Robert J. Allen

University of California, Riverside
Department of Earth & Planetary Sciences
Riverside, CA 92521 USA

Phone: (951) 992-9688
https://rjallen3.wixsite.com/acdc/
rjallen@ucr.edu

PROFESSIONAL PREPARATION

Yale University, New Haven, CT	Atmos., Ocean and Climate Dyn.	Ph. D.	2009
Yale University, New Haven, CT	Atmos., Ocean and Climate Dyn.	M. Phil.	2004
Cornell University, Ithaca, NY	Applied Climatology	M.S.	2003
Cornell University, Ithaca, NY	Atmospheric Science	B.S.	1997

APPOINTMENTS

Full Professor	University of California, Riverside	07/2023-present
Associate Professor	University of California, Riverside	07/2016-06/2023
Assistant Professor	University of California, Riverside	07/2011-06/2016
Postdoctoral Scholar	Scripps Institution of Oceanography	11/2010-07/2011
Postdoctoral Scholar	University of California, Irvine	11/2008-11/2010

PUBLICATIONS IN LAST ~FIVE YEARS (75 Total Peer-Reviewed Publications)

(Bold = Group Member; * = Student Author)

***Zhao, X**., **Allen, R.J**., 2019. Strengthening of the Walker circulation in recent decades and the role of natural sea surface temperature variability. *Environmental Research Communications*. Vol 1. (2), 021003.

Allen, R.J., ***Hassan, T**., Randles, C.A., Su, H., 2019. Enhanced land-sea warming contrast elevates aerosol pollution in a warmer world. *Nature Climate Change*. Vol. 9 (4), 300.

Allen, R.J., ***Amiri-Farahani, A**., Lamarque, J.-F., Smith, C., Shindell, D., ***Hassan, T**., Chung, C.E., 2019. Observationally constrained aerosol–cloud semi-direct effects. *npj Climate and Atmospheric Science.* Vol. 2 **(**16)

***Amiri-Farahani, A**., **Allen, R.J**., Li, K.-F., Chu, J.-E., 2019. The semi-direct effect of combined dust and sea salt aerosols in a multi-model analysis. *Geophys. Res. Lett*., 46.

***Park, S.**, **Allen, R. J**., Lim, C.H., 2020. A likely increase in fine particulate matter and premature mortality under future climate change. *Air. Qual. Atmos. Health*, 13, 143–151.

***Amiri-Farahani, A.**, **Allen, R.J.,** Li, K.-F., Nabat, P., Westervelt, D.M., 2020. A La Nina-like climate response to south African biomass burning aerosol in CESM simulations. *Journal of Geophysical Research: Atmospheres*, 125, e2019JD031832.

***Zhao, X.**, **Allen, R.J**., Wood, T., Maycock, A.C., 2020. Tropical belt width proportionately more sensitive to aerosols than greenhouse gases. *Geophys. Res. Lett*., 47.

Allen, R. J., Turnock, S., Nabat, P., et al., 2020. Climate and air quality impacts due to mitigation of non-methane near-term climate forcers, *Atmos. Chem. Phys*., 20, 9641–9663.

Turnock, S. T., **Allen, R. J**., Andrews, M., Bauer, S. E., et al. 2020. Historical and future changes in air pollutants from CMIP6 models, *Atmos. Chem. Phys* 20, 14547–14579, https://doi.org/10.5194/acp-20-14547-2020.

*Ma, X., Liu, W., **Allen, R.J**., *et al.* 2020. Dependence of regional ocean heat uptake on anthropogenic warming scenarios. *Sci. Adv* .**6**, eabc0303, DOI:10.1126/sciadv.abc0303

Allen, R. J., Horowitz, L. W., Naik, V., Oshima, N. et al., 2021. Significant climate benefits from near-term climate forcer mitigation in spite of aerosol reductions. *Environ. Res. Lett.* 16, 034010, **DOI** 10.1088/1748-9326/abe06b.

***Hassan, T**., **Allen, R. J**., Liu, W., and Randles, C. A., 2021. Anthropogenic aerosol forcing of the Atlantic meridional overturning circulation and the associated mechanisms in CMIP6 models, *Atmos. Chem. Phys*., 21, 5821–5846, https://doi.org/10.5194/acp-21-5821-2021.

***Zhao, X**., **Allen, R. J**., & Thomson, E. S., 2021. An implicit air quality bias due to the state of pristine aerosol. *Earth's Future*, 9, e2021EF001979.

