VED CHIRAYATH PUBLICATIONS

Books and monographs

1. Ved Chirayath and Sam Purkis. 2022. "Remote Sensing for Earth & Planetary Science." In contract. *Wiley-Blackwell*. ~400pp.

Juried or refereed journal articles and exhibitions
Patents (peer and legally reviewed)

2. Chirayath, Ved. 2021. "System and Method for Imaging Underwater Environments Using Fluid Lensing." *United States Patent and Trade Office*. Patent No. 62/634,803. https://patents.google.com/patent/US20190266712A1/en
3. Chirayath, Ved. 2018. "System for multispectral imaging, detection and active reflectance (MiDAR)." *United States Patent and Trade Office*. Patent No. 15/480,318. https://patents.google.com/patent/US10041833B1/en
4. Chirayath, Ved. 2022. "System and Method for Imaging Underwater Environments Using Active Fluid Lensing." *Patent Pending.*

Journal Papers

5. Mennon, V., Chirayath, V., et al. 2021. "Design and Performance Evaluation of Multispectral Sensing Algorithms on CPU, GPU, and FPGA". In Press. *IEEE Aerospace.*
6. van den Bergh, J., Chirayath, V*.,* Li, A., Torres-Perez, J., Segal-Rozenhaimer, M. 2021. "NeMO-Net - Gamifying Coral Reef 3D Labelling with a Citizen Science Video Game for Automated Marine Habitat Mapping." Accepted. *Special Issue, Frontiers in Marine Science.*
7. Chirayath, V. and Purkis, S. 2021. "Remote Sensing of the Ocean Biosphere." In Press. *Annual Reviews of Environment and Resources*.
8. Li, Alan S., Chirayath, V., et al. 2020. NASA NeMO-Net's Convolutional Neural Network: Mapping Marine Habitats with Spectrally Heterogeneous Remote Sensing Imagery." *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 13 (2020): 5115-5133. https://doi.org/10.1109/JSTARS.2020.3018719
9. Chirayath, V. et al. 2020. "NASA NeMO-Net – A Neural Multimodal Observation & Training Network for Marine Ecosystem Mapping at Diverse Spatiotemporal Scales," *IEEE Geoscience and Remote Sensing Society,* pp. 3633-3636. https://doi.org/10.1109/IGARSS39084.2020.9323188
10. Asanjan, A., Das, K., Li, A., Chirayath, V., Torres- Perez, J., and Sorooshian, S. 2020. Learning Instrument Invariant Characteristics for Generating High-resolution Global Coral Reef Maps. *ACM SIGKDD, Knowledge Discovery and Data Mining (KDD).* 2020. ACM, New York, NY, USA, 8 pages. https://doi.org/10.1145/3394486.3403312
11. Chirayath, V and Li, A. 2020. Next-Generation Optical Sensing Technologies for Exploring Ocean Worlds - NASA FluidCam, MiDAR, and NeMO-Net. Special Issue, *Frontiers in Marine Science* 6, 521. doi.org/10.3389/fmars.2019.00521
12. Segal-Rozenhaimer, M., Li, A., Das, K., and Chirayath, V. 2020. Cloud Detection Algorithm for Multi-Modal Satellite Imagery using Convolutional Neural-Networks (CNN). *Remote Sensing of Environment* 237, 111446. doi.org/10.1016/j.rse.2019.111446
13. Chirayath, Ved and Instrella, Ron. 2019. Fluid Lensing and Machine Learning for Automated Centimeter-Resolution Airborne Assessment of Coral Reefs in American Samoa without Ocean Wave Distortion. *Remote Sensing of Environment* 235, 111475. doi.org/10.1016/j.rse.2019.111475
14. Rogers, J., Maticka, S., Chirayath, V., Woodson, B., Alonso, J., Monismith, St. 2018. Connecting flow over complex terrain to hydrodynamic roughness on a coral reef. *Journal of Physical Oceanography*. doi:*10.1175/JPO-D-18-0013.1*
15. McGillivary, Phil, Chirayath, Ved, and Baghdady, Joshua. 2018. Use of Multi-Spectral High Repetition Rate LED Systems for High Bandwidth Underwater Optical Communications, and Communications to Surface and Aerial Systems. *IEEE*. doi:10.1109/UComms.2018.8493228
16. Chirayath, Ved and Earle, Sylvia. 2016. Drones that See through Waves – Preliminary Results from Airborne Fluid Lensing for Centimetre-Scale Aquatic Conservation. Special Issue, *Aquatic Conservation: Marine and Freshwater Ecosystems*. https://doi.org/10.1002/aqc.2654
17. Suosaari, E., Reid, R., Playford, P., Foster, J., Stolz, J., Casaburi, G., Hagan, P., Chirayath, V., Macintyre, I., Planavsky, N. et al. 2016. New multi-scale perspectives on the stromatolites of Shark Bay, Western Australia. *Nature, Scientific Reports* 6: 20557. Doi: 10.1038/srep20557
18. Maximenko, N., Arvesen, J., Asner,G., Carlton, M., Castrence, L., Centurioni, Y., Chapman, J., Chirayath, V. et al. 2016. Remote sensing of marine debris to study dynamics, balances and trends. *NASA Decadal Survey for Earth Science and Applications from Space.*
19. Aurell, J., Mitchell, W., Chirayath, V., Jonsson, J., Tabor, D., Gullett, B.. 2017. Multipollutant Gas and Particle Emission Sampling with a Hexacopter Unmanned Aerial System. *Atmospheric Environment*; 166(11): 433–440. Doi: 10.1016/j.atmosenv.2017.07.046
20. Chirayath, Ved. 2016. Wonderworld. *Stanford University Magazine, Medium. https://medium.com/stanford-magazine/wonder-world-aa0aabc5ed7a*
21. Chirayath, Ved, Oscar Galvan-Lopez, and Ronnie Instrella. "Blind Wave Field Characterization from Fluid Lensing." (2015). https://tinyurl.com/4aems9va

