

Daniele Visioni

Curriculum Vitae

Education

- 2020-2021 **Postdoc Leadership Program**, *Cornell University*, Ithaca (NY).
- 2015-2018 **Ph.D. with Honors in Atmospheric Physics and Chemistry**, *University of L'Aquila*, Italy.
Thesis: A climate engineering technique for a warming planet: stratospheric sulfur injection as a temporary solution to greenhouse gases increase.
- 2013-2015 **Master's Degree in Physics**, *University of L'Aquila*, Italy, Curriculum in Atmospheric Physics.
- 2009-2013 **Bachelor's Degree in Physics**, *University of L'Aquila*, Italy.

Professional appointments

- 2023-Present **Cornell Atkinson Faculty Fellow**, *Cornell Atkinson Center for Sustainability*, Ithaca (NY), USA.
August **Assistant Professor**, *Cornell University - Department of Earth and Atmospheric Sciences*, Ithaca (NY), USA.
- 2023-Present **Assistant Professor**, *Cornell University - Department of Earth and Atmospheric Sciences*, Ithaca (NY), USA.
- Jan 2023-July 2023 **Project Scientist I**, *National Center for Atmospheric Research - Atmospheric Chemistry, Observation and Modeling Lab*, Boulder (CO), 40% Part-time position.
- 2022-2023 **Research Associate**, *Cornell University - Sibley School of Mechanical and Aerospace Engineering*, Ithaca (NY), USA.
- 2018-2021 **Post-doctoral Associate**, *Cornell University - Sibley School of Mechanical and Aerospace Engineering*, Ithaca (NY), USA, Supervisor: Prof. Douglas MacMartin.
- 2015-2018 **Ph.D. Fellow in Atmospheric Physics and Chemistry**, *University of L'Aquila, Italy*, Supervisor: Prof. Giovanni Pitari.
- Jan-Mar 2018 **Visiting Scientist**, *NCAR*, Boulder (CO), USA, Supervisor: Dr. Simone Tilmes.
- June-Sep 2017 **Visiting Scientist**, *NASA GSFC - Earth Science Division*, Greenbelt (MD), USA, Supervisor: Prof. Valentina Aquila.

Research Grants

Awarded

- 2024 **Quadrature Climate Foundation**, *Geoengineering Assessment Across Uncertainties, Scenarios and Strategies (GAUSS)*, Awarded, 5.000.000\$, PIs: D. Visioni, D.G. MacMartin.
- 2023 **Harvard Global Empowerment Meeting Incubation Fund**, *How Would Climate Change and Solar Geoengineering Affect the Coastal Megacities in Developing Countries? A Case Study of Buenos Aires.*, Awarded, 30.000 \$, PI: I. Camilloni, D. Visioni.
- 2023 **Cornell Atkinson Center for Sustainability - 2023 Fast Grant Awards**, *Changes in Shipping Emissions as a Natural Analogue for Climate Intervention: detecting and attributing changes due to specific human activities as a testbed for future controversies.*, Awarded, 23.050 \$, PI: D. Visioni.
- 2022 **National Oceanic and Atmospheric Administration - Earth Radiation Budget Program**, *Atmospheric Aerosols and their Potential Roles in Solar Climate Intervention Methods grant - Assessing the impact of Stratospheric Aerosol Interventions on Regional Climate and Air Quality*, Awarded (NA222OAR4310477), PI: S. Tilmes, listed as co-PI.

- 2022 **Resources for the Future - Social Science Research into Solar Geoengineering**, *Integrating Risk Perception with Climate Models to Understand the Potential Deployment of Solar Radiation Modification to Mitigate Climate Change*, Awarded, 10.000 \$, PIs: B. Beckage, D. Vioni.
Submitted
As External Collaborator or Senior Personnel
- 2022 **European Research Council Starting Grant**, *Stratospheric cOmposition in a changing CLIMate: drivers and mechanisms (SOCLIM)*, Awarded, PI: G. Chiodo, listed as External Collaborator.
- 2020 **SilverLining Safe Climate Research Initiative**, *GAUSS: Geoengineering Assessment across Uncertainty, Scenarios, and Strategies*, Awarded, PI: D.G. MacMartin, listed as Senior Personnel.
- 2020 **NCAR Large University Allocation**, *Fundamental limits and trade-offs of stratospheric aerosol geoengineering*, Awarded, 14,700,000.0 Core-hours, PI: D.G. MacMartin.
- 2020 **NSF Award CBET-2038246**, *Fundamental limits and trade-offs of stratospheric aerosol geo-engineering*, Awarded, PI: D.G. MacMartin; co-PI: B. Kravitz.

Scholarships and Awards

- March 2022 **2022 Future Leader fellow for the Aspen Institute.**
- May 2021 **Selected for ACCESS-XVI**, *Atmospheric Chemistry Colloquium for Emerging Senior Scientists.*
- 2015-2018 **Ph.D. scholarship from the Italian Ministry of Education, University, and Research.**

Mentorship

Undergraduate students.

Kion Yaghoobzadeh (2023-2024, Honor Thesis); William Cano (2024-current, RA); Ronald Geiger (2024-current, RA)

Graduate students.

Ilaria Quaglia (2018-2023); Walker Lee (2018-2023); Yan Zhang (2019-2023); Jared Farley (2021-current); Ezra Brody (2021-current); James Park (2024-current); Isabelle Amacker (2024-current); Hyung-Jun Min (2024)

Postdoctoral Associates.

Ilaria Quaglia (2023-2024); Illeana Gomez-Leal (2024-current)

Publications

First author (in bold): 18, h-index: 26; (* Student or Postdoc mentored)

75. 2024 **Emulating inconsistencies in stratospheric aerosol injection**, Farley, J.*, MacMartin, D.G., Vioni, D., Kravitz, B., *Environ. Res.: Climate* 3, 035012. <https://doi.org/10.1088/2752-5295/ad519c>.
74. 2024 **Research criteria towards an interdisciplinary Stratospheric Aerosol Intervention assessment**, Simone Tilmes, Karen H Rosenlof, **Daniele Vioni**, Ewa M Bednarz, Tyler Felgenhauer, Wake Smith, Chris Lennard, Michael S Diamond, Matthew Henry, Cheryl S Harrison, Chelsea Thompson, *Oxford Open Climate Change*, Volume 4, Issue 1, 2024, kgae010, <https://doi.org/10.1093/oxfclm/kgae010>.
73. 2024 **Kicking the can down the road: understanding the effects of delaying the deployment of stratospheric aerosol injection**, Brody, E.*, **Vioni, D.**, Bednarz, E.M., Kravitz, B., MacMartin, D.G., Richter, J.H., Tye, M.R., *Environ. Res.: Climate* 3, 035011. <https://doi.org/10.1088/2752-5295/ad53f3>.

