EDWARD J. CHARLESWORTH

PERSONAL INFORMATION

address	230 Widderdorfer Strasse Köln 50825 Germany
email	edward.charlesworth.science@gmail.com
phone	+49-176-23853650
citizenship	*United States*
place of birth	Portland, Oregon, USA
date of birth	February 22, 1992

EDUCATION

2017- Research Center Jülich, PhD Physics

Graduate Degrees

Advisor: Prof. Felix Plöger
This degree focuses on studying stratospheric processes and phenomenon using the Chemical Lagrangian Model of the Stratosphere (CLaMS). The core work involved is the coupling of CLaMS with a chemistry climate model (ECHAM) to create apply a Langrangian transport scheme in the stratosphere and upper troposphere, and to perform experiments with this model to understand the effects of the two transport schemes on stratospheric processes. The work is entirely funded by a scholarship from the Research Center Jülich. The degree is officially associated with the University of Wuppertal and is under the academic advisement of Prof. Michael Volk.

2014-2017 Colorado State University, MS Atmospheric Science

Masters of Science, Atmospheric Science

Advisor: Prof. Thomas Birner
This degree focused on studies in the tropical tropopause layer with a thesis component based on original research in the role of the Brewer-Dobson circulation in the tropical tropopause layer, investigating feedbacks between radiation and ozone chemistry there. In the course of the work, a novel single-column radiative-convective equilibrium model of temperature and ozone profiles was developed.

2010-2014 Seattle University, BS Mathematics, Applied Mathematics Specialization

Undergraduate Degrees

This degree included studies in asymptotics, Fourier analysis, nonlinear systems and dynamics, and computer simulations.

2010-2014 Seattle University, BS Chemistry

Bachelor of Science, Chemistry

This degree included studies in general, organic, inorganic, analytical, and physical chemistry with a focus on scientific writing and navigation of the scientific literature.

PUBLICATIONS

2020

E. J. Charlesworth, A. Dugstad, F. Fritsch, P. Jöckel, F. Ploeger: Impact of Lagrangian transport on lower-stratospheric transport timescales in a climate model, *Atmospheric Chemistry and Physics*, 20, 23, https://doi.org/10.5194/acp-20-15227-2020, 2020

2019

F. Ploeger, B. Legras, E. Charlesworth, X. Yan, M. Diallo, P. Konopka, T. Birner, M. Tao, A. Engel, M. Riese: How robust are stratospheric age of air trends from different reanalyses?, *Atmospheric Chemistry and Physics*, 19, 9, https://doi.org/10.5194/acp-19-6085-2019, 2019

E. J. Charlesworth, T. Birner, J. R. Albers: Ozone Transport-Radiation Feedbacks in the Tropical Tropopause Layer, *Geophysical Research Letters*, 46, 23, https://doi.org/10.1029/2019GL084679, 2019

2018

Y. Zou, E. Charlesworth, C. Q. Yin, X. L. Yan, X. J. Deng, F. Li: The weekday/weekend ozone differences induced by the emssion change during summer and autumn in Quangzhuo, China, *Atmospheric Environment*, 199, 10.1016/j.atmosenv.2018.11.019, 2018

2017

T. Birner, E. Charlesworth: On the relative importance of radiative and dynamical heating for tropical tropopause temperatures, *Journal of Geophysical Research*, 112, 13, https://doi.org/10.1002/2016JD026445, 2017

AWARDS AND HONORS

Scholarship

2017 · Scholarship from the Research Center Jülich, funding PhD work there (see above) in full.

Eagle Scout

2010 · Rank of Eagle Scout, Troop 351, Portland, Oregon, Boy Scouts of America

PRESENTATIONS

Oral Presentations

February 2019 · Invited colloquium presentation at the Max Planck Institute for Meteorology – Hamburg, Germany – Title: *EMAC-CLaMS: A Climate Model with Lagrangian Tracer Transport in the Stratosphere*.

June 2018 · Oral presentation at MESSy Conference – Karlsruhe, Germany – Title: *Status of MESSy/CLaMS and EMAC CLaMS*.

