Prepared

Dear fellow leaders, The World Economic Forum's (WEF) sobering 2024 Global Risks Report was just released, and once again for business leaders, weather is rated #1 to pose a material risk in 2024, **even bigger than AI.**



While this makes me extremely sad, it is also the reason we started Tomorrow.io. Just like we put cyber security systems in place a decade ago, now is the time for weather and climate security systems.

If the best time to plant a tree was 20 years ago, the same can be said for implementing a weather intelligence system in your organization. Without it, you are not prepared for what lies ahead, and your business will suffer from being unprepared. Safety, financial, operational efficiency, are all compounding risks that if not addressed now will culminate in catastrophe.

As CEO of Tomorrow.io, I have seen firsthand how increasing extreme weather is already inflicting escalating economic damages and risk across industries worldwide.

## But there is hope.

At Tomorrow.io, we are leveraging AI and proprietary satellite data to provide the most accurate hyperlocal weather intelligence on the planet. Our technology is enabling organizations to stress test their business operations, supply chains, infrastructure, and investments against a range of weather scenarios so they can implement resilience into strategic decisions and day to day operations.

WEF's report underscores that we don't have long to get climate adaptation right. This will require that weather become as integral to continuity planning as cybersecurity. By preemptively modeling and preparing for climate impacts, we can mitigate risks in a significantly more cost effective way.

Tomorrow.io is empowering leaders to create a more resilient future for their businesses, despite the uncertainties ahead. The costs of inaction are too great. The time for weather and climate security is now.

While we have more to share in this report, let us also continue the dialogue on how we can leverage technology and data to secure a prosperous path forward. The future remains unwritten, but we must work diligently today to ensure it is not a catastrophic one.



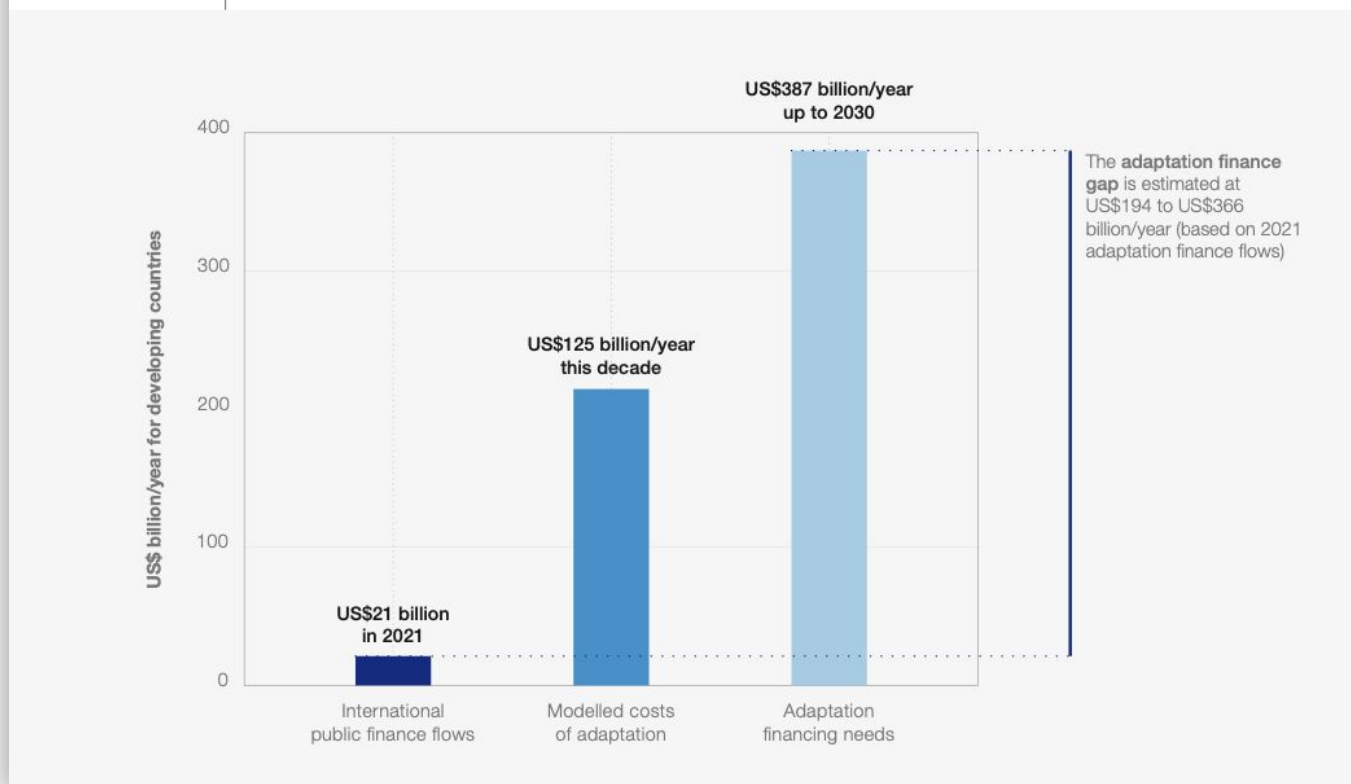
**Shimon Elkabetz,**  
Co-founder and CEO at Tomorrow.io

