Zachary C.J. Decker – Curriculum Vitae

Zachary.Decker@PSI.ch // ZacharyCJDecker@gmail.com // ZacharyCJDecker.com

About me

I am an atmospheric scientist specializing in operating atmospheric instrumentation to study air quality impacts from aerosols and gases. I go where we need answers, whether that be a flying laboratory through wildfire smoke or a long-term monitoring station atop the Swiss Alps. I am motivated by my love for the outdoors and to affect positive change for the environment.

Education

Aug 2016 – Aug 2021	Ph.D.	University of Colorado at Boulder (CU) Physical Chemistry
Aug 2012 – Jan 2016	B.A.	New College of Florida, Florida's Honors College (NCF) Honors / Physical Chemistry

Appointments

Jan 2022 – Current	Postdoctoral Fellow Paul Scherrer Institute (PSI), Switzerland
Aug 2021 – Dec 2021	Career Break Camping and hiking across Western North America
May 2016 – Jul 2021	Graduate Research Assistant Cooperative Institute for Research in Environmental Sciences (CIRES) National Oceanic and Atmospheric Administration (NOAA)

Honors, Awards, and Fellowships

- Irish Research Council Postdoctoral Fellowship (*declined*): 2021
- Bronze Medal – CIRES: 2021
- Administrator Award – CIRES: 2021
- Group Achievement Award – NASA, for FIREX-AQ: 2021
- Graduate Research Fellowship – CIRES: 2019
- Outstanding Student Presentation Award – American Geophysical Union: 2018
- 1st place at the 12th Annual Earth System and Space Science Conference: 2018

Synergistic Activities

Science Outreach

Senior Editor at Science Buffs: 2017 – 2021
CU Wizards organizer and performer: 2019 – 2021
NOAA Outreach presenter at conferences: 2018 – 2020

Mentoring

Ph.D. student mentor at PSI: 2022
Hiking guide and Environmental Steward in the CU Boulder Hiking Club: 2020 – 2022
Graduate student peer mentor at CU Boulder: 2020

Teaching

STEM tutoring for middle to college level: 2013 – 2021
Teaching Assistant in Chemistry: 2013 – 2017
Teacher for SAT/ACT prep courses at the IMG Academy: 2014 – 2016

Select Publications & Metrics – See google scholar for up-to-date metrics
Total publications: 12 [4 first author] // Times cited: 194 // H-index: 8 (Clarivate)

Submitted **Decker Z. C. J.**, Novak G., …, Brown S.S. Airborne Observations Constrain Heterogeneous Nitrogen and Halogen Chemistry on Tropospheric and Stratospheric Biomass Burning Aerosol

Nov 2021 **Decker Z. C. J.**, Wang S., …, Brown S.S. A Novel Analysis to Quantify Plume Crosswind Heterogeneity Applied to Biomass Burning Smoke *Environ. Sci. Technol.* 2021, 55, 23, 15646 – 15657, https://doi.org/10.1021/acs.est.1c03803

Jan 2019 **Decker Z. C. J.**, Zarzana K. J., ..., Brown S.S., Nighttime chemical transformation in biomass burning plumes: a box model analysis initialized with aircraft observations *Environ. Sci. Technol.* 2019, 53, 5, 2529-2538. doi:10.1021/acs.est.8b05359

Select Field Research Campaigns

Total deployments: 8 // Platforms: Ground (5), Mobile (2), Aircraft (1), Chamber (1)

Sep 2021 – May 2022 **APPROPRIATE** | Campaign lead for gas and particle comp. measurements
Aviation Plume PROPeRtIes AT point of Exposure

Aug 2021 – Sep 2021 **CBC** | Instrument lead for VOC measurements
Carbon Balance Campaign at Jungfraujoch

Jun 2019 – Sep 2019 **FIREX-AQ** | Co-operator for VOC measurements
Fire Influence on Regional to Global Environments Experiment - Air Quality

May 2017 – Jul 2017 **FAST-LVOS** | Instrument lead for Nitrogen Oxides measurements
Fires, Asian, and Stratospheric Transport-Las Vegas Ozone Study

Conferences

Talks: 6 Invited Talks: 1 Posters: 7
- European Aerosol Conference (*2023*)
- Zürich Nanoparticle Conference (*2023)*
- International Aerosol Conference (2022)
- American Geophysical Union (2018 – 2021)
- American Meteorological Society (2021, 2023)
- CIMS Users Meetings (2018, 2022 - 2023)
- Atmospheric Chemical Mechanisms (2020)

Software Proficiencies

- Matlab – Fluent
- Igor Pro – Fluent
- Labview – Proficient
- Adobe Illustrator – Fluent
- Microsoft Office - Fluent

Modeling Experience

Box Modeling (Ph.D. + 2 years)
Ab-inito (B.A. + Ph.D.)

Instrument Experience

Measurement of Aerosol Properties
- Mass Spectrometry – EESI-MS, AMS
  2 years (Lab & ground)
- Particle Sizing and Counts– AAC, SMPS, CPC
  2 years (Lab & ground)
- Analysis – above + LAS, UHSAS, NAIC, CIC
  Ph.D. + 2 years

Measurement of Trace Gasses
- Spectroscopy – CRD & CE
  B.A. + Ph.D. + 2 years (Lab, mobile, ground, chamber)
- Mass Spectrometry – VOCUS H^+ & CIMS I^-
  Ph.D. + 2 years (Lab, mobile, aircraft, ground)
- Analysis – above instruments
  B.A. + Ph.D. + 2 years