Twitter Thread by Gavin Schmidt

Gavin Schmidt
@ClimateOfGavin

The potentially record-shattering extreme heat weather forecasts for the Pacific NW are pretty shocking, but some folks keep getting the climate change connection wrong.

This guy for instance: https://t.co/36IaHNDLNq

He states as a supposed ‘golden rule’ that “the bigger the temperature extreme the SMALLER the contribution of global warming”. This is nonsense - but it’s worth thinking about why.

Any extreme event can have both ultimate and proximate causes. The proximate cause could be a frontal system, a jet stream meander, a hurricane etc. which are not unique. But this all takes place within the climatology, which as we know, is changing.

The Mass claim is based on a naive accounting of the proximate and ultimate causes. He takes the weather-related anomaly (large) and compares it to climatological anomaly (smaller) and concludes that the climate change fraction gets smaller if the weather anomaly grows.

But this leads to a logical paradox. Take a situation where climate change now means that we can experience an extreme that could effectively never* happen under the previous climate [how near we are to this point is not relevant for the argument].

*a v. low probability

Mass would claim that this situation has less of climate change attribution than a more common event, even though it would never have happened without climate change. That is absurd.

Instead it is much more coherent (and practical) to judge attribution based on thresholds. What is likelihood of exceeding, say, 105°F under the previous climate (P) and the new situation (N)? The fractional attribution to climate change is then (N-P)/N.

So if P=0 (the extreme was never going to happen before), the attribution to climate change is 100%. If the odds of an event have doubled, then climate change is 50% responsible etc. This is far more intuitive and more closely aligned with impacts which are often threshold-based.

I discussed this more thoroughly a while back: https://t.co/fGxBioWDJr and the analysis still holds up.

What it means for the Pacific NW is that there will be a very high attribution to climate change for the upcoming event and the exact numbers will depend on how hot it really gets. And the hotter it gets, the larger the attribution will be.

Regardless of cause though, stay safe!