# \$387 Billion in Financial Risk

The WEF report highlights that the costs of climate change impacts on US businesses could exceed \$350 billion annually. This stark figure quantifies the widespread damages extreme weather is already imposing across nearly all sectors, some examples include:

- Extreme heatwaves and droughts have decimated crop yields, causing several billions in losses for US farmers and rippling through global food supply chains.
- Hurricane Ian inflicted over \$100 billion in property and infrastructure damages in Florida last year.
- In 2021, Texas experienced \$80 to \$130 billion in economic losses from the state's catastrophic winter storm.

FIGURE 2.8 | Adaptation finance gap



Beyond direct asset damage, supply chain disruptions from floods, storms, and fires also introduce risks from both the direct and indirect impacts of worsening weather that will continue to compound if resilience measures are not prioritized.

# Weather #1 Risk in Every Category

When it comes to weather, almost every industry is at risk and in need of implementing automated systems to mitigate risk, improve efficiency, and ensure operational resilience. Let's look at a few industry's for more examples:

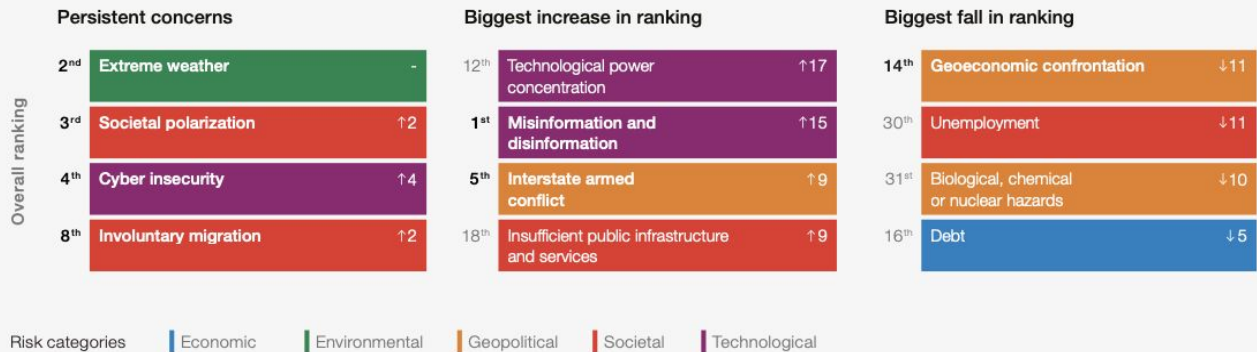
## Agriculture:

- Improved yield forecasts and disease/pest spread modeling can help farmers optimize crop production, reducing losses and increasing profits.
- Optimizing irrigation based on weather conditions can save water resources and reduce costs.

