

Daniele Vioni

Curriculum Vitae

Education and Training

- 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

- Jan 2021-Present **Research Associate**, *Cornell University - Sibley School of Mechanical and Aerospace Engineering*, Ithaca (NY), USA.
- Nov 2018-Dec 2020 **Post-doctoral Associate**, *Cornell University - Sibley School of Mechanical and Aerospace Engineering*, Ithaca (NY), USA, Supervisor: Prof. Douglas MacMartin.
- Nov 2015-Oct 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.

Scholarships and Awards

- May 2021 **Select to participate in ACCESS XVI - Atmospheric Chemistry Colloquium for Emerging Senior Scientists.**
- Nov 2015-Oct 2018 **Ph.D. scholarship from the Italian Ministry of Education, University, and Research**, First ranked among the candidates in Physics and Chemistry at the University of L'Aquila.

Publications

Total peer-reviewed publications: 42; First author: 12, h-index (Scopus): 16

- Stratospheric ozone response to sulfate aerosol and solar dimming climate interventions based on the G6 Geoengineering Model Intercomparison Project (GeoMIP) simulations,**
42. 2022 *Tilmes, S., Vioni, D., Jones, A., Haywood, J., Séférián, 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.
- Future geoengineering scenarios: balancing policy relevance and scientific significance,**
41. 2021 *Vioni, D., and Robock, A.*, *Bulletin of the American Meteorological Society*, 103(3), E817-E820.

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. Visionsi**, 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., Scinnoca, 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>.

In review

- Assessing Responses and Impacts of Solar climate intervention on the Earth system with stratospheric aerosols**, Richter, J. H., **Visioni, D.**, D. G. MacMartin, D. A. Bailey, N. Rosenbloom, W. R. Lee, M. Tye, J.-F. Lamarque, Earth System Science Data, in review).
5. 2022
- Scenarios for modeling solar radiation modification**, MacMartin, D., **Visioni, D.**, et al., Proceedings of the National Academy of Science, in review.
4. 2022
- The overlooked role of the stratosphere under a solar constant reduction**, Bednarz, E., **Visioni, D.**, et al., Proceedings of the National Academy of Science, in review.
3. 2022
- Indices of Extremes: Geographic patterns of change in extremes and associated vegetation impacts under climate intervention**, Tye, M., **Visioni, D.**, et al., Earth. Sys. Dyn. Discuss., in review.
2. 2022
- A novel approach to sulfate geoengineering with surface emissions of carbonyl sulfide**, Quaglia, I., **Visioni, D.**, Pitari, G., and Kravitz, B., Atmos. Chem. Phys. Discuss. [preprint], <https://doi.org/10.5194/acp-2021-813>, in print.
1. 2021

Non peer-reviewed publications

- Solar Radiation Management Primer**, available at <https://www.srmprimer.org/>, Lee, W., MacMartin, D. G., Visioni, D., A primer intended for a general audience about the topic of Solar Radiation Management.
2. 2021
- Climate engineering research is essential to a just transition and sustainable future**, Kravitz, B., Visioni, 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>.
1. 2021

Teaching and mentoring activities

- August 2021 **External examiner for PhD thesis, Cambridge University.**
Candidate: John Staunton Sykes, Faculty of Physics & Chemistry
- Sept **LeadTheFuture STEM Mentorship Program**, LeadTheFuture.
- 2020-Current **Mentoring Italian Bachelor and Master students in STEM programs**
- Aug **GSMU Mentorship Program**, Cornell University.
- 2019-Current **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.

Research Grants

- 2020-2022 **Assisted in the writing of multiple grants, listed below.**
Assisted and collaborated on the writing of various grants for private philanthropic groups, NSF, NOAA and NCAR.
- 2022 **Swiss National Science Foundation Starting Grant, Stratospheric cOmposition in a changing CLIMate: drivers and mechanisms (SOCLIM)**, Submitted, PI: G. Chiodo, listed as External Collaborator.

