

Skills

- Proficient in Python and several modules including NumPy, SciPy, Pandas, geoPandas, netCDF4, xarray, ECCodes, boto3 (and botocore), multiprocessing, datetime, and logging.
- Amazon Web Services (AWS) certified associate solutions architect in building solutions leveraging the Elastic Compute Cloud (EC2), Lambda, Fargate, Simple Storage (S3), Simple Notification Service (SNS), Simple Queue Service (SQS), FSx for Lustre, Elastic Fabric Adapter (EFA), CloudWatch, SAM, CodeCommit, CodePipeline, DynamoDB, as well as the use of ParallelCluster for cloud high-performance computing (HPC) cluster creation and management.
- Well versed in the several different Linux environments with advanced utilization of shell scripting (Bash and csh shells) for workflow optimization and system management.
- Robust knowledge of numerical weather simulation systems including the Weather Research and Forecasting (WRF) modeling system and Finite Volume Cubed-Sphere Global Forecast System (FV3GFS) and their implementation in cloud (and bare metal) HPC environments.
- Advanced understanding of meteorological datasets including data acquisition, file formatting (including netCDF, GRIB1/2, binary), metadata, and data manipulation.
- Usage of a variety of scientific programming languages and data manipulation tools including QGIS, Structured Query Language (SQL), GrADS, Fortran, and LaTeX word processing.
- Strong scientific research background on dynamical and mesoscale meteorology with an emphasis on understanding meteorological processes using numerical weather modeling and advanced statistical analyses.
- Effective communicator of complex scientific and technical processes and ideas through presentations, publications, patents, meetings, and proposals.
- Conducting day-to-day personnel and project management including task prioritization, planning, and guidance for multiple employees and projects.

Certifications and Achievements

- AWS Certified Solutions Architect: Associate; Valid Through Nov 26 2025 ([Verification](#))

Experience

Maxar Technologies

Remote (in MD)

Principal Data Scientist and Engineer

November 2022 – present

- Technical lead for the award winning AWS cloud HPC solution developed by Maxar Technologies ([Link](#))
- Prioritizing, leading, and planning scientific research and development

Senior Data Scientist and Engineer

July 2020 – November 2022

- Leading, planning, and executing technical roadmaps for new products and initiatives
- Designing and implementing serverless cloud-based workflows for real-time data processing and analysis

Data Scientist and Engineer

July 2018 – July 2020

- Building cloud-based (AWS) parallelized processing and extraction environments to support client-focused solutions
- Architecting and maintaining cloud HPC numerical weather prediction systems and workflows
- Migrating and refactoring meteorological data processing and delivery applications for use in AWS

Cherokee Nation Businesses (NOAA Contractor)*Scientist III*

Silver Spring, MD

March 2018 – July 2018

- Supporting the National Earth System Prediction Capability (ESPC) through scientific, technological, and strategic guidance
- Identifying synthesizing, and orchestrating state-of-the-art research for operational use

Weather Analytics*Vice President for Earth Sciences*

Washington, DC

May 2016 – March 2018

- Wrote patents, including creation of workflow diagrams, that focus on key scientific and data innovations created by the company
- Conducted numerous meteorological dataset validation studies, including the spatiotemporal verification of gridded forecast and analysis data to non-gridded data such as ground station observations
- Spearheaded and managing strategic meteorological research and development initiatives critical to the improvement of the company's product line
- Created and maintaining several scientific computational environments, including HPC clusters, within AWS EC2
- Generated technological plans and cost estimates for business development and product innovation
- Led a team of meteorologists in the development and implementation of business-related weather solutions
- Oversaw day-to-day operations of several employees, products, and research-to-operation projects

*Vice President of Scientific Solutions**February 2016 – May 2016*

- Led several initiatives to enhance and create new weather applications for clients
- Managed team prioritization of numerous scientific research-to-operation projects
- Designed innovative approaches for the acquisition, curation, processing, and storage of new meteorological datasets
- Prepared proposals to secure business through Small Business Innovation Research (SBIR) solicitations

*Senior Director of Scientific Modeling**September 2015 – February 2016*

- Supervised a team of meteorologists and projects focused on enhancing existing business weather solutions
- Developed customized versions of short-term weather forecasting systems using the WRF model within AWS EC2

