Twitter Thread by Ryan Maue

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Scientists say global warming – specifically the rapid warming of the Arctic – is a possible, if not likely, culprit in the extreme weather.

Freak cold in Texas has scientists discussing whether climate change is to

> The freak cold spell that has killed at least 21 Americans and shut down power for days in Texas has revived scientific discussion over whether climate change could be delivering this week's chill.\u200b https://t.co/9iiVc0YKMm
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> — Reuters Science News (@ReutersScience) February 17, 2021

Jet stream slowed down & meandered.

Paul Beckwith, a climate system scientist in Ottawa: "(Arctic warming) could cause the polar jet stream to slow down and meander, so that it carries more warmer air toward the pole and frigid air further south"

“What we’re seeing this year is an extreme example of what happens when the jet stream trough goes really deep southward,” Beckwith said.

“I think it’s a rock-solid case,” But “it might take a bit of time for the science to catch up and find all the details” to prove it. ■

Speculative, not facts:

The theory “remains speculative, and it is the reporting of it as fact that is not justified,” climate scientist Geoffrey Vallis at the Univ of Exeter tweeted on Tuesday. “It may be true, but perhaps more likely not.”

Record cold, intense storms and tornadoes amid global warming: Could there be a connection?

“It’s been unusual for a few weeks now – very, very crazy,” Francis said. “Totally topsy-turvy.”

https://t.co/Ls9wpDa98P

Goosing the atmospheric wave @judah47 ■

Warming in the Arctic, with shrinking sea ice, is goosing the atmospheric wave in two places, giving it more energy when it

strikes the polar vortex, making it more likely to disrupt the vortex, Cohen said.

What's happened to the vortex in the past few weeks has been remarkable: Francis said “it’s been a major breakdown. It really is the cause of all of these crazy weather events in the Northern Hemisphere.”

"Wandering polar vortex"

From USA Today:

Some scientists – but not all – say there could be a connection between global warming and the wandering polar vortex: The theory is that when weird warmth invades the Arctic, some of the cold that's supposed to stay up there.

"The theory is that when weird warmth invades the Arctic, some of the cold that's supposed to stay up there."

Heating Arctic may be to blame for snowstorms in Texas, scientists argue

The wintry weather that has battered the southern US and parts of Europe could be a counterintuitive effect of the climate crisis

https://t.co/31XcOdZJzn

“The current conditions in Texas are historical, certainly generational,” said @judah47. “But this can’t be hand-waved away as if it’s entirely natural. This is happening not in spite of climate change, it’s in part due to climate change.”

'Cold air is normally concentrated around the north pole in the polar vortex, an area of low pressure that circulates in a tight formation in the stratosphere during winter. This rotation is likened by scientists to a spinning top, one that can meander if it is interfered with.'

“I’d say the situation this winter is consistent with research that has connected what’s happening in the Arctic with extreme weather patterns in the mid latitudes,” said Jennifer Francis

There is no consensus among scientists over the interaction between Arctic heat and cold weather further south – Francis calls the topic an “active area of research”.

“We still have a lot to learn on this,” said Francis. “I think this year will be studied for a long time.”

Texas flunks climate change test as its energy grid freezes solid

https://t.co/3Z57ajoagx

"This is a large-scale emergency," said Julie McNamara, a senior energy analyst at the Union of Concerned Scientists. "We're seeing the consequences of insufficiently considering climate impact on the grid."

■

The polar vortex, a weather pattern that originates in the Arctic, is increasingly descending to lower latitudes. Scientists say global warming caused by humans is partly responsible for shifts that bring glacial weather to more southern climes and keep it around longer.

There was a "snownado" in Texas, in case you're wondering how climate change is going

Conditions became dire over the weekend in Texas, where an unprecedented wave of winter weather has crashed upon the typically warm state.

https://t.co/vvXYLvDg0m

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"It's hard to blame Texas for these outcomes. The state never assumed that it would experience such a widespread, ongoing cold spell, and its infrastructure simply was not built to withstand these types of temperatures."

"snownado alley" ❄■■■■

But the sad fact is these weather events are becoming more and more common, and climate change is to thank.

Failure to act could result in Texas becoming a “snownado alley” — and that is a fate that the state’s infrastructure is not prepared to survive.

How one Texas storm exposed an energy grid unprepared for climate change

"Texas crisis is a wake-up call that exposes how the U.S. electric infrastructure may not be fully prepared to absorb steep climate-related spikes in demand for power."

https://t.co/WXFuP6ggom

(Similar cold snap happened December 1989) ■

"We are in a nonstationary world. Climate change means that it is not stationary," Craig said. "The last 40 years might not be reflective of what's coming down the pike the next 40 years."