- 2021 **NOAA ERB Program**, *Assessing uncertainty in stratospheric aerosol intervention: the dependence of atmospheric circulation on design choices and model parameters*, Submitted, PI: D.G. MacMartin, listed as Senior Personnel.
- 2021 **NCAR Accelerated Scientific Discovery program**, *Geoengineering Assessment across Uncertainty, Scenarios, and Strategies (GAUSS)*, Submitted, 45,000,000 Core-hours, PI: D.G. MacMartin; listed as Technical Specialist.
- 2020 **SilverLining Safe Climate Research Initiative**, *GAUSS: Geoengineering Assessment across Uncertainty, Scenarios, and Strategies*, Awarded, PI: D.G. MacMartin.
- 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 geoengineering*, Awarded, PI: D.G. MacMartin; co-PI: B. Kravitz.

Scientific Leadership

- Feb 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.*
- Ongoing
- 13-17 Dec **AGU Fall Meeting 2021**, *Session Chair - Advances in Climate Engineering Research*, New Orleans, USA.
- 2021
- Aug 2020- **Project Co-Chair**, *Geoengineering Model Intercomparison Project*, geomip.org.
- Ongoing Coordinating modeling groups, devising modeling experiments, organizing GeoMIP meetings, liaising with WCRP and CMIP, as well as other external groups.
- June 27-28, **Gordon Research Seminar on Climate Engineering**, *Co-chair*, Sunday River-Newry, ME, USA,
- 2020* **postponed to 2022 due to COVID-19.*
- 9-13 Dec **AGU Fall Meeting 2019**, *Session convener - Solar Geoengineering Benefits and Risks: Modeling, Impacts, Analogs, Engineering, Ethics, and Governance*, San Francisco, USA.
- 2019

Professional Activities

- March 2021- **Solar Radiation Management Governance Initiative**, *Research Collaborator.*
- Ongoing External Advisor for two research teams awarded by SRMGI
- March 2021- **WMO - Scientific Assessment of Ozone Depletion 2022**, *Co-author.*
- Ongoing Leading Section 3 - "Dynamical and Chemical changes" on Chapter 6: Stratospheric aerosol intervention and its potential effect on the stratospheric ozone layer
- Feb 2021- **NCAR HPC User Group Advisor**, *National Center for Atmospheric Research*, <https://www2.cisl.ucar.edu/user-support/ncar-hpc-user-group>.
- Ongoing High Performance Computing User Group Advisor at the Computational and Information Systems Lab
- Dec 2020- **EGUsphere Moderator**, *European Geophysical Union*, www.egusphere.net/.
- Ongoing Moderator for the not-for-profit scientific repository of the EGU, bringing together all preprints submitted to EGU journals.
- Aug 28-Sept **ISSAOS 2016-Advanced Programming Techniques for the Earth System Science**, *Organising committee*, L'Aquila.
- 2, 2016
- 2017- **Reviewer for Scientific Journals**, I am an active reviewer for various journals in the field
- Ongoing of atmospheric physics and chemistry: *Advances in Atmospheric Sciences* (1), *Atmosphere* (10), *Atmospheric Chemistry and Physics* (9), *Climate* (2), *Earth's Future* (1), *Earth-Science Reviews* (2), *Earth System Dynamics* (1), *Environmental Research Letters* (3), *Environmental Research Communications* (1), *Frontiers: Climate* (1), *Geophysical Research Letters* (1), *Nature Communications* (2), *Journal of Geophysical Research: Atmosphere* (10), *Bulletin of the American Meteorological Society* (1).

