



## TRANSCRIPT

NOAA July 2023 U.S./Global Climate and Coral Reef Update Media Briefing

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Media advisory about briefing

<https://www.noaa.gov/media-advisory/noaa-monthly-us-global-climate-report-and-coral-bleaching-update-august-17>

Fran (operator):

Thank you everyone for standing by. Participants are in a listen only mode until the question and answer session of today's event. At that time, you may press one on your touchtone phone if you care to ask a question. Today's conference is being recorded. If you have any objections, you may disconnect at this time. And I'd like to turn it over to your host, Mr. John Bateman. And thank you sir, you may begin.

John Bateman:

All right, thank you. Good morning everyone, and thank you for joining this monthly climate update call, part of the suite of climate services that NOAA provides to government, business, academia, the media and the public to support informed decision-making. I'm John Bateman with NOAA Communications and I'll be facilitating the call today. If you have any additional questions after the conclusion of today's call, my colleague John Leslie and I can both be reached by email at, and I will spell it, N-E-S-D-I-S-P-A@N-O-A-A-G-O-V. That's nesdis.pa for public affairs, @noaa.gov.

Today's update will feature four short presentations followed by an operator-assisted question and answer session. A copy of the presentation our speakers will follow, can be downloaded from the link in the media advisory. And with that, I will introduce our speakers. The first presenter is Dr. Sarah Kapnick, NOAA's Chief Scientist, who will provide a brief statement from NOAA ahead of the July 2023 climate review.

Our second presenter is Karin Gleason, Monitoring section chief from NOAA's National Centers for Environmental Information who will provide a summary of the July 2023 US and Global Climate Report, as well as the latest drought monitor update.

Our third presenter is Derek Manzello, coordinator of NOAA's Coral Reef Watch who will provide an update on the status of the heat stress impacting Florida's coral reefs and other coral reefs in both the Eastern Pacific and Caribbean.

And our last speaker is Dan Collins, a meteorologist at NOAA's Climate Prediction Center who will provide the latest El Niño update as well as the US temperature precipitation and drought outlooks for September, October and November. Our first speaker will be Chief Scientist, Dr. Sarah Kapnick.

Dr. Sarah Kapnick:

Thank you John.

I'm excited to join NOAA's monthly media climate briefing. Producing climate analysis like this gives us a collective understanding of how our climate is changing and how we can help our communities and economy better adapt to what lies ahead. NOAA's able to provide authoritative national and global scale climate data because of the continuously collected and maintained observations. Weather, water, climate and ocean observations gathered from instruments ranging from satellites orbiting earth, to sensors on the ocean buoys, are the backbone of NOAA's environmental science and stewardship mission. These are the best available science and observations regularly delivered to the American people.

I'll let our experts go into specific climate trends for July 2023. What I will say is in addition to the national and global climate trends we saw last month, the US has been struck with 15 separate billion dollar disasters so far in 2023. That is the highest number of billion dollar disasters ever recorded for the first seven months of the year since NOAA started tracking these types of events in 1980, these 15 events led to 113 direct and indirect fatalities and produced losses exceeding \$39.7 billion.

Our nation, more than any other country, consistently has both the highest total count and the largest diversity of different types of weather and climate extremes that lead to billion dollar disasters every year. This is generally due to a combination of two things. One, a high incidence of many extremes where both exposure and vulnerability are high for producing damage. And two, climate change is enhancing certain types of extremes such as severe weather, heatwaves, droughts, and flooding events that may lead to billion dollar disasters. This is why NOAA's climate science and services are more relevant than ever, protecting lives, lifestyles and livelihoods, and helping build a climate ready nation.

As we move to the future, NOAA continues to equitably develop and deliver climate science and tools from data collection through sharing information with users as part of a whole government effort to address the climate crisis and promote economic development. We are also doing this at the international scale through publicly available science and strong collaborations that help countries make science-based decisions and build their own climate ready nations. In my capacity as chief scientists, I'm working to engage key sectors of our economy to promote the uptake of the incredible data that NOAA and the US government provides, with our regular climate statistics being a prime example. In my view, it is a key part of becoming a climate ready nation, is whether decision makers and leaders begin incorporating this critical data into their planning, decisions and forecasts. A warming planet, which we'll see evidence of from the statistics provided today means that we need to be prepared for the impacts of climate change that are happening here and now, like the more frequent and instructive extreme events. From devastating coral bleaching, deadly heat waves, poor air quality and destructive severe weather, this has been the summer of extremes. As these continue moving forward, rely on NOAA and [weather.gov](https://www.weather.gov) for updates in your community.

With that, I'll turn it over to Karin for more on today's media climate briefing.

