# National Oceanic and Atmospheric Administration - Senior Catastrophe Modeling Analyst at Brown & Brown Insurance

## Interview conducted on January 30, 2024

**Topics**

Parametric Insurance, Risk Mitigation, Insurance Products, Data Sources, Climate Change, Insurance Innovation, Risk Assessment, Pricing Strategies

**Summary**

The Tegus Client is interested in insurance products for waterfront and ski resorts in the travel and hospitality industry. The Senior Catastrophe Modeling Analyst explains the differences between traditional indemnity-based insurance and parametric insurance, highlighting the need to consider business interruption coverage. When asked about insuring against snowfall, the analyst suggests exploring traditional insurance options for broader coverage and customizing the policy based on specific needs. They also mention third-party data sources for parametric insurance and the use of near real-time information and location-level data for assessing risks related to natural disasters.

**Expert Details**

Senior Catastrophe Modeling Analyst at Brown & Brown Insurance. Expert can speak to parametric insurance for ski resorts, including natural disasters, exchange rates, price stabilization, and risk.

Senior Catastrophe Modeling Analyst at Brown & Brown Insurance. Reporting to the Chief Analytics Officer, the expert is responsible for range of initiatives related to Property and Energy CAT risks. This includes conducting technical research to quantify risk and developing strategies for exposure data management. Working closely with our clients, I ensure they have the tools and insights necessary to make informed decisions about their risk management.

Prior to Brown & Brown Insurance, the expert was the Research Engineer at Verisk- Extreme Event Solutions. The expert was responsible for working with a collaborative team of analysts, engineers, and economists to transform national censuses, building surveys, geospatial data, and satellite imagery into detailed models of the built environment. The expert developed databases to allow engineering teams to predict how much damage would be caused at a specific location by simulated catastrophes such as hurricanes, storm surges/flooding, earthquakes, and more.

The expert can speak to Catastrophe (CAT) modeling, AutoCAD, Fluid Dynamics, Structural Engineering, OpenFoam, and Statistical Data Analysis.

Q: What kind of products do you use to hedge risk at your resort? Please elaborate.
A: Resorts employ various strategies to hedge against risks in their operations. Common approaches include purchasing insurance to safeguard against property damage and liability, utilizing currency hedging to manage foreign exchange rate fluctuations, employing interest rate hedging instruments to mitigate the impact of interest rate changes, and using commodity futures contracts to stabilize prices for essential goods. Weather derivatives help manage the effects of adverse weather conditions, while diversification, strategic partnerships, and alliances serve as broader risk mitigation strategies. Ultimately, resorts tailor their hedging strategies to their specific circumstances and market conditions, with the guidance of financial professionals and risk managers.

Q: Can you speak to the parametric insurance space?
A: Parametric insurance is a distinct form of coverage where predetermined, measurable parameters trigger payouts, bypassing traditional loss assessment. Commonly used in industries vulnerable to specific risks,

such as agriculture and catastrophe bonds, parametric insurance offers advantages like faster payouts, transparency in trigger conditions, and customization to suit unique needs. The objective trigger mechanisms, often based on measurable events like natural disasters or weather conditions, contribute to efficient risk transfer. While providing a complementary layer to traditional insurance, parametric insurance's suitability depends on the specific risks faced by businesses and their preferences for transparent and quickly settled claims processes.

---

**Tegus Client**

Hi, I was hoping to use this time to learn more about a few areas in -- specifically around the travel and hospitality industry and the types of insurance products that are being offered to mitigate against climate change. So I was thinking more around waterfront resorts and destinations, specifically ski resorts, especially ones that are not maybe getting as much snowfall. So better to learn about products that exist in those industries.

And then also if there's any opportunity to learn more about parametric insurance and how that's being serviced here, both from the B2B side and the B2C side. So I think it would be great just to start a bit with a bit more on -- just on your background, how Brown & Brown, kind of where you're working now and then spend some more time just talking about those areas.

**Senior Catastrophe Modeling Analyst at Brown & Brown Insurance**

Sure, yes. So basically, I'm a Senior Catastrophe Modeling Analyst. And what we do, we help clients to better understand the risk from natural disasters. So basically, we will get like a statement of value from our clients. So it's more about like they have exposures. It could be like a different line of business, commercial, residential or industrial brand.

What is the value and what is like the practices of each building. I mean, type of construction, like height and age of construction, are there primary and secondary characteristics. So then we can basically model those in our process. I mean, to understand what is the probability of loss, with different return periods from like natural disaster.

It could be hurricane, earthquake, flood, like different kind of natural disaster, depending on the location and the vulnerability of that asset to their basically hazard part of the modeling. And then based on the numbers that we get in this process, like we can offer them, like help them find a better product, I mean for insurance products with their negotiation with the insurance companies.

**Tegus Client**

Got it. Maybe so just to give an example of a company. So let's just use a ski resort, for example, who's dependent on most of their revenue from tourism. And there's -- how do they hedge or kind of what insurance products would they be buying? And how would you be structuring them for a ski resort that might be dealing with low snow season?