72. 2024 **Multi-Model Simulation of Solar Geoengineering Indicates Avoidable Destabilization of the West Antarctic Ice Sheet**, Moore, J. C., Yue, C., Chen, Y., Jevrejeva, S., **Visioni, D.**, Uotila, P., and Zhao, L., *Earth's Future*, 12, e2024EF004424. <https://doi.org/10.1029/2024EF004424>.
71. 2024 **Carbon cycle response to stratospheric aerosol injection with multiple temperature stabilization targets and strategies**, Zhao, M., Cao, L., **Visioni, D.**, and MacMartin, D. G., *Earth's Future*, 12, e2024EF004474. <https://doi.org/10.1029/2024EF004474>.
70. 2024 **A Living Assessment of Different Materials for Stratospheric Aerosol Injection—Building Bridges Between Model World and the Messiness of Reality**, **Visioni, D.**, Quaglia*, I., and Steinke, I., *Geophysical Research Letters*, 51, e2024GL108314. <https://doi.org/10.1029/2024GL108314>.
69. 2024 **Analysis of the global atmospheric background sulfur budget in a multi-model framework**, Brodowsky, C. V., Sukhodolov, T., Chiodo, G., Aquila, V., Bekki, S., Dhomse, S. S., Höpfner, M., Laakso, A., Mann, G. W., Niemeier, U., Pitari, G., Quaglia*, I., Rozanov, E., Schmidt, A., Sekiya, T., Tilmes, S., Timmreck, C., Vattioni, S., **Visioni, D.**, Yu, P., Zhu, Y., and Peter, T., *Atmos. Chem. Phys.*, 24, 5513–5548, <https://doi.org/10.5194/acp-24-5513-2024>.
68. 2024 **Dependency of the impacts of geoengineering on the stratospheric sulfur injection strategy – Part 2: How changes in the hydrological cycle depend on the injection rate and model used**, Laakso, A., **Visioni, D.**, Niemeier, U., Tilmes, S., and Kokkola, H., *Earth Syst. Dynam.*, 15, 405–427, <https://doi.org/10.5194/esd-15-405-2024>.
67. 2024 **The potential of Stratospheric Aerosol Injection to reduce the climatic risks of explosive volcanic eruptions**, Quaglia*, I., **Visioni, D.**, Bednarz, E. M., MacMartin, D. G., and Kravitz, B., *Geophysical Research Letters*, 51, e2023GL107702. <https://doi.org/10.1029/2023GL107702>.
66. 2024 **G6-1.5K-SAI: a new Geoengineering Model Intercomparison Project (GeoMIP) experiment integrating recent advances in solar radiation modification studies**, **Visioni, D.**, Robock, A., Haywood, J., Henry, M., Tilmes, S., MacMartin, D. G., Kravitz, B., Doherty, S. J., Moore, J., Lennard, C., Watanabe, S., Muri, H., Niemeier, U., Boucher, O., Syed, A., Egbebiyi, T. S., Séférian, R., and Quaglia, I., *Geosci. Model Dev.*, 17, 2583–2596, <https://doi.org/10.5194/gmd-17-2583-2024>.
65. 2024 **Hemispherically symmetric strategies for stratospheric aerosol injection**, Zhang*, Y., MacMartin, D. G., **Visioni, D.**, Bednarz, E. M., and Kravitz, B., *Earth Syst. Dynam.*, 15, 191–213, <https://doi.org/10.5194/esd-15-191-2024>.
64. 2024 **Side Effects of Sulfur-Based Geoengineering Due To Absorptivity of Sulfate Aerosols**, Wunderlin, E., Chiodo, G., Sukhodolov, T., Vattioni, S., **Visioni, D.**, and Tilmes, S., *Geophysical Research Letters*, 51, e2023GL107285.
63. 2023 **Potential Non-Linearities in the High Latitude Circulation and Ozone Response to Stratospheric Aerosol Injection**, Bednarz, E. M., **Visioni, D.**, Butler, A. H., Kravitz, B., MacMartin, D. G., and Tilmes, S., *Geophysical Research Letters*, 50, e2023GL104726.
62. 2023 **Stratospheric aerosol injection can reduce risks to Antarctic ice loss depending on injection location and amount**, Goddard, P. B., Kravitz, B., MacMartin, D. G., **Visioni, D.**, Bednarz, E. M., and Lee, W. R., *Journal of Geophysical Research: Atmospheres*, 128, e2023JD039434.
61. 2023 **Injection strategy – a driver of atmospheric circulation and ozone response to stratospheric aerosol geoengineering**, Bednarz, E. M., Butler, A. H., **Visioni, D.**, Zhang, Y., Kravitz, B., and MacMartin, D. G., *Atmos. Chem. Phys.*, 23, 13665–13684, <https://doi.org/10.5194/acp-23-13665-2023>, 2023.