Karin Gleason:

Thank you Dr. Kapnick, and thanks to everyone for joining the call today.

Let's begin by turning our attention to slide number two and first mentioning that the underlying data depicted on these global temperature maps come from the NOAA global temp dataset, which is the basis for NOAA's global temperature analysis. This dataset consists of land observations from the Global Historical Climatology Network for GHCN and Ocean observations from the Extended Reconstructed Sea Surface Temperature or ERSST dataset. The underlying sources of observations that go into these data sets come to NOAA from other partner agencies, other national meteorological centers, through coordination by the World Meteorological Organization, and are collected via surface weather stations on land, as well as buoys and Argo floats in the ocean.

Other global temperature analyses like the one NASA produces also utilize the GHCN and ERSST observations, but their methods for computing temperature anomalies differ from NOAA's. Even with these differences, the conclusions about how global temperatures are changing over time are essentially the same. Looking at the NOAA global data for July 2023, we see that the global surface temperature anomaly is 1.12 degrees Celsius above the 20th century average, making it the warmest July on record. This July was the first July to exceed the 1.0 degrees Celsius above average threshold, and exceeded the previous warmest July, which occurred last year by 0.2 degrees Celsius, but it was 0.23 degrees Celsius lower than the all-time highest monthly temperature anomaly on record, which occurred back in March of 2016. Climatologically speaking, July is the warmest month of the year, and as the warmest July on record July 2023 was more than likely the warmest month on record for the globe since 1850.

Turning our attention to global ocean temperatures, we saw that a record high was set for the fourth consecutive month and the July sea surface temperature anomaly value of 0.99 degrees Celsius was the highest anomaly value for any month on record, making the ocean temperatures in July, the warmest for any month on record, and the prior record occurred just last month in June.

When looking at land only, we see the 1.4 degree Celsius warm anomaly. Value is also a record for July. Continents that ranked record warm during July include South America, Africa and Asia with North America ranking second warmest and the Arctic third-warmest. Record warm temperatures which can be seen in the dark red areas in the map on the right covered more than 9% of the world's surface, which is the highest July value on record.

Moving on to slide number three, we see the global temperature percentile map for the January to July period and the 2023 year to date temperature comparison for the top 10 warmest years on record, the January to July global surface temperature was 1.03 degrees Celsius above average, which is the third-warmest January to July on record in the 174-year record. Only 2016 and 2020 fared warmer through the first seven months of the year, with both of those years ranking warmest and second-warmest on record respectively at the end of the calendar year. And according to NCEI's temperature ranking outlook statistical analysis, there is nearly a 50% chance of the year ending as warmest on record, and just about a 70% chance of 2023 ending as the second-warmest year.

Zooming in a little closer to home and looking at slide number four, we see that the July temperatures averaged 75.7 degrees Fahrenheit, which is 2.1 degrees Fahrenheit above the 20th century average, and that translates to a ranking of 11th warmest. Looking at the temperature map on the left, we see that in general temperatures were below average across the North Central US with above average temperatures present across much of the West, the South, and the East Coast. Arizona, New Mexico, Florida, and Maine, each had their warmest July on record, with both Arizona and New Mexico breaking their previous warmest July record values by nearly two degrees Fahrenheit.

For precipitation, we see the contiguous US average of 2.70 inches, which is 800th of an inch below the long-term mean, which is near the middle third or the near average portion of the historical distribution. Looking at the precipitation map on the right, we see below average precipitation occurred across much of the west, the northern plains, the south, and parts of the southeast. Above average precipitation occurred from the Central Plains to the Great Lakes and into the Northeast. Arizona, Idaho, and Minnesota ranked third driest while Vermont ranked second wettest for July.

Moving on to slide number five, we see that the year to date temperatures for the contiguous US averaged 53 degrees Fahrenheit, which was 1.7 degrees Fahrenheit above average, and that translates to the 16th warmest such year to date period on record. The temperature map on the left shows the temperature ranks for this January to July period and we see the temperatures were above average across much of the Eastern US and portions of the northwest with near to below average temperatures from the West Coast to the Northern Plains. Florida ranked warmest on record for this seven month period with seven additional states across the south and the east ranking second-warmest on record. Precipitation for this year to date period averaged 18.41 inches, which is nearly a third of an inch above average. And that falls in the middle portion or the near average section of the historical distribution.

Looking at the precipitation map on the right, we see above average precipitation from California to the Central Rockies and portions of the Plains, Great Lakes, Southeast and Northeast. Below. Average precipitation occurred across the northwest parts of the Southwest in the Upper Midwest and the Mid-Mississippi Valley and across parts of the Mid-Atlantic. Maryland ranked 10th driest while New Hampshire ranked fifth wettest for the seven-month period.