## Oil & Gas:

- Enhanced supply chain resilience to storms can minimize disruptions in oil and gas production and distribution, reducing financial losses.

FIGURE 1.4 | Annual change in global risk perceptions over the short term (2 years)



## Utilities:

- Better predicting renewable energy output allows utilities to plan and manage resources more efficiently, reducing operational costs.
- Managing peak demand during heat waves can prevent strain on the grid and potential outages.

## Real Estate:

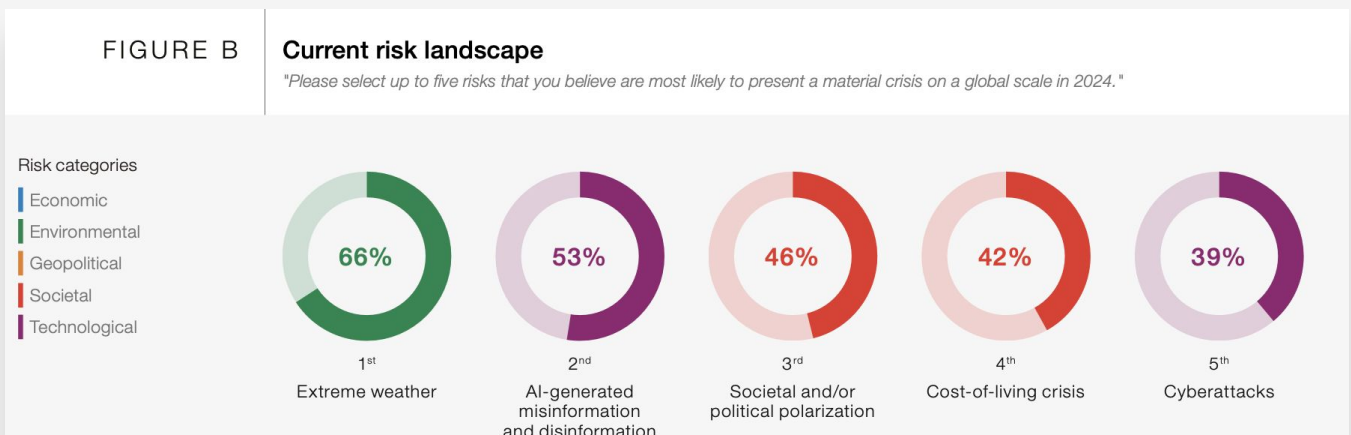
- Identifying climate risk exposure across portfolios helps real estate investors make informed decisions and mitigate potential financial losses.

**Insurance:**

- Quantifying changing risk profiles enables insurance companies to adjust premiums accordingly, ensuring they remain financially stable.

**Construction:**

- Adjusting building codes and materials for future climate conditions can prevent damage and loss, reducing the need for repairs and renovations.



**Retail:**

- Improving demand forecasting based on weather patterns allows retailers to optimize inventory management and reduce costs.

**Healthcare:**

- Predicting disease outbreaks and heat stroke risk helps providers allocate resources efficiently and reduce the economic burden of healthcare associated with climate-related health issues.

**Transportation:**

- Optimizing shipping routes around severe weather events helps avoid delays, damage, and loss of goods, contributing to cost savings.

# Tomorrow.io created Weather Intelligence

**Weather Forecast**

20° and mostly cloudy with a 40% chance of Rain on Thursday.

**Weather Intelligence**

“Stop trains Thursday at 2 PM at mile marker 27 to avoid derailment.”