Shim S, Sung H, Kwon S, Kim J, Lee J, Sun M, Song J, Ha J, Byun Y, Kim Y, …**Allen, R.J**… et al., 2021. Regional Features of Long-Term Exposure to $PM_{2.5}$ Air Quality over Asia under SSP Scenarios Based on CMIP6 Models. *International Journal of Environmental Research and Public Health*, 18(13):6817.

Allen, R.J. and ***Zhao, X**., 2022. Anthropogenic aerosol impacts on Pacific Coast precipitation in CMIP6 models. *Environ. Res.: Climate* **1** 015005 **DOI** 10.1088/2752-5295/ac7d68.

Turnock, S. T., **Allen, R. J.,** Archibald, A. T., Dalvi, M., Folberth, G., Griffiths, P. T., et al., 2022. The future climate and air quality response from different near-term climate forcer, climate, and land-use scenarios using UKESM1. *Earth's Future*, 10, e2022EF002687.

***Hassan, T**., **Allen, R.J**., Liu, W. *et al.*, 2022. Air quality improvements are projected to weaken the Atlantic meridional overturning circulation through radiative forcing effects. *Commun Earth Environ* **3**, 149, https://doi.org/10.1038/s43247-022-00476-9.

Wilcox, L. J., **Allen, R. J**., Samset, B. H., Bollasina, M. A., et al, 2023. The Regional Aerosol Model Intercomparison Project (RAMIP*), Geosci. Model Dev*., 16, 4451–4479, https://doi.org/10.5194/gmd-16-4451-2023.

*Li, S., Liu, W., **Allen, R.J**. *et al.* Ocean heat uptake and interbasin redistribution driven by anthropogenic aerosols and greenhouse gases, 2023. *Nat. Geosci.* **16**, 695–703, https://doi.org/10.1038/s41561-023-01219-x.

Persad, G., Samset, B. H., Wilcox, L. J., **Allen, R. J**., *et al* 2023. Rapidly evolving aerosol emissions are a dangerous omission from near-term climate risk assessments. *Environ. Res.: Climate* **2** 032001 **DOI** 10.1088/2752-5295/acd6af.

Allen, R.J., ***Zhao, X**., Randles, C.A. *et al.* 2023. Surface warming and wetting due to methane's long-wave radiative effects muted by short-wave absorption. *Nat. Geosci.* **16**, 314–320, https://doi.org/10.1038/s41561-023-01144-z.

***Gomez, J**., **Allen, R.J.,** Turnock, S.T. *et al.*, 2023. The projected future degradation in air quality is caused by more abundant natural aerosols in a warmer world. *Commun Earth Environ* **4**, 22, https://doi.org/10.1038/s43247-023-00688-7.

Allen, R.J., *Gomez, J., Horowitz, L.W. *et al.*, 2024. Enhanced future vegetation growth with elevated carbon dioxide concentrations could increase fire activity. *Commun Earth Environ* **5**, 54,. https://doi.org/10.1038/s43247-024-01228-7.

Fiedler, S., Naik, V., O'Connor, F. M., Smith, C. J., Griffiths, P., Kramer, R. J., Takemura, T., **Allen, R. J.**, Im, U., Kasoar, M., Modak, A., Turnock, S., Voulgarakis, A., Watson-Parris, D., Westervelt, D. M., Wilcox, L. J., Zhao, A., Collins, W. J., Schulz, M., … Forster, P. M. (2024). Interactions between atmospheric composition and climate change – progress in understanding and future opportunities from AerChemMIP, PDRMIP, and RFMIP. *Geoscientific Model Development,* **17**(6), 2387–2417. https://doi.org/10.5194/gmd-17-2387-2024.

*Ren, X., Liu, W., **Allen, R. J.**, & Song, S.-Y. (2024). Distinct anthropogenic greenhouse gas and aerosol induced marine heatwaves. *Environmental Research: Climate*, **3**(1), 015004. https://doi.org/10.1088/2752-5295/ad13ac.