22. Chirayath, V, Mahlstedt, B. "HiMARC 3D-high-speed, multispectral, adaptive resolution stereographic CubeSat imaging constellation." 2012. *IEEE SmallSat*. Winner of SmallSat Frank J. Redd Best Paper Award.
23. Chirayath, Ved. 2003. "Photometric Detection Of An Extra-solar Planetary Transit Across The Sun-like Star HD 209458. *Bulletin of the American Astronomical Society*. Vol. 35. https://ui.adsabs.harvard.edu/abs/2003AAS...203.1705C/abstract

Exhibitions
24. Chirayath, Ved. Solo exhibition. 2013. "Above, Below, & In-Between." The Sacramento Temporary Contemporary Museum. https://www.vedphoto.com/above-below-and-in-between
25. Chirayath, Ved. Solo exhibition. 2012. "Terrafirmament." Cantor Art Museum, Stanford University. https://www.vedphoto.com/terrafirmament
26. Chirayath, Ved. Solo exhibition. 2011-2013. "Physics in Vogue." Stanford University Angel Grant, Cantor Art Museum, Stanford University. https://www.vedphoto.com/physics-in-vogue
27. Chirayath, Ved. Solo exhibition. 2001. "Ceramics and Pottery by Ved Chirayath – Alpay Foundation Artist in Residence." Palos Verdes Art Center.

