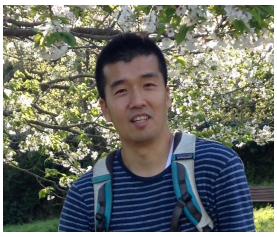

Kazuyuki Miyazaki

NASA Jet Propulsion Laboratory

My research

Kazuyuki Miyazaki is a scientist who specializes in atmospheric composition research. His research activities range from the development of chemical data assimilation system to the study of the impact of air quality on climate and human health. His chemical reanalysis product, based on assimilation of multiple satellite measurements from various NASA missions, has provided unique information on decadal changes in the atmospheric environment for various studies. He is currently a PI of several NASA projects, including the NASA Earth Science to Action, Aura Science team, ACMAP, and Earth Science U.S. Participating Investigator programs. His current research includes observing system simulation experiments (OSSEs), evaluations of satellite data products and chemistry-climate models, and air quality and greenhouse gas emission analysis.

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https://science.jpl.nasa.gov/people/Miyazaki/

EDUCATION

Ph.D. in Geophysics, 2006
Tohoku University, Japan

Focus: Atmospheric Sciences

Professional Experience

	University of California, Los Angeles
2022 - Present	**Visiting Project Scientist**, Joint Institute for Regional Earth System Science and Engineering (JIFRESSE)
	Jet Propulsion Laboratory, California Institute of Technology
2019 - Present	**Scientist**, Tropospheric Composition Group
2016 - 2017	**Research Scholar**, Carbon Cycle and Ecosystems Group
	Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
2019 - Present	**Visiting Senior Scientist**, Geochemical Cycle Research Group
2017 - 2019	**Deputy Group Leader**, Geochemical Cycle Research Group
2013 - 2019	**Senior Scientist (tenured)**, Research and Development Center for Global Change
2011 - 2012	**Research Scientist**, Environmental Biogeochemical Cycle Research Program
2006 - 2010	**Postdoctoral Scientist**, Frontier Research Center for Global Change
	University of Hawai'i
2012 - 2013	**Visiting Scientist,** International Pacific Research Center (IPRC)
	Royal Netherlands Meteorological Institute (KNMI)
2010 - 2012	**Visiting Scientist,** Chemistry and Climate Division
	The Japan Society for the Promotion of Science (JSPS)
2010 - 2012	**Research Fellow**, Overseas Research Fellowships
2003 - 2006	**Research Fellow**, Category DC1: for excellent Ph.D. students

Professional Activities

Editorial and Committee Service

2024 – present	**Associate Editor**, Nature Portfolio npj Clean air
2024 – present	**Dissertation committee member**, Gwangju Institute of Science and Technology
2023 – present	**Dissertation advisory committee,** The University of North Carolina at Chapel Hill, Environmental Sciences and Engineering
2019 - present	**Steering members,** IGAC (International Global Atmospheric Chemistry), AMIGO (Analysis of eMIssions usinG Observations)
2019 - present	**Science Advisory Group member,** the ESA Mission ESP-MACCS
2015 - 2019	**Committee member**, the IGPB/WCRP/DIVERSITAS subcommittee, *Science Council of Japan*

Advisory and Review Panel

2023	**Member,** Use of Geostationary Satellites to Improve Air Quality Characterization and Forecasts, the International Space Science Institute (ISSI)
2022 – present	**Team member,** The Joint Center for Satellite Data Assimilation (JCSDA) AOP2022
2021 – present	**Working group lead,** IGAC, Tropospheric Ozone Assessment Report, Phase II (TOAR-II, 2020-2024), Chemical Reanalysis Focus working group
2021 – present	**Validation team member**, GEMS L1/L2 validation team
2018 – present	**Review Panel,** NASA, ESA, EFG grant proposals
2015	**Review Panel**, Wageningen University graduate school evaluation panel
2013 – 2017	**Expert investigator,** National Institute of Science and Technology Policy, *Ministry of Education, Culture, Sports, Science and Technology, Japan*

