

RESEARCH EXPERIENCE

Doctoral Research

University of Hawai'i at Mānoa

2010-2014

Investigating the governing factors behind rapid intensification of tropical storms and typhoons in the western North Pacific. The research involves collaboration with scientists at the National Oceanic and Atmospheric Administration (NOAA) Earth System Research Laboratory in Boulder, CO as well as U.S. Navy and U.S. Air Force forecasters at the Joint Typhoon Warning Center (JTWC) in Pearl Harbor, HI with the objective of improving intensity forecasts for typhoons and hurricanes. My collaboration with the military at the JTWC is sponsored by U.S. Pacific Command (USPACOM).

Federal STEP Intern

NOAA Earth System Research Lab

Summer 2010

As part of the Forecast Applications Branch/Global Systems Division/NOAA ESRL in Boulder, CO, wrote and organized GrADS scripts for use with Diapost (software from the Hurricane Research Division in Miami, FL) to visualize HWRF simulations of Hurricane Ike (2008). This was in support of the Unmanned Aerial Systems - Observing System Simulation Experiment (UAS-OSSE), a project aimed at improving our observations of hurricanes and the dynamics behind rapid intensification.

Masters Research

University of Oklahoma

2007-2010

Investigated the structure and evolution of a supercell in the outer-rainband region of a high-resolution, numerically simulated tropical cyclone ($D_x = D_y = 667$ m) using the three-dimensional, non-hydrostatic Straka Atmospheric Model. The simulated supercell structures resembled observed TC supercells, and it was hypothesized that vertical tilting of baroclinically generated horizontal vorticity may be an important factor in the development of TC supercells.

Undergraduate Honors Thesis

Cornell University

2004-2007

Investigated local minimum of tropical cyclogenesis in eastern Caribbean Sea. Analyzed wind data from NCEP Reanalysis and conducted statistical tests to identify pre-existing low-level divergence as a contributing factor. Awarded the Father James B. Macelwane Award by the AMS for best undergraduate research paper in the nation. Peer-reviewed and published in Feb. 2010 issue of *BAMS*.

NOAA Hollings Scholar Research Assistant

National Severe Storms Laboratory

Summer 2006

Assimilated 2003-2006 rain gauge data for use in the lab's Tar River Basin project of North Carolina (Coastal and Inland and Flood Observation and Warning Project). Evaluated biases in the lab's Quantitative Precipitation Estimate products through a case study. Presented the study at NOAA Hollings Scholars conference in Silver Spring, MD.

TEACHING EXPERIENCE

Lecturer – METR 2603 (Severe and Unusual Weather)

University of Oklahoma

Fall 2009

Served as primary instructor of METR 2603 (Severe and Unusual Weather), with a final enrollment of 64 students. Tailored course content to non-meteorology majors to raise understanding and awareness to severe weather causes, conditions, and response. Incorporated severe weather hazards training and safety into the curriculum. Also tailored some course content to the interests of aviation students, who were required to take this course as part of their FAA certification program.

Lecturer – METR 2023 (Intro. to Meteorology II)

University of Oklahoma

Summer 2008

Lectured the meteorology major's sophomore-level second semester course in atmospheric dynamics, synoptic, and mesoscale meteorology. Designed and presented all lectures, exams, and assigned all grades.

Lecturer – EAS 494 (Special Topics in Atmos. Science)

Cornell University

Spring 2007

Designed a new course for freshmen/sophomore atmospheric science majors. Served as head instructor and covered topics related to mesoscale/synoptic weather analysis and forecasting. Due to its success, this was later established as an official, permanent course at Cornell University, EAS 1340 (Weather Analysis and Forecasting).

Teaching Assistant – EAS 342 (Atmospheric Dynamics)

Cornell University

Spring 2007

Served as grader and teaching assistant for the junior-level atmospheric dynamics course at Cornell University.

Lab Instructor – EAS 133 (Basic Meteorology Lab)

Cornell University

Fall 2006

Served as instructor for an introductory meteorology course using hands-on methods of learning weather analysis and forecasting.

FIELD EXPERIENCE

Radar Scientist

DYNAMO Field Program

Fall 2011

Served as one of two scientists responsible for the operation of the TOGA C-band Doppler radar aboard the ship *R/V Roger Revelle* as part of the Dynamics of the Madden-Julian Oscillation (DYNAMO) international field program. The objective of this project was to collect data through a multi-platform approach to improve our understanding of the genesis of convection associated with the MJO. I was stationed on the ship for 5 weeks in the equatorial Indian Ocean from November into December 2011.

Mobile Mesonet Navigator & Team Leader

VORTEX 2 Field Program

Spring 2009/2010

Operated a mobile mesonet to collect data within tornadic supercell thunderstorms during the Verification of Rotation in Tornadoes Experiment 2 (VORTEX 2). Served as team leader and navigator for Mobile Mesonet #5 and #2, under the guidance of Drs. Paul Markowski and Yvette Richardson, PIs.

Hurricane Ike Radar Deployment

OU/NSSL

Fall 2008

Participated in a University of Oklahoma (OU) and National Severe Storms Laboratory (NSSL) intercept of Hurricane Ike at landfall. Deployed the NO-XP Dual-Polarization Mobile Doppler Radar to study the inner rainbands and boundary layer structure of the hurricane. Served under the guidance of Dr. Michael Biggerstaff.