Allen, R. J., *Vega, C., *Yao, E., & Liu, W. (2024). Impact of industrial versus biomass burning aerosols on the Atlantic Meridional Overturning Circulation. *Npj Climate and Atmospheric Science*, **7**(1). https://doi.org/10.1038/s41612-024-00602-8

Allen, R. J., Samset, B. H., Wilcox, L. J., & Fisher, R. A. (2024). Are Northern Hemisphere boreal forest fires more sensitive to future aerosol mitigation than to greenhouse gas–driven warming? *Science Advances*, **10**(13). https://doi.org/10.1126/sciadv.adl4007

***Gomez, J. L., Allen, R. J**., & Li, K.-F. (2024). California wildfire smoke contributes to a positive atmospheric temperature anomaly over the western United States. *Atmospheric Chemistry and Physics*, **24**(11), 6937–6963. https://doi.org/10.5194/acp-24-6937-2024

*Kalisoras, A., Georgoulias, A. K., Akritidis, D., **Allen, R. J.**, Naik, V., Kuo, C., Szopa, S., Nabat, P., Olivié, D., van Noije, T., Le Sager, P., Neubauer, D., Oshima, N., Mulcahy, J., Horowitz, L. W., & Zanis, P. (2024). Decomposing the effective radiative forcing of anthropogenic aerosols based on CMIP6 Earth system models. *Atmospheric Chemistry and Physics*, **24**(13), 7837–7872. https://doi.org/10.5194/acp-24-7837-2024

Allen, R. J., ***Zhao, X.**, Randles, C. A., Kramer, R. J., Samset, B. H., & Smith, C. J. (2024). Present-day methane shortwave absorption mutes surface warming relative to preindustrial conditions. *Atmospheric Chemistry and Physics,* **24**(19), 11207–11226. https://doi.org/10.5194/acp-24-11207-2024

Samset, B. H., Wilcox, L. J., & **Allen, R. J.** (2024). Broader research efforts and assessments needed to uncover the complex climate effects of regional changes in aerosol emissions. *PLOS Climate*, **3**(10), e0000508. https://doi.org/10.1371/journal.pclm.0000508

Watson-Parris, D., Wilcox, L. J., Stjern, C. W., **Allen, R. J.**, Persad, G., Bollasina, M. A., Ekman, A. M. L., Iles, C. E., Joshi, M., Lund, M. T., McCoy, D., Westervelt, D. M., Williams, A. I. L., & Samset, B. H. (2025). Surface temperature effects of recent reductions in shipping SO2 emissions are within internal variability. *Atmospheric Chemistry and Physics*, **25**(8), 4443–4454. https://doi.org/10.5194/acp-25-4443-2025

Allen, R. J., *Lee, Y.-C., *Thomas, A., *Duarte, D., *Mimi, M. S., *Li, K.-Y., *Wenzel, B., *Jeon, J.-G., & Clifton, O. E. (2025). Atmospheric chemistry enhances the climate mitigation potential of tree restoration. *Communications Earth & Environment*, **6**(1). https://doi.org/10.1038/s43247-025-02343-9

Samset, B. H., Wilcox, L. J., **Allen, R. J.,** Stjern, C. W., Lund, M. T., Ahmadi, S., Ekman, A., Elling, M. T., Fraser-Leach, L., Griffiths, P., Keeble, J., Koshiro, T., Kushner, P., Lewinschal, A., Makkonen, R., Merikanto, J., Nabat, P., Narazenko, L., O'Donnell, D., … Westervelt, D. M. (2025). East Asian aerosol cleanup has likely contributed to the recent acceleration in global warming. *Communications Earth & Environment*, **6**(1). https://doi.org/10.1038/s43247-025-02527-3

Luo, F., Samset, B. H., Stjern, C. W., Joshi, M., Wilcox, L. J., **Allen, R. J.**, Hua, W., & Li, S. (2025). Physical processes influencing the Asian climate due to black carbon emission over East Asia and South Asia. *Atmospheric Chemistry and Physics*, **25**(14), 7647–7667. https://doi.org/10.5194/acp-25-7647-2025

Griffiths, P. T., Wilcox, L. J., **Allen, R. J.**, Naik, V., O'Connor, F. M., Prather, M., Archibald, A., Brown, F., Deushi, M., Collins, W., Fiedler, S., Oshima, N., Murray, L. T., Samset, B. H., Smith, C., Turnock, S., Watson-Parris, D., & Young, P. J. (2025). Opinion: The role of AerChemMIP in advancing climate and air quality research. *Atmospheric Chemistry and Physics*, **25**(14), 8289–8328. https://doi.org/10.5194/acp-25-8289-2025

Gomez, J.L., Allen, R.J.**, Horowitz, L.W., Turnock, S. T., Fisher, R. A., Clifton, O. E., Mignone, B. K., Shevliakova, E. and Malyshev, S. Climate effects of a future net forestation scenario in CMIP6 models. *npj Clim Atmos Sci.,8**, 297 (2025). https://doi.org/10.1038/s41612-025-01127-4

