

Levi Cowan

Florida State University | Department of Earth, Ocean, and Atmospheric Science

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Current

- **Ph.D. candidate in tropical meteorology at Florida State University** August 2014-present
Studying the interactions of tropical cyclones with upper tropospheric environmental flow
Advisor: Dr. Robert Hart, Department of Earth, Ocean, and Atmospheric Science

Education

- **Bachelor of Science in Applied Physics with a Concentration in Atmospheric Physics, Magna Cum Laude**
University of Alaska Fairbanks (UAF), Fairbanks, AK
Advisor: Dr. Channon Price, Department of Physics
Awarded May 14, 2014

Final cumulative GPA: 3.88 | In-major: 3.93

Research Experience

- **Visiting Scientist at the National Hurricane Center, Miami, FL** June 16 – August 15, 2017
- Through the NCEP Visiting Scientist Program
- Studied the impact of upper tropospheric troughs and jets on TC intensification
- Observed and participated in numerous operational shifts during active Atlantic and Pacific TCs
- **Research Internship at the National Weather Center, Norman, OK** May-July 2013
- Investigated seasonal predictors of Oklahoma tornado activity at the National Weather Service, Norman, OK
- Wrote and presented a paper on my findings: *The Relationship of Precursory Precipitation and Synoptic-Scale Mid-Tropospheric Flow Patterns to Spring Tornado Activity in Oklahoma*
(Full manuscript: <http://www.caps.ou.edu/reu/reu13/papers/Cowan.pdf>)
- Presented at the 2014 AMS Annual Meeting

Conference Presentations

- **Cowan, L.** and R. Hart, 2016: Elucidating the Character of Atlantic Tropical Cyclone Trough Interactions in the Context of Intensity Change, AMS 32nd Conference on Hurricanes and Tropical Meteorology, San Juan, Puerto Rico
- [poster] **Cowan, L.** and R. Hart, 2016: Elucidating the Character of Favorable and Unfavorable Atlantic Tropical Cyclone Trough Interactions, 96th AMS Annual Meeting, New Orleans, Louisiana
- [poster] **Cowan, L.**, M. Austin, J. Kurtz, M. Scotten, and M. Day, 2013: The Relationship of Precursory Precipitation and Synoptic-Scale Mid-Tropospheric Flow Patterns to Spring Tornado Activity in Oklahoma, 94th AMS Annual Meeting, Atlanta, Georgia

Honors and Awards

- **Induction into Chi Epsilon Pi national honor society for meteorology students (2016)**
- **UAF Department of Physics Award for Outstanding Undergraduate Student in Physics (2013)**
- **UAF Physics Student Scholarship Award (2012 and 2013)**
- **Alaska Aerospace Development Corporation Scholarship (2010-2014)**
 - This award is given to students who demonstrate motivation, academic and leadership potential in mathematics, physics, engineering, business or a technical science field.
- **UAF College of Natural Science and Mathematics Dean's Scholarship (2012)**
- **Usibelli Coal Mine, Inc. Honors Scholarship (2012)**
- **UAF Honors Program Scholarship (2010 and 2011)**
- **UAF Cornerstone Scholarship (2010)**
- **Sourdough Reunion Memorial Scholarship (2013)**
- **University of Alaska Scholar Award (2010)**
 - This is awarded to the top ten percent of all graduating seniors from Alaska high schools.
- **Member of UAF Honors Program (2010-2013)**
- **Chancellor's List:** Fall 2011, Spring 2012, Fall 2012, Spring 2013, Spring 2014
- **Dean's List:** Fall 2010, Spring 2011, Fall 2013

Extracurricular Projects

- **Tropical cyclone forecasts in video and text format for the Atlantic basin**
 - Since 2005, I have written forecast discussions on Atlantic tropical cyclone activity. I have largely switched to a video format for these discussions during the last few years. Discussions since January 2012 are published on my own website: <https://www.tropicaltidbits.com/>. The purpose of these discussions is to provide an outlet for my passion for forecasting tropical cyclones, and to deliver quality analysis and information to my viewers.
- **Development of numerical model products and meteorological data visualization**
 - Since its inception in January 2012, I have used my website as a platform for developing graphical forecast products from numerical weather prediction model output (<https://www.tropicaltidbits.com/analysis/models/>). Real-time imagery is currently produced for numerous publicly available operational global models, ensemble systems, mesoscale regional models, and hurricane models. Other visualization products based on various meteorological datasets are also available, such as tropical cyclone aircraft reconnaissance, ATCF, reanalysis, surface observations, and others. This web page currently ranks among the most visited sources of numerical model output in the world.

Computer and Technical Skills/Experience

Operating Systems: Linux, Microsoft Windows

Programming and Scripting Languages:

- Extensive experience in Python and the GrADS plotting environment
- Experience in UNIX shell scripting

Web:

- Front-end development with HTML, CSS, Javascript, PHP
- Back-end web server maintenance and management under high load production environments
- Experience delivering dynamic web pages to the end-user with performance and efficiency in mind

Software:

- Experience in MATLAB/Octave, Microsoft Office, and a large variety of open source Linux software tools

Data Formats:

- Extensive experience working with meteorological data files like GRIB, netCDF, and text documents (e.g. CSV)

Skills/Experience:

- Visualization of gridded meteorological data (e.g. GRIB, netCDF) with GrADS and Python for public, real-time display through self-developed software
- Real-time analysis and dissemination of other various meteorological data sources (e.g. tropical cyclone aircraft reconnaissance, ATCF data tables, etc.)
- Web development and server maintenance

Employment

- Research Assistant at Florida State University (May 2015 - present)
- Teaching Assistant at Florida State University (August 2014 – May 2015)
- Guest housing custodian at UAF Conference Services (May-August 2012)
- Labor assistant at UAF Facilities Services carpentry shop (May-August 2011)

Interests

- Tropical cyclone prediction from daily to seasonal timescales, especially in the Atlantic Ocean
- Interaction of tropical cyclones with upper tropospheric troughs and jets and resulting modulations of tropical cyclone intensity
- Understanding and predicting tropical cyclone genesis
- Predicting seasonal tropical cyclone track clusters in the Atlantic basin and the associated risk of landfall
- Understanding the role of tropical cyclones in the Earth climate system and what drives changes in global and regional tropical cyclone activity
- Synoptic-scale weather prediction at medium-range lead times at which present-day computer models lack reliable skill (e.g. 5-15+ days)
- Visualization of meteorological data in easy to access formats (e.g. real-time imagery on the web)
- Programming in productive languages, especially Python
- Music, including playing the piano
 - Earned second place in the Marguerite Downey Alaska State Piano Competition in 2003 and an honorable mention in 2002
- Playing and spectating sports of many kinds, especially football, pickleball, tennis, ultimate frisbee, soccer, and dodgeball.

Memberships

- American Meteorological Society
- Chi Epsilon Pi national honor society for meteorology students

References

- Available upon request