

Anna Possner

Curriculum Vitae

Department of Global Ecology
Carnegie Institution for Science

+1 630 394 0619

✉ apossner@carnegiescience.edu

Scientific interests

The study of aerosol-cloud interactions in boundary layer clouds, their radiative forcing and dynamics on a process scale. In particular I focus on the identification and quantification of climate relevant processes in this region of the atmosphere.

Education

- 2011–2014: **PhD**, *ETH*, Zurich, Switzerland.
Doctoral studies in Atmospheric and Climate Science.
Thesis: “The dynamics and microphysics of atmospheric ship tracks at the mesoscale”.
- 10/2010– **Master Thesis**, *MPI for Meteorology*, Hamburg, Germany.
03/2011: Thesis under supervision of Hauke Schmidt (MPI) and David Stevenson (University of Edinburgh) on “The resolution dependency of simulated tracer transport into the Antarctic polar vortex in ECHAM6”.
- 2006–2011: **MPhys**, *University of Edinburgh*, Edinburgh, Scotland.
Master in “Mathematical Physics” at the University of Edinburgh.
- 1999–2006: **Abitur**, *Adolf Reichwein Gymnasium*, Jena, Germany.
higher education entrance qualification
- 2003: **visiting student**, *Taylor Allderdice High School*, Pittsburgh, USA.

Professional Experience

- 2016–present **PostDoc**, *Carnegie*, Stanford, USA.
Researcher in atmospheric sciences focusing on cloud processes and geophysical limitations of wind energy
- 2014–2016 **PostDoc**, *ETH*, Zurich, Switzerland.
Researcher in atmospheric sciences focusing on ship tracks in warm- and mixed-phase clouds
- 2011–2014 **PhD Candidate**, *ETH*, Zurich, Switzerland.
Main foci of research:
1) Boundary layer processes and parameterisations.
2) Aerosol cloud interactions in warm-phase ship tracks.
- 2009 **Intern (3 months) at MPI for Meteorology**, *MPI*, Hamburg, Germany.
Researching global CAPE distributions to better understand convective triggering in ECHAM5 (Reference below).
- 2008 **Intern (3 months) at Carl Zeiss Microlmaging GmbH**, *Carl Zeiss Jena*, Jena, Germany.
Measurements and characterisation of light emitting sources, heat stress tests and coding of analysis tools.

Teaching Experience

- 2016 **Lecturer**, Summer school on "Aerosol-Cloud Interactions", ICTP, Trieste, Italy.
- 2016 – **Supervision of PhD student.**
present Kilometer scale and LES simulations of Arctic mixed-phase clouds
- 2012–2015 **Supervision of master students.**
worked with 3 master students on:
1) Occurrence and forecast of low stratus clouds over Switzerland
2) Resilience of Arctic mixed-phase clouds during the M-PACE campaign in the COSMO model
3) Impact of Residential Woodburning on the Swiss Climate.
- 2012–2013 **Assistant**, Master course by Prof. Christoph Schär and Prof. U. Lohmann: *Numerical Modelling of Weather and Climate*, **including lectures**, ETH Zurich.
- 2011–2013 **Assistant**, Bachelor course by Dr. Olaf Stetzer: *Observational networks*, ETH Zurich.

Publications

- **A. Possner** & K. Caldeira (2017). Geophysical potential for wind energy over the open oceans, PNAS, doi:10.1073/pnas.1705710114.
- F. Glassmeier, **A. Possner**, B. Vogel, H. Vogel and U. Lohmann (2017). A comparison of two chemistry and aerosol schemes on the regional scale and resulting impact on radiative properties and warm and cold aerosol-cloud interactions, *Atm. Chem. Phys. Disc.*, doi:10.5194/acp-2016-1092.
- **Possner, A.**, A. Ekman and U. Lohmann (2017). Cloud response and feedback processes in stratiform mixed-phase clouds perturbed by ship exhaust, *Geophys. Res. Lett.*, doi:10.1002/2016GL071358.
- **Possner, A.**, E. Zubler and U. Lohmann and C. Schär (2016). The resolution dependence of cloud effects and ship-induced aerosol-cloud interactions in marine stratocumulus, *J. Geophys. Res.*, doi:10.1002/2015JD024685.
- **Possner, A.**, E. Zubler and U. Lohmann and C. Schär (2015). Real-case simulations of aerosol cloud interactions in ship tracks over the Bay of Biscay, *Atmos. Chem. and Phys.*, doi:10.5194/acp-15-2185-2015.
- **Possner, A.**, E. Zubler and O. Fuhrer and U. Lohmann and C. Schär (2014). A case study in modeling low-lying inversions and stratocumulus cloud cover in the Bay of Biscay, *Weather and Forecasting*, doi:10.1175/WAF-D-13-00039.1.

Awards and Funding

- 2015 Co-PI on Swiss Supercomputing Center Production Proposal on: “Evaluating Aerosol Cloud Interactions at the Regional Scale” (1.6M SU for 2 years).
- 2012 Swiss Supercomputing Center: Poster Award on: “Cloud Resolving Climate Simulations”.
- 2010 University of Edinburgh: Class Medal for Mathematical Physics Senior Honours (top of class).
- 2007,2008 University of Edinburgh: Lang Scholarship and Neil Arnott Scholarship for academic achievement (top 5% of class).

Reviewing activities

- 2014 – 2017 Reviewer for: Atmospheric Chemistry and Physics (ACP), Journal of Geophysical Research (JGR), Q. J. Roy. Met. Soc. (QJRMS), Geoscientific Model Development (GMD), Environmental Research Letters (ERL)

Skills

- Languages German (native), English (fluent), French (basic)
- Programming *Proficient*: Fortran, NCL, CDO, CSH, BASH, SVN. *Basic*: Python, C++, IDL.
- Modeling *development*: COSMO, *coding and application*: ECHAM, CESM, WRF.

Selected Presentations

- **University of Stockholm 2017**, Sweden. “Ship tracks: a framework for ACI evaluation in marine stratocumulus” (**invited**).
- **Meteorology and Climate - Modeling for Air Quality 2015**, UC Davis, Sacramento, USA. “Ship tracks: a framework for ACI evaluation in warm-phase stratocumulus” (**invited**).
- **Seminar talks 2015** at, Berkeley National Laboratory, Lawrence Livermore National Laboratory, Scripps San Diego, USA. “Ship tracks: a framework for ACI evaluation in warm-phase stratocumulus”.
- **Symposium on coupled chemistry-meteorology/climate modeling 2015**, WMO Headquarters in Geneva, Switzerland. “Uncertainties in climate prediction: The influence of aerosol particles on clouds and climate”.
- **EGU General Assembly 2014**, Vienna, Austria. “Real Case Simulations of Aerosol-Cloud Interactions in Ship Tracks over the Bay of Biscay”.
- **AMS–94th Annual Meeting 2014**, Atlanta, USA. “A case study on Ship Tracks in the Bay of Biscay”.
- **EGU General Assembly 2013**, Vienna, Austria. “A Case-study in Forecasting Low-lying Inversions and Stratocumulus Cloud Cover in the Bay of Biscay”.