60. 2023 **Comparison of UKESM1 and CESM2 simulations using the same multi-target stratospheric aerosol injection strategy**, Henry, M., Haywood, J., Jones, A., Dalvi, M., Wells, A., **D. Vioni**, Bednarz, E. M., MacMartin, D. G., Lee, W., and Tye, M. R., *Atmos. Chem. Phys.*, 23, 13369–13385, <https://doi.org/10.5194/acp-23-13369-2023>.
59. 2023 **Optimal climate intervention scenarios for crop production vary by nation**, Clark, B., Xia, L., Robock, A., Tilmes, S., Richter, Y., **D. Vioni**, Rabin, S.S., *Nat Food* 4, 902–911 (2023). <https://doi.org/10.1038/s43016-023-00853-3>.
58. 2023 **Climate, variability, and climate sensitivity of “Middle Atmosphere” chemistry configurations of the Community Earth System Model Version 2, Whole Atmosphere Community Climate Model Version 6 (CESM2(WACCM6))**, N. A. Davis, **D. Vioni**, R. R. Garcia, D. E. Kinnison, D. R. Marsh, M. Mills, J. H. Richter, S. Tilmes, C. G. Bardeen, A. Gettelman, A. A. Glanville, D. G. MacMartin, A. K. Smith, F. Vitt, *Journal of Advances in Modeling Earth Systems*, 15, e2022MS003579. <https://doi.org/10.1029/2022MS003579>.
57. 2023 **The choice of baseline period influences the assessments of the outcomes of stratospheric aerosol injection**, **Vioni, D.**, Bednarz, E. M., MacMartin, D. G., Kravitz, B., Goddard, P. B., *Earth’s Future*, 11, e2023EF003851. <https://doi.org/10.1029/2023EF003851>.
56. 2023 **Quantifying the Efficiency of Stratospheric Aerosol Geoengineering at Different Altitudes**, Lee*, W. R., **Vioni, D.**, Bednarz, E. M., MacMartin, D. G., Kravitz, B., Tilmes, S., *Geophysical Research Letters*, 50, e2023GL104417, <https://doi.org/10.1029/2023GL104417>.
55. 2023 **The scientific and community-building roles of the Geoengineering Model Intercomparison Project (GeoMIP) – past, present, and future**, **Vioni, D.**, Kravitz, B., Robock, A., Tilmes, S., Haywood, J., Boucher, O., Lawrence, M., Irvine, P., Niemeier, U., Xia, L., Chiodo, G., Lennard, C., Watanabe, S., Moore, J. C., and Muri, H., *Atmos. Chem. Phys.*, 23, 5149–5176, <https://doi.org/10.5194/acp-23-5149-2023>, 2023.
54. 2023 **High-latitude stratospheric aerosol injection to preserve the Arctic**, Lee*, W. R., MacMartin, D. G., **Vioni, D.**, Kravitz, B., Chen, Y., Moore, J. C., et al., *Earth’s Future*, 11, e2022EF003052. <https://doi.org/10.1029/2022EF003052>, 2023.
53. 2023 **Interactive stratospheric aerosol models’ response to different amounts and altitudes of SO₂ injection during the 1991 Pinatubo eruption**, Quaglia*, I., Timmreck, C., Niemeier, U., **Vioni, D.**, Pitari, G., Brodowsky, C., Brühl, C., Dhomse, S. S., Franke, H., Laakso, A., Mann, G. W., Rozanov, E., and Sukhodolov, T., *Atmos. Chem. Phys.*, 23, 921–948, <https://doi.org/10.5194/acp-23-921-2023>, 2023.
52. 2023 **Climate response to off-equatorial stratospheric sulfur injections in three Earth system models – Part 2: Stratospheric and free-tropospheric response**, Bednarz, E. M., **Vioni, D.**, Kravitz, B., Jones, A., Haywood, J. M., Richter, J., MacMartin, D. G., and Braesicke, P., *Atmos. Chem. Phys.*, 23, 687–709, <https://doi.org/10.5194/acp-23-687-2023>, 2023.
51. 2023 **Climate response to off-equatorial stratospheric sulfur injections in three Earth system models – Part 1: Experimental protocols and surface changes**, **Vioni, D.**, Bednarz, E. M., Lee, W. R., Kravitz, B., Jones, A., Haywood, J. M., and MacMartin, D. G., *Atmos. Chem. Phys.*, 23, 663–685, <https://doi.org/10.5194/acp-23-663-2023>, 2023.
50. 2022 **Assessing Responses and Impacts of Solar climate intervention on the Earth system with stratospheric aerosol injection (ARISE-SAI): protocol and initial results from the first simulations**, Richter, J. H., **Vioni, D.**, MacMartin, D. G., Bailey, D. A., Rosenbloom, N., Dobbins, B., Lee, W. R., Tye, M., and Lamarque, J.-F., *Geosci. Model Dev.*, 15, 8221–8243, <https://doi.org/10.5194/gmd-15-8221-2022>, 2022.