**Senior Catastrophe Modeling Analyst at Brown & Brown Insurance**

So basically, I think for -- basically, coverage, it could be like [ 12 ] for them. So basically, there are usually like three components. I mean, so it is like the main structure that they have. I mean, buildings and if any damage could happen to those. And then other type of the structure are secondary, like related to the main structure.

And then we have business interruption. For example, if something happens and they cannot operate or I mean they will lose their revenue here because there is no -- basically no tourists over there. They could like -- I mean, have this problem. I mean they will lose money.

So based on these, I mean if the focus is like on the natural disaster. So we need to understand like where is the location of that specific resort. And then we can investigate, if it is maybe in near California, for example, even like earthquake would be an issue, for example.

But I mean, if it is in another area, so maybe some -- if no related or freezing issue like cold weather-related disaster could happen for the facility or the whole resort. So based on the location, we can better understand the exposure, like what is the major drivers of the loss and then we can decide, like work on the terms and conditions for the insurance product.

So it could be like several insurance provider that they can offer like their coverage, depending on the language and their condition. There could be different layers, and we can match it with -- I mean, the products from different insurance companies.

So it depends on the scope and how big this exposure is, where it is located, and what is the risk appetite basically from the resort managers, like CFO, for example. Like if they can have some risk, basically, they can have it -- they can cover it themselves or they wanted to transfer to insurance companies. So there will be some adjustment for premiums, like deductibles and limits. So those terms are all important in the discussion.

And I think the first thing we need to know where it is located, what is the TIV, total insurable value at risk, and what are the major drivers of the loss. And then this discussion basically can be started with the insurance company. So there are some traditional, for example, insurance products.

And there are also some new well maybe approaches, for example, as you mentioned, the parametric insurance, that there are some trigger, some -- basically based on the index. And I can go in more detail if you're interested with the parametric insurance.

**Tegus Client**

Yes, that would be helpful in a bit more detail. And I think wherever you can use examples would be helpful, like just from a layman's terms of a new person to the industry, if a hotel is -- like a hotel manager is thinking about lost revenue because customers may not be able to attend a ski season, how hotel manages that risk and whether parametric insurance or what the other policies are do you think that they use?

**Senior Catastrophe Modeling Analyst at Brown & Brown Insurance**

So basically, so traditional insurance is basically indemnity-based, basically in the context of insurance. So it means that it will restore the individual or entity to the financial situation or position that it was before the loss happened. So there will be some basically process in this loss adjustment.

Basically, there will be -- so for example, if there is a loss, so then the -- when the event occurs, so the insurer needs to assess the damage and also submit a claim to the insurer and insurer reviews the claim and adjust it and validate the claim basically. And this could be like a lengthy process. It could happen months or like years even.

And then after that, the claim is paid based on the assessment. So this is like more traditional indemnity-based insurance. But parametric insurance basically is a different process. So it can be -- basically, it is a type of insurance that plays out based on predetermined amount. So you will agree on the predetermined amount.

And then based on the occurrence of a specific event or it could be, for example, so this is like the payout is triggered by a predefined insurable parameters. For example, if you are talking about earthquake, it could be earthquake magnitude or if it is about like wind, wind hurricane, it could be wind speed.

Or if it is about like floods, could be like rainfall or like level of river water in the river basically, so level of water. So this process is faster because -- so you -- there is no like need to assess the loss or adjust the claim. So it is like more transparent basically. So there is like less ambiguous terms related to policy and trigger conditions basically.

So in this case, even you can customize -- maybe more customize the product towards like more of your specific needs. For example, if you have exposures in some specific areas, you can define different like level of -- for example, if you are talking about earthquakes. So the payout could be based on each single location shaking intensity.

So usually, for example, they work with a third party or independent, like data provider. In the case of earthquake, it could be like USGS, United Geological (sic) [ U.S. Geological Survey ] basically center -- I forgot their complete name. But USGS, they have like a ShakeMap. So basically, after major events.

So this ShakeMap can be helpful to understand like the regional seismic effect, and they can use like a near real-time ground motion and shaking information intensity to understand what is the impact that, that specific location is experiencing? And then there is like a structure for the payment.

For example, it could be depending on the -- what percentage of the ground basically G is like the acceleration. For example, they could say like 70% of the G. If that happens, we will pay like 5% of the limit that is agreed on. Or if it is like 95% of G, we will pay like 30%. So that structure is defined before.

And the key point here is that they -- after any events, so they go back to these ShakeMaps, for example, in terms of earthquake ShakeMap or if it is like about hurricanes or they go to NOAA, for example. So to understand what is the maximum wind speed in that specific location to evaluate like what is the payment percentage of the limit.

But I think there are some issues here. For example, there are some advantage and disadvantage for each of the products. For parametric. For example, it is transparent. It is a faster payout. So you can customize it, for example, based on your specific need. So these are all good and you can transfer the risk based on like your specific situation in your locations.

But there are some also disadvantage, for example, if you have -- the basic risk is a concern. So when the event is in a way that it cannot trigger any payments or you will have some loss and you need to take care of that by yourselves, basically, the insurance companies they do not pay you. So that's one thing also.

