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Sent: Wednesday, November 18, 2020 1:33 PM
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Subject: RE: Stormwater Advisory Committee - information you requested

Tom

Thank you for the raw data and your statistical analysis in your precipitation trend model. My concern is that the data doesn't support the Trend Line that you have proposed. In fact, reviewing the data briefly implies that there are a few obvious problems that I think you should take another look at as follows:

- a. Data is provided for Nantucket only from 1852 to 1858, a period of only 7 years for only one station. Then there is a large gap of no data. There are just not enough data points to bring it back to 1850 and based on this I think that extrapolating before 1900 should be removed from the graph and the Trend Line computation.
- b. Then there is some data that our significant outliers. I think a factor of 15-20% should be applied and that data should be removed from the Trend Line analysis. We do this in transportation using the 85th percentile. That seems reasonable for this trend analysis – 85% high and low.

If you do these I think the trend line drops to the red line or thereabouts (sorry about the wiggle – I just manually drew it in your graph). This will significantly alter your NOAA + even before the additional factoring (within which I also have a problem).

So my thoughts, briefly:

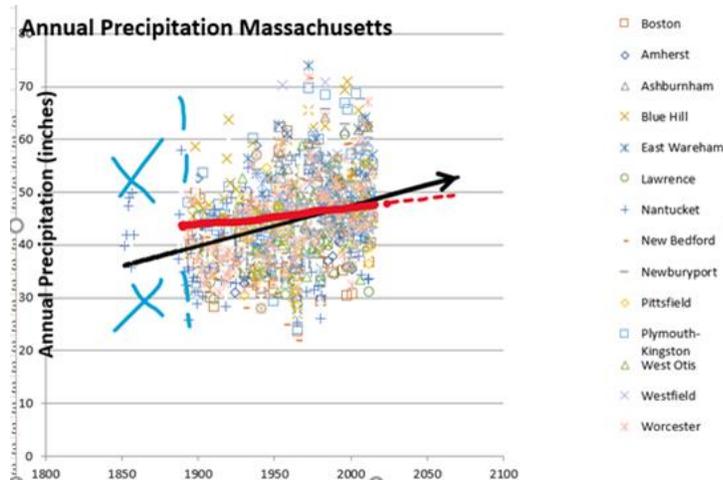
I think that data can often be manipulated for the result. In my opinion I believe that the folks responsible for regulatory change at MassDEP are very reasonable and they would agree that they should not be in the business of data management.

Addressing climate change is a good goal, but like many things, proper controls are often in the details.

I appreciate and would agree that the **trend is upward** as you identify using the Mann-Kendall trend test. So, although we may agree that precipitation levels have increased in the last 120 years, I don't think it is in the order of 40 – 60%. I think that is ridiculous and proposing regulatory changes for a few trends, such as precipitation rates, with an exacerbated time window trend of as much as 50% (2020 to 2080 (60 years) vs. an analysis of 1900 to 2020 (120 years) is equally ridiculous.

Tom, I can understand your approach here and I think you may be on the right track to put forth some climatology changes in the way we perform hydrologic models here in the Commonwealth but I think some additional work on the data that you have is warranted. If you recall, your email below is from my request for the standard deviation. I think closer analysis may be necessary since the mean standard deviation computes to be 7.68 in, which exceeds 33% and is therefore quite diverse off the norm.

As always, I look forward to future discussions on this and other topics.



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