International conferences, talks and workshops

Attended as invited speaker

- April 11th 2022 **Invited seminar on "Stratospheric aerosol geoengineering: understanding and reducing modeling uncertainties"**, National Center for Atmospheric Research, Virtual ACOM Seminar, recording link.
- March 22th 2022 **Invited seminar on "Climate engineering: what do we know, what do we still need to know, and should we know it?"**, University of Torino and Sant'Anna School of Advanced Studies, Italy, recording link.
- January 13th 2022 **Invited seminar on "The Sun-Earth relationship across different timescales and its climatic influences"**, University of Perugia, Italy, Department of Physics and Geology.
- January 10th 2022 **Invited seminar on "Understanding the potential impacts of sulfate aerosol injections on the climate system"**, University of Washington, Department of Atmospheric Sciences.
- October 13th 2021 **Invited seminar on Earth System Modeling applied to Geoengineering**, Yale College.
As part of the course Geo Engineering: Climate Change held by prof. W. Smith
- June 28-July 3, 2020* **Gordon Research Conference on Climate Engineering**, Invited talk on "Is solar dimming a good proxy for sulfate geoengineering?", Sunday River-Newry, ME, USA, *postponed to 2022 due to COVID-19.
- August 12, 2021 **Center for Climate Repair at Cambridge Summer Workshop Series**, Invited talk on "Refreezing the Arctic: Stratospheric Aerosol Injection and other techniques", Center for Climate Repair at Cambridge, Cambridge, UK, recording link.
- August 1-7, 2021 **Ecological Society of America Annual Meeting 2021**, Invited talk on "What goes up must come down: surface impacts of deposition in a sulfate geoengineering scenario", Ecological Society of America, Long Beach, California.
- Jan 10-14, 2021 **American Meteorological Society Annual Meeting 2021**, Invited talk on "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**, Invited talk on "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**, Invited talk on "Changes in sulfate geoengineering efficacy due to uncertainties in model representations of high clouds", NCAR, Boulder, CO, USA.

Attended as speaker

- April 16th, 2018 **8th GeoMIP Meeting**, Presentation on: "Upper tropospheric ice sensitivity to sulfate geoengineering", Zurich, Switzerland, Financed by a grant from Rutgers University.
- June 21-22, 2016 **6th GeoMIP Meeting**, Presentation on: "Direct and indirect radiative effects of stratospheric sulfate under geoengineering conditions", Oslo, Norway, Financed by a grant from NCAR.
- April 25-28, 2016 **SSiRC 2016 Workshop**, Presentation on: "Stratospheric aerosols from major volcanic eruptions: a model study of the aerosol cloud dispersal and e-folding time", Berlin, Germany, Financed by a WMO scholarship for young researcher.

Attended as poster presenter

- March 18th-23rd, 2018 **Chapman Conference on Stratospheric Aerosol in the Post-Pinatubo Era**, Poster presentation on: "Stratospheric aerosols from major volcanic eruptions: QBO impact on the aerosol cloud dispersal and optical depth", Tenerife, Spain, Financed by a scholarship for Early Career Scientists founded by NASA.
- Oct 9th-12th, 2017 **Climate Engineering Conference 2017**, Poster presentation on: "Quantification of sulfur deposition under sulfate geoengineering conditions", Berlin, Germany.

- July 23rd-28th, 2017 **I Gordon Research Conference on Climate Engineering and 7th GeoMIP meeting**, *Poster presentation on: "Upper tropospheric ice sensitivity to sulfate geoengineering"*, Sunday River-Newry, ME, USA, Financed by a GeoMIP scholarship.
- Apr 24th, 2017 **EGU 2017**, *Poster presentation on: "Upper tropospheric ice sensitivity to sulfate geoengineering"*, Wien, Austria.
- Oct 31st-Nov 1st, 2016 **WCRP/SPARC workshop: "Challenges for Climate Science - Synergies between SPARC and the WCRP Grand Challenges"**, *Poster presentation on: "Future trend of the lower stratospheric ozone column at tropical latitudes from SPARC-CCMI model simulations"*, Berlin, Germany.
- Nov 19-20 2015 **Science Symposium on Climate**, *Poster presentation on: "Sulfate Geoengineering Impact on Methane Transport and Lifetime: Results from the Geoengineering Model Intercomparison Project (GeoMIP)"*, Rome, Italy.

Professional references

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| Current supervisor, mentor | Prof. Douglas G. MacMartin | Sibley School of Mechanical and Aerospace Engineering,
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| Collaborator, mentor | Prof. Ben Kravitz | Department of Earth and Atmospheric Sciences,
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| Collaborator | Prof. Jessica Gurevitch | Department of Ecology and Evolution,
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