49. 2022 **A Review of El Niño Southern Oscillation Linkage to Strong Volcanic Eruptions and Post-Volcanic Winter Warming**, Mubashar Dogar, M., Hermanson L., Scaife A., **Visioni, D.**, Zhao, M., Hoteit, I., Graf, H., Dogar, A.M., Almazroui M., Fujiwara, M., Earth Syst Environ, <https://doi.org/10.1007/s41748-022-00331-z>.
48. 2022 **Impact of the latitude of stratospheric aerosol injection on the Southern Annular Mode**, Bednarz, E., **Visioni, D.**, Richter, J. H., Butler, A. H., MacMartin, D.G., Geophysical Research Letters, 49, e2022GL100353, <https://doi.org/10.1029/2022GL100353>.
47. 2022 **A Subpolar-focused Stratospheric Aerosol Injection Deployment Scenario**, Smith, W., Bhattarai, U., MacMartin, D.G., Lee, W.R., **Visioni, D.**, Kravitz, B., Rice, C.V., Environmental Research Letters, 4 095009, <https://doi.org/10.1088/2515-7620/ac8cd3>.
46. 2022 **Indices of Extremes: Geographic patterns of change in extremes and associated vegetation impacts under climate intervention**, Tye, M. R., Dagon, K., Molina, M. J., Richter, J. H., **Visioni, D.**, Kravitz, B., and Tilmes, S., Earth Syst. Dynam., 13, 1233–1257, <https://doi.org/10.5194/esd-13-1233-2022>.
45. 2022 **Scenarios for modeling solar radiation modification**, MacMartin, D., **Visioni, D.**, Kravitz, B., Richter J.H., Felghenauer T., Lee W.R., Morrow D.R., Parson E.A., Sugiyama M., Proceedings of the National Academy of Science, 119 (33) e2202230119, <https://doi.org/10.1073/pnas.2202230119>.
44. 2022 **The overlooked role of the stratosphere under a solar constant reduction**, Bednarz, E., **Visioni, D.**, Banerjee, A., Braesicke, P., Kravitz, B., MacnMartin, D.G., Geophysical Research Letters, 49, e2022GL098773, <https://doi.org/10.1029/2022GL098773>.
43. 2022 **An approach to sulfate geoengineering with surface emissions of carbonyl sulfide**, Quaglia*, I., **Visioni, D.**, Pitari, G., and Kravitz, B., Atmos. Chem. Phys., 22, 5757–5773, <https://doi.org/10.5194/acp-22-5757-2022>, 2022.
42. 2022 **Changes in Hadley circulation and intertropical convergence zone under strategic stratospheric aerosol geoengineering**, Cheng, W., MacMartin, D.G., Kravitz, B. **Visioni, D.**, Bednarz, E.M., Xu, Y., Luo, Y., Huang, L., Staten, P.W., Hitchcock, P., Moore, J.C., Guo, A., Deng, X., npj Clim. Atmos. Sci. 5, 32, <https://doi.org/10.1038/s41612-022-00254-6>, 2022.
41. 2022 **Stratospheric ozone response to sulfate aerosol and solar dimming climate interventions based on the G6 Geoengineering Model Intercomparison Project (GeoMIP) simulations**, Tilmes, S., **Visioni, D.**, Jones, A., Haywood, J., Séférian, R., Nabat, P., Boucher, O., Bednarz, E. M., and Niemeier, U., Atmos. Chem. Phys., 22, 4557–4579, <https://doi.org/10.5194/acp-22-4557-2022>, 2022.
40. 2022 **The impact of stratospheric aerosol intervention on the North Atlantic and Quasi-Biennial Oscillations in the Geoengineering Model Intercomparison Project (GeoMIP) G6sulfur experiment**, Jones, A., Haywood, J. M., Scaife, A. A., Boucher, O., Henry, M., Kravitz, B., Lurton, T., Nabat, P., Niemeier, U., Séférian, R., Tilmes, S., and **Visioni, D.**, Atmos. Chem. Phys., 22, 2999–3016, <https://doi.org/10.5194/acp-22-2999-2022>, 2022.
39. 2022 **An interactive stratospheric aerosol model intercomparison of solar geoengineering by stratospheric injection of SO₂ or accumulation-mode sulfuric acid aerosols**, Weisenstein, D. K., **Visioni, D.**, Franke, H., Niemeier, U., Vattioni, S., Chiodo, G., Peter, T., and Keith, D. W., Atmos. Chem. Phys., 22, 2955–2973, <https://doi.org/10.5194/acp-22-2955-2022>, 2022.
38. 2022 **Potential limitations of using a modal aerosol approach for sulfate geoengineering applications in climate models**, **Visioni, D.**, Tilmes, S., Bardeen, C., Mills, M., MacMartin, D. G., Kravitz, B., and Richter, J. H., Atmos. Chem. Phys., 22, 1739–1756, <https://doi.org/10.5194/acp-22-1739-2022>, 2022.

37. 2022 **How large is the design space for stratospheric aerosol geoengineering?**, Zhang, Y., MacMartin, D. G., **Visioni, D.**, and Kravitz, B., *Earth Syst. Dynam.*, 13, 201–217, <https://doi.org/10.5194/esd-13-201-2022>.
36. 2022 **Dependency of the impacts of geoengineering on the stratospheric sulfur injection strategy part 1: Intercomparison of modal and sectional aerosol module**, Laakso, A., Niemeier, U., **Visioni, D.**, Tilmes, S., and Kokkola, H., *Atmos. Chem. Phys.*, 22, 93–118, <https://doi.org/10.5194/acp-22-93-2022>.
35. 2021 **Identifying the sources of uncertainty in climate model simulations of solar radiation modification with the G6sulfur and G6solar Geoengineering Model Intercomparison Project (GeoMIP) simulations**, **Visioni, D.**, MacMartin, D. G., Kravitz, B., Boucher, O., Jones, A., Lurton, T., Martine, M., Mills, M. J., Nabat, P., Niemeier, U., Séférian, R., and Tilmes, S., *Atmos. Chem. Phys.*, 21, 10039–10063, <https://doi.org/10.5194/acp-21-10039-2021>.
34. 2021 **Is Turning Down the Sun a Good Proxy for Stratospheric Sulfate Geoengineering?**, **Visioni, D.**, MacMartin, D. G., Kravitz, B., *Journal of Geophysical Research: Atmospheres*, 126, 5, e2020JD033952. <https://doi.org/10.1029/2020JD033952>.
33. 2021 **Sensitivity of total column ozone to stratospheric sulfur injection strategies**, Tilmes, S., Richter, Y., Kravitz, B., MacMartin, D. G., Glanville, A., **Visioni, D.**, Kinnison, D. and Mueller, R., *Geophysical Research Letters*, 48, e2021GL094058. <https://doi.org/10.1029/2021GL094058>.
32. 2021 **Differences in the quasi-biennial oscillation response to stratospheric aerosol modification depending on injection strategy and species**, Franke, H., Niemeier, U., **Visioni, D.**, *Atmos. Chem. Phys.*, 21, 8615–8635; <https://doi.org/10.5194/acp-21-8615-2021>.
31. 2021 **High-latitude stratospheric aerosol geoengineering can be more effective if injection is limited to spring**, Lee, W., MacMartin, D. G., **Visioni, D.**, Kravitz, B., *Geophysical Research Letters*, 48, e2021GL092696, <https://doi.org/10.1029/2021GL092696>.
30. 2021 **Potential ecological impacts of climate intervention by reflecting sunlight to cool Earth**, P. L. Zarnetske, J. Gurevitch, J. Franklin, P. M. Groffman, C. S. Harrison, J. J. Hellmann, Forrest M. Hoffman, S. Kothari, A. Robock, S. Tilmes, **D. Visioni**, J. Wu, L. Xia, C. Yang, *Proceedings of the National Academy of Sciences* Apr 2021, 118 (15) e1921854118; <https://doi.org/10.1073/pnas.1921854118>.
29. 2021 **From fAIrplay to Climate Wars: Making climate change scenarios more dynamic, creative and integrative**, Pereira, L., Morrow, D., Aquila, V., Beckage, B., Beckbesinger, S., Beukes, L., Buck, L., Carlson, C., Geden, O., Jones, A., Keller, D., Mach, K., Mashigo, M., Moreno-Cruz, J., **D. Visioni**, Nicholson, S., Trisos, C., *Ecology and Society* 26(4):30. <https://doi.org/10.5751/ES-12856-260430>.
28. 2021 **From Moral Hazard to Risk-Response Feedback**, J. Jebari, T.M. Andrews, V. Aquila, B. Beckage, M. Belaia, M. Clifford, J. Fuhrman, D.P. Keller, K.J. Mach, D.R. Morrow, K.T. Raimi, **D. Visioni**, S. Nicholson, C.H. Trisos, *Climate Risk Management*, 100324, <https://doi.org/10.1016/j.crm.2021.100324>.
27. 2021 **Comparing different generations of idealized solar geoengineering simulations in the Geoengineering Model Intercomparison Project (GeoMIP)**, Kravitz, B., MacMartin, D. G., **Visioni, D.**, Boucher, O., Cole, J. N. S., Haywood, J., Jones, A., Lurton, T., Nabat, P., Niemeier, U., Robock, A., Séférian, R., and Tilmes, S., *Atmos. Chem. Phys.*, 21, 4231–4247, <https://doi.org/10.5194/acp-21-4231-2021>, 2021.
26. 2021 **Detection Of Pre-Industrial Societies On Exoplanets**, Lockley, A. and **Visioni, D.**, *International Journal of Astrobiology*, February 2021 , pp. 73 - 80. <https://doi.org/10.1017/S1473550420000361>.