Turning our attention now to the latest US drought monitor map on slide number six, we see that approximately 30.6% of the contiguous US was in drought. This is up by more than three and a half percent from the beginning of July. Overall drought conditions we saw lessen or diminish in size across the Northeast as well as the mid-Atlantic. And in the Central Plains and Midwest and Great Lakes, although the rainfall in July helped shrink as well as lessen the severity of the drought, but it is still ongoing in that part of the country. Drought conditions expanded or intensified across much of the Deep South and parts of the Southwest, as well as the Northwest and extreme Northern Tier.

Looking outside of the contiguous US, we saw drought coverage expand and intensify across Puerto Rico, Hawaii, and portions of Alaska.

Looking at slide number seven and our latest update to the Billion-Dollar Weather and Climate Disasters map, as Dr. Kapnick already mentioned, we see that 15 disasters have been confirmed through the end of July. This is the most events identified for the seven-month period since 1980. The events consisted of 13 severe storm events, one winter storm and one flooding event. For this year to date, the first seven months of 2023 ranked highest for disaster count ahead of 2017, which had 14 disasters. The total cost of the events so far in 2023 exceeds 39.7 billion, and they've resulted in 113 direct and indirect fatalities.

Later this month, the American Meteorological Society is hosting a summer community meeting in Minneapolis, and during one of the town hall meetings NCEI will be discussing next steps and potential future enhancements for the Billion-Dollar Weather and Climate Disasters products.

And with that, I'll turn the presentation over to Derek.

Derek Manzello:

Thank you very much, Karin.

Moving on to slide number eight. Today I'm going to highlight the current coral bleaching level heat stress patterns in Florida as well as the Wider Caribbean and Eastern Pacific.

First, let me orient you to the map and graphs on slide eight, the map of Florida in the top right is showing you our bleaching alert area product for the region. The bleaching alert area product simplifies our coral bleaching prediction algorithm such that all light red areas are where there is heat stress that is known to elicit significant coral bleaching. And the dark reds are where there is sufficient heat stress to cause severe bleaching and coral mortality. The light red corresponds to an alert level one and the dark red corresponds to an alert level two. I will refer to these alert levels multiple times.

As you can see, all of the Florida Keys and most of Southeast Florida is experiencing alert level two conditions. The plot in the bottom right summarizes the data from our Florida Keys and Southeast Florida regional virtual stations. These plots are showing two things. First, the multiple different colored lines near the top are the daily average sea surface temperatures for every year for the entire satellite record. Second, the lines at the bottom of the plot show the accumulation of degree heating weeks for each year. Degree heating weeks are our primary metric for estimating bleaching level heat stress. There are two dashed horizontal lines that indicate the degree heating week values whereby an alert level one and two are generated. The black lines are the data from 2023.

Some key points, daily average temperatures have been record setting for both regions. In the Florida Keys, sea temperatures broke the previous record for the highest value ever measured by satellite on July 9th, and temperatures have been higher than the prior record for 27 of the past 36 days. You can see this pattern in both graphs as the 2023 black line and sea temperatures is clearly much higher than anything ever recorded. The onset of this heat stress started earlier than ever before. We need to bear in mind that there have already been eight mass coral bleaching events that have impacted the entire Florida Keys since 1987. During past events, temperatures didn't reach bleaching level heat stress and bleaching wasn't observed until mid-August. If you look at the bottom of the plot, it's clear that the accumulation of heat stress started earlier than ever before on record. The Florida Keys virtual station has been at an alert level two since July 16th and hit an alert level one on July 6th. What this means is that this bleaching event started a full five to six weeks earlier than the previous eight mass bleaching events that have impacted Florida.

In summary, we hear the word unprecedented thrown around all the time, but allow me to qualify that word with the facts. Florida's corals have never been exposed to this magnitude of heat stress. This heat occurred earlier than ever before. A big concern is that temperatures are reaching their seasonal peak right now, so this stress is likely to persist for at least the next month. These corals will experience heat stress that is not only higher than ever before, earlier than ever before, but for longer than ever before. This is key because the impacts to corals is a function of how high the heat stress is and how long it lasts.

Turning over to slide nine. Unfortunately Florida is just the tip of the iceberg and is just one location that is being impacted by this large scale heat stress event that is impacting coral reefs across both the Eastern Tropical Pacific and Atlantic Oceans.

And the top left is the year to date bleaching alert area product for the Caribbean region in Eastern Pacific. As you can see, large areas of the Eastern Tropical Pacific have experienced alert level two conditions. In the bottom left, you can see an image of a completely bleached reef off of the Mexican Pacific, as well as the multi-year temperature and degree heating weeks data for that site. Again, there is a similar pattern to Florida, in that heat stress began accumulating earlier than ever before and has reached values that have never before been achieved.