Conference and Workshop Organizer

2022 – 2024	**SOC,** WMO workshop on the Impact of Various Observing Systems on NWP and Earth System Prediction
2020	**Workshop member,** COVID-19: Identifying Unique Opportunities for Earth System Science, Caltech KISS Virtual Workshop
2020	**Workshop organizer**, AMIGO/IGAC VIRTUAL WORKSHOP, CHANGES IN ATMOSPHERIC COMPOSITION DURING THE COVID-19 LOCKDOWNS
2020	**Session Chair**, AGU fall meeting 2020 "Satellite-Based Air Quality and Atmospheric Composition Impacts of COVID-19"
2020	**Panelist**, the EPA's webinar "Moving from research to regular utilization of satellite data: NO_2 and O_3" (2020)

Awards

NASA and JPL

2025	Blue Ribbon Winner at Research Poster Day
2025	JPL Voyager Award
2021	NASA Exceptional Scientific Achievement Medal
2020	NASA group achievement award for MUSES algorithm team
2020	JPL team bonus award for COVID-19 air quality research
2017	NASA group achievement award to KORUS-AQ team

Others

2024	JAMSTEC Research & Development Achievement Award
2023	Best presentation award at EPA 2023 International Emissions Inventory Conference
2012	Yamamoto-Shono Award (best young scientist award) from the Meteorological Society of Japan
2009	Young Scientist Award from the Japan Society of Atmospheric Chemistry
2009	JAMSTEC Award for Outstanding Research Accomplishments
2004	Best poster award, 5th International Workshop on Global Change: Connection to the Arctic (GCCA5)
2004 - 2006	Half exemption of the school fee at Tohoku University
1999 - 2003	Japanese Government Scholarship, Ministry of Education, Culture, Sports, Science and Technology

Mentor / Teaching experience

JPL

2025 – present	**Mentor**, Hyeonmin Kim, UCLA/JIFRESSE postdoc
	Mentor, Jinhyeok Yu, JPL postdoc
2025	**Mentor**, Laura Yang (Harvard University), NSF intern
2024 – present	**Mentor**, Jinkyul Choi, NPP postdoc
2023 – 2025	**Mentor**, Mukesh Rai, JPL postdoc
2024 – present	**Mentor**, Machenzie Arnold (UCLA), 2023 JIFRESSE Summer Internship Program (JSIP)
	Mentor, Jiani Yang (Caltech), JPL Summer Internship Program (JPLSIP)
	Co-mentor, Kelsey Doerksen (Univ. Oxford), JPL Postdoctoral Researcher JPL Visiting Student Research Program (JVSRP)
2022 – 2023	**Mentor**, Joanna Li (UCLA), UCLA Student Research Program (SRP)
	Mentor, Machenzie Arnold (UCLA), UCLA Strategic University Research Partnerships (SURP) Program
	Mentor, Oscar Neya (UCLA), 2022 UCLA Strategic University Research Partnerships (SURP) Program
2020 – present	**Co-mentor**, Jiani Yang (Caltech), Caltech graduate student
2022	**Mentor**, Joanna Li (UCLA), 2022 JIFRESSE Summer Internship Program (JSIP)
	Co-Mentor, Eshani Patel (Caltech), 2022 Caltech SURF Internship Program (JSIP)
2021	**Mentor**, Madelyn Romberg (Caltech), 2021 JIFRESSE Summer Internship Program (JSIP) & JPL Visiting Student Research Program (JVSRP)
2019	**Mentor**, Nadia Columbi (UCLA), JPL summertime intern student (JPLSIP)

JAMSTEC

2016 – 2020	**Mentor**, Takashi Sekiya, postdoctoral scientist (JAMSTEC)
2016 – 2019	**Co-supervisor**, Dai Koshin, PhD course student (University of Tokyo)
2015 – 2016	**Co-supervisor**, PhD course student (Tohoku University)
2013	**Part-time Lecturer**, Ibaraki University
2009 – 2010	**Co-supervisor**, master's candidate (Hokkaido University)
2003 – 2006	**Technical assistance**, Supercomputing System Information Synergy Center, Tohoku University
2003 – 2004	**Research Assistant**, Tohoku University