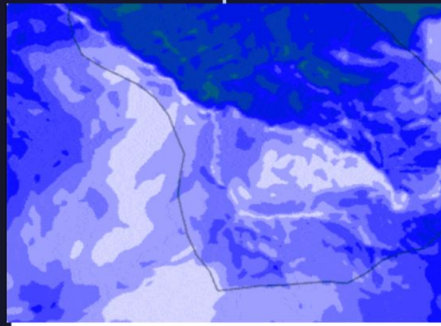
## Automated & Customizable to Anything



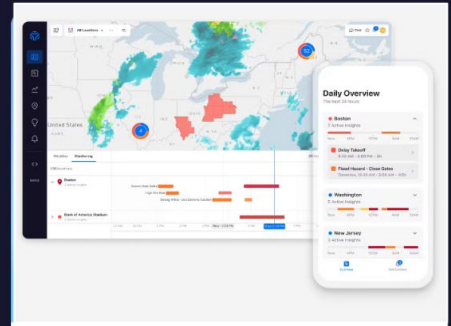
# Differentiated on 3 Fronts



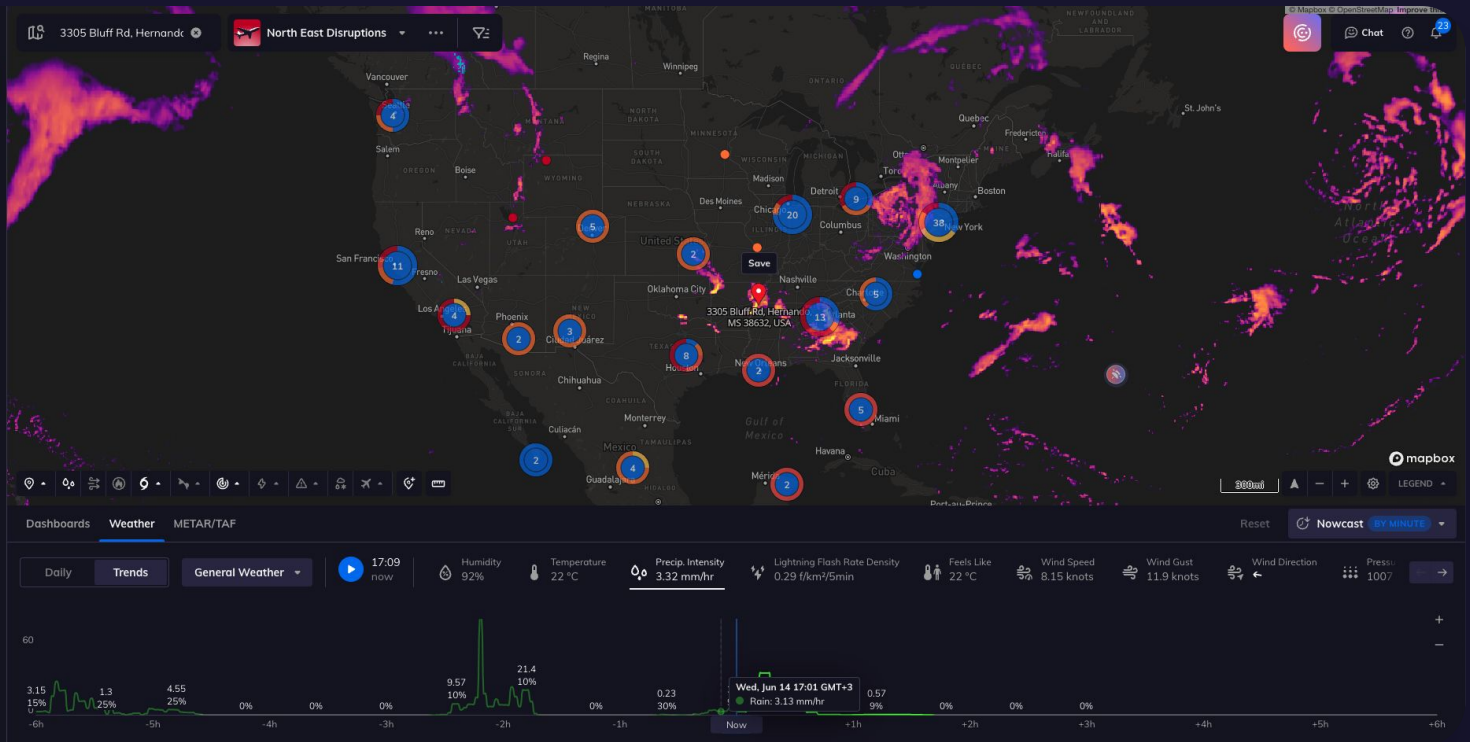
**Comprehensive Global  
Weather Observations &  
Measurements**