Now let's look at the data from Bocas del Toro, which is on the Caribbean side of Panama. Multiple investigators began observing severe bleaching here in early July and began sending us pictures and reports. In the picture here is *Acropora cervicornis* or staghorn coral, which is listed as threatened under the Endangered Species Act. Unfortunately, all the non-white portions of these colonies are recent heat driven mortality.

Finally, the top right shows data specific to the Coral Reef Climate Sentinel monitoring site in the Florida Keys where 100% bleaching has been reported since late July.

Moving on to slide 10, we have confirmed bleaching in five countries ordering the Eastern Pacific, Mexico, El Salvador, Costa Rica, Panama, and Columbia. In the Atlantic, there is confirmed bleaching in at least seven countries and territories that include Florida both sides of the Yucatan off Mexico, Belize, Cuba, Panama, Puerto Rico, and the US Virgin Islands.

Moving on to slide 11, not only does Coral Reef Watch monitor heat stress in near real time, but we also produce a four-month coral bleaching outlook product. This forecast is model-based and utilizes NOAA's climate forecast system to provide weekly updates about possible future heat stress. The Outlook product predicts that the Caribbean will continue to warm, and the majority of the Caribbean is predicted to experience alert level one conditions within the next one to two weeks. Alert level two conditions are predicted to occur for the entire Caribbean by mid-September and persist through October.

For Florida in particular, the heat stress is not expected to dissipate until mid to late September or early October. This means we may be looking at an additional month of heat stress in Florida. I will add a caveat here. This is not a prophecy written on stone tablets. Things could change. Specifically the Outlook product does not do a good job at predicting hurricanes and tropical storms. Tropical cyclones do a very good job at dissipating and redistributing the heat in the ocean and they cause significant cooling of coral reef environments. Plus if Atlantic hurricane activity starts spinning up, these predictions may change.

Moving on to final slide number 12. The key take home points are as follows. There is a large scale heat stress and coral bleaching event underway spanning two ocean basins and multiple countries. These surface temperatures in the Atlantic are currently as high or higher than they've ever been in the satellite record, and heat stress has accumulated earlier than ever before. Unfortunately, Florida appears to be the location that is being most severely impacted by this large scale marine heatwave. Pretty much every coral in Florida is experiencing alert level two conditions. Some sites in the Florida Keys are experiencing accumulated heat stress that is two times greater than when we expect mortality to begin. Unless we have significant changes in weather patterns and development of tropical storms and hurricanes, we are marching towards a Caribbean wide heat stress event within a matter of days to weeks. I will now turn over the call to Dan Collins.

Dan Collins:

Thank you Derek.

I will provide the latest El Niño update and the climate outlooks for the next three months. I'll begin with slide number 13 and this is the current conditions in the Tropical Pacific Ocean and the forecast for the El Niño-Southern Oscillation, known as ENSO, E-N-S-O. Sea surface temperature anomalies averaged over the last four weeks are shown in the map on the left. Above normal sea surface temperatures continue across the Pacific Ocean with larger anomalies in the Central and Eastern Pacific near the equator.

Both ocean and atmospheric conditions reflect the climate state that we know as El Niño, which accompanies warmer than average ocean temperatures in the Eastern Tropical Pacific. In addition to unusually warm ocean temperatures, atmospheric convection and precipitation over the Central Pacific Ocean were greater than normal in recent weeks. The figure on the right shows the probability of El Niño or warmer than normal Tropical Pacific Ocean temperatures in red bars or neutral conditions in gray bars. If there were a chance for cooler than normal temperatures or La Niño conditions, blue bars would indicate that.

El Niño is expected to continue and strengthen over the next several months with probabilities of El Niño greater than 90% through winter. In addition, a stronger El Niño event is likely. With this metric for the temperatures in the Eastern Central Pacific expected to exceed one and a half degrees Celsius above average in the late autumn and winter. This occurred most recently in the winter of 2015 into the beginning of 2016.

I'll now turn to slide 14, and we'll be looking at the temperature and precipitation outlooks for September. Those are shown with temperature on the left and precipitation on the right. In the map on the left, shades of orange and red are where above normal temperatures are more likely to occur. Shades of blue would be shown where below normal temperatures are more likely.

Above normal temperatures are most likely for most of the west in September, as the climate pattern favors increased atmosphere pressure in the ridge over the region. While warmer than normal conditions are more likely across much of the Northwestern areas for the month of September, cooler conditions are forecast earlier in the month leading to lower probabilities for above normal temperatures for that area. Above normal temperatures are also more likely for the southern plains, Lower Mississippi Valley and parts of the Southeast. In the map on the right shades of brown show where below normal precipitation is more likely, and shades of green indicate where above normal precipitation is more likely.

