

NOAA Climate Science & Services Monthly Climate Update

May 18th, 2017

NOAA Monthly Climate Briefings webpage [here](#)

[Slides](#) and [audio](#) for the May 18th, 2017 briefing

Time mark: 33:00

Hunter Cutting:

I had a couple questions about the Missouri flooding and I'm hoping I can pack in more than one question here.

You talked about the advection of moisture in this event feeding the extreme rainfall -- and on slide 2 you depict much warmer than average and some record-warm SSTs in the Gulf. And so my first question is, did those elevated SSTs contribute to moisture coming up from the Gulf?

And then the second question I have -- is this extreme rainfall event consistent with the long-term trend in the atmosphere of greater capacity to hold water vapor?

And then the third question I have is, I know that and appreciated the work that NOAA did in conducting that AEP analysis that found, that characterized, the rainfall across much of Missouri and the parts of Indiana and Illinois as 1-in-1,000 year rainfall events and 1-in-500 year rainfall events. And I, of course, noted your slide that showed the other three similar events in the last decade, and I'm wondering, is this a shift from prior decades?

Patrick Guinan:

This is Pat. I'll try to answer all three parts of your question, of course I'll defer to Jake and Steve if they want to add anything to that.

The first part of your question, I think the warmer-than-normal SSTs in the Gulf of Mexico would contribute to more water vapor in the atmosphere perhaps, and, you know, that's somewhat of a situation that we've seen in the middle part of the country -- we've seen these higher dew points and we've seen over the period of the past several decades where the source regions of these air masses have actually gone up from the Gulf of Mexico versus decades before that.

And so, when you get water vapor in the atmosphere, you increase the dew point, you have more water holding capacity with the warmer temperatures in the atmosphere that could squeeze out and give you some significant rainfall.

And so, that's sort of a scenario that's playing out, in regard to, in a warming world, where the National Climate Assessment does indicate that over the next few decades we will see an

increase in extreme precipitation events, and that has definitely played out, not only in the Midwest, but in the Northeastern US. So something that we've seen with those four rain events, major rain events over the past decade, you know, similar processes where we had some incredible moisture that was able to be wrung out and dropped a large amount of rain over a lot of real estate and lead to some, you know it's hard to call it historic flooding when you see this has happened over the past decade... Definitely more so when we look at previous decades.

We haven't seen a magnitude of these extreme precipitation events across the Midwest when you look at the more recent 30 years or so versus what's happened prior to that. We've seen an increase in extreme precipitation events over the past 30 years compared to the long-term average. In the Midwest.