Other works, publications and abstracts
Interviews for Radio, Film, and Documentaries
28. "From Planetary Detection to Planetary Protection - Ved's Journey to Becoming a NASA Scientist and Inventor." 2020. *Storycorps.* https://archive.storycorps.org/interviews/from-planetary-detection-to-planetary-protection-veds-journey-to-becoming-a-nasa-scientist-and-inventor/
29. NASA Science Live Interview. 2020. https://youtu.be/TURJhJB9F-Y?t=585
30. NASA Science Live Earth Day with NASA Administrator. 2020. https://youtu.be/79Zjr3WRXLw?t=1475
31. "It's really amazing how difficult it is to study something like the ocean - An interview with Ved Chirayath." 2020. American Geophysical Union Narratives Project, *Storycorps*. ID APP2221273. https://archive.storycorps.org/interviews/its-really-amazing-how-difficult-it-is-to-study-something-like-the-ocean-an-interview-with-ved-chirayath/
32. "Research Scientist Ved Chirayath Organizes NASA's First Official Gay Pride Contingent In San Francisco." 2014. *Huffington Post*. https://www.huffpost.com/entry/nasa-gay-pride-contingent_n_5538118
33. "NASA ScienceCasts: Exploring Beneath the Waves." 2018. NASA ScienceCast Broadcast. https://www.youtube.com/watch?v=6fYNpU0yh6w&feature=emb_title
34. ABC Documentary, "Looking for Evidence of Past Life on Mars," featuring Dr. Ved Chirayath. 2017. https://www.youtube.com/watch?v=pOZdo4ldRPM
35. Stanford University Engineering Profile – Dr. Ved Chirayath. "I'm obsessed with finding new forms of life on our home planet. To me, that is one of the most compelling scientific pursuits." 2017. https://engineering.stanford.edu/spotlight/ved-chirayath
36. Hawaiian public radio. An interview with Dr. Ved Chirayath at the IUCN World Conservation Congress. 2016. https://www.hawaiipublicradio.org/post/conversation-wednesday-september-7th-2016#stream/0
37. NASA Earth Science Technology Office Interview with Dr Ved Chirayath and FluidCam Fluid Lensing instrument. 2016. https://www.youtube.com/watch?v=zrLvWPqmiLU
38. "Ved Chirayath Talks About Imaging Through the Ocean Surface." 2017. *NASA in Silicon Valley Podcast*. https://www.nasa.gov/ames/nisv-podcast-Ved-Chirayath
39. "Wells Fargo Point Foundation National LGBT Scholar – Ved Chirayath's Story." 2015. https://www.youtube.com/watch?v=TkE2TNsar4g
40. "Literally Looking Through Waves – A Mission Blue Technology Exclusive." 2014. Mission Blue & Sylvia Earle Alliance. https://www.youtube.com/watch?v=kdp-xDRiDQY
41. IUCN (International Union for Conservation of Nature) World Parks Congress in Sydney, Australia. 2014. https://www.nasa.gov/ames/las/wpc
42. "The incredible story behind the discovery of this amazing, lost video of the Grand Canyon." 2015. The Washington Post. https://www.washingtonpost.com/news/capital-weather-gang/wp/2015/09/15/the-incredible-story-behind-the-discovery-of-this-amazing-lost-video-of-the-grand-canyon/
43. "No Tax Dollars Went To Make This Space Viking Photo." 2013. *National Public Radio*. https://www.npr.org/2013/08/05/209144805/no-tax-dollars-went-to-make-this-space-viking-photo

Selected Press
44. "NASA Scientists Named AGU 2020 Union Honorees." 2021. https://www.nasa.gov/feature/goddard/2020/nasa-scientists-named-agu-2020-union-honorees
45. "Drone takes to the skies to image offshore reefs." Silver, A. 2019. *Nature* 570**,** 545 (2019), *doi: 10.1038/d41586-019-01988-9*

46. "Ice-tracking space laser could also map sea floor and monitor health of coral reefs*." 2020*. Voosen, P. *Science Magazine*. https://www.sciencemag.org/news/2020/04/ice-tracking-space-laser-could-also-map-sea-floor-and-monitor-health-coral-reefs

47. NASA is asking gamers and citizen scientists to help map the world's corals. 2020. *World Economic Forum*. https://www.weforum.org/agenda/2020/05/nasa-science-coral-oceans-floor-explore-civilians-exploration/

48. "Coral reef video game will help create global database." 2018. Cartier, K. M. S. *Eos, 99,* doi:10.1029/2018EO112373.

49. "NASA Calls on Gamers, Citizen Scientists to Help Map World's Corals." 2020. *NASA*. www.nasa.gov/press-release/nasa-calls-on-gamers-citizen-scientists-to-help-map-world-s-corals

50. "Help NASA map the world's coral reefs." 2020. *Fast Company*. https://www.fastcompany.com/90491275/bored-at-home-this-game-lets-you-help-nasa-map-the-worlds-coral-reefs

51. "NASA построит карты коралловых рифов в океане с помощью игры NeMO-Net." 2020. http://thg.ru/technews/20200413_234510.html

52. "NASA Wants You to Help Save the Ocean's Corals by Playing This New Game." 2020. *Thrillist*. https://www.thrillist.com/news/nation/nasa-nemo-net-app-game-coral-reefs-ocean-map

53. "NASA created a game that lets you help map the ocean's coral reefs." 2020. *CNET*. https://www.cnet.com/news/nasa-wants-gamers-to-help-it-map-the-oceans-coral-reefs/

54. "NASA lanza videojuego para que ciudadanos ayuden a localizar corales." 2020. https://tehuacandigital.com.mx/2020/04/11/nasa-lanza-videojuego-para-que-ciudadanos-ayuden-a-localizar-corales/