A Glimpse of America’s Future: Climate Change Means Trouble for Power Grids

Systems are designed to handle spikes in demand, but the wild and unpredictable weather linked to global warming will very likely push grids beyond their limits.

https://t.co/ZNATcRlSCn

(Similar Texas cold snap happened in December 1989)

"But as climate change accelerates, many electric grids will face extreme weather events that go far beyond the historical conditions those systems were designed for, putting them at risk of catastrophic failure."

"grid operators in Texas have also long known that electricity demand can spike in the winter... But this week's winter storms, which buried the state in snow and ice, and led to record-cold temperatures, surpassed all expectations — and pushed the grid to its breaking point."

"But some climate scientists have also suggested that global warming could, paradoxically, bring more unusually fierce winter storms. Some research indicates that Arctic warming is weakening the jet stream... "

"...weakens the jet stream, the high-level air current that circles the northern latitudes and usually holds back the frigid polar vortex. This can allow cold air to periodically escape to the South, resulting in episodes of bitter cold in places that rarely get nipped by frost."

Climate change may explain frigid weather so far south, experts say.

https://t.co/iGVP5FcbwC

But the weather patterns that send freezing air from the polar vortex plunging all the way to the Gulf Coast could, like other forms of extreme weather, be linked to global warming — which is why the climate scientist Katharine Hayhoe prefers the phrase "global weirding."

No evidence of a trend ...■

Dr. Amy Butler, a research scientist at the NOAA Chemical Sciences Laboratory, has said that she has yet to find any long-term trend in polar vortex disruptions, which "occur naturally even in the absence of climate change."

"Severe winter weather is much more frequent when the Arctic is warmest," Dr. Cohen said, adding, "It's not in spite of climate change, but related to climate change."

The current storm "could be one of the most costly natural disasters of the year," he said, in part because of its unusual geography: "Texas, which is known for hurricanes, is not known for snow and cold damage" like burst water pipes.

How the Warming Arctic Helped Drive a Deep Freeze Into Texas

The sub-zero temperatures causing blackouts across the southern U.S. are connected to climate change.

https://t.co/eJwhkeWKGX

Is the Texas cold blast connected to climate change? "I have argued a definitive yes," said Judah Cohen ... who's spent more than a decade studying what warming across the Arctic means to weather for the rest of the world.

■

As the planet warms and this contrast diminishes, the jet stream weakens and can no longer push large weather patterns out of the way. This is what caused wildfires above the Arctic Circle, droughts throughout the world, and record-setting heat waves from Moscow to the U.S.

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While these events happen about six times per decade, according to the National Oceanic and Atmospheric Administration, Cohen maintains that climate change has increased the frequency with which the polar vortex weakens and allow the cold to air to run amok.

“It’s no secret that extreme weather events are happening more frequently,” said Jennifer Francis, “Climate scientists have been predicting this behavior for years...so it comes as no surprise whatsoever that we’re seeing back-to-back extremes of various types around the globe.”

Climate change caused the storm -- MSNBC

A winter storm caused Texas's power outage. Climate change likely caused the storm.

As the planet's climate changes, the only constant is unpredictability.

https://t.co/jHvdFqI3qu

"A pocket of the polar vortex, which the air of the jet stream normally holds in place, got loose and decided to visit the U.S."

"The bad news is that the jet stream has been getting weaker over the last few years as the areas on both sides of it have gotten warmer." ■

You Can Thank Climate Change For Extreme Weather Patterns Wreaking Havoc in Texas and Across the U.S.

https://t.co/HGtY1vLUYJ

Chris Gloninger, a meteorologist NBC10 Boston, explained to NBCLX that there was a definite connection.

"There are waves in the jet stream and because of climate change and the warmer air in the Arctic and the largely ice-free Arctic sea, those waves are able to go far south"

Good article -- read this one ■

Extreme winter storms aren’t inconsistent with global warming and will continue for decades, expert says.

https://t.co/FOtBJdN3PS

Exactly:

“We haven’t had enough warming to eliminate cold events, and we shouldn’t expect to have enough warming to eliminate cold events in the mid-latitudes for some time,” Noah Diffenbaugh, a climate scientist at Stanford University.

“When we look out at projections for the climate warming 3°C above pre-industrial levels or 4°C compared to the 1°C that we’ve already had, the mid-latitudes can still expect to experience severe cold, even at those high levels of global warming,” Diffenbaugh said. ✔■