Above normal precipitation is more likely for Western Alaska. Below normal is more likely for southeastern areas of Alaska. Above normal precipitation is most likely for the Southeast, Northward to the Mid-Atlantic region. This area of precipitation is consistent with the impacts of El Niño at this time of year. Below normal precipitation is favored to the north for the Western Great Lakes and the Upper Mississippi Valley. This area of precipitation is also consistent with impacts of El Niño in September.

Above normal precipitation is possible for parts of Southern California, Nevada, and Southwestern Arizona, as models are predicting moisture to flow across the Gulf of California from the Eastern Pacific.

Now I'll turn to slide 15 and the temperature and precipitation outlooks for three months of September, October and November shown in maps on the left and on the right. Above normal seasonal mean temperatures are more likely across most of the US, including all of Alaska and the West, the Southeast and the Northeast. The highest probabilities for above normal temperature exceed 50% for parts of Northern Alaska, the Southwest and the Northeast. In part due to trends related to climate change.

El Niño was a factor in reducing likelihood of above normal temperatures over the center of the country. Looking to the map on the right, above normal precipitation is most likely for Western and Northern Alaska and large area of Southeastern United States from Florida to parts of the mid-Atlantic region. These patterns are generally consistent with the impacts of El Niño. And in particular the above normal precipitation in the Southeast. The low normal precipitation is favored for the Pacific Northwest, the Western Great Lakes region and parts of the Southwest. Continuation of a weaker than normal Southwest monsoon precipitation is most likely despite precipitation forecasted for areas further to the west in September.

Turning now to slide 16, this is the drought outlook for the end of November. Sorry, this is the drought outlook for the end of August through September, October and November.

This map indicates expected changes in drought conditions by the end of the month of November relative to the drought monitor that was shown earlier in this presentation, and including the next couple of weeks of August. Areas of persistent drought where it is like [inaudible] already present are shown in brown, areas of predicted drought development are shown in yellow, expected drought improvement is shown gray, and areas where drought removal is likely are shown in green.

Drought is expected to worsen or persist in most of the Pacific Northwest and for much of the desert Southwest across Texas to the Western Gulf coast. Drought is also expected to persist along the Canadian border in the west, and drought is expected to persist or may improve in areas where drought is most severe in the Western Great Lakes region, and drought is expected to persist in the Central Mississippi Valley. Removal of drought conditions are expected in parts of Southern California and Nevada, Southwestern Arizona due to shorter range precipitation forecasts, such as the forecast for September, drought removal is also expected in small areas in the east and in Alaska in the next three months. Improvement or removal was also expected for areas of drought in Puerto Rico and the US for [inaudible].

That concludes the look at the climate outlook and I will turn the call back over to John.

John Bateman:

All right, thanks so much Dan. We will now take specific questions from the call participants. Please be sure to identify who you would like to answer the question if possible. Operator, could you please remind the call participants how they can ask a question and then please queue up the first question.

Fran (operator):

Thank you, Mr. Bateman. Now if you do have a question, please press star one. Please press star one, and our first is from Seth Borenstein with the Associated Press. Sir, your line is open.

Seth Borenstein:

Yes, thank you for doing this. This is for Derek. In terms of the previous worst global bleaching and die off, was that 2016 and how bad did it get and is it fair to say that this is likely to exceed that and if so by how much? Thanks.

Derek Manzello:

Thank you Seth. This is Derek Manzello again, so it's very early in this event, so it's difficult to predict what's going to happen over the next several years. What we can say is that this event is following the same pattern that we've seen during past severe El Niño events, which the most severe past El Niño event was the one associated with the global bleaching event that occurred from 2014 to 2017. So we are indeed concerned that we may be potentially moving towards a global event. I will say that right now things in the Caribbean and Eastern Pacific are worse than they were at the start of the last global bleaching event, but again, it's still very early, too early to tell if this will indeed become a global bleaching event over the course of 2024. But as of right now, all the indicators are in line with that happening.

Seth Borenstein:

Thank you.

Fran (operator):

Thank you both. Our next question now is from Oliver Milman with The Guardian and your line is now open.

Oliver Milman:

Hi there. Also, I wanted to ask Derek a question, Derek, I just wondered if you could talk about the potential ramifications of this mortality event in Florida specifically. I mean, what are the potential negative outcomes of this when you look at the Florida reef in its entirety?