25. 2020 **Reduced poleward transport due to stratospheric heating under stratospheric aerosols geoengineering**, *Visioni, D., MacMartin, D. G., Kravitz, B., Lee, W., Simpson, I. R., and Richter, J. H.*, *Geophysical Research Letters*, 47, e2020GL088 337, <https://doi.org/10.1029/2020GL089470>.
24. 2020 **Seasonally Modulated Stratospheric Aerosol Geoengineering Alters the Climate Outcomes**, *Visioni, D., MacMartin, D. G., Kravitz, B., Richter, J. H., Tilmes, S., and Mills, M. J.*, *Geophysical Research Letters*, 47, e2020GL088 337, <https://doi.org/10.1029/2020GL088337>.
23. 2020 **What goes up must come down: impacts of deposition in a sulfate geoengineering scenario**, *Visioni, D., Slessarev, E., MacMartin, D., Mahowald, N. M., Goodale, C. L., and Xia, L.*, *Environmental Research Letters*, 15(9), <http://iopscience.iop.org/10.1088/1748-9326/ab94eb>.
22. 2020 **Expanding the Design Space of Stratospheric Aerosol Geoengineering to Include Precipitation-Based Objectives and Explore Trade-offs**, *Lee, W., MacMartin, D. G., Visioni, D., Kravitz, B.*, *Earth Syst. Dynam.*, 11, 1051–1072, <https://doi.org/10.5194/esd-11-1051-2020>.
21. 2019 **Seasonal Injection Strategies for Stratospheric Aerosol Geoengineering**, *Visioni, D., MacMartin, D. G., Kravitz, B., Tilmes, S., Mills, M. J., Richter, J. H., Boudreau, M.*, *Geophysical Research Letters*, 46, 7790–7799. <https://doi.org/10.1029/2019GL083680>.
20. 2019 **Stratospheric Sulfate Aerosol Geoengineering Could Alter the High Latitude Seasonal Cycle**, *Jiang, J., Cao, L., MacMartin, D. G., Simpson, I. R., Kravitz, B., Cheng, W., Visioni, D., Tilmes, S., Richter, J. H., Mills, M. J.*, *Geophysical Research Letters*, 46, 7790–7799. <https://doi.org/10.1029/2019GL083680>.
19. 2019 **Clear-sky ultraviolet radiation modelling using output from the Chemistry Climate Model Initiative**, *Lamy, K., Portafaix, T., Josse, B., Brogniez, C., Godin-Beekmann, S., Bencherif, H., Revell, L., Akiyoshi, H., Bekki, S., Hegglin, M. I., Jockel, P., Kirner, O., Liley, B., Marecal, V., Morgenstern, O., Stenke, A., Zeng, G., Abraham, N. L., Archibald, A. T., Butchart, N., Chipperfield, M. P., Di Genova, G., Deushi, M., Dhomse, S. S., Hu, R.-M., Kinnison, D., Kotkamp, M., McKenzie, R., Michou, M., O'Connor, F. M., Oman, L. D., Pitari, G., Plummer, D. A., Pyle, J. A., Rozanov, E., Saint-Martin, D., Sudo, K., Tanaka, T. Y., Visioni, D., and Yoshida, K.*, *Atmospheric Chemistry and Physics*, 19, 10 087–10 110, <https://doi.org/10.5194/acp-19-10087-2019>.
18. 2019 **The effect of atmospheric nudging on the stratospheric residual circulation in chemistry-climate models**, *Chrysanthou, A., Maycock, A. C., Chipperfield, M. P., Dhomse, S., Garny, H., Kinnison, D., Akiyoshi, H., Deushi, M., Garcia, R. R., Jockel, P., Kirner, O., Pitari, G., Plummer, D. A., Revell, L., Rozanov, E., Stenke, A., Tanaka, T. Y., Visioni, D., and Yamashita, Y.*, *Atmospheric Chemistry and Physics*, 19, 11 559–11 586, <https://doi.org/10.5194/acp-19-11559-2019>.
17. 2019 **The influence of mixing on the stratospheric age of air changes in the 21st century**, *Eichinger, R., Dietmuller, S., Garny, H., Sacha, P., Birner, T., Bonisch, H., Pitari, G., Visioni, D., Stenke, A., Rozanov, E., Revell, L., Plummer, D. A., Jockel, P., Oman, L., Deushi, M., Kinnison, D. E., Garcia, R., Morgenstern, O., Zeng, G., Stone, K. A., and Schofield, R.*, *Atmospheric Chemistry and Physics*, 19, 921–940, <https://doi.org/10.5194/acp-19-921-2019>.
16. 2018 **Upper tropospheric ice sensitivity to sulfate geoengineering**, *Visioni, D., Pitari, G., di Genova, G., Tilmes, S., and Cionni, I.*, *Atmospheric Chemistry and Physics*, 18, 14867–14887, <https://doi.org/10.5194/acp-18-14867-2018>.
15. 2018 **Sulfur deposition changes under sulfate geoengineering conditions: quasi-biennial oscillation effects on the transport and lifetime of stratospheric aerosols**, *Visioni, D., Pitari, G., Tuccella, P., and Curci, G.*, *Atmospheric Chemistry and Physics*, 18, 2787–2808, <https://doi.org/10.5194/acp-18-2787-2018>.

