Yoichi Paolo Shiga

EDUCATION

PhD, Environmental Engineering
Stanford University, 2018
Advisor: Anna M. Michalak

MS, Environmental Engineering
University of Michigan, 2011

BS, Aerospace Engineering
University of California San Diego, 2008

POSITIONS

Universities Space Research Association
NASA Academic Mission Services
NASA Ames Research Center
Mountain View, California
August 2019 - Present

Visiting Associate Scientist, Earth Science

Exploring the terrestrial carbon cycle using atmospheric observations, remote sensing, and geostatistical data fusion.

Carnegie Institution for Science
Department of Global Ecology
Stanford, California
April 2018 - July 2019

Postdoctoral Research Fellow, Supervisor: Dr. Joseph Berry

Estimation of photosynthetic carbon fluxes by combining atmospheric carbonyl sulfide observations with remote sensing observations.

PUBLICATIONS

Whelan, M.E.; Anderegg, L. D. L.; Badgley, B; Campbell, J.E.; Commane, R; Frankenberg, C; Hilton, T.W.; Kuai, L.;, Parazoo, N.; **Shiga, Y.P**.; Wang, Y.; Worden, J.; (2020) Two Scientific Communities Striving for a Common Cause: innovations in carbon cycle science. *Bulletin of the American Meteorological Society*.

Hu, L; Andrews, A.E.; Thoning K.W.; Sweeney C; Miller J.B.; Michalak A.M.; Dlugokencky E; Tans P.P.; **Shiga Y.P.**; Mountain M; Nehrkorn T; Montzka S.A.; McKain K; Kofler J; Trudeau M., Michel S.E.; Biraud S.C.; Fischer M.L.; Worthy D.E.J.; Vaughn B.H.; White J.W.C.; Yadav V; Basu S; van der Velde I.R. (2019), “Enhanced North American carbon uptake associated with El Niño,” *Science Advances,* 5 (6), eaaw0076, https://doi.org/10.1126/sciadv.aaw0076.

Shiga, Y.P.; Michalak, A.M.; Fang, Y; Schaefer, K; Andrews, A.E.; Huntzinger, D.H.; Schwalm, C.R.; Thoning, K.; Wei, Y. (2018), “Forests dominate the interannual variability of the North American carbon sink,” *Environmental Research Letters,* 13 (8), 084015, https://doi.org/10.1088/1748-9326/aad505.

PUBLICATIONS (continued)

Shiga, Y. P. (2018). Characterizing natural and anthropogenic carbon flux spatiotemporal variability at regional scales using a dense network of atmospheric CO2 observations over North America (Doctoral dissertation). Stanford University. Retrieved from https://searchworks.stanford.edu/view/12375809

Shiga, Y.P.; Tadić, J.; Yadav, V.; Qiu, X.; Andrews, A.; Berry, J.; Michalak, A.M.; (2018), "Atmospheric CO_2 observations reveal strong correlation between regional net biospheric carbon uptake and solar induced chlorophyll fluorescence," *Geophys. Res. Lett., 44,* doi:10.1002/2017GL076630.

Alden, C.; Miller, J.; Gatti, L.; Gloor, M.; Guan, K.; Michalak, A.M.; van der Laan-Lujikx, I.T.; Touma, D; Andrews, A.E.; Basso, L.S.; Correia, C.S.C.; Domingues, L.G.; Joiner, J.; Krol, M.C.; Lyapustin, A.I.; Peters, W.; **Shiga, Y.P.**; Thoning, K.; van der Velde, I.; van Leeuwen, T.T.; Yadav, V.; Diffenbaugh, N.; (2016), "Regional atmospheric CO2 inversion reveals seasonal and geographic differences in Amazon net biome exchange.," *Glob Change Biol,* 22: 3427–3443. doi:10.1111/gcb.13305.

Yadav, V.; Michalak, A.M.; Ray, J.; **Shiga, Y.P.**; (2016), **"**A statistical approach for isolating fossil fuel emissions in atmospheric inverse problems, *J. Geophys. Res. Atmos*., 121, 12,490–12,504, doi:10.1002/2016JD025642.

Jucks, K.; Neeck, S.; Abshire, J.; Baker, D.; Browell, E.; Chatterjee, A.; Crisp, D.; Crowell, S.; Denning, S.; Hammerling, D.; Harrison, F.; Hyon, J.; Kawa, S.; Lin, B.; Meadows, B.; Menzies, R.; Michalak, A.; Moore, B.; Murray, K.; Ott, L.; Rayner, P.; Rodriguez, O.; Schuh, A.; **Shiga, Y.**; Spiers, G.; Wang, J.; Zaccheo, T.; (2015), Active Sensing of CO 2 Emissions over Nights, Days, and Seasons (ASCENDS) Mission, Science Mission Definition Study.