Derek Manzello:

So unfortunately again, Derek Manzello, unfortunately the Florida's core reef has undergone a well-publicized decline since the late 1970s, early 1980s. What that means is that many areas of Florida's coral reef already have very low levels of coral cover and separate studies done by NOAA and the US geological survey found that approximately 70% of Florida's coral reef was already in a net erosional state before this heat stress event. What that means is that the reef structures are losing material faster than they can create them. So over time, you eventually start experiencing a loss of architectural structural complexity, which is really the key factor that all the marine seeds species that associate with reefs depend on. So it's been estimated that approximately 25% of all marine species associated with coral reefs at some point in their lives.

So the ramifications are as reefs start slowly eroding and losing their structural complexity, they will no longer be able to host as many marine species because the habitat is essentially just slowly disappearing over time.

So the big concern here is that if the Florida Keys does experience severe coral mortality associated with this event, it will essentially push this reef ecosystem further towards a trajectory of degradation, and this has severe potential ramifications in terms of the ecological services that this reef provides. So the Florida's coral reef is very important for many commercially important fisheries like spiny lobsters, snappers, stone crabs, as well as all the scuba diving tourism that takes place. I believe Key Largo is the most visited most dive site in the entire world. So as we lose live coral, we're definitely going to be potentially losing associated species on the reefs. And one of the big threats that humans are going to face as corals decline is that coral reefs provide very important coastal breakwater protection from things like storms and sea level rise. So as the coral starts degrading and the reefs start becoming more flattened over time, their ability to provide this coastal protection will decline and this will result in increased damage and flooding from things like tropical storms and hurricanes that are directly going to impact the communities in the Florida Keys and southeast Florida.

Fran (operator):

Thank you both. Our next question now is from Brian Sullivan with Bloomberg News. Your line is open.

Brian Sullivan:

Hi, thanks. I was late getting on the call. Dr. Kapnick, if you're still on, I was wondering if you could just characterize, in general terms, this year and how it's been. And then my second question is in terms of the billion dollar disasters, has there been any look at how much impact the smoke may have caused, especially the bad situation in New York and June?

Dr. Sarah Kapnick:

Yes, this is Dr. Kapnick and this year so far is the third-hottest on record to date through July with June and July being the hottest on record that we have going back 174 years and we have the El Niño developing, and so there's expectations for further potential for warming. We also see that there's currently a 50% chance that this could be the hottest year on record as when the year ends based on our predictions of the statistical analysis of past historic temperature through the rest of the year. And I send it over to Adam Smith for comments on billion dollar disasters.

Adam Smith (Q&A only):

Hi, thank you, Sarah. Yes, this is Adam Smith with the Billion-Dollar Disasters product. I'll take the second question. So wildfire smoke certainly has profound mental and physical healthcare ramifications to people well outside of the wildfire region, whether it's the smoke that people in the US Western states have dealt with for years or in this year, millions of people in the East Coast got a sense for what that smoke does to interrupt their daily lives, their commerce, or even for sensitive populations, how that impacts them individually. Wildfire smoke is an active area of research to integrate the economic valuation of that on top of the physical damage to wildfires, but historically, wildfire smoke has not been a part of the wildfire impact calculations. Thank you.

Fran (operator):

Thank you. Our next question now is from Barbara Moran, WBUR Boston. Ma'am, your line is open.

Barbara Moran:

Hi there. This is a question for Dan Collins. I'm looking at the graph showing or the chart showing above average temperatures for New England for the fall, and I was just wondering if you could give any explanation of why those are expected given that we've had a below average warmth this summer?

Dan Collins:

Yes, sure. Well, the primary factors that go into the seasonal outlook are the ongoing El Niño, the ENSO-Oscillation, in this case, El Niño conditions, in addition to decadal timescale that is changes in climate over multiple decades. In the region of Northeast at this time of year, the trends, the changes in temperature over recent decades are strongly positive. It's a significant factor in the outlook for September, October and November. Those trends are increase through the seasonal cycle from spring into summer, so they're a larger factor at this time of year than they are at some other times of the year.

In addition to that, the El Niño, the impacts of El Niño are primarily cooling over the central part of the United States, and in El Niños we can have occasionally warmer conditions over the US that is possible is considered more probable in these circumstances with trends and temperature over the last several decades. Those are the primary factors going into that outlook for the Northeast region.

Barbara Moran:

Just to make sure I'm clear, so it's mostly it's the general upward climate trends that we're looking at?

Dan Collins:

That is right. Mostly the signal that we have for that region, the reason for putting the probabilities towards above normal is from the general trends in recent decades.

Barbara Moran:

Great, thank you.

Fran (operator):

Thank you so much. Our next question now is from Scott Dance with The Washington Post. Sir, your line is open.