Media releases

- New NASA Study Tallies Carbon Emissions From Massive Canadian Fires: https://www.nasa.gov/earth/new-nasa-study-tallies-carbon-emissions-from-massive-canadian-fires/
- NASA Tracks COVID-19's Atmospheric Fingerprint https://www.youtube.com/watch?v=mBXeA3v1NLY used in "NASA Science Enables First-of-its-Kind Detection of Reduced Human CO2 Emissions" https://www.nasa.gov/feature/goddard/2022/for-the-1st-time-nasa-spots-short-term-drops-in-co2-emissions-from-human-activity https://science.nasa.gov/science-news/nasa-trackscovid-19s-atmospheric-fingerprint
- Local Lockdowns Brought Fast Global Ozone Reductions, NASA Finds, June 9, 2021 (more than 200 new articles) https://www.jpl.nasa.gov/news/local-lockdowns-brought-fast-global-ozone-reductions-nasa-finds
- China's COVID Lockdown Significantly Cut Air Pollution-Related Hospitalizations, October 10, 2020 https://nicholas.duke.edu/news/chinas-covid-lockdown-significantly-cut-air-pollution-related-hospitalizations
- Unexpected slowdown of US pollutant emission reduction in the past decade (in Japanese), May 1, 2018 http://www.jamstec.go.jp/j/about/press_release/20180501/
- Decadal changes in global surface NOx emissions from multi-constituent satellite data assimilation (in Japanese), January 27, 2017 http://www.jamstec.go.jp/j/about/press_release/20170127/
- *Animations and articles for the general public*: Global Tropospheric Ozone Response to Worldwide COVID-19 Lockdowns, https://svs.gsfc.nasa.gov/4912
- *Animations and articles for the general public*: Reduction in Tropospheric NOx and Ozone Corresponding to Worldwide COVID-19 Lockdowns, https://svs.gsfc.nasa.gov/4959
- *Animations and articles for the general public*: The impact of COVID-19 restrictions on global air quality, https://www.youtube.com/watch?v=prTLw1YoiIU

Funding

NASA and JPL proposals funded as PI

- **PI,** *High-Resolution Global Data Assimilation of Satellite and Surface Observations for Atmospheric Composition and Emission Analysis*, **NASA ROSES Atmospheric Composition Modeling and Analysis Program** (*"Selectable"* for FY2026-2028)
- **PI,** *Earth Action for Air Quality at JPL*, **NASA** (FY2025-2027)
- **PI (as mentor),** *Earth Science: Data assimilation of atmospheric composition*, **NASA Postdoctoral Program (NPP)** (FY2025-2026)
- **PI,** *Shifting patterns of global emissions and ozone chemical regime linked to human activity and natural processes using a decadal chemical reanalysis*, **NASA ROSES Aura Science Team and Atmospheric Composition Modeling and Analysis Program** (FY2023-2026)
- **PI,** *New satellite-based products of global fossil fuel CO_2 emissions from JAXA's GOSAT-GW*, **NASA ROSES Earth Science U.S. Participating Investigator** (FY2022-2027)
- **PI,** *Impact of COVID-19 on radiative forcing from short-lived climate pollutants (SLCPs) informed by satellites, modeling, and assimilation*, **JPL Researchers on Campus (JROC) Program**, (FY2023)
- **PI,** Studying 2020 western US mega-fires using carbon monoxide from satellites, models, and reanalysis, **JPL Strategic University Research Partnership (SURP)**, (FY2023-2025)
- **PI,** Sub-grid Scale Drivers of Pollution Inferred from Model-based Inference and Machine Learning, **JIFRESSE Summer Internship Program (JSIP),** (FY2022)
- **PI,** MOMO-Chem research support, **NASA ROSES Aura Science Team and Atmospheric Composition Modeling and Analysis Program** (FY2022)
- **PI,** *Subgrid Scale Drivers of Pollution Inferred from Model-Based Inference and Machine Learning*, **JPL Strategic research and technology development (SRTD)**, (FY2022-2024)
- **PI**, JPL Earth Science Division Raise the Bar (2020-2023)
- **PI,** *Quantifying the impacts of global shifts of anthropogenic emissions on air quality using a decadal chemical reanalysis based on the Aura and A-train satellite measurements,* **NASA ROSES Aura Science team NNH19ZDA001N-AURAST** (2020–2023)