**Proprietary Weather  
Modeling. Powered by  
Physics, Supercharged with  
AI/ML.**

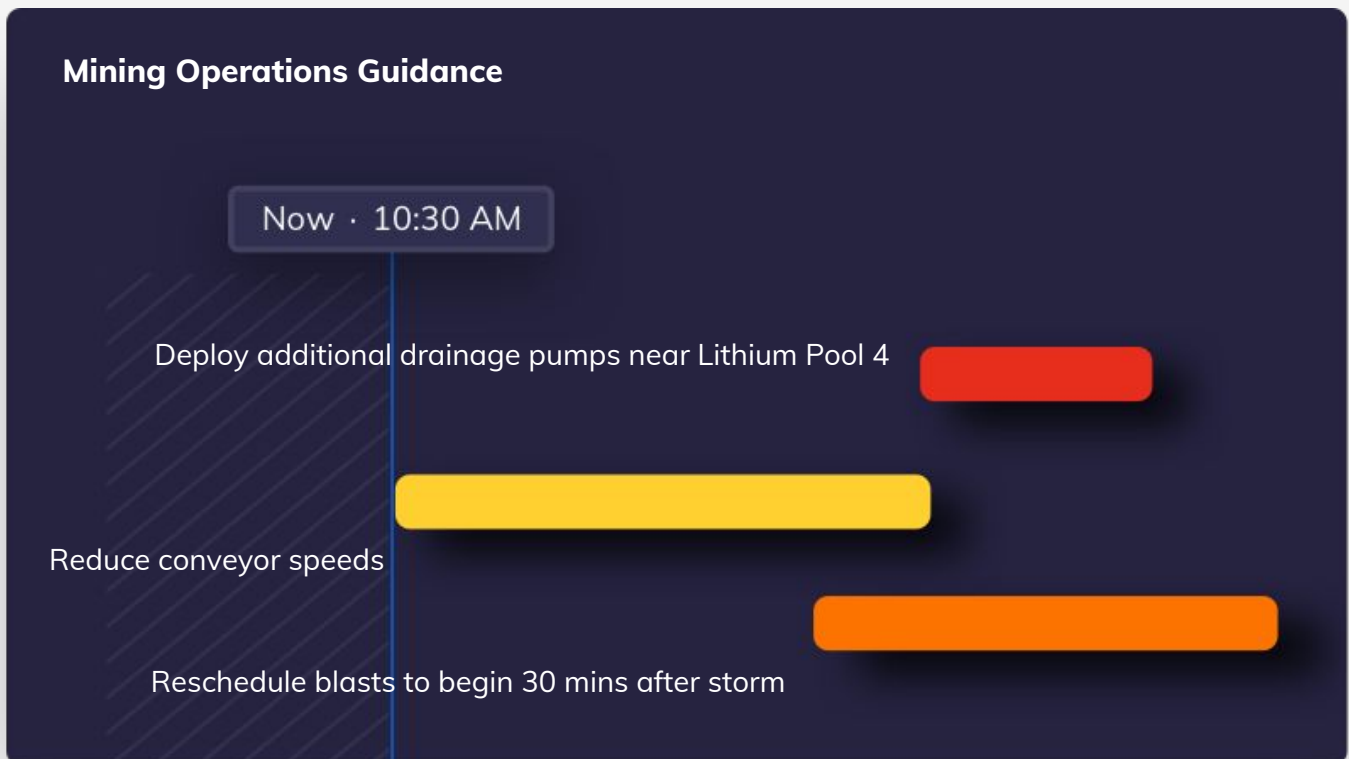


**Weather  
Intelligence SaaS/API**



# Put Systems in Place NOW With Tomorrow.io's Weather Intelligence Platform

- Translate forecast to predictive impact
- Single source of weather truth
- Automated protocols
- Predictive workflows
- Ability to solve for weather impact
- Task acknowledgment
- End-to-end communications
- Proactive operation vs. reactive