14. 2018 **Stratospheric ozone loss over the Eurasian continent induced by the polar vortex shift**, Zhang, J., Tian, W., Xie, F., Chipperfield, M. P., Feng, W., Son, S.-W., Abraham, N. L., Archibald, A. T., Bekki, S., Butchart, N., Deushi, M., Dhomse, S., Han, Y., Jockel, P., Kinnison, D., Kirner, O., Michou, M., Morgenstern, O., O'Connor, F. M., Pitari, G., Plummer, D. A., Revell, L. E., Rozanov, E., **Visioni, D.**, Wang, W., and Zeng, G., *Nature Communications*, 9, 206, <https://doi.org/10.1038/s41467-017-02565-2>.
13. 2018 **Revisiting the mystery of recent stratospheric temperature trends**, Maycock, A. C., Randel, W. J., Steiner, A. K., Karpechko, A. Y., Christy, J., Saunders, R., Thompson, D. W. J., Zou, C.-Z., Chrysanthou, A., Luke, A. N., Akiyoshi, H., Archibald, A. T., Butchart, N., Chipperfield, M., Dameris, M., Deushi, M., Dhomse, S., Genova, G. D., Jockel, P., Kinnison, D. E., Kirner, O., Ladstadter, F., Michou, M., Morgenstern, O., O'Connor, F., Oman, L., Pitari, G., Plummer, D. A., Revell, L. E., Rozanov, E., Stenke, A., **Visioni, D.**, Yamashita, Y., and Zeng, G., *Geophysical Research Letters*, 0, <https://doi.org/10.1029/2018GL078035>.
12. 2018 **Estimates of ozone return dates from Chemistry- Climate Model Initiative simulations**, Dhomse, S. S., Kinnison, D., Chipperfield, M. P., Salawitch, R. J., Cionni, I., Hegglin, M. I., Abraham, N. L., Akiyoshi, H., Archibald, A. T., Bednarz, E. M., Bekki, S., Braesicke, P., Butchart, N., Dameris, M., Deushi, M., Frith, S., Hardiman, S. C., Hassler, B., Horowitz, L. W., Hu, R.-M., Jockel, P., Josse, B., Kirner, O., Kremser, S., Langematz, U., Lewis, J., Marchand, M., Lin, M., Mancini, E., Marecal, V., Michou, M., Morgenstern, O., O'Connor, F. M., Oman, L., Pitari, G., Plummer, D. A., Pyle, J. A., Revell, L. E., Rozanov, E., Schofield, R., Stenke, A., Stone, K., Sudo, K., Tilmes, S., **Visioni, D.**, Yamashita, Y., and Zeng, G., *Atmospheric Chemistry and Physics*, 18, 8409-8438, <https://doi.org/10.5194/acp-18-8409-2018>.
11. 2018 **Quantifying the effect of mixing on the mean age of air in CCMVal-2 and CCMI-1 models**, Dietmuller, S., Eichinger, R., Garny, H., Birner, T., Boenisch, H., Pitari, G., Mancini, E., **Visioni, D.**, Stenke, A., Revell, L., Rozanov, E., Plummer, D. A., Scinocca, J., Jockel, P., Oman, L., Deushi, M., Kiyotaka, S., Kinnison, D. E., Garcia, R., Morgenstern, O., Zeng, G., Stone, K. A., and Schofield, R., *Atmospheric Chemistry and Physics*, 18, 6699-6720, doi:10.5194/acp-18-6699-2018.
10. 2018 **Ozone sensitivity to varying greenhouse gases and ozone-depleting substances in CCMI-1 simulations**, Morgenstern, O., Stone, K. A., Schofield, R., Akiyoshi, H., Yamashita, Y., Kinnison, D. E., Garcia, R. R., Sudo, K., Plummer, D. A., Scinocca, J., Oman, L. D., Manyin, M. E., Zeng, G., Rozanov, E., Stenke, A., Revell, L. E., Pitari, G., Mancini, E., Di Genova, G., **Visioni, D.**, Dhomse, S. S., and Chipperfield, M. P., *Atmospheric Chemistry and Physics*, 18, 1091-1114, <https://doi.org/10.5194/acp-18-1091-2018>.
9. 2018 **Large-Scale tropospheric transport in the Chemistry Climate Model Initiative (CCMI) Simulations**, Orbe, C., Yang, H., Waugh, D. W., Zeng, G., Morgenstern, O., Kinnison, D. E., Lamarque, J.-F., Tilmes, S., Plummer, D. A., Scinocca, J. F., Josse, B., Marecal, V., Jockel, P., Oman, L. D., Strahan, S. E., Deushi, M., Tanaka, T. Y., Yoshida, K., Akiyoshi, H., Yamashita, Y., Stenke, A., Revell, L., Sukhodolov, T., Rozanov, E., Pitari, G., **Visioni, D.**, Stone, K. A., and Schofield, R., *Atmospheric Chemistry and Physics*, 18, <https://doi.org/10.5194/acp-18-7217-2018>.
8. 2018 **Tropospheric ozone in CCMI models and Gaussian process emulation to understand biases in the SOCOLv3 chemistry-climate model**, Revell, L. E., Stenke, A., Tummon, F., Feinberg, A., Rozanov, E., Peter, T., Abraham, N. L., Akiyoshi, H., Archibald, A. T., Butchart, N., Deushi, M., Jockel, P., Kinnison, D., Michou, M., Morgenstern, O., O'Connor, F. M., Oman, L. D., Pitari, G., Plummer, D. A., Schofield, R., Stone, K., Tilmes, S., **Visioni, D.**, Yamashita, Y., and Zeng, G., *Atmospheric Chemistry and Physics*, 18, 16 155-16 172, <https://doi.org/10.5194/acp-18-16155-2018>.

