

Meet Meghan Stockman

Meghan Stockman
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Why does your work for NOAA matter?

As forecasters, our main focus is resource protection, which is related to commerce. The main purpose of forecasting space weather storm events is to be able to give adequate warning to some of the major industries (i.e., power grids, airlines, GPS and oil pipelines) in the United States so the leaders of those industries can take action to ensure no major damage is sustained. A key point is that these leaders are not spending unnecessary money when conditions are quiet. For example, airlines use polar routes often to cut costs and time of travel when traveling from the United States to Asia. During a solar storm, the airlines may have to re-route further south, to ensure no communication gaps occur for the duration of the flight. Re-routing adds hours, millions of dollars in fuel and possible layovers and delays, so it is essential that they trust NOAA to alert them only when actions are necessary.



What do you enjoy the most about your work?

The challenge! We sometimes have very little data to work with and most of the data is fairly new so we are still very much in the learning process and will be for several years. There just isn't a way to stick satellites any closer to the Sun at this time, so as a plasma cloud makes its way to the Earth, it goes through roughly 92 million miles of space where we cannot see. The Sun is a fascinating and beautiful mystery and it seems every time we peel another layer of understanding, new questions arise.

Where do you do most of your work? In a lab? In field studies?

My work is centered in the Space Weather Forecast Office at NOAA's Boulder Campus. The forecast center is staffed 24 hours a day, 7 days a week with forecasters watching the Sun's every move.

What in your lab could you not live without?

Unfortunately some of the equipment I would consider essential is not intended for operational use, meaning if for some reason it breaks down, it will not be fixed on an emergency timeline. For example, NASA's Advanced Composition Explorer (ACE) spacecraft is our buoy, if you will, sitting 1 million miles away from the Earth directly between the Sun and Earth. After the 92 million miles of dead space I mentioned earlier, ACE is our first opportunity to see a Coronal Mass Ejection's (CME's) speed, density and magnetic field strength. Without this information, we have no way to measure how strong the CME is after its journey through space or how it might affect the Earth's magnetic field in the next 15-45 minutes. NOAA is currently working with NASA on a replacement spacecraft, which will be considered operationally essential. That will definitely be something we feel we cannot live without!

If you could invent any instrument to advance your research and cost were no object, what would it be? Why?

I would invent a series of satellites launched to head directly toward the Sun. Eventually the nearest to the sun would get too close and burn up, but it would be replaced by another shortly, if they were evenly spaced and somewhat close together. Having intermittent "glances" at the shape, size and magnetic orientation/strength of a plasma cloud headed our way would yield huge advances in our understanding and forecast ability of a CME. Our warning lead time would be extended and the forecast accuracy of the magnitude of the expected storm would also increase dramatically. Our ability to model future storms would also improve. This is an expensive idea, but money was no object in this scenario!

When did you know you wanted to pursue science?

My dad took me outside during a tornado warning when I was about 6 years old in Kansas. I always wanted to understand how a thunderstorm worked, so I ended up with a degree in atmospheric science and working as a weather forecaster in the Air Force. Space weather was introduced to me later in life, and I have been completely fascinated ever since.

What's at the top of your recommended reading list for someone wanting to explore a career in science?

I am a visual learner so my advice would be to get out and see what scientists are up to! Ask to spend a day with a scientist in a field that intrigues you and see what their day is actually like. Visit as many as possible to find the path that inspires you to ask questions. Science is all about the pursuit of unanswered questions.

And how about a personal favorite book?

I like puzzles, so generally mysteries that are scientifically based. Kathy Reichs and Dan Brown are two of my favorite authors.

What part of your job as a NOAA employee did you least expect to be doing?

I did not realize how much media exposure we had when I was hired. We end up filming for a lot of local television stations along with some major media outlets such as CNN, the BBC and IMAX.

Do you have an outside hobby?

My family and I love to be outdoors so skiing and hiking are where you will find me outside of work.

What would you be doing if you had not become a scientist?

I changed my major to theatre for a year in college, but I am guessing I would have been attracted to playing the roles of scientists there as well! Acting seems to be a venue that allows you to learn about pretty much everything so it would satisfy the geek in me!

Who is your favorite historical scientist and why?

Albert Einstein was a scientist who explored several different disciplines but also seemed to have a real appreciation of life. His "live in the moment" philosophy and his belief that imagination and curiosity are the keys to success influenced me as much as his scientific theories.