WindScore

Wind Events Caused by Climate Change Impact Lives and Commerce

Extremely high winds threaten the structural integrity of tall and large assets, such as bridges, high-rise buildings, power lines, turbines, radio and telecom masts, smokestacks, and even manufacturing facilities. What's more, the destructive potential of extreme wind is amplified when accompanied by heavy flooding or ice loads. Increased understanding of long-term changes in wind force and direction driven by climate change will provide profound benefits to communities and many industries.

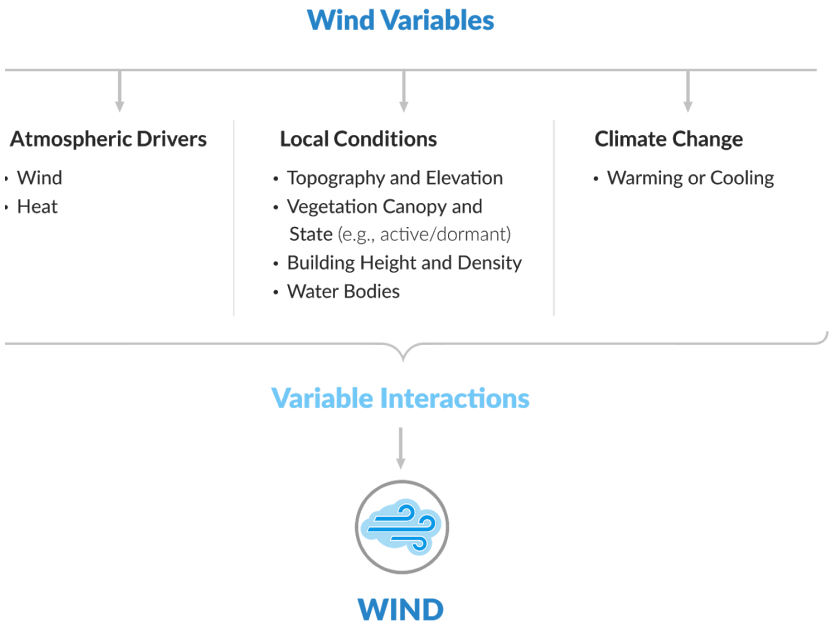
For instance, utilities must anticipate changes in wind patterns to improve grid resiliency, regulatory compliance, clean-power generation, and safe power transmission. Companies that produce the world's materials, chemicals, and hydrocarbon fuels are susceptible to facility and infrastructure damage from the increasing occurrence of extreme winds associated with intensifying weather events caused by the changing climate.

Jupiter Intelligence™ WindScore™ provides maps of probabilistic predictions of wind characteristics from six months to 50-plus years in advance. Using Jupiter's dynamic models, private and public sector organizations can make informed decisions to protect assets, limit business downtime, and save lives and property.

Jupiter WindScore™

WindScore Planning™ enables customers to better prepare for likely future changes in wind-related hazards.

It uses Jupiter's best-in-science climate models and machine-learning platform to deliver quantifiable analysis of changes in wind at very high spatial and temporal resolution—down to the asset level. WindScore is designed for deployment across multiple industries, and more comprehensive than other wind modeling services based solely on historical insights. It offers insights like "days above a threshold" in addition to return periods, and discriminates among the types of physical events (trade winds, non-trade winds, tropical cyclones, etc.) that drive extreme wind events.