NASA and JPL proposals funded as Co-I and collaborators

- **Co-I,** *Advancing GHG and AQ Digital Twins for Societal Co-Benefits,* **JPL Strategic research and technology development (SRTD)**, (FY2024-2026) (PI: Kevin Bowman)
- **Collaborator,** Using new generation satellite observations to investigate the influence of drought and heatwave on isoprene emission, NNH22ZDA001N-FINESST:F.5 Future Investigators in NASA Earth and Space Science and Technology, (2023-2026) (PI: Alex Guenther)
- **Collaborator,** Wildfire drivers and impacts on air pollution and vegetation in a changing climate: an integrated remote sensing and modeling approach, NASA NNH22ZDA001N-IDS:A.28 Interdisciplinary Research in Earth Science, (2023-2026) (PI: Pablo Saide)
- **Co-I,** *NASA Carbon Monitoring System Flux (CMS-Flux) in support of the Global Stocktake*, **NASA ROSES Carbon Monitoring System** (FY2023-2026) (PI: Kevin Bowman)
- **Collaborator,** *Tropospheric Regional Atmospheric Composition and Emissions Reanalysis - 1 (TRACER-1) 2005 - 2024*, **NASA ROSES Aura Science Team and Atmospheric Composition Modeling and Analysis Program** (FY2023-2026) (PI: Arthur Mizzi)
- **Collaboraor,** *Regimes of Upper Troposphere / Lower Stratosphere (UTLS) Satellite-derived Trends in Composition (RUSTIC)*, **NASA ROSES Aura Science Team and Atmospheric Composition Modeling and Analysis Program** (FY2023-2026) (PI: Gloria Manney)
- **Co-I,** *STRATOS,* **JPL Strategic research and technology development (SRTD)**, (FY2022-2024)
- **Co-I,** *Ozone and Trace Gases,* **JPL Strategic research and technology development (SRTD)**, (FY2022-2024)
- **Co-I,** *Air Quality Architecture to Meet US National Needs for Forecasting, Management, and Assessment of Health Impacts,* **JPL Strategic research and technology development (SRTD)** (FY2022-2024)
- **Co-I**, A scalable framework for assessing variability in CO_2 point sources using multiple satellite instruments, NASA ROSES 2020: Science Team for the OCO Missions NNH20ZDA001N-OCOST (2021-2024) (PI: Daniel Cusworth)
- **Collaborator,** Substantiating Key Synergies Between Air Quality (AQ) and Greenhouse Gas (GHG) Monitoring from Space: A case for anthropogenic CO2 and CH4 constraints from CO and NO2, **NASA ROSES Atmospheric Composition: Aura Science Team and Atmospheric Composition Modeling and Analysis Program** (FY2018-2020) (Avelino Arellano Jr.)
- **Collaborator,** The Role of Anthropogenic Combustion on Urban-Geo System Environments: A Multi-Species Analysis Over Megacities, **NASA ROSES Atmospheric Composition: Aura Science Team and Atmospheric Composition Modeling and Analysis Program** (FY2016-2018) (Avelino Arellano Jr.)
- **Collaborator,** Global and Regional Chemical Forecasting and Analysis using CAM-chem, Data Assimilation and WRF-Chem for KORUS-AQ, **NASA ROSES KORUS-AQ: An International Cooperative Air Quality Field Study in Korea** (FY2015-2017) (PI: Louisa Emmons)