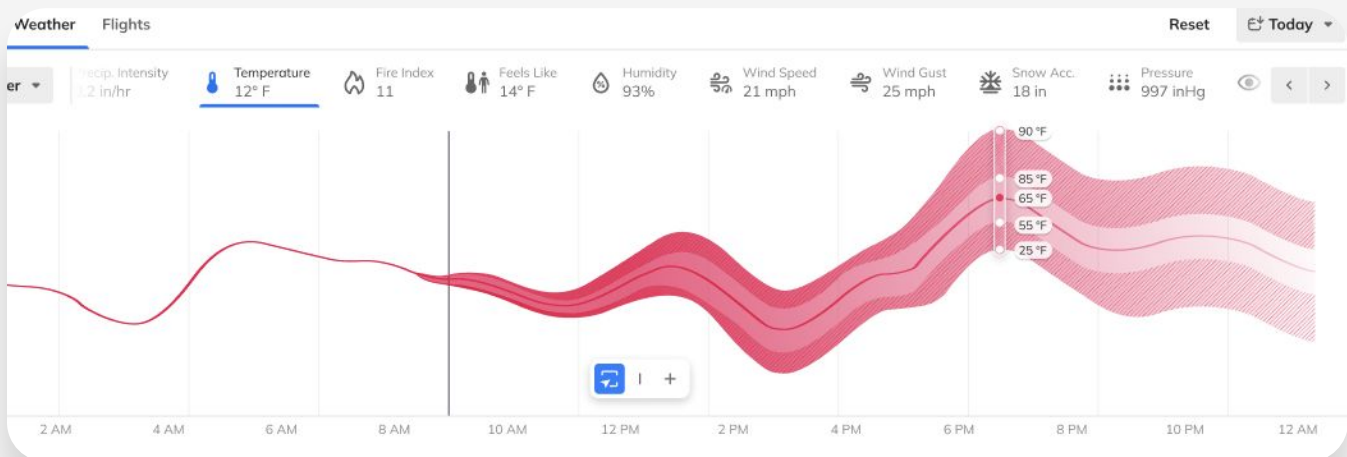
# About Tomorrow.io

## Operational Differentiation

Powered by the world's most accurate global weather forecast, Tomorrow.io has become a must-have platform for operations leaders with its unique ability to translate the weather forecast into predictive actionable insights for any company, industry, or job, which we pioneered the concept and name "weather intelligence." For instance, instead of telling Uber it will rain on Monday and them having to figure out how that will impact their business, we tell them to expect a 20% increase in rider demand Monday from 1-3 PM in San Francisco. This allows them to get more drivers on the platform in advance of the demand spike to reduce ETAs and provide a better customer experience. Based on a company's specific operating protocols and risk thresholds, Tomorrow.io helps organizations transition from manual reactive operations, to proactive automation at scale.

## Machine Learning / Deep Learning

Tomorrow.io utilizes machine learning to enhance weather models through a post-processing technique that learns from historical forecast errors and observations to correct systematic model biases. The technology deploys physical equations that govern the atmosphere that have been derived over the last many decades of scientific advancements. These numerical weather prediction models capture how the atmosphere will currently evolve or evolve from its current state. To avoid bias, the team uses machine learning to learn the patterns between how the numerical weather prediction model expects a storm system to evolve, and the observations of what actually occurred historically. From there, the machine learning model can tailor that there tends to be a warm bias in this area of the models, or it tends to under forecast precip in this season, in this area, and ultimately producing a forecast that has the lowest error that we've quantified over a long historical record of the models as well as the observations and generating the probabilities, because as the forecast lead time increases, there's a greater likelihood of error growth. The combination of machine learning and high resolution numerical weather prediction models is a key to Tomorrow.io's methodology.