55. "NASA producing 3D maps of Guam's reefs." 2019. *Guam KUAM.* https://www.kuam.com/story/40476451/nasa-producing-3d-maps-of-guams-reefs

56. "La NASA vous invite à jouer pour la bonne cause." 2020. *Presse-citron*. https://www.presse-citron.net/la-nasa-vous-invite-a-jouer-pour-la-bonne-cause/

57. "美国 NASA 希望你能帮助绘制全球珊瑚地图." 2020. *CNBETA.* https://www.cnbeta.com/articles/science/966179.htm

58. "This NASA Camera Uses 'Fluid Lensing' to See Through Ocean Waves." 2018. *Petapixel*. https://petapixel.com/2018/04/26/this-nasa-camera-uses-fluid-lensing-to-shoot-through-ocean-waves/

59. "Mapping coral reefs with drones." 2018. *Stanford Engineering*. https://earth.stanford.edu/news/mapping-coral-reefs-drones#gs.utyaon

60. Stanford drones open way to new world of coral research. 2013. *Stanford University*. https://news.stanford.edu/news/2013/october/coral-reefs-drones-101613.html

61. "Back Down to Earth - Two years later, balloon cameras turn up in the desert." 2016. *Stanford Magazine*. https://stanfordmag.org/contents/back-down-to-earth

62. "The art of back-of-the-envelope calculations." 2014. Symmetry Magazine. https://www.symmetrymagazine.org/article/june-2014/the-art-of-back-of-the-envelope-calculations

Other Publications

63. Chirayath, Ved. 2016. "NASA Climate Downscale Hyperwall Visualization." NASA. https://www.youtube.com/watch?v=FqDJ5LgxSJA&feature=emb_title

64. "Fluid Lensing and Deep Machine Learning for Global Coral Reef Assessment." 2018. American Geophysical Union NASA Hyperwall Talk. https://www.youtube.com/watch?v=OlI_LmxnLqc

65. Chirayath, Ved. 2016. "Fluid Lensing & Applications to Remote Sensing of Aquatic Systems." PhD Thesis. *Stanford University.*

66. Chirayath, Ved. 2016. "Advances in Thermophotovoltaic Radioisotope Generators for Deep Space Exploration." *Stanford University.*

67. Chirayath, Ved. 2016. "Impacts of Nuclear Testing on Bikini Atoll Coral Reefs." *Stanford University.*

68. Kabariaa, Hardik, Ashish Goelb, and Kristen Moorec. 2013. "3D Reconstruction, Segmentation and Classification of Corals from Aerial Images Final Report: CS 231A." *Stanford University.*

69. Chirayath, Ved. 2012. "Plasma Actuated Unmanned Aerial Vehicle." Master's Thesis. *Stanford University*.

70. Chirayath, V., Arnold, J., Kalk, M., Roth, G., Serrano, A., Wang, W. 2011. "Measuring the viscosity of a superfluid Helium mixture with a high-Q Quartz oscillator." *Department of Physics, Stanford University*. https://www.vedphoto.com/physics-108-final-paper---group-1.pdf

71. Chirayath, Ved. 2010. "Experimental determination of the speed of light." *Department of Physics*, *Stanford University*. https://www.vedphoto.com/experimental-determination-of-the-speed-of-light

72. Chirayath, Ved. 2010. "Experimental Demonstration of Optical Laser Oscillation with Population Inversion in Helium-Neon Plasma." *Department of Physics, Stanford University*. https://www.vedphoto.com/population-inversion-in-helium-neon-plasma.pdf

73. Chirayath, Ved. 2010. "Experimental determination of the Boltzmann constant by Johnson noise." *Department of Physics, Stanford University.* https://www.vedphoto.com/experimental-determination-of-the-boltzmann-constant.pdf

Conference Papers & Proceedings (See Professional for Invited Keynote Presentations and Panels)

74. Barbier, Louis Matthew, et al. "The Present and Future of NASA's Citizen Science Program." *AGU Fall Meeting 2020*. AGU, 2020.

75. Chirayath, V*.,* Li, A., Torres-Perez, J., Segal-Rozenhaimer, M., van den Bergh, J. 2020. NASA NeMO-Net - The Neural Multi-Modal Observation and Training Network for Global Coral Reef Assessment. Fall Meeting, *American Geophysical Union*.

