

Re: Higher elevations equals more calm weather? Does elevation matter?

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- *From:* Crackles McFarly <[helpmeplz2008@xxxxxxxxxx](mailto:helpmeplz2008@xxxxxxxxxx)>
  - *Date:* Thu, 31 Jan 2008 15:18:51 -0500
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On Wed, 30 Jan 2008 17:59:15 -0800 (PST), Russell  
<[Russell.Martin@xxxxxxxx](mailto:Russell.Martin@xxxxxxxx)> said the following:

On Jan 30, 7:09 pm, Crackles McFarly <[helpmeplz2...@xxxxxxxxxx](mailto:helpmeplz2...@xxxxxxxxxx)> wrote:

On Wed, 30 Jan 2008 13:30:32 -0800 (PST), Russell  
<[Russell.Mar...@xxxxxxxx](mailto:Russell.Mar...@xxxxxxxx)> said the following:

On Jan 30, 3:08 pm, Crackles McFarly  
<[helpmeplz2...@xxxxxxxxxx](mailto:helpmeplz2...@xxxxxxxxxx)> wrote:

On Tue, 29 Jan 2008 06:15:37 -0800 (PST),  
LiquidSquid  
<[m...@xxxxxxxxxxxxxxxxxx](mailto:m...@xxxxxxxxxxxxxxxxxx)> said the following:

Being I live on a hill in just  
this sort of scenario, here is  
what I  
observe:

Storms tend to "split" as  
they approach my location  
from the west. One  
half will remain over lower  
terrain, while the other will  
head up into  
higher terrain. The storms  
tend to not linger where

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there is an long-term elevation change. To my south it is an average elevation of 1500 ft and increases towards PA, to my north, 650 ft and slowly decreases to lake Ontario. My house is situated on one of the first hills (1300 ft) as you approach Bristol hills from the north, so it is low-lands and fairly flat to the north, high land and hilly to the south.

It is interesting to watch a storm make like a curve-ball and head out over the higher terrain away from my location as my gardens wither. Bristol mountain is the usual target for many of these storms, as it is one of the highest elevations around at over 2200ft.

The nastiest storms are immediately to my north, which is partly due to the deeper atmosphere providing more energy, and partly due to convergence between lake Ontario, Lake Erie, and over land.

In all, even though I am at a higher location, we are in a transition zone, and more often than not, the storms miss us. In

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fact it is quite frustrating as I enjoy a good storm. When we do get a storm, we get a little more lightning activity, but 600 feet of change from average topology does not mean much to a 2-mile long lightning stroke.

So to answer your question: There are many more factors than two point locations that need to be taken into account to predict a trend. In my location the lakes provide the greater influence over storm paths than the hills do. Down in PA where they are far enough away from lakes, the hills have more influence (plus they are larger).

Well I was comparing two cities near me and their storm activity and recorded severe weather events.

Johnson city TN compared to Chattanooga TN.

JC is about 1,000 ft above sea level Higher than Chattanooga, and it bears out in the NOAA data that JC gets far fewer severe events than Chattanooga.

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The same goes for the data on the  
appalachian mountain cities.

It seems the more of a plateau or mountain  
you're on the less chances  
of severe weather.

We have a tiny mountain in town but you  
could drive your car around it  
in less than 5 minutes, so the differences in  
weather are not extreme  
except for winter weather like snow.

Of course their is the odd thing I love about  
last night. It never  
stormed, not even lightening or thunder YET  
we had a 'severe  
thunderstorm warning' because of 58+ mph  
wind gusts.

Kinda like a flood warning in the desert and  
it's not been raining.  
Weird stuff.

One day I'll get over my fascination with  
weather but I suspect I  
won't realize it since I'll be dead.

Anyone has anything else to add PLEASE  
do so.

I hate the politico posts just like you do.–  
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– Show quoted text –

Re: Higher elevations equals more calm weather? Does elevation matter?

Topography certainly can influence the weather, but as LS points out it is due to more than just vertical displacement alone. And one also needs to keep other factors in mind when looking at things like storm statistics. Without looking up the climate statistics, I'd guess Johnson City and Chattanooga are in similar general climate regimes, but they are separated by enough horizontal distance that they might not be exactly comparable. Also Johnson City is much smaller, at least by population and presumably also somewhat proportionally by area, than Chattanooga, so the "target" that each represents for severe weather may be different. And larger cities will tend to be in the valleys, so there is a potential sampling bias from that. And since severe weather is comparatively rare, there are possible statistical sampling differences, although those should tend to go either way when looking at a large number of different locations. I think that just how much such factors account for differences is difficult to say without careful study. With as many variables as there are in weather, it is sometimes difficult to separate the various contributions.

Cheers,  
Russell

I've read up on the severe storms, what ingredients need to be present.

1. Steep lapse rates.
- 2, vertical shear
3. low pressure nearby
4. diving jet stream.

1,2,3 or all 4 is needed for severe storms that I've studied. Of course you can just have excessive heat, 100F+, on a clear day and have storms popup like mad.

With all those present it stills seems less severe, at least less frequent, in places of higher elevation.

Am I catching on to this at all?

Perhaps I should pick 2 data points closer as you suggested.

How about Johnson City and Knoxville Tennessee. They're much closer but the elevations are very different.

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The more variables that you're not interested in that you can minimize the differences of, the better. Other than the summer I spent in Knoxville, I don't have much experience in the area, and when I was there it had pretty boring weather. Careful observation and long familiarity with the weather in an area is very helpful when one studies such things.

Any opinions?

Also you mentioned severe as being relatively rare but I seem to think it's more common. Is this because of my location's experience, in other words am I biased?

In part I was referring to trying to establish differences, and compared to regular weather one might be interested in, especially temperatures, severe weather is rare most places. I mean, you have temperature every day, so the samples are larger than for severe weather. Also it depends on what you mean by "severe". If you include all thunderstorms there will be more instances than if you only consider storms that produce hail, wind, etc. that satisfy NWS criteria for "severe". I wasn't sure which you're interested in.

I know the overall odds of being killed by a tornado is 1 in 2 million but if you live in tornado alley those odds approach more like 1 in 500,000

That last number seems low to me if it is per year, but maybe it's correct. Anyway, you're right that where you live can make a difference.

Again, am I getting any of this correct?

thanks for your time.– Hide quoted text –

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I think you're on the track. During the time I spent in Knoxville, I think there were two days with severe weather, but it was a fairly dry summer despite the almost constant forecast of "chance of afternoon thunderstorms", so you probably have a better feel for how the weather usually behaves where you live than I do.

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Cheers,  
Russell

What about a more broad risk of severe weather. Not including tornadoes, say only severe thunderstorms?

In my city we 'average' 75 thunderstorm days per year but obviously all those times are not severe.

I made a chart about this for 2007 and the number that actually turned severe was under 5%.

What made my jaw drop was the local forecasts accuracy, something around 66% which I thought was low.

I included all surrounding counties and if a drop of rain hit anywhere I called it correct. 33% of the time they blew it.

But back to elevation. I guess I was trying to find an escape plan by moving to a higher elevation without having to move west of the rockies.

I've enjoyed this conversation with you Russell..

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