March 2018 · Oral presentation at SPARC UTLS Conference – Mainz, Germany – Title: *Transport-Radiation Feedbacks of Ozone in the Tropical Tropopause Layer*.

June 2017 · AMS Conference on Middle Atmospheres – Portland, Oregon, USA – Title: *Transport-Radiation Feedbacks of Ozone in the Tropical Tropopause Layer*.

Spring 2014 · Oral presentation of mathematics research at the Seattle University Undergraduate Research Association undergraduate research conference. – Seattle, Washington – Title: *Pressure Along Streamlines: Work on a New Method for Detecting Tsunamis*.

Spring 2014 · Oral presentation of chemistry research at the Seattle University Undergraduate Research Association undergraduate research conference. – Seattle, Washington – Title: *Laser-Induced Breakdown Spectroscopy: Particle Radius and Signal Strength*.

Winter 2014 · Oral presentation of mathematics research during weekly Seattle University Mathematics Departmental Colloquim. – Seattle, Washington – Title: *Pressure Along Streamlines: Preliminary Steps of a New Method for Detecting Tsunamis*.

Winter 2014 · Oral presentation of mathematics research during weekly Joint University of Wahington Applied Mathematics Department and Seattle University Mathetmatics Department water waves mathematics seminar. – Seattle, Washington – Title: *Pressure Along Streamlines: Preliminary Steps of a New Method for Detecting Tsunamis*.

Spring 2013 · Oral presentation of mathematics research at the Seattle University Undergraduate Research Association undergraduate research conference. – Seattle, Washington – Title: *Pressure Along Streamlines: Preliminary Steps of a New Method for Detecting Tsunamis*.

Spring 2013 · Oral presentation of mathematics research) at NUMS undergraduate research conference, Pacific Lutheran University – Tacoma, Washington – Title: *Pressure Change Along Streamlines - A New Method to Determine Wave Height: Preliminary Results*.

Poster Presentation

Spring 2013 · Poster Presentation of mathematics research (above) at IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena – Athens, Georgia – Title: *Streamline Pressure Change under a Stokes Wave*.

PEDAGOGICAL EXPERIENCE

Tutoring

Fall 2012 · International Tutor Training Program Certification - Level 2 Tutor Certification

Spring 2012 · International Tutor Training Program Certification - Level 1 Tutor Certification

UNDERGRADUATE RESEARCH EXPERIENCE

2012–2014 Research Assistant, Seattle University Mathematics Department

SU Math Dept.

Project: Development of mathematics for an alternative method of tsunami detection utilizing pressure measurements along streamlines through a wave. Gained experience in solving inverse problems, computational mathematics using Python and MATLAB, fluid mechanics, and reading the applied mathematical literature. Funded in part by the NSF (grant number DMS-1313049).

2012–2014 Seattle University – Spectroscopic Physical Chemistry

Physical Chemistry

Analysis of aerosolized and non-aerosolized nanoparticles using laser-induced breakdown spectroscopy (LIBS). Gained experience in experimental set-up, computational data analysis with MATLAB, carpentry, and reading the spectroscopic scientific literature.

Summer 2012 Research Intern, Leibniz Institute of Tropospheric Research — Leipzig, Germany

TROPOS

Investigated correlations between organic acid and trace metal concentrations in atmospheric aerosols. Gained experience in analytical chemistry, atmospheric chemistry, data analysis, and thrifty travelling. Funded by the German Academic Exchange Service (DAAD) through an award in the RISE (Research Internships in Science and Engineering) program.

Summer 2013 Graduate Research Assistant, Seattle University Law School

SU Law School

Analyzed survey data on attitudes towards religion and democracy in Turkey. Gained experience with statistical mathematics programs including SPSS and JMP. Funded by the SU Law School.

COMPUTER SKILLS

Basic	C, R, IDL
Intermediate	Mathematica
Proficient	Python, MATLAB, FORTRAN, LaTeX

LANGUAGE SKILLS

Languages	English · Native
	German · Fluent

May 9, 2021