Scott Dance:

Thank you. Yeah. My question is about the probabilities of where this year could end up ranking. So I guess it's for Karin Gleason. Some other estimates out there are a bit more aggressive, Berkeley Earth is saying it's virtually certain already that this year's going to be the hottest on record. Could you talk about what goes into these estimates and why NOAA's might be a little more conservative than others out there?

Karin Gleason:

Yes, Scott, great question. This is Karin Gleason with NCEI. The NCEI probability ranking statistical tool is based on data, historical data, so it's a diagnostic tool rather than a prognostic tool, which mean it isn't a true forecast in the sense that there are computer models and weather and climate models that are involved. This is purely looking back at the historical global temperature record and seeing how the month to month changes in temperature, how they behave month over month as the year progresses. So the statistical analysis looks at many thousands of permutations of different behaviors and different potential outcomes. And so with it being more conservative, it's based on the historical data.

And we have seen looking at as we're in an emerging and growing El Niño situation, we have seen the year to date temperature were average or the anomaly value. We see it sort of flatten out or continue to warm as the year goes on as we approach strong El Niños. Now, we only have a handful of those eight to 10 events to look at, but we have seen that, and so we have also seen in the last several months that statistical outlook, the probability of being the warmest or second warmest has increased pretty significantly as we've moved through 2023. So again, it's based on the historical data rather than looking at computer or weather models, but we are growing more confident that it is going to be one of the top one or two, possibly third-warmest year on record, depending on how the last five months shape out.

Scott Dance:

Thank you.

Fran (operator):

Thank you so much. Now our next question is from Chase Cain with NBC. Your line is open.

Chase Cain:

Hello, this question would be for Sarah or possibly Dan. I'm wondering if you can talk even in general terms about how ocean warming and or if El Niño might be impacting tropical activity in the Eastern Pacific.

Dr. Sarah Kapnick:

Dan, do you want to go first?

Dan Collins:

Sure, I can go first. This is Dan Collins with the Climate Prediction Center. So the Eastern Pacific warming that's associated with El Niño also impacts the global temperatures as noted.

The warm Eastern Pacific, it does have an impact on the outlooks leading to increased tropical activity in the Eastern Pacific, we're expecting some possible development of tropical systems in the next several weeks, and that's leading to potential for precipitation in the two parts of the Southwest, particularly California and Arizona during the period. So I think your question was primarily in regards to the tropical

activity, the increased temperatures that lead to increased tropical activity in the Eastern Pacific. Did I cover your question?

Chase Cain:

Yeah, and I guess, I mean even just more broadly, just general ocean warming, I know Southern California is not frequently accustomed to these sorts of things, but with changes to tropical forecast of the local weather forecast offices was just wondering about that bigger picture effect of warmer oceans and what that might mean for Southern California and the Southwest.

Dan Collins:

Bigger picture. I guess that I would think that the warmer Eastern Pacific would again lead to and including the Gulf of California and temperatures in that area, potentially leads to greater moisture, greater precipitation into that region. But it's very much dependent on the variations, shorter timescale variations as well. And I'm not exactly an expert on the climate of California at this time related to that. The sea surface temperature, the trends in the sea surface temperatures are positive I believe in the Eastern Pacific, but I don't believe that they're overall as strong as in some other areas perhaps. But during an El Niño event, certainly you would expect much of both normal temperatures. So in future El Niño events, this would also be true

Fran (operator):

And this thank you Mr. Collin.

Dr. Sarah Kapnick:

What I'll add is the warmer temperatures provide conditions that we can have storms, and so as the El Niño develops, you have that warmer water moving up the coastline and towards North America as it develops, and so it allows for those differences in storms and long-term over climate change, there's a lot of scientific discussion debate about how the North American [inaudible] seeing changes and the importance of those [inaudible] with potential for drying, but also potential for increased extreme precipitation events in the North American monsoon region.

Chase Cain:

Thank you.

Fran (operator):

Thank you very much. Our next question now is from Emma Dennis with Marist Circle College. Ma'am, your line is open.

Emma Dennis:

Yes. Hi. Thank you so much. My name is Emma, I'm with Marist College. My question is for Dr. Kapnick, and it's in relation to the term climate tipping point. So my question is, have the extreme climate events of this past summer globally, have they pushed us past such a threshold or if not, how close are we to reaching a climate tipping point in general?

Dr. Sarah Kapnick:

This is Sarah. The extreme events that we are experiencing around the world and that we have seen this past summer are the probabilities of many of them and the magnitudes of them are increasing due to climate change and due to the increase in greenhouse gases in the atmosphere, we will continue to see many of those types of extremes, particularly heat, extreme precipitation events will increase in probability and magnitude with every additional ton of carbon dioxide that goes into the atmosphere.

Emma Dennis:

Thank you so much.