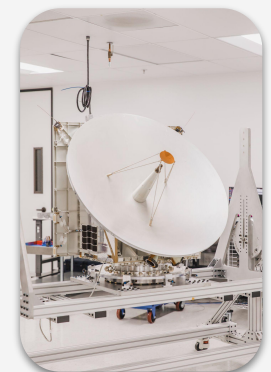
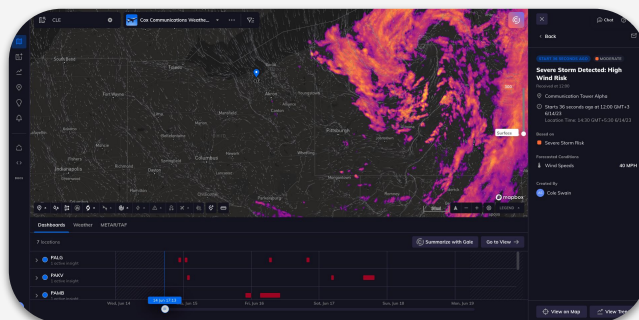


## Space

With Tomorrow-R1 and Tomorrow-R2, the world's first commercial weather radar satellites now in orbit, Tomorrow.io is set to revolutionize global weather forecasting. Collecting high-resolution precipitation data with an average global revisit rate of 1 hour will lead to a new level of understanding and prediction of hurricanes, floods, landslides, wildfires and droughts. With the world's first-of-its-kind constellation, Tomorrow.io is democratizing access to weather data for every person (including the 5 billion people on earth that live outside radar coverage), business, and government on earth, empowering organizations to navigate an increasingly unpredictable weather and climate landscape. Tomorrow.io's radar technology, now actively operational on our Pathfinder satellites, provides unparalleled global precipitation coverage. The future deployments of additional radar satellites and microwave sounders will enhance these capabilities, recording additional precipitation measurements, vital atmospheric temperature profiles, water vapor profiles, and offering additional precipitation data proxies. Together, these technologies form the backbone of our cutting-edge weather forecasting system. Equipped with a state-of-the-art precipitation radar payload, Tomorrow-R1 and Tomorrow-R2 employ innovative operational modes and meticulous instrument calibration to realize precipitation measurements of unprecedented sensitivity and accuracy, ushering in a new paradigm in Earth observation. Powered by the unique, pulse-to-pulse reconfigurable radar, our weather satellite constellation is expected to enable the collection of multiple geophysical variables.