Other funded proposals

- Determination of Tropical Oxidising Capacity through model calibration (DeTOX)
- **Co-I**, *The Fate, Emissions and Transport of CH_4 (FETCH$_4$) project,* Schmidt Futures (2023-2028) (PI: Alex Turner)
- **Co-I**, *Quantifying Trends in Top-down Emission Estimates of CO and NOx*, CSA Class Grant and Contribution Program (2021-2024) (PI: Dylan Jones)
- **PI,** *TROPOMI multi-constituent data assimilation*, Japan Society for the Promotion of Science Fund for the Promotion of Joint International Research (Fostering Joint International Research (B)), 18KK0102 (2018–2019)
- **PI,** *Tropospheric chemistry reanalysis: TCR-2*, Japan Society for the Promotion of Science Grant-in-Aid for Scientific Research (B)18H01285D (2018–)
- **PI,** *Multi-constituent chemical data assimilation*, Japan Society for the Promotion of Science Grant-in-Aid for Scientific Research (C) 15K05296 (2015–2017)
- **PI,** *Assimilation of multiple chemical satellite observations and emission estimations*, Japan Society for the Promotion of Science Grant-in-Aid for Yong Scientists (B) 19740300 (2012–2014)

- **PI**, *Global chemical data assimilation of OMI NO_2 data*, Japan Society for the Promotion of Science Postdoctoral Fellowship for Research Abroad (2010–2012)
- **PI,** *Development of a data assimilation system for ozone and related species using an ensemble Kalman filter*, Japan Society for the Promotion of Science Grant-in-Aid for Yong Scientists (B) 19740300 (2006–2009)
- **PI**, WMO/WCRP financial assistance for the Earth System Science Partnership (ESSP), Global Environmental Change Open Science Conference (2006)
- **PI**, Financial assistance for the carbon data assimilation workshop from the Mathematical Sciences Research Institute, University of California Berkeley (2006)
- **PI**, WMO/WCRP financial assistance for SPARC data assimilation workshop (2005)
- **PI**, Travel grant from the Tohoku development foundation (2005)
- **PI,** Grant-in-Aid for Fellows of the Japan Society for the Promotion of Science (2003–2006)
- **CoI,** *Emission estimates of black carbon and methane*, Global Environment Research Fund (2-1803) by the Ministry of the Environment, Japan (2018–2021)
- **CoI,** *The Role of Anthropogenic Combustion on Urban-Geo System Environments: A Multi-Species Analysis Over Megacities*, NASA Research Announcement, NNH16ZDA001N-ACMAP, Atmospheric Composition: Aura Science Team and Atmospheric Composition Modeling and Analysis Program (PI: Avelino F. Arellano, Jr., University of Arizona) (2017–2019)
- **CoI**, *Development and application of intelligent measurement-analysis methods through coalition between measurement technologies and informatics,* Japan Science and Technology Agency (JST) CREST program (PI: K. Sato) (2016–2022)
- **CoI,** *Tropospheric ozone variations over southeast Asia*, Japan Society for the Promotion of Science Grant-in-Aid for Scientific Research (C) 16K00535 (PI: S. Ogino) (2016–2022)
- **CoI,** *A.19 KORUS-AQ: An International Cooperative Air Quality Field Study in Korea*, NASA Research Announcement (NRA) NNH15ZDA001N, Research Opportunities in Space and Earth Science (ROSES-2015) (PI: L. Emmons) (2016–2018)
- **CoI,** *Big data and Earth sciences*, FLAGSHIP2020 Post-K computer project (PI: K. Takahashi) (2015–2019)
- **CoI,** *Towards km-scale air pollution observations from space*, Coordination Funds for Promoting AeroSpace Utilization (PI: Y. Kanaya) (2015–2017)
- **CoI,** Arctic Challenge for Sustainability (ArCS) Project (PI: T. Koike) (2015–2019)
- **CoI,** *Isentropic analyses of atmospheric/oceanic global circulations*, Japan Society for the Promotion of Science Grant-in-Aid for Scientific Research (A) 15H02129 (PI: T. Iwasaki) (2015–2019)
- **CoI,** *Dynamics and chemistry in the tropical tropopause layer*, Japan Society for the Promotion of Science Grant-in-Aid for Scientific Research (S) 26220101 (PI: F. Hasebe) (2014–2018)
- **CoI,** *Understanding QBO variations in changing climate*, Japan Society for the Promotion of Science Grant-in-Aid for Scientific Research (B) 26287117 (PI: Y. Kawatani) (2014–2016)
- **CoI,** *Understanding CH_4 and N_2O variations from an atmospheric chemistry-land vegetation coupling model*, Japan Society for the Promotion of Science Grant-in-Aid for Scientific Research (B) 25241006 (PI: K. Sudo) (2013–2015)
- **CoI,** *Development of a data assimilation system for ozone and related species using an ensemble Kalman filter*, Global Environment Research Fund (B-93) by the Ministry of the Environment, Japan (PI: T. Iwasaki) (2009–2012)