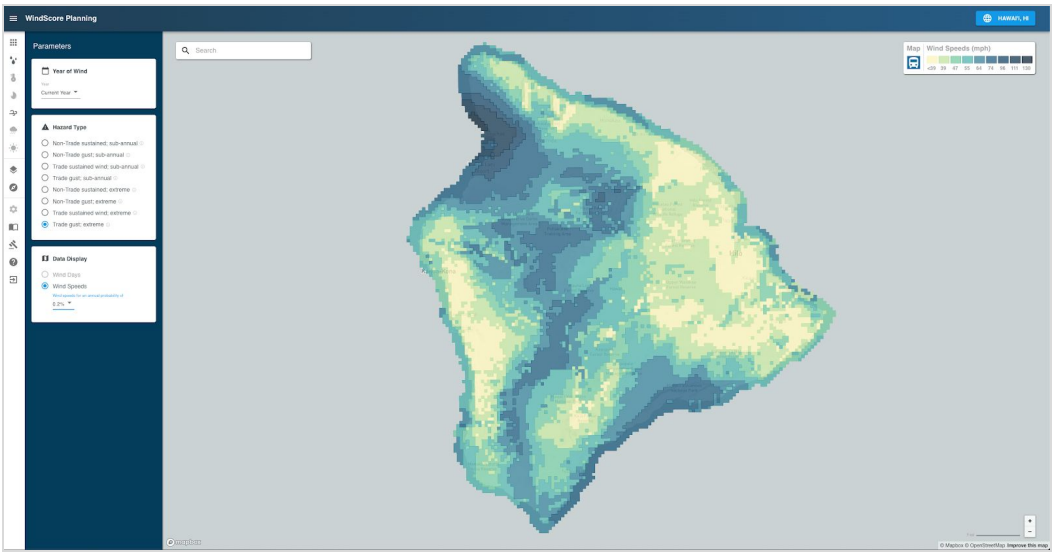


Built on top of the Jupiter ClimateScore™ Intelligence Platform, WindScore Planning offers probabilistic projections of wind speeds under current and future climate conditions. For a given region, location, or asset, WindScore combines model and machine learning methods to identify and analyze key atmospheric conditions that define current and future statistical characteristics of wind speed and direction. The resulting probabilistic projections provide measures of confidence, and allow decision-makers to assess levels of uncertainty in factors that affect their operations.

Use Cases: Enhancing Infrastructure Resilience and Informing Capital Planning

Extreme wind creates ongoing and escalating risk exposure for many industries. WindScore offers climate risk intelligence that enables asset owners to develop hardening and resilience plans that mitigate damage and disruption.

For utilities, high winds pose a risk to above-ground infrastructure such as electrical transmission towers and poles. High winds can topple trees that, in turn, take down power lines that support many facets of modern society.



Simulated WindScore risk for the Island of Hawai'i

Jupiter helps utilities like the Hawaiian Electric Companies with analysis of long-term climate risks to their infrastructure. Hawaiian Electric uses Jupiter's ongoing climate risk analytics services for its generation, transmission, and distribution infrastructure across five major islands of Hawaii. The collaboration is part of an overall infrastructure resiliency and planning effort, assessing risk arising from perils like wind and flooding related to changing climate conditions on a 50-year time horizon.

Hawaiian Electric's senior vice president, planning and technology, Colton Ching, said: "We selected Jupiter because of their focus on specific customer decision-making requirements, terrific track record and reputation among other utilities, world-class science and ease to work with."

Another leading electric utility, based in Europe, uses Jupiter WindScore to help it assess potential wind damage to its overhead power lines and aging infrastructure, and to inform their capital investment strategy.

A major European scientific organization has also recommended Jupiter's products as a basis for regulatory requirements. Extreme winds also pose a threat to critical transport systems like electric-powered high-speed rail networks, which rely on overhead transmission lines.

Jupiter ClimateScore™ Intelligence Platform

All Jupiter services are built on the cloud-based Jupiter ClimateScore™ Intelligence Platform. Jupiter ClimateScore is based on leading-edge scientific developments by the global earth system science community, including the assumption of a changing climate. The platform is designed specifically for the rigors of dynamic weather analysis and predictive modeling. Its physics-based and artificial intelligence models are continuously fine-tuned, using petabytes of constantly refreshed data from ground-based and orbital sensors. Innovative machine learning techniques reduce local biases of scientific simulations and update the system as new observations become available.