

The floating city also would be designed to **withstand severe weather conditions**, including floods, tsunamis and Category 5 hurricanes, **according to the company**.

AccuWeather spoke to Oceanix founder and CEO Marc Collins Chen to learn how planning for severe weather factors into his company's plans. Below is an edited version of his one-on-one interview with AccuWeather.

AccuWeather: How have you tested whether a floating city could withstand such extreme weather?

Marc Collins Chen: Our approach is that it would be irresponsible to build any sort of new infrastructure without taking into account the new [weather] data that we have. Extreme weather is here; depending on whose data you read, either the storms are getting stronger or more frequent, one or the other. But we need to take it into consideration for the building code of these new infrastructures.

Our thinking around extreme weather is it's here, it's happening and it can't just be business as usual. Think back about **the house that survived [Hurricane Michael] in Mexico Beach**. It was more expensive [to build], but if you think about it, if all of the houses there had been built to that [type of] code, how would it have been different?



One house in Mexico Beach, Florida, survived Hurricane Michael unscathed. (AccuWeather Jonathan Petramala)

Here's how I see it in terms of survivability. If you look at the Saffir-Simpson [hurricane] wind scale, at Category 5, you're very clearly facing catastrophic damage. But here's the secondary issue: the power outages can literally last, well, look at Puerto Rico, that was 11 months. Why? Because power lines are outdoors, trees fall on them and you know what happens next. The other catastrophic thing after these weather events is obviously standing water. **Think about Mozambique** and what's going to happen now. There are health hazards.

So you take all of that into account – and we're working with the experts at the MIT Center for Ocean Engineering – and you ask, how are these floating cities going to fare in this sort of event? We're



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'I honestly just started laughing [after the rescue] because I was happy to be alive and thankful to be alive. It's one of those things where you are on an emotional roller coaster.'

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We're looking obviously at saving lives and making sure there are shelters on these floating cities where people are completely safe from the wind.... What's important is the safety and security of everybody onboard and I believe we have some thinking and solutions that we can at least make sure everybody is safe.

But then the day after, what's really important is all of your systems. So that means you need your freshwater [systems] to be up and running, your electrical grid to still be up and your sewage treatment [working]– the last thing you want is for everybody to have a sewage problem.

So we're approaching this from a design perspective... And that's what our partnership with the United Nations is about – what are the best practices and what can we learn, and how do we future weatherproof these floating cities? That's our objective.

This is science, so it works by iteration. You have to do the first one, try it out – now all of this gets tested first in 3D computer models, and in wind tunnels and in wave pools before it gets put out there. That's our thinking.

AW: When preparing for catastrophes, you could use the Japanese nuclear power plant disaster as an example of a worst-case scenario on top of a worst-case scenario. Can you handle a Category 5 hurricane followed by a tidal wave as happened there? Are you planning for those type of events followed by another catastrophe?

MCC: They are. So again, I'm really happy about this partnership with MIT... I'll tell you where our project is limiting; it does limit as to where these future floating cities will be positioned. We're thinking about being close to major coastal megacities because, according to the UN, by 2050, nine out of 10 megacities will be coastal cities. A megacity is 10 million-plus. Those are the cities that today have the greatest need for affordable housing. Huge, huge demand for affordable housing. We're going to [have a world population of] 9.7 billion in 2050.

Every mayor in every coastal city has someone who's responsible for figuring out what to do in case of weather, in case of flooding, in case of sea level rises. Every city is thinking: What do I build next? Do I retreat? Do I just basically stop giving building permits for anything in the flood zone? Cities have responded by allowing land reclamation, which is really bad for the environment when you dump sand into the ocean and hope it holds. It makes things worse...

Where I'm from in French Polynesia, we have the understanding that nature will always beat us. So you work with it and not against it. You don't try to build a wall to protect yourself from the ocean because it's not going to work.

So it's more about what does this future world look like? Extreme weather for me is not only the hurricanes and the sea level rise, but it

I'm actually really eager to see in the next few years the development of sustainable floating cities, which means sustainable from energy, food, water, zero waste and all of this. But beyond just that, to see how these are going to fare in the face of this new weather. That's critical and it's central to everything we're designing.

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AW: If a Category 5 hurricane were heading toward Oceanix City and you were there, would you stay?

MCC: We are planning to be located in the most suitable sites away from known hurricane paths. In the event that one was heading our way, we would have protocols in place to protect our residents and keep all our systems up and running (electricity, water, sewage, food and telecom), but this does not include towing the floating structures out of the way.

In the event of long-term climate change, however, if a certain site was consistently hit or in the event of a sustained drought, we would have the potential to unmoor the platforms and tow them to a more suitable location.

AW: What's the timetable for your plans?

MCC: There is no timetable that is public yet. We are working actively and daily with all of our teams -- the architects, the engineers, [etc.]. So our next step -- and this was something agreed on with the United Nations on April 3 -- is that what we really need is a prototype in the water. This doesn't mean a city or 10,000 people -- it's a small part of that. We haven't determined the site; this is where we need a lot of simulation work and computer models to figure out where's the safest place.

Now here's the other thing: we're positioning these cities in places where we know nature will protect us. We're not going to the open seas, we're not going to the North Sea -- we're going to areas that are very well protected. Think about any sailor or mariner: as soon as they know that there's bad weather, they know that they [need to] head to a bay, a cove, an inlet -- something that has natural features to protect them.

We're doing the same thing. We're looking at places that will afford us the greatest natural protection. And on top of that, we're building all sorts of innovative ways to mitigate wave energy.

MCC: That's exactly the question all of our teams are working on right now. To figure out what engineers would call the minimum viable product. This is something where there's a lot of excitement from every corner. This is science. That's what everybody keeps telling me.

We were lucky enough to have the Nobel Prize-winning economist Joseph Stiglitz at our [U.N.] roundtable and he said, 'The only way you're going to find things out is to actually do these things.' That's the thinking we have today.

I fly in airplanes all the time because I live in a place that you can't get off unless you fly. And every time I get in an airplane, I think, there's 330 people in an aluminum tube seven miles in the sky going hundreds of miles an hour and I think, now that -- *that* is complicated. But nobody thinks about it anymore.

Millions of people are living on the ocean right now. There are entire cultures in China that have lived for over 1,000 years on small boats; they're born on them, they live on them, they have their economic engine on them, and then they die on those boats. Their entire life is on the ocean.

So it's not that far-fetched to think that we can do this in a sustainable and scalable way. Now with the support of the UN, this is becoming very real.

We're talking to governments that are very eager because this isn't an easy problem to solve for cities. We're looking at solutions that are affordable that can go to every country in the world. This isn't a luxury resort; this is definitely not a rich person's solution. It has to be for the many.

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