Selected invited talks

1. **Miyazaki, K.,** MOMO-Chem: A multi-satellite and multi-model atmospheric composition data assimilation framework for global air quality and climate applications, 14 November 2025, Caltech atmospheric chemistry group seminar, Pasadena, CA.
2. **Miyazaki, K.,** Tropospheric Chemistry Reanalysis, **MOPITT 25th Anniversary Meeting**, 11 April 2025, Quebec, Canada.

3. **Miyazaki, K.,** Tropospheric Chemistry Reanalysis, APARC Reanalysis Intercomparison (A-RIP) Planning Workshop, 23 July 2024, Boulder, CO.
4. **Miyazaki, K.,** Shifting patterns of global emissions and tropospheric ozone linked to human activity and natural processes derived from a decadal chemical reanalysis, Second Ozone_cci User Workshop, 29 May 2024, online.
5. The 104th AMS Annual Meeting, 1 February 2024, Baltimore, MD
6. **Miyazaki, K.,** Shifting patterns of global emissions and ozone chemical regime linked to human activity and natural processes using a decadal chemical reanalysis, The 104th AMS Annual Meeting, 1 February 2024, Baltimore, MD
7. **Miyazaki, K.** and Kevin Bowman, Predictability of fossil fuel CO2 from air quality emissions, AGU Annual Meeting 2023, San Francisco, CA, 11 December 2023
8. **Miyazaki, K.** and Kevin Bowman, Predictability of fossil fuel CO2 from air quality emissions, Korean Society for Atmospheric Environment, Busan, Korea, 26 October 2023
9. **Miyazaki, K.**, Tropospheric Chemistry Reanalysis, The 2nd International Workshop for the FRIEND (Fine Particle Research Initiative in East Asia Considering National Differences) Project, Busan, Korea, 23 October 2023
10. **Miyazaki, K.**, Atmospheric Composition Reanalysis, 2023 Meteorology and Climate - Modeling for Air Quality Conference, Davis, CA, USA, 13 September 2023
11. **Miyazaki, K.**, Atmospheric Composition Reanalysis, ECMWF Annual Seminar, Reading, UK, 4 September 2023
12. **Miyazaki, K.**, Atmospheric composition Reanalysis, KNMI The R&D Satellite Observations department colloquium, De Bilt, the Netherlands, 31 August 2023
13. **Miyazaki, K.**, Atmospheric Chemistry Reanalysis, IGAC AMIGO training workshop, Brussels, Belgium, 19 June 2023
14. **Miyazaki, K.**, Tropospheric Chemistry Reanalysis, Banff International Research Station (BIRS) Workshop on Mathematical Approaches of Atmospheric Constituents Data Assimilation and Inverse Modeling, Banff, Canada, 20 March 2023
15. **Miyazaki, K.**, Sate of the Science: Source Attributions, Looking toward the 2027 Decadal Survey: Considerations for a coordinated national air quality architecture, Pasadena, CA, USA, February 6, 2023.
16. **Miyazaki, K.**, K. Bowman, Predictability of fossil fuel CO2 from air quality emissions, Caltech Yuk Lunch Seminar, 1 February 2023
17. **Miyazaki, K.**, Atmospheric composition modeling, data assimilation, and emission estimates using multi-constituent satellite observations. University of California Irvine, Department of Earth System Science Seminar, 16 November 2022
18. **Miyazaki, K.**, Atmospheric composition chemical reanalysis and emission estimates based on multi-constituent satellite data assimilation. Harvard University Atmospheric & Environmental Chemistry Seminar, 1 April 2022 (Virtual)
19. **Miyazaki, K.**, K. Bowman, T. Sekiya, M. Takigawa, J. Neu, K. Sudo, G. Osterman, H. Eskes, Global tropospheric ozone responses to reduced NOx emissions linked to the COVID-19 world-wide lockdowns, AGU Fall Meeting 2021, 15 December 2021 (Virtual)
20. **Miyazaki, K.**, K. Bowman, T. Sekiya, M. Takigawa, J. Neu, K. Sudo, G. Osterman, H. Eskes, Global tropospheric ozone responses to reduced NOx emissions linked to the COVID-19 world-wide lockdowns, Caltech Yuk Lunch Seminar, 1 September 2021 (Virtual)
21. **Miyazaki, K.,** K. Bowman, T. Sekiya, M. Takigawa, J. L Neu, K. Sudo, G. Osterman, H. Eskes, Updated atmospheric composition chemical reanalysis and emission estimates, JpGU Meeting 2021, 2 June 2021. (Virtual)
22. **Miyazaki, K.**, Jones, D., W. Helen, K. Bowman (2021). Assessment of measurement representativeness by chemical reanalyses and TOAR-II chemical reanalysis Focus Working Group plan, IGAC TOAR-II HEGIFTOM working group meeting, 25 March 2021. (Virtual)
23. **Miyazaki, K.**, Bowman, K., Neu, J., Osterman, G., Sekiya, T., Takigawa, M., Eskes, H., Sudo, K. (2021). Quantifying the impacts of global shifts of anthropogenic emissions on air quality using a decadal chemical reanalysis based on multiple NASA's satellite measurements, UCLA JIFRESSE seminar, 26 February 2021. (Virtual)
24. **Miyazaki, K.**, Bowman, K., Sekiya, T., Jiang, Z., Chen, X., Eskes, H., Ru, M., Zhang, Y., Shindell, D., (2020). Quantifying the impacts of global shifts of anthropogenic emissions on air quality using a decadal chemical reanalysis based on multiple NASA's satellite measurements, AGU fall meeting, 8 December 2020. (Virtual)

