

Introduction

It is thought that the number of tornadoes has increased in recent years. This research project will see if there has been an increase in tornadoes for Colorado. This will be determined by comparing averages of tornado occurrences in Colorado since 1952.

Review of Research Literature

Most research of tornadoes has been put towards understanding the basics of how they form as well as what may affect the intensity of these tornadoes.

It has been shown that as of 2008 there is no noticeable correlation between tornado intensity/occurrences and global warming (Committee on Environmental and Natural Resources, 2008). There is also a possible (but not well-documented) correlation between ENSO (El Niño/Southern Oscillation) events and tornado intensity/occurrences. There is a possible trend of more tornadoes occurring during La Niña events (Schaefer & Tatom, 1999), however, it is unlikely that ENSO matters to tornado formation (Cook & Schaeffer, 2008).

Other studies claim that they “can find no evidence for a long-term increase or decrease in the threat from significant tornadoes.” In this study, significant tornadoes were those of at least F2 intensity (Concannon, 2000).

There have been many studies in this section of research, but not very many looking into a general trend of tornado occurrences.

Rationale

Researching the trends in tornado occurrences in Colorado will allow the government and people of Colorado to better anticipate tornadoes in the future.

If the number of tornadoes is increasing, then proper measures should be taken to decrease risk to people.

Research Outline

The primary data will be found on the National Oceanic and Atmospheric Administration’s (NOAA) National Weather Service (NWS) Storm Prediction Center (SPC) website. It contains a history of all recorded tornadoes since 1952. This data can be used to find an average for comparison with recent times.

The site also contains a 10, 20, and 30-year average for each state. However, this data should still be computed for the research in order to ensure accuracy.

Using the Annual Tornado Maps (Figure 1), a 50-year (1952-2002) average (μ) and standard deviation (σ) can be found. Then, the 10-year (1952-1962, 1962-1972, etc.) averages can be compared to this μ .

The goal is then to see where these averages fall. Do they remain within $\mu \pm \sigma$? In recent years (i.e. 1982-2012) have the averages consistently increased or decreased?

The answer to this question will, of course, be only a partial answer. There is enough data for a preliminary estimate, but nothing certain can be determined. Still, this may provide a better picture of what is happening today.

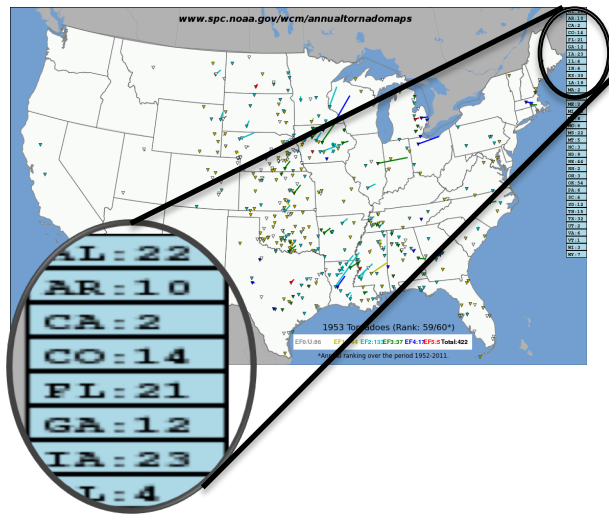


Figure 1: This 1953 map from the SPC shows the distribution of tornadoes as well as the number of tornadoes recorded in each state on a chart in the right-hand corner ("U.S. annual tornado," 2011).

Conclusion

In this research project, the average number of tornadoes over a 50-year period will be used to determine whether or not the number of tornadoes in recent years has been increasing in Colorado. This will be a preliminary estimate that will help the state of Colorado to better prepare for the coming years, whether that be to increase safety measures to leave things as they are.

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