**Tegus Client**
What would be like the benefits of business interruption versus parametric insurance?

**Senior Catastrophe Modeling Analyst at Brown & Brown Insurance**
So basically, business interruption, so it's a part of the coverage that you need to think of for your business. So business interruption could be as a result of different things, like depending on your specific location, what is like cost.

**Tegus Client**
Let's just say I'm specifically trying to insure against the amount of snowfall. What kind of insurance policy would I take out? A parametric insurance policy?

**Senior Catastrophe Modeling Analyst at Brown & Brown Insurance**
So in this specific case you need to understand like if they have -- basically, they can avoid this or if this is in the market it depends on the original type of the risk. So some of the parametric insurance may not be. So maybe you need to go even like with more traditional insurance market. So in that case, it can offer like a broader range of coverage options. And so it could be like more suitable for the resort like in that case.

Also sometimes it is not -- for example, for a snowfall, so you need to work with the insurance company first to understand if they can offer such coverage. And what are the basically triggers that they define, like I mean, or other parametric here? And what is the source of that? I mean how you agree on the amount and the occurrence of such thing.

And I mean you can customize it and work with the insurance company, for example, certain level of it did not happen. So they can pay to a certain level. So they define like a maximum amount that they can pay you, that's the limit. For example, if it is, I don't know, like three feet or I don't know, four feet, five feet. So we will pay that percentage of that limit. So that's possible.

But I think -- so in that case if you get like a harsh weather and maybe get like less snow, but you still like lose some revenue because like it's not a good situation for skiing, you will lose like revenue, and this is like business interruption, for example. But you don't have anything about this fall.

But probably in those cases, like it's more about like the harsh condition and maybe wind situation and cold weather. So I think these are all need to be discussed during the process, basically defining what parameters are important for this insurance product.

So I think for each specific case, it can be customized based on the negotiation and your specific need. But first, you need to see like what the insurance companies can offer such thing for that specific area, for example, where your exposures are located. And so this is basically a high-level description here.

**Tegus Client**
Has parametric insurance ever been offered directly to consumers? So if I'm visiting a hotel, can I be offered an insurance policy that if there is rain or flooding or a certain amount that I can get that insurance policy also.

**Senior Catastrophe Modeling Analyst at Brown & Brown Insurance**
In this case, so basically, we work more with the main clients. I mean, the property owners here, like those are all client and they buy insurance for their major portfolio. So like I mean, this specific insurance product that you are asking, I think it is not probably included in that portfolio.

**Tegus Client**
Do you know if that exist?

**Senior Catastrophe Modeling Analyst at Brown & Brown Insurance**
I'm not exactly sure, but this could be like discussed with like the insurance any specific insurance companies that are active in this area, probably you can explore this with them. But what basically we offer is like to help the major property owners. So they need to, for example, to make sure there is no such disruption in their business and also for their property.

So it's easy to say for -- I mean, if there is any major damage from natural disasters. So basically, we have them to buy insurance products for such situation. But maybe more like -- so the cases that you are in this specific case, I'm not sure about that.

**Tegus Client**
Can you tell me a little bit about the data sources that go into parametric insurance? Like how do you source the data, price the contract and then track whether the contract was fulfilled based off of the metrics that you set for it?

**Senior Catastrophe Modeling Analyst at Brown & Brown Insurance**
So basically, so in this case it depends on like what [ period ] you're looking for. For example, as I said, like the first example was the earthquake. I mean there are some third party, they can provide such data, but also there are some maybe more famous data provider, like I mean, USGS. As I said, like they can provide like ShakeMap after any major events.

So those are like valid and being used in this negotiation and in this process, and this is for the earthquake. Also there are some data provider, they can also provide such services like independent firms. And for example, for -- I mean, hurricane or like tornado also like you can work with NOAA. And so they also have such information being released after any major event.

So I think these are like some starting points for the discussion. But depending on, for example, if you are a client, you can also say, "I prefer this specific data source for this contract." And if the insurance company, they agree or if there are some disagreement, you can work together to basically reach to a resolution, basically R&Ds. So there are some.

**Tegus Client**
What are the other innovative areas that you see when it relates to the insurance market? Were there any other opportunities that you've seen from climate change and how the market has evolved in the time that

you've been spending time in the industry?

**Senior Catastrophe Modeling Analyst at Brown & Brown Insurance**
I think there are like different areas like related to natural disasters, even like this related to -- could be related to parametric. I mean, for example, imagine you have like solar farm somewhere and then you need to have more location level information of any like hail data.

So in that case some companies they offer like near real-time information maps, some information like that. I mean this is also even good for fire like natural -- like on-fire situation, so you need to understand. Maybe -- so I mean if you have some hazard map, so maybe there are like less useful.

So you need to have like near real-time information to understand the extent of the event. So I think some companies, they are working on these areas. I think this is good, like helping the insurance companies in these new products, basically for the parametric insurance that you need to have like better location level and near real-time information in your decision-making process.

**Tegus Client**
Great, great. I think this is great. Thank you so much for your time. I appreciate it.