*Director of Scientific Modeling**June 2014 – September 2015*

- Led a team of meteorologists in the analysis and deployment of high spatial resolution weather datasets for various clients
- Designed and implemented customized versions of the WRF model for downscaling of historical weather data
- Developed infrastructure and code for the acquisition and processing of real-time weather products, such as the High-Resolution Rapid Refresh (HRRR), Global Forecast System (GFS), and Multi-Radar/Multi-Sensor System (MRMS)

Education**Doctor of Philosophy, Atmospheric and Oceanic Science***University of Maryland, College Park*

May 2014

*College Park, MD***– 2012 NASA Earth and Space Science Fellowship (NESSF) Recipient**

- * Proposal: *An Investigation of Tropical Cyclogenesis From African Easterly Waves*
- * Renewed for the 2013 and 2014 academic years

– 2012 Eugene Rasmusson Fellowship Award Recipient

- * Awarded annually by the Department of Atmospheric and Oceanic Science to an outstanding student who has advanced to candidacy

Master of Science, Atmospheric and Oceanic Science*University of Maryland, College Park*

May 2012

*College Park, MD***Bachelor of Science, Meteorology and Minor in Mathematics***Millersville University of Pennsylvania*

May 2009

Millersville, PA

Selected Patents, Publications, and Presentations

S. F. Cecelski, 2019: Running HPC in the cloud for global Numerical Weather Prediction. AWS re:Invent 2019: Powering global-scale predictive intelligence using HPC on AWS (AIM227-S), Las Vegas, NV, USA. [Recording](#); [Presentation](#).

Cousins, E. D. and **S. F. Cecelski**, inventors; Athenium LLC, assignee. 2020, Jan 14. Formulation and Delivery of Dynamic, Severity-Based Weather Peril Scoring. United States patent 10,534,784.

Cousins, E. D. and **S. F. Cecelski**, inventors; Athenium LLC, assignee. 2017, Nov 28. Automated Severity-Based Risk Scoring for Ice Storms and Freezing Rain. United States patent application 16/200,805.

Cecelski, S. F., L. A. Munchak, and S. T. Daigneault, inventors; Athenium LLC, assignee. 2017, Oct 11. Corrective Ensemble Forecasting System for Tropical Cyclones. United States patent application 15/666,959.

Jones, J., L. A. Munchak, and **S. F. Cecelski**, inventors; Athenium LLC, assignee. 2017, Aug 30. Radar Artifact Reduction System for the Detection of Hydrometeors. United States patent application 15/690,746.

Cecelski, S. F. and D.-L. Zhang, 2016: Genesis of Hurricane Julia (2010) within an African Easterly Wave: Sensitivity to ice microphysics. *Journal of Applied Meteorology and Climatology*, **55**, 79-92.

Cecelski, S., 2015: Python, Weather Data, and Amazon's Cloud Computing Services. 2015 Unidata Users Workshop - Data-Driven Geoscience: Applications, Opportunities, Trends, and Challenges, Boulder, CO, USA.

Zhu, L., D.-L. Zhang, **S. F. Cecelski**, and X. Shen, 2015: Genesis of Tropical Storm Debby (2006) within an African Easterly wave: Roles of the bottom-up and midlevel pouch processes. *Journal of the Atmospheric Sciences*, **72**, 2267-2285.

Cecelski, S. F., 2014: On The Genesis and Predictability of Hurricane Julia (2010). University of Maryland, <http://hdl.handle.net/1903/15241>, 195 pp.

Cecelski, S. F. and D.-L. Zhang, 2014: Genesis of Hurricane Julia (2010) within an African Easterly Wave: Sensitivity Analyses of WRF-LETKF Ensemble Forecasts. *Journal of the Atmospheric Sciences*, **71**, 3180-3201.

Cecelski, S. F., D.-L. Zhang, and T. Myoshi, 2014: Genesis of Hurricane Julia (2010) within an African Easterly Wave: Developing and Non-Developing Members from WRF-LETKF Ensemble Forecasts. *Journal of the Atmospheric Sciences*, **71**, 2763-2781.

Cecelski, S. F. and D.-L. Zhang, 2013: Genesis of Hurricane Julia (2010) within an African Easterly Wave: Low-Level Vortices and Upper-Level Warming. *Journal of the Atmospheric Sciences*, **70**, 3799-3817.