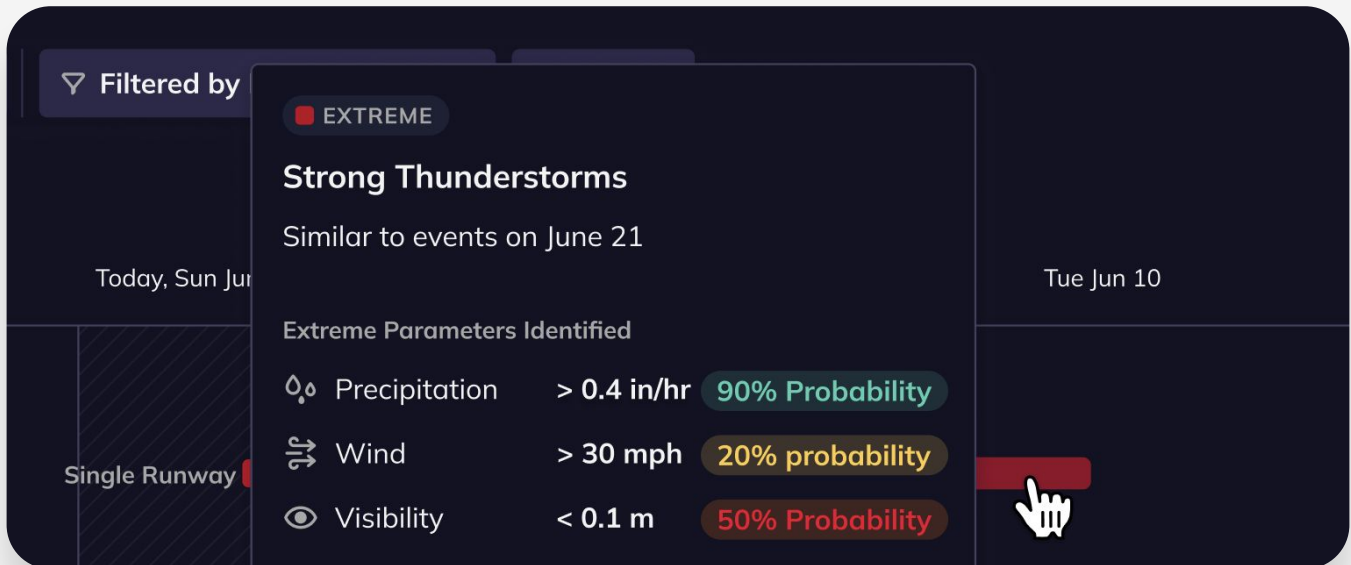
## AI

In 2023, Tomorrow.io launched the industry's first weather and climate generative AI. The interactive product, nicknamed Gale, leverages generative AI for specific use cases that can be customized to user needs and goals. While Gale is able to process vast amounts of weather and climate data, enabling easy identification of key trends, risks, and opportunities, what differentiates Tomorrow.io's generative-AI from any other in the industry is the proprietary dataset (AI is only as good as its underlying dataset) it pulls from, including space. Users can incorporate any customized set of inputs based on location, 40+ weather parameters, frequency, intensity, and more to highlight the most important trends based on operating goals. The ability to quickly analyze millions of data points in an instant empowers smarter decisions for proactive climate adaptation and resilience. Gale summarizes and can chat about the underlying details of the weather events Tomorrow users have set the Platform to monitor for across their operation and compresses all of these details into one easy to read synopsis.



## Probabilistic Forecasting

Tomorrow.io's probabilistic suite leverages advanced ensemble modeling to quantify the likelihood of different scenarios, optimizing decision-making amid uncertainties. Advanced thunderstorm analytics provide hourly storm probability forecasts and detailed severity forecasts to deliver actionable intelligence on tornado, wind, hail, and flood threats up to 14 days out. Together, these capabilities give operators advanced predictive intelligence with hyper-local accuracy to inform high-stakes decisions.



## Unique Approach to Data

Tomorrow.io has developed a paradigm shifting ML based approach that maximizes the predictive accuracy of high resolution NWP modeling together with deep learning utilizing a comprehensive observational dataset. The team has created an approach combining the best of weather observations, prediction and machine learning, maximizing the predictive accuracy of high resolution probabilistic models through AI together with deep learning. Tomorrow.io gathers as much global data as possible, from sources including satellites in space to weather instruments on the ground, and Tomorrow.io then synthesizes that data using proprietary modeling techniques, machine learning and AI to create customized and hyperlocal forecasts. Our data sources include both public sources (free) and private (paid). This unique approach allows us to model at the highest spatial and temporal resolutions, while "beginning with the end in mind," meaning the decisions our customers need to make on a daily basis. Imagine having an automated system in place telling you 24/7 exactly when and where it might rain, down to your street corner, the impact of that rain, and exactly what you should do in advance of that rain. That's what the company has built. The satellite data only further enhances our data quality, forecast accuracy, and predictive insights capabilities. Compared to existing satellites that update every three days, our radar satellites can refresh data hourly.



Learn More Now

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