7. 2018 **Stratospheric injection of brominated very short-lived substances: aircraft observations in the Western Pacific and representation in global models**, *Wales, P. A., Salawitch, R. J., Nicely, J. M., Anderson, D. C., Canty, T. P., Sunil, B., Dix, B., Koenig, T. K., Volkamer, R., Chen, D., Huey, G. L., Tanner, D. J., Cuevas, C. A., Fernandez, R. P., Kinnison, D. E., Lamarque, J. F., Lopez, A. S., Atlas, E. L., Hall, S. R., Navarro, M. A., Pan, L. L., Schauffler, S. M., Stell, M., Tilmes, S., Ullmann, K., Weinheimer, A. J., Akiyoshi, H., Chipperfield, M. P., Deushi, M., Dhomse, S. S., Feng, W., Graf, P., Hossaini, R., Jockel, P., Mancini, E., Michou, M., Morgenstern, O., Oman, L. D., Pitari, G., Plummer, D. A., Revell, L. E., Rozanov, E., Martin, D. S., Schofield, R., Stenke, A., Stone, K. A., **Visioni, D.**, Youshuke, Y., and Zeng, G.*, *Journal of Geophysical Research: Atmospheres*, 123, 5690– 5719. <https://doi.org/10.1029/2017JD027978>.
6. 2017 **Sulfate Geoengineering Impact on Methane Transport and Lifetime: Results from the Geoengineering Model Intercomparison Project (GeoMIP)**, ***Visioni, D.**, Pitari, G., Aquila, V., Tilmes, S., Cionni, I., Di Genova, G., and Mancini, E.*, *Atmospheric Chemistry and Physics*, 17, 11 209-11 226, <https://doi.org/10.5194/acp-17-11209-2017>.
5. 2017 **Sulfate geoengineering: a review of the factors controlling the needed injection of sulfur dioxide**, ***Visioni, D.**, Pitari, G., and Aquila, V.*, *Atmospheric Chemistry and Physics*, 17, 3879-3889, <https://doi.org/10.5194/acp-17-3879-2017>.
4. 2017 **Deriving global OH abundance and atmospheric lifetimes for long-lived gases: a search for CH₃CCl₃ alternatives**, *Liang, Q., Chipperfield, M. P., Fleming, E. L., Abraham, N. L., Braesicke, P., Burkholder, J. B., Daniel, J. S., Dhomse, S., Fraser, P. J., Hardiman, S. C., Jackman, C. H., Kinnison, D. E., Krummel, P. B., Montzka, S. A., Morgenstern, O., McCulloch, A., Muhle, J., Newman, P. A., Orkin, V. L., Pitari, G., Prinn, R. G., Rigby, M., Rozanov, E., Stenke, A., Tummon, F., Velders, G. J. M., **Visioni, D.**, and Weiss, R. F.*, *Journal of Geophysical Research: Atmospheres* 122, 11,914– 11,933. <https://doi.org/10.1002/2017JD026926>.
3. 2016 **Sulfate aerosols from non-explosive volcanoes: Chemical- radiative effects in the troposphere and lower stratosphere**, *Pitari, G., **Visioni, D.**, Mancini, E., Cionni, I., Di Genova, G., and Gandolfi, I.*, *Atmosphere*, 7, <https://doi.org/10.3390/atmos7070085>.
2. 2016 **Stratospheric aerosols from major volcanic eruptions: A composition-climate model study of the aerosol cloud dispersal and e-folding time**, *Pitari, G., Genova, G. D. G., Mancini, E., **Visioni, D.**, Gandolfi, I., and Cionni, I.*, *Atmosphere*, 7, <https://doi.org/10.3390/atmos7060075>, 20.
1. 2016 **Impact of stratospheric volcanic aerosols on age-of-air and transport of long-lived species**, *Pitari, G., Cionni, I., Di Genova, G., **Visioni, D.**, Gandolfi, I., and Mancini, E.*, *Atmosphere* 2016, 7(11), 149; <https://doi.org/10.3390/atmos7110149>.

Non peer-reviewed publications

6. 2022 **Process-Level Experiments and Policy-Relevant Scenarios in Future GeoMIP Iterations**, ***Visioni, D.**, A. Robock, A. Duffey and I. Quaglia*, *Bulletin of the American Meteorological Society*, 104, E501-E503.
5. 2022 **Solar radiation modification is risky, but so is rejecting it: a call for balanced research**, *Wieners, C. E., Hofbauer, B. P., de Vries, I. E., Honegger, M., **Visioni, D.**, Russchenberg, H. W. J., Felgenhauer T.*, *Oxford Open Climate Change*, Volume 3, Issue 1, 2023.
4. 2022 **Process-Level Experiments and Policy-Relevant Scenarios in Future GeoMIP Iterations**, ***Visioni, D.**, Robock, A., Duffey, A. and Quaglia, I.*, *Bulletin of the American Meteorological Society*, 104, E501-E503.
3. 2022 **Future geoengineering scenarios: balancing policy relevance and scientific significance**, ***Visioni, D.**, and Robock, A.*, *Bulletin of the American Meteorological Society*, 103(3), E817-E820.

2. 2021 **Solar Radiation Management Primer**, available at <https://www.srmprimer.org/>, Lee, W., MacMartin, D. G., Visionsi., D., A primer intended for a general audience about the topic of Solar Radiation Management.

1. 2021 **Climate engineering research is essential to a just transition and sustainable future**, Kravitz, B., Visionsi., D., Snider, L., MacMartin, D. G., Editorial published on theHill.com <https://thehill.com/opinion/energy-environment/559859-climate-engineering-research-is-essential-to-a-just-transition-and>.

Teaching activities

- 2023 **Instructor**, *Climate Dynamics*, Department of Earth and Atmospheric Sciences, Cornell University.
- 2021-Current **External examiner for PhD and Master thesis**.
Cambridge University (PhD); ETH Zurich (Master)
- Sept **LeadTheFuture STEM Mentorship Program**, *LeadTheFuture*.
2020-Current Mentoring Italian Bachelor and Master students in STEM programs
- Aug **GSMU Mentorship Program**, Cornell University.
2019-2022 Mentoring first generation college students with an interest in pursuing a PhD
- 2018 **Lecturer**, *Atmospheric radiative transfer*, Department of Physical and Chemical Sciences, University of L'Aquila.
- 2017,2018 **Lecturer**, *Magnetism and Electricity Lab*, Department of Physical and Chemical Sciences, University of L'Aquila.
- 2017,2018 **Lecturer**, *General physics*, Department of Biology and Life Sciences, University of L'Aquila.