76. French, Matthew, et al. "Emulating and Verifying Sensing, Computation, and Communication in Distributed Remote Sensing Systems." *IGARSS 2020-2020 IEEE International Geoscience and Remote Sensing Symposium*. IEEE.

77. Estes, Maury. "Using satellite remote sensing and in situ data to evaluate marine biodiversity and ecosystems." *Ocean Sciences Meeting 2020*. AGU, 2020.

78. Chirayath, Ved. "NEMO-NET & fluid lensing: the neural multi-modal observation & training network for global coral reef assessment using fluid lensing augmentation of NASA EOS data." (2018).

79. McGillivary, Philip Andrew, et al. "Advancing Underwater Optical Communications Technology via Demonstration Projects for Students, Researchers and Maritime Forces through Partnerships between Government and Industry." *Ocean Sciences Meeting 2020*. AGU, 2020.

80. Chirayath, Ved, et al. "NeMO-Net: The Neural Multi-Modal Observation and Training Network for Global Coral Reef Assessment." *AGU Fall Meeting Abstracts*. Vol. 2019. 2019.

81. Li, Alan, Ron Instrella, and Ved Chirayath. "Fluid Lensing based Machine Learning for Augmenting Earth Science Coral Datasets." *AGU Fall Meeting Abstracts*. Vol. 2016. 2016.

82. Chirayath, Ved, et al. "NASA NeMO-Net-A Neural Multimodal Observation & Training Network for Marine Ecosystem Mapping at Diverse Spatiotemporal Scales." *IGARSS 2020-2020 IEEE International Geoscience and Remote Sensing Symposium*. IEEE.

83. van den Bergh, Jarrett, et al. "A 3D Active Learning Application for NeMO-Net, the NASA Neural Multi-Modal Observation and Training Network for Global Coral Reef Assessment." *AGU Fall Meeting Abstracts*. Vol. 2017. 2017.

84. Li, Alan Sheng Xi, Ved Chirayath, and Kamalika Das. "H34B-06: NeMO-Net–The Neural Multi-Modal Observation & Training Network for Global Coral Reef Assessment."

85. Chirayath, Ved, et al. "NASA NeMO-Net-The NASA Neural Multi-Modal Observation & Training Network for Global Coral Reef Assessment." *AGU Fall Meeting Abstracts*. Vol. 2018. 2018.

86. Vitek, Brooke, et al. "Morphometric analysis of shallow marine stromatolites in Hamelin Pool based on Fluid Lensing Image Processing." *AGU Fall Meeting Abstracts*. Vol. 2018. 2018.

87. van den Bergh, Jarrett, et al. "A 3D Citizen Science Video Game for NeMO-Net, the NASA Neural Multi-Modal Observation and Training Network for Global Coral Reef Assessment." *AGU Fall Meeting Abstracts*. Vol. 2018. 2018.

88. Li, Alan Sheng Xi, et al. "NeMO-Net-The Neural Multi-Modal Observation & Training Network for Global Coral Reef Assessment." *AGU Fall Meeting Abstracts*. Vol. 2017. 2017.

89. Li, Alan Sheng Xi, et al. "NeMO-Net-The Neural Multi-Modal Observation & Training Network for Global Coral Reef Assessment." *AGU Fall Meeting Abstracts*. Vol. 2018. 2018.

90. Fladeland, Matthew M., et al. "Using remotely piloted aircraft and onboard processing to optimize and expand data collection." *AGU Fall Meeting Abstracts*. Vol. 2016. 2016.

91. Chirayath, Ved, and Ron Instrella. "FluidCam 1&2-UAV-based Fluid Lensing Instruments for High-Resolution 3D Subaqueous Imaging and Automated Remote Biosphere Assessment of Reef Ecosystems." *American Geophysical Union* 2016 (2016): IS53A-01.

92. Instrella, Ron, and Ved Chirayath. "Automated Segmentation and Classification of Coral using Fluid Lensing from Unmanned Airborne Platforms." *AGU Fall Meeting Abstracts*. Vol. 2015. 2015.

93. Chirayath, Ved, and J. Alonso. "Plasma actuated unmanned aerial vehicle–the first plasma controlled flight in history." *Conference at Standford University VPUE*. 2011.