Fran (operator):

Thank you very much. Taylor Tucker with Florida DEP. Your line is open now.

Taylor Tucker:

Hi. Thank you. Yeah, I just wanted to ask the question with all of this difficult information to digest, where can we find hope and what should be our priority action to help lessen the future effects of climate change? And I guess this could be for anyone.

Dr. Sarah Kapnick:

Dr. Kapnick, I'll take this and I welcome others to join. But with this we have an understanding. We are observing what is happening around the country, around the world, and we have tools to be able to predict this weeks, months, years in advance. And so with that information, we know where the risks are and how they're evolving, and that gives us the knowledge to be able to act upon that, to build adaptation plans and to build resilience to those events so that they no longer create the financial and community impacts if we take that information and use it effectively. And so with information comes knowledge, comes power to be able to implement those plans.

Derek Manzello:

Hey, this is Derek Manzello. I could speak to that a little bit. One of the things that I have been really just, I am not finding the word, but just found hope in is the coordinated effort by state, local, federal government and non-governmental organizations in the Florida Keys to work together to conduct coral rescue efforts to pull some of the most heat sensitive coral species and genotypes out of the ocean and put them in land-based nurseries and aquaria. I've just been totally blown away at how selflessly everyone has very quickly acted. Nobody really sat on their hands and said, "Well, is this going to cause any problems?" People are well-educated that do coral restoration, and they knew immediately the threat about what was happening and they mobilized and got themselves in this field to really make the best out of this situation.

And the fact of the matter is, we're learning a lot as this event is unfolding. So they were able to rescue the majority of the genetic diversity for the more sensitive species, the staghorn and Elkhorn corals in Florida. And basically the information now that we're going to glean from their monitoring and their rescue efforts are going to be vital moving forward to continue to do the restoration efforts in the Florida Keys and the nursery efforts. So again, the sign of hope is really for me, has been the reaction to this event in Florida and just these people are working tirelessly day and night to do coral rescue and really save as much of the corals that they possibly can. And I'm hopeful that the information we're going to learn from this event in terms of identifying different individuals that may be more or less heat tolerant, the potential to identify possible refugia in Florida, in other words, reef sites that did not

experience such severe bleaching or severe mortality. This information moving forward is really going to be crucial for the further restoration and management of Florida's coral reef.

Taylor Tucker:

Thanks, Derek. Yeah, I'm right there with you. Appreciate you guys.

Fran (operator):

Thank you everyone. Now our last question is from Dinah Pulver with USA Today. Ma'am, your line is open.

Dinah Pulver:

Thank you, and thanks for doing the call. I just wanted to go back to the billion dollar disasters and ask if you would mind reminding me which year we had the greatest number of billion dollar disasters and whether you think the year is shaping up to exceed that, particularly given there have been a couple of disasters already in August that aren't even included in the list.

Adam Smith (Q&A only):

Hi, yes. This is Adam Smith with the Billion-Dollar Disaster product. So the highest count for any year from 1980 to present inflation adjusted to present day dollars, was the year 2020 in which we had 22 separate weather and climate disasters that were a billion dollars or more in today's dollars. So far this year, as was mentioned, we've identified and confirmed 15, however, there are several more that we're currently assessing, currently the Midwest and Southern drought, we're looking at several flood events, several other severe storm events across the east and the south that happened in recent months. And of course, the tragic wildfire in Maui will clearly be an event. So looking at where we are so far the year this year, there's a reasonable expectation that 2023 could challenge or even surpass the record of 22 events just with the data we already have so far this year. Thank you.

Dinah Pulver:

Thank you.

Fran (operator):

Thank you all, as I have no further questions, I now would like to turn it back to Mr. Bateman for any closing remarks.

John Bateman:

All right, thanks so much. If there are no further questions, I will wrap up the call. First, I'd like to thank all of our speakers for their time and everyone else for participating in this conference call. I will end by reminding you to mark your calendar for a few upcoming events. One going on today, NOAA's special teleconference taking a more detailed look into the bleaching event around the Florida Keys will begin in about one hour at 1:00 PM Eastern Time. Again, that is today. And dial in information for that can be found on the same media advisory from this climate call.

Also, the release of the August 2023 US Climate Report is scheduled for September 11th. The release of the August 2023 Global Climate Report is scheduled for September 14th. And NOAA will hold its next monthly US and Global Climate Media call at 11:00 AM Eastern Time on Thursday, September 21st. Lastly, an audio file of this call will be posted on the noaa.gov media advisory site later today. And if you

have any further informational needs, please feel free to email me, John Bateman. My contact information is available at the top of the media advisory. Thank you.

Fran (operator):

Conference is now concluded. Again, thank you very much for your participation. You may please disconnect at this time.