RECENT INVITED TALKS

- 02/2024 *Idealized CO2 increases drive enhanced fire activity due to vegetation and the CO2 fertilization effect*. National Center for Atmospheric Research.
- 10/2023 *Are Northern Hemisphere boreal forest fires more sensitive to future aerosol mitigation than to greenhouse gas driven warming?* Department of Chemistry and Molecular Biology, University of Gothenburg, Gothenburg Sweden.
- 10/2023 *Are Northern Hemisphere boreal forest fires more sensitive to future aerosol mitigation than to greenhouse gas driven warming?* Centre for International Climate and Environmental Research, Oslo, Norway.
- 05/2021 *Significant climate benefits from near-term climate forcer mitigation in spite of aerosol reductions*. 4th Annual BREATHE Spring Workshop, Riverside, CA.
- 05/2021 *Aerosols, Climate and Air Quality*. Regional Aerosol Meeting, University of Reading, UK (remotely).
- 04/2021 *Significant climate benefits from near-term climate forcer mitigation in spite of aerosol reductions.* EGU General Assembly, Vienna, Austria (remotely).
- 01/2020 *Enhanced land-sea warming contrast elevates aerosol pollution in a warmer world*. AMS Annual Meeting, 12th Symposium on Aerosol-Cloud-Climate Interactions, Boston, MA.
- 12/2019 *Enhanced land-sea warming contrast elevates aerosol pollution in a warmer world*. AGU Fall Meeting, San Francisco, CA.

STUDENTS/POSTDOCS ADVISED (2 MS and 7 PhD students; 2 Postdocs)

- Timothy Carson, PhD (In progress).
- Taylor Adkins, PhD (In progress).
- James Gomez, PhD 2025. Now an air-quality monitoring and modeling specialist within the California Department of Pesticide Regulation.
- Joon-Gu Jeon, 2024-2025. Visiting PhD Student from Hanyang University.
- Claire Vega, 2023. High School Student at Stockdale High School.
- Eva Yao, 2023. High School Student at Monta Vista High School.
- Xueying Zhao, PhD 2022. Now Postdoctoral Researcher at the University of Texas, Austin and Visiting Researcher at the National Center for Atmospheric Research.
- Taufiq Hassan, PhD 2021. Recipient of NASA MIRO Fields Fellowship. Now Postdoctoral Research Associate at Pacific Northwest National Laboratory.
- Anahita Amiri-Farahani, PhD 2018; Postdoc 2019. Now Research Scientist at Air Quality Research Center, University of California, Davis.

- Sunmin Park, PhD 2017. Now Research Professor at Korea University.
- Rainer Luptowitz, MS 2016. Recipient of NASA ESSF.
- Osinachi Ajoku, MS 2014. Recipient of NSF GRF. Now Assistant Professor at Howard University.
- Mahesh Kovilakam, Postdoc 2012-2014. Now Senior Research Scientist at NASA Langley Research Center.
- Durga Kafle, Postdoc 2012-2014. Now STEM Technical Lead at the Department of Defense.
- Katherina Zecca, Environmental Engineering undergraduate student.
- Heedo Kye, Environmental Sciences undergraduate student.
- Abhishek Patel, Civil and Environmental Engineering undergraduate student.

SYNERGISTIC ACTIVITIES

- Reviewer of ~30 manuscripts per year and ~2 proposals per year.
- Earth & Planetary Sciences Graduate Advisor, UC Riverside (2019-2024)
- Earth & Planetary Sciences Chair, UC Riverside (2024-present)
- Representative for UC Climate Change Communications Network (2018-2023)
- Contributing author IPCC 6th Assessment Report (Chapters 6 & 8) (2019-2020)
- Member, US CLIVAR Working Group "Changing Width of the Tropical Belt" (2016-2019)
- Topic leader for the Aerosol Chemistry Model Intercomparison Project (2019-2022)
- Member of Aerosol Chemistry Model Intercomparison Project version 2 (2024-present)
- Member of leadership team for UCR's Environmental Dynamics and GeoEcology Institute (EDGE) (2020-present)
- Committee member of the "Composition Air quality Climate inTeractions Initiative" (CACTI) (2023-present)
- Member of leadership team for the Regional Aerosol Model Intercomparison Project (RAMIP) (2023-present)
- Research Fellow at the Center for Advanced Study at the Norwegian Academy of Science and Letters (2023-2024)