94. Das, Kamalika, et al. "Classifying multimodal coral reef images using domain adaptation." *AGU Fall Meeting 2018*. AGU, 2018.

95. Monismith, Stephen G., et al. "Hydrodynamic roughness: spatial variability of bottom drag on a coral reef." *2018 Ocean Sciences Meeting*. AGU, 2018.

96. Bianco, Mariasole, Rebecca Koss, and Katherine Zischka. "Empowering emerging leaders in marine conservation: the growing swell of inspiration." *Aquatic Conservation: Marine and Freshwater Ecosystems* 26 (2016): 225-236.

97. Gaddis, Keith. "Advances in the application of remote sensing for biodiversity monitoring: Integrating data across scales and technologies." *AGU Fall Meeting 2019*. Agu, 2019.

98. Chirayath, Ved. 2018. Next-Generation Sensing Technologies for Exploring Ocean Worlds. *Ocean Optics* Plenary. Dubrovnik, Croatia. https://ntrs.nasa.gov/search.jsp?R=20180007065

99. McGillivary, P., Chirayath, V., Bahr, A. et al. Advancing Underwater Optical Communications Technology via Demonstration Projects for Students, Researchers and Maritime Forces through Partnerships between Government and Industry. Ocean Sciences Meeting 2020. *American Geophysical Union*.

100. Chirayath, Ved. 2016. "FluidCam 1&2 - UAV-based Fluid Lensing Instruments for High-Resolution 3D Subaqueous Imaging and Automated Remote Biosphere Assessment of Reef Ecosystems." *AGU Ocean Sciences Meeting.* https://agu.confex.com/agu/os16/preliminaryview.cgi/Paper93849.html

101. Chirayath, Ved. 2015. FluidCam 1&2 - UAV-Based Fluid Lensing Instruments for High-Resolution 3D Subaqueous Imaging and Automated Remote Biosphere Assessment of Reef Ecosystems." AGU Fall Meeting 1.

102. Chirayath, Ved. 2015. "ESTO FluidCam 1&2 CubeSats - Fluid Lensing CubeSat Imagers with Applications to High-Resolution 3D Subaqueous Imaging & Automated Remote Biosphere Assessment from Airborne and Space-borne Platforms." NASA ESTO Earth Science Technology Forum, Caltech, Pasadena, CA. 1 https://esto.nasa.gov/forum/estf2015/abstracts/chirayath.htm

103. Chirayath, Ved. 2015. The 2015 El Niño Event and the Battery in the Pacific. Stanford University.

104. Chirayath, Ved. 2014. Fluid Lensing, Applications to High-Resolution 3D Subaqueous Imaging & Automated Remote Biosphere Assessment from Airborne and Space-borne Platforms. AGU Fall Meeting 1: 1178. https://ui.adsabs.harvard.edu/abs/2014AGUFMOS41A1178C/abstract

105. Chirayath, Ved. 2014. "Fluid Lensing & Applications to High-Resolution 3D Subaqueous Imaging from Airborne and Space-borne Platforms." NASA ESTO Earth Science Technology Forum, Leesburg, VA. https://esto.nasa.gov/forum/estf2014/abstracts/Chirayath.htm

106. Fladeland, M., Schoenung, S., Chirayath, V., Podolske, J. 2019. Supporting NASA Science with High-Altitude Long-Endurance Aircraft. *Living Planet Symposium 2019*. https://ntrs.nasa.gov/search.jsp?R=20190027733

Other works accepted for publication

1. Chirayath, V. et al. 2021. "Oceans Across the Solar System - Technology." Accepted. NASA Headquarters Publication for Special Issue, Annual Review of Earth and Planetary Sciences.

2. Chirayath, V*.,* Li, A., Torres-Perez, J., Segal-Rozenhaimer, M., van den Bergh, J. 2021. "High-resolution Global Characterization of Shallow Marine Systems using NASA NeMO-Net – the Multimodal Neural Network for Marine Ecosystem Assessment using Fluid Lensing." *Submitted.*

3. Chirayath, V., King, R., Li, A., Torres-Perez, J., van den Bergh, J., Jonsson, J. 2021. "2019 Airborne Fluid Lensing Campaign in Puerto Rico." *Commissioned.*

4. Chirayath, V., King, R., Li, A., van den Bergh, J., Jonsson, J. 2021. "2019 Airborne Fluid Lensing Campaign in Guam." *Commissioned.*