

Expert Interview: CME Group on Weather Derivatives

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Speaker: Anne Crema, CME Group

Interviewers: Yasintorn Wongwoottisaroch & Professor Tolulope Fadina, University of Illinois Urbana-Champaign (UIUC)

The Actuarial Science and Risk Management program at the University of Illinois Urbana-Champaign recently had the opportunity to interview Anne Crema, Director of Commodity Research and Product Development at CME Group. In the discussion, Ms. Crema explained how CME structures and trades its weather derivative products, the types of participants involved, and the future of climate-related derivatives. The insights below highlight both the challenges and opportunities in this niche but growing market.

Market Structure & Pricing

Ms. Crema began by describing how CME Group's weather derivatives are structured and traded. She first explained that weather derivatives at CME are exchange-traded, temperature-based index products. The primary measures are Heating Degree Days (HDDs), Cooling Degree Days (CDDs), and Cumulative Average Temperature (CAT) — with CAT used in European cooling-month contracts and year-round for Tokyo. These contracts cover 18 cities globally across the U.S., Europe, and Tokyo, a number expanded in 2023 when CME Group added six new cities and launched additional strip combinations beyond the original set.

A distinctive feature of the market is its legacy contract structure: each monthly or seasonal strip is listed as a separate contract with its own code, unlike markets such as natural gas where strips are built from a single monthly contract.

Weather products can be traded in two ways:

- **Globex** — CME Group's electronic central limit order book – the screen trading platform, where bids and offers are posted and visible to all participants on an anonymous basis.
- **ClearPort** — CME Group's functionality for posting and clearing bilaterally negotiated block trades.

While screen participation does occur and is increasing in practice, the vast majority of weather derivatives trading occurs via **ClearPort block trades**, which are negotiated off-screen but still centrally cleared through CME Clearing.

Her team manages the contract rulebooks for weather derivatives, maintains alignment with physical trading communities, and coordinates with CME Group's Energy business line (which oversees weather operationally), risk teams, market regulation, and regulators. They also handle product launches and engage with external partners, academics, and brokers. Options activity is significant in weather markets alongside futures, and trading patterns are highly city- and year-

dependent. As of August 2025, the highest open interest was in a Burbank Q3 seasonal option, followed by Dallas and Philadelphia contracts — though the ranking shifts from year to year.

Participants & Demand

CME Group’s weather derivatives attract a diverse but specialized group of participants. Among the largest and most consistent are reinsurance companies, which hedge climate-related insurance exposure to extreme weather events. Energy trading firms are also significant players, often active in both power and weather markets, particularly those with natural gas positions linked to heating or cooling demand. Hedge funds and proprietary trading firms participate as well, sometimes acting as market makers and sometimes taking speculative positions.

Participation from the agricultural sector has historically been limited, largely because contract design evolved with energy-sector heating and cooling needs in mind. While certain cities like Chicago, Minneapolis, Dallas, and Cincinnati have agricultural relevance, others, such as Des Moines, were delisted due to inactivity. CME Group is always open to exploring contract designs that better fit agricultural risk profiles and could encourage greater participation from that sector.

Ms. Krema noted that major clients often stay in the market for many years, while other firms re-enter after periods of inactivity or adjust their involvement based on changes in strategy or capital allocation. Demand is highly seasonal: HDD contracts dominate in winter, CDD contracts in summer, and activity can spike in specific cities when seasonal weather deviates significantly from the norm. Some weather risk also trades over-the-counter (OTC), particularly for unlisted cities or further-out months, and CME Group monitors OTC activity closely as an indicator of potential new risk management needs. The decision to expand to 18 cities in 2023 was influenced in part by such OTC market signals.

Supply-Side & Liquidity Dynamics

On the supply side, liquidity is provided by market makers, proprietary trading firms, hedge funds, and commercial hedgers. In weather markets, some participants operate more like traditional market makers than in other asset classes, consistently taking the other side of trades when approached by brokers.

In brokered transactions, market makers respond to requests by quoting a two-sided bid–ask or a single price, depending on the inquiry. If the market is thin or the risk is unattractive, spreads generally become wider. Most liquidity resides in block trades negotiated off-screen, with limited visible activity on Globex. As of August 2025, the most active contract by open interest was the Burbank Q3 seasonal option, a new listing from 2023, followed by Dallas and Philadelphia contracts. Furthermore, as of November 19, 2025, the Chicago HDD November Seasonal Strip Options exhibit the highest level of open interest.

Trading patterns reflect seasonal cycles: HDD contracts in winter, CDD contracts in summer, and crossover months like April and October where both may be relevant. In 2016, CME Group delisted many inactive city contracts, reducing the list to 10. With renewed interest, it expanded to 12 in 2020 with the listing of Portland and Tokyo and grew again in 2023 to 18 cities with an additional six cities listed.

Climate Risk & Evolving Needs

While CME Group’s weather suite currently includes only temperature-based products, Ms. Krema noted increasing interest in climate-related indices beyond temperature.

Ms. Krema expects the weather derivatives market to grow over time through the addition of new cities and strips, possible development of non-temperature climate products, the return of former participants, and the recruitment of new ones. She also sees potential in engaging agricultural traders more directly, possibly through alternative contract designs tailored to their needs. CME Group remains open-minded about adapting products to meet the specific risk profiles of different sectors.

Some markets at CME Group, both in energy and agriculture, have successfully launched with block-traded liquidity before building active screen markets — a “soft launch” strategy that works well when OTC activity already exists. This approach could also support future climate-related product introductions.

Data, Modeling & Indices

Settlement for CME Group’s weather derivatives is based on indices provided by Speedwell Weather Ltd., now part of Vaisala. Vaisala aggregates temperature data from official airport weather stations worldwide and applies standardized HDD, CDD, and CAT formulas to calculate the index values. CME Group does not collect raw weather data itself; instead, it uses Vaisala’s published index prints as the official settlement values for both futures and options.

Standardized contract specifications ensure consistency across all listings. CME Group does not supply pricing models; instead, clients develop their own models for exposure analysis, strategy building, and price formation. Prices emerge through market negotiation, with wider bid-ask spreads or no quote in less liquid situations.

Academia & Collaboration

CME Group expressed interest in research collaborations with academic institutions in several areas: designing weather products to increase agricultural sector participation, studying barriers to broader market engagement, exploring alternative contract structures, and applying advanced climate risk modeling techniques to derivatives markets.

Conclusion:

Weather derivatives remain a **niche but growing segment** of CME Group's product portfolio. The market's structure — broker-led block trading, specialized participants, and evolving product design — offers fertile ground for academic research and industry innovation. With climate risk increasing in focus, CME Group sees room for expansion in collaborative research, making this a timely and dynamic field for actuarial science students and faculty alike.