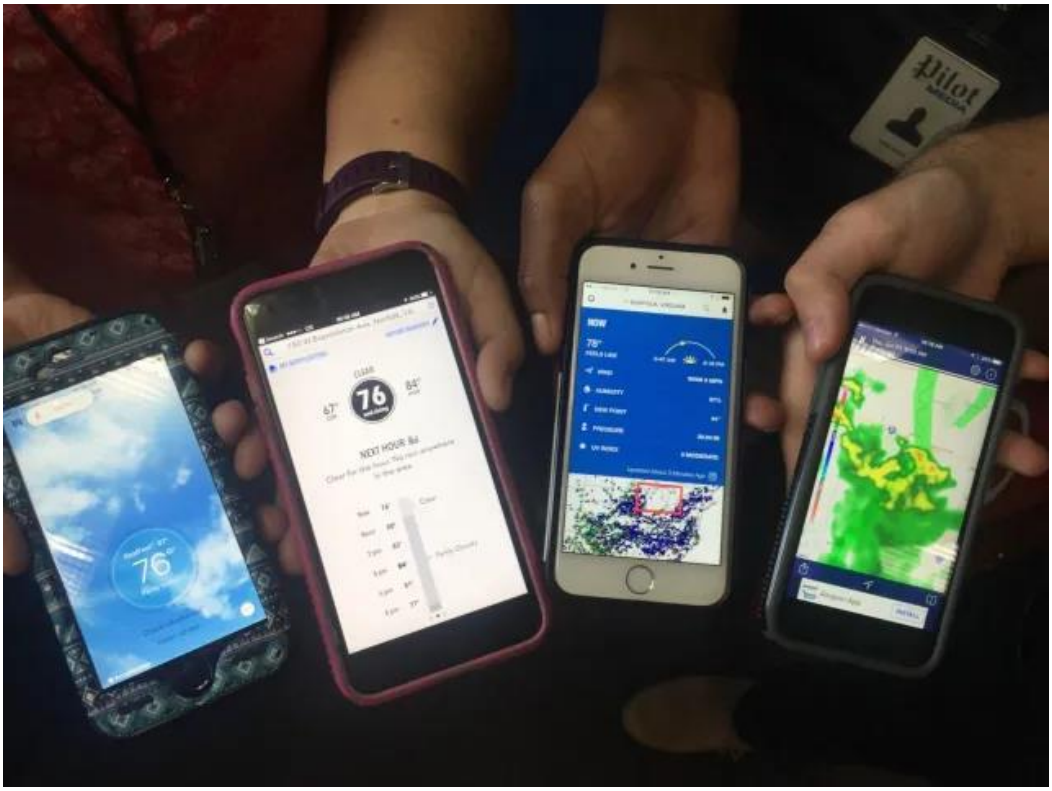
Weather App vs. The Human Element



Weather apps are quite convenient. You just pull out your smartphone, open an app that you're most familiar with, and check whatever data you're seeking. Maybe you're biased that every time you've checked your weather app, it's been accurate with the precipitation type. Surely, they have their strengths; however, in general they're unequivocally limited by what they can do.

Weather apps are run by specific algorithms. These algorithms are based on sets of equations that were developed by human-beings. Humans are not 100% perfect and that's where the flaw comes in. These equations are based on assumptions of many variables: temperature, pressure, wind, etc., all of which are in constant flux. Us humans try to quantify this ceaseless "fluid", and that's fundamentally where errors arise.

However, meteorologists are trained not only in the field to apply certain methods to predict specific types of weather; rather, but they're also taught or are made aware through the years of specific biases that computer models have. For instance, let's say you open your app and see snow forecasted on day three. That meteorologist on the news or your weather service you subscribe to or follow, says otherwise. In the end, the app ends up being wrong. Why? It's because that meteorologist knew by comparing maybe the GFS (Global Forecast System – a deterministic model) for example, to other models and using "pattern recognition" that the forecast for snow is likely incorrect.

This is where the human element is undoubtedly superior. It's how they add such critical value because there are methods and techniques either taught or learned that help to "think outside the box", and question everything. Though we'd be remised to say meteorologists are far from perfect. It's what they contribute that makes it so important and can utilize the imperfections to render a more accurate forecast.

If a computer model ingests bad data, which happens from time-to-time, then that weather app takes it verbatim and "spits" out whatever that model cycle produced. As they say, "garbage in equals garbage out".

There's a reason why meteorologists and students in atmospheric science are put through rigorous course work to better understand how the atmosphere – which is within of itself a chaotic system - cooperates on a planet that rotates on an axis. Rather complicated to say in the very least. Math, physics, geography - to name a few, are all imposed on students for this very reason. It's necessary to learn how certain variables affect other variables in the atmosphere, which in turn have profound implications on the sensible weather that we observe.

Your weather app can't decipher terrain. When it comes to elevation, computer models can't predict precisely the gradients that occur over a certain distance. Maybe you were driving down from a higher elevation that day, but your app said there was an 80% chance it'd precipitate. Surely as you continued to descend, you notice the lack thereof. Why could that be? A meteorological phenomenon that transpires is referenced as "downsloping", where air is compressed and dries out (i.e. virga). This of course is a purely hypothetical situation but doesn't negate the fact that the app was wrong. However, once again meteorologists are given the tools needed to understand "why", and catalysts that argue for or against specific weather conditions.

Weather apps can't "look" at the vertical profile of the atmosphere. If a set of computer models show bands of lake effect snow showers from the Great Lakes as another example, the weather app you're using most likely registers this as snowfall accumulations. However, maybe

your local or regional weather forecast office like the National Weather Service shows a forecast that opposes what the app says. Right there and then, it'd make you pause undoubtedly.

What could this be and why different? It's once again because those forecasters were taught everything needed to analyze certain parameters based upon fundamental lessons of how precipitation even works to get to the surface! We need moisture in the "snow growth region" for snowflakes to form. If there's no moisture there, but there is below and surface temperatures are above freezing, we know not to forecast high snow totals. However, your weather app won't know that. Once again, this proves the necessity for humans to provide their input no matter how advanced technology becomes.

Weather apps certainly have proven their worth and have their place when it comes to getting a general idea of what the weather for a certain day or time is. Essentially, data is fed to computer models, which in turn both weather apps and meteorologists use, as both observe the same data. However, one can critically think and render specifics whereas the other provides whatever it's "fed". Without a doubt the technological advancements have come an almost unfathomable distance since the start of the 21st century! Though at the end of the day, you can't deny the input that humans provide to both understand the convolutedness the atmosphere facilitates, and what the forecast will be in the future. It's quite the feat!