Fang, Y.; Michalak, A. M.; **Shiga, Y. P.**; and Yadav, V. (2014), "Using atmospheric observations to evaluate the spatiotemporal variability of CO_2 fluxes simulated by terrestrial biospheric models, *Biogeosciences*, 11, 6985-6997, doi:10.5194/bg-11-6985-2014.

Shiga, Y.P.; Michalak, A.M.; Gourdji, S.M.; Mueller, K.L., Yadav, V. (2014), "Detecting Fossil Fuel Emissions Patterns From Sub-Continental Regions Using North American In-Situ CO_2 Measurements," *Geophys. Res. Lett.,* 41, 4381–4388, doi:10.1002/2014GL059684.

Shiga, Y.P.; Michalak, A.M.; Kawa, S.R.; Engelen, R.J. (2013), "In-Situ CO_2 Monitoring Network Evaluation and Design: A Criterion Based on Atmospheric CO_2 Variability," *J. Geophys. Res. Atmos*., 118, 2007–2018, doi:10.1002/jgrd.50168.

INVITED PRESENTATIONS

"Decision Making in a Changing Climate", **Stanford Summer College Academy** - Climate Change: Biology, Impacts, and What You Can Do, Stanford, California.
Guest Lecture, August 2015.

"Gender Roles and Engineering Student Teams", **Stanford Student Chapter of the American Society for Engineering Education**, Stanford, California.
Oral Presentation, November 2014.

"Atmospheric Inverse Modeling and Uncertainty Quantification for Surface Fluxes", **Next-Generation Ecosystem Experiments – Arctic: Scaling Workshop**, Oak Ridge, Tennessee,
Oral Presentation, April 2013.

TEACHING

San José State University, *Atmospheric Pollution – METR 113,* San José, California (Virtual).

Lecturer, Spring (2021): Taught upper division general education course on atmospheric pollution to ~50 students in a virtual asynchronous setting.

TEACHING (continued)

Stanford Continuing Studies*, Solving Climate Change: Promising Solutions of the 21st Century,* Stanford, California.

Guest Lecture, February (2019), October (2019), June (2020 – Virtual): Presented a narrative overview of the carbon cycle and climate change.

Thinking Matters – Stanford University, *Sustainability Challenges and Transitions – THINK40*, Stanford, California.

Teaching Fellow, Fall (2016): Collaborated with teaching team to design syllabi, assignments, assessments and lesson plans. Led 16 student sections twice a week and individual tutorials twice a quarter.

Stanford University, *Introduction to Geostatistics – EESS 214*, Stanford, California.

Teaching Assistant, Fall (2012 & 2013): Taught MATLAB programming tutorial, consulted with students individually throughout the development of final projects, held interactive office hours.

Elementary Institute of Science, San Diego, California.

Engineering Lab Instructor, 2008 – 2009: Developed hands-on engineering lesson plans for 2nd – 8th grade students in an after-school science enrichment program for students of diverse backgrounds focusing on curiosity, creativity, and critical thinking.

University of California San Diego, *Introduction to Engineering Design – MAE 3*, San Diego, California.

Lab Tutor, Spring (2008): Worked with teaching team to facilitate first year robot design competition projects. Taught weekly lab tutorials and oversaw weekly lab workshop hours.

ACADEMIC LEADERSHIP AND SERVICE

Peer Ombuds Officer (2015-2019)
Carnegie Institution for Science
Department of Global Ecology, Stanford, CA
International Association of Ombudsman Certified

Provided impartial, informal, independent, and confidential avenue for concerns to be voiced and conflict resolution. Reported directly to department director.

Board Member (2013-2017)
American Society for Engineering Education (ASEE) Stanford Chapter
Stanford, CA

Organized monthly science and engineering education discussions (monthly attendance ~ 25)
Planned annual engineering education colloquium (attendance ~ 100)

AWARDS & FELLOWSHIPS

Best Student Paper Award, American Geophysical Union Fall Meeting (December 2012)

1st Place (tie) Student Poster Winner at Michigan Geophysical Union (March 2011)

Rackham Merit Fellowship (Fall 2009-2011)

PROFESSIONAL MEMBERSHIP

American Geophysical Union (2010-Present)

American Society for Engineering Education (2013-Present)