Scientific Leadership

- January 2024-
Ongoing **World Climate Research Program**, *Co-chair of the Lighthouse Activity on Climate Intervention Research*.
- October 2022-
Ongoing **National Center for Atmospheric Research (NCAR)**, *External co-chair for the Whole Atmosphere Working Group (WAWG)*, Assisting and overseeing model development for the Whole Atmosphere Climate Chemistry Model (WACCM) together with the internal NCAR co-chairs.
- October
2022-March **American Geophysical Union (AGU)**, *Expert on panel tasked with updating the Union statement on Climate Intervention*, <https://www.agu.org/Share-and-Advocate/Share/2023-Policymakers/Position-Statements/Draft-Climate-Intervention>.
- June 27-28,
2022 **Gordon Research Seminar on Climate Engineering**, *Co-chair*, Sunday River-Newry, ME, USA, Conference organization, speakers selection, funding.
- Feb 2022-
December 2022 **World Climate Research Programme (WCRP) Climate Intervention Task Team**, *Charged with establishing a strategy as to how WCRP can address Climate Intervention research in the future*.
- March
2021-July 2022 **WMO - Scientific Assessment of Ozone Depletion 2022**, *Co-author*.
Leading Section 3 - "Dynamical and Chemical changes" on Chapter 6: Stratospheric aerosol intervention and its potential effect on the stratospheric ozone layer. Invited to attend the Panel Review Meeting in Geneva to draft the Executive Summary.
- 2019,2021,2022 **AGU Fall Meeting**, *Session Chair or Session Convener on Climate Engineering related sessions*, Multiple locations.
- Aug 2020-
Ongoing **Project Co-Chair**, *Geoengineering Model Intercomparison Project*, geomip.org.
Coordinating modeling groups, devising modeling experiments, organizing GeoMIP meetings, liaising with WCRP and CMIP, as well as other external groups.

Professional Activities

August 2024 **Consultant for the U.S. Department of State on Climate Technology**.

- 2023- Ongoing **CMIP Data Request Team**, *Author*, Boulder, CO.
Connecting with different communities and interfacing with CMIP to create lists of data requests for modeling teams for CMIP7
- Oct 30-Nov 1 2022 **Climate Intervention Scenario Design Workshop**, *Organizing Committee*, Boulder, CO.
Workshop planning, assisted in writing funding requests (successful), invites, organization.
- March 2021- Ongoing **Solar Radiation Management Governance Initiative**, *Research Collaborator*.
External Advisor for two research teams awarded by SRMGI
- Feb 2021- Ongoing **NCAR HPC User Group Advisor**, *National Center for Atmospheric Research*, <https://www2.cisl.ucar.edu/user-support/ncar-hpc-user-group>.
High Performance Computing User Group Advisor at the Computational and Information Systems Lab
- Dec 2020- Ongoing **EGUsphere Moderator**, *European Geophysical Union*, www.egusphere.net/.
Moderator for the not-for-profit scientific repository of the EGU, bringing together all preprints submitted to EGU journals.

International conferences, talks and workshops

Attended as invited speaker

- February 22, 2024 **Gordon Research Conference on Climate Engineering**, "*Keynote address: Climate Modeling for Sunlight Reflection Methods: Progress So Far, Why We Do It, Who Is it For, and What Is Next*", Florence, Italy.
- October 20, 2023 **College of the Coast and Environment (CCE) Seminar at LSU**, "*Climate Intervention with Stratospheric Aerosols: steps towards a more robust assessment*", Baton Rouge, LO, USA.
- July 12, 2023 **28th IUGG General Assembly**, "*The Geoengineering Model Intercomparison Project (GeoMIP): Past, present and future*", Berlin, Germany.
- November 15, 2022 **Climate and Global Dynamics seminar series, NCAR**, "*Stratospheric aerosol geoengineering: How do we move towards a more robust assessment*", Boulder, CO, USA, YouTube recording.
- September 23, 2022 **Lamont-Doherty Earth Observatory Earth Science Colloquium**, "*Understanding the potential impacts of sulfate aerosol injections on the climate system*", Columbia University, New York, NY, USA, event link.
- June 28-July 3, 2022 **Gordon Research Conference on Climate Engineering**, "*The Role of Different Temperature Targets for Determining Climate Engineering Outcomes and Trade-Offs*", Sunday River-Newry, ME, USA.
- April 11th 2022 **Atmospheric Chemistry Observation and Modeling Virtual Seminar**, "*Stratospheric aerosol geoengineering: understanding and reducing modeling uncertainties*", YouTube recording.
- March 22th 2022 **Labont seminars: Climate Crisis and Future Generations, Sant'Anna School of Advanced Studies, Italy**, "*Climate engineering: what do we know, what do we still need to know, and should we know it?*", YouTube recording.
- January 13th 2022 **University of Perugia, Italy, Department of Physics and Geology**, "*The Sun-Earth relationship across different timescales and its climatic influences*".
- January 10th 2022 **University of Washington, Department of Atmospheric Sciences**, "*Understanding the potential impacts of sulfate aerosol injections on the climate system*".
- October 13th 2021 **Yale College**, "*Earth System Modeling applied to Geoengineering*".
As part of the course Geo Engineering:Climate Change held by prof. W. Smith
- August 12, 2021 **Center for Climate Repair at Cambridge Summer Workshop Series**, "*Refreezing the Arctic: Stratospheric Aerosol Injection and other techniques*", Center for Climate Repair at Cambridge, Cambridge, UK, YouTube recording.
- August 1-7, 2021 **Ecological Society of America Annual Meeting 2021**, "*What goes up must come down: surface impacts of deposition in a sulfate geoengineering scenario*", Long Beach, California.

- Jan 10-14, 2021 **American Meteorological Society Annual Meeting 2021**, "*Geoengineering with stratospheric aerosols - physical mechanisms and sources of uncertainty*", American Meteorological Society, New Orleans, USA.
- 30 Sep 2019 **Geoengineering Modeling Research Consortium, 2nd meeting**, "*Comparison of SO₂ and H₂SO₄ injection strategies using a model aerosol microphysics representation*", Harvard University, Cambridge, MA, USA.
- 20-21 May 2019 **Geoengineering Modeling Research Consortium, 1st meeting**, "*Changes in sulfate geoengineering efficacy due to uncertainties in model representations of high clouds*", NCAR, Boulder, CO, USA.