25. **Miyazaki, K.**, K. W. Bowman, T. Sekiya, D. Fu, S. S. Kulawik, K. Sudo, T. Walker, Y. Kanaya, M. Takigawa, K. Ogochi, H. Eskes, K. F. Boersma, A. M. Thompson, B. Gaubert, J. Barre, and L. K. Emmons, K. Yumimoto Multi-constituent chemical data assimilation and its applications in air quality and climate research, EOS Aura Science Team Meeting, Pasadena, CA, USA, 27 August 2019.
26. **Miyazaki, K.,** T. Sekiya, D. Fu, K. W. Bowman, T. Walker, S. S. Kulawik, K. Sudo, Y. Kanaya, M. Takigawa, K. Ogochi, B. Gaubert, J. Barre, L. Emmons, Applications of satellite, ozonesonde, and aircraft measurements and chemical transport models on air quality research, USTH workshop on Upper Air Sounding and Air Quality, Hanoi, Vietnam, 8 October 2018.
27. **Miyazaki, K.,** T. Sekiya, H. Eskes, F. Boersma, D. Fu, K. Bowman, Susan S. Kulawik, T. Walker, K. Sudo, Y. Kanaya, M. Takigawa, K. Ogochi, B. Gaubert, J. Barre, L. Emmons, A tropospheric chemistry reanalysis based on multi-constituent satellite data assimilation and its application for KORUS-AQ, 2017 annual conference of Korean Society for Atmospheric Environment, Deagu, Republic of Korea, 10 November, 2017.
28. **Miyazaki, K.**, A tropospheric chemistry reanalysis based on multi-constituent satellite data assimilation, University of Toronto Noble seminar series, Toronto, Canada, 3 October 2016.
29. **Miyazaki, K.**, H. Eskes, and K. Sudo, A tropospheric chemistry reanalysis for the years 2005-2014 based on an assimilation of AURA OMI, MLS, TES and MOPITT satellite data, The Moscone Center, San Francisco, AGU fall meeting, 15 December 2015.
30. **Miyazaki, K.**, A tropospheric chemistry reanalysis for the years 2005-2014 based on an assimilation of AURA OMI, MLS, TES and MOPITT satellite data, UC Berkeley BASC Seminar, Berkeley, USA, 18 November 2015.
31. **Miyazaki, K.,** A tropospheric chemistry reanalysis for the years 2005-2014 based on an assimilation of AURA OMI, MLS, TES and MOPITT satellite data, Wageningen University Meteorology and Air Quality seminar, Wageningen, the Netherlands, 10 September 2015.
32. **Miyazaki, K.**, A tropospheric chemistry reanalysis for the years 2005-2012 based on an assimilation of AURA OMI, MLS, TES and MOPITT satellite data, NCAR formal seminar, Boulder, USA, 19 March 2015.
33. **Miyazaki, K.**, Estimating surface NOx and CO emissions and lightning NOx sources by assimilating satellite observations of multiple chemical species, Workshop on parameter estimation and inverse modelling for atmospheric composition, ECMWF, Reading, UK, 22 October 2013.
34. **Miyazaki, K.**, Global and Asian NOx emission estimates derived from a combined assimilation of multiple satellite observations, International Workshop on "Inventory, Modeling and Climate Impacts of Greenhouse Gas emissions (GHG's) and Aerosols in the Asian Region, Tsukuba International Conference Center, Tsukuba, Japan, 26 June 2013.
35. **Miyazaki, K.**, Simultaneous assimilation of multi-species data for the analysis of chemical composition in the troposphere and stratosphere, WCRP Regional Workshop on Stratosphere-Troposphere Processes and their Role in Climate (SPARC), Kyoto University, Kyoto, 1 April 2013.