FORECASTING & OPERATIONAL EXPERIENCE

Typhoon Duty Officer (in-training)

Joint Typhoon Warning Center

2011-present

Currently in training to certify as a Typhoon Duty Officer (TDO) at the U.S. Navy/Air Force Joint Typhoon Warning Center (JTWC). Located in Pearl Harbor, Hawaii, the JTWC is a Joint Task Force of the U.S. Pacific Command (USPACOM) responsible for forecasting 89% of the world's tropical cyclone activity. Serving on the front lines of operations as a TDO to issue forecasts and warnings to protect U.S. Government assets and personnel throughout the USPACOM Area of Responsibility, which includes the Pacific and Indian Ocean basins. Will be collaborating with USPACOM disaster response and humanitarian aid missions that rely on accurate forecasts.

Lead Forecaster & Shift Leader

Oklahoma Weather Lab

2007-2008

Supervised a team of student forecasters. Prepared forecasts for eight zones in the State of Oklahoma. Instructed undergraduate students in the practical applications of atmospheric dynamics theory to weather forecasting. Created podcasts and released forecasts to media.

National Weather Service Intern

WFO Binghamton, New York

Summer 2007

Wrote, prepared, and issued standard NWS products (ZFPs, AFDs, TAFs). Worked radar shift during severe weather staffing situations. Performed shift change briefings. Completed intern training drills.

On-Camera Broadcast Meteorologist

ICTV Ithaca, New York

Spring 2007

Served as on-camera meteorologist to an Emmy award-winning television station during severe weather. Provided real-time analyses of heavy snow event to the central New York community.

Weather Columnist

Cornell Daily Sun

2005-2007

Designed the weather page of the Cornell University campus newspaper. Created daily weather forecasts for the campus community. Wrote and published detailed weather synopses. Served as head columnist 2006-2007. Assigned shift schedules and trained other weather columnists.

Lead Forecaster

Cornell Weatherphone

2005-2007

Prepared forecasts, including weather synopses, for the Tompkins County, New York community and maintained the Cornell University weather hotline. Supervised the completion and dissemination of forecasts during my assigned shift.

Meteorology Intern for the Expert Team

The Weather Channel

Summer 2005

Forecasted tropical cyclone track and intensity under the guidance of Dr. Steve Lyons. Assisted with hurricane operations. Compiled tropical meteorology statistics for Tropical Updates. Developed a tropical weather

forecasting webpage. Created an online severe weather photo glossary for Dr. Greg Forbes as part of an internal training package for forecasters at The Weather Channel.

National Weather Service Volunteer

WFO Melbourne, Florida

2002-2003

Solicited damage reports from law enforcement and SKYWARN spotters. Called in to assist with warning coordination during severe weather events. Analyzed radar and surface data. Compiled post-storm damage reports. Gained operational meteorology experience and familiarity with AWIPS software.

INVITED PRESENTATIONS

- Zhang, C. and O. H. Shieh, 2012: DYNAMO. *11th Annual Stud. Conf.*, New Orleans, LA, Amer. Meteor. Soc.
Shieh, O. H., 2011: VORTEX2. *United States Air Force Academy*, Colorado Springs, CO.
Shieh, O. H., 2011: VORTEX2. *American Meteorological Society – Aloha Chapter*, Honolulu, HI.
Shieh, O. H., 2010: Internship and funding opportunities. *9th Annual Stud. Conf.*, Atlanta, GA, Amer. Meteor. Soc.

PUBLICATIONS & CONFERENCE PRESENTATIONS

- Shieh, O. H., S. M. Mackaro, 2011: HWRF Simulation of Hurricane Ike (2008). *91st American Meteorological Society Annual Meeting – Student Conference General Poster Session* (poster presentation), Seattle, WA, Amer. Meteor. Soc., S1.
Shieh, O. H., and S. J. Colucci, 2010: Local minimum of tropical cyclogenesis in the eastern Caribbean. *Bull. Amer. Meteor. Soc.*, **91**, 185–196.
Shieh, O., S. J. Colucci, 2008: Local minimum of tropical cyclogenesis in the eastern Caribbean Sea. *88th American Meteorological Society Annual Meeting – Student Conference General Poster Session* (poster presentation), New Orleans, LA, Amer. Meteor. Soc., P1.95.
Shieh, O., S. J. Colucci, 2007: Local minimum of tropical cyclogenesis in the eastern Caribbean Sea. *87th American Meteorological Society Annual Meeting – Symposium on Connections Between Mesoscale Processes and Climate Variability* (oral presentation), San Antonio, TX, Amer. Meteor. Soc.
Shieh, O., S. Van Cooten, 2006: Evaluation and assessment of NSSL high-resolution multi-sensor Quantitative Precipitation Estimates. *2006 NOAA Hollings/EPP Scholars Conference* (oral presentation), Silver Spring, MD, NOAA.

SKILLS & CERTIFICATIONS

Computing: UNIX • GrADS • MPI Supercomputing • PYTHON • FORTRAN • XHTML • PHP • CSS

Writing: Author of the following two books, available in all major bookstores:

We the Peoples: The Bus, The Journey, The Lessons (2010) – youth leadership and global dialogue
Journey on the Level (2011) – life philosophy and self-development

Foreign Languages: Mandarin Chinese (conversational) • Taiwanese (conversational) • Spanish (very limited)

Business: Founder of the following businesses:

The Elements Survival Training (www.ElementSurvival.com) – severe weather & outdoor safety training
The CP Bog – national online horticultural carnivorous plant nursery (2001-2010)

Medical: Adult CPR Certified (2009-2010) • Wilderness First Aid Certified (2009-2011) [American Red Cross]

Music: piano instructor • award-winning classical concert pianist • trumpeter