Publications

Google scholar

1. Glenn-Michael Oomen, Jinkyul Choi, Jinhyeok Yu, **Kazuyuki Miyazaki**, Avelino F. J. Arellano, Trissevgeni Stavrakou, Gaelle Dufour, Dylan B. A. Jones, Jennifer Kaiser, Daven Henze, Claire Granier, Improved determination of atmospheric trace gas emissions through observation-based analysis techniques: the AMIGO global initiative, in revision
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Presentations

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3. **Miyazaki, K.,** and D. Hubert, TOAR II Assessment of satellite ozone, CEOS-AC-VC-21, 10 June 2025, Takamatsu, Japan
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6. **Miyazaki, K.,** Shifting patterns of global emissions and tropospheric composition linked to human activity and natural processes using a decadal chemical reanalysis for 2005-2023, 25th Anniversary of Canada's MOPITT Instrument, 11 April 2025, Montreal, Canada (virtual)
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84. Miyazaki, K., and K. Sudo, Development of a chemical data assimilation system using a local ensemble transformed Kalman filter, Third WCRP International Conference on Reanalysis, Tokyo, Japan, January 2008.
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92. Miyazaki, K., T. Iwasaki and K. Shibata, Diagnosis of meridional ozone transport based on mass weighted isentropic zonal means, IAGA Scientific Assembly, Toulouse, France, July 2005.
93. Miyazaki, K., T. Iwasaki, K. Shibata and M. Deushi, The roles of transports in seasonal variation of total ozone amount, IAGA Scientific Assembly, Toulouse, France, July 2005.
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97. Miyazaki, K., and T. Iwasaki, Diagnosis of meridional ozone transport based on mass weighted isentropic zonal means, Canadian GCC (Global Chemistry for Climate) summer school, Banff, Canada, May 2005.
98. Miyazaki, K., and T. Iwasaki, Seasonal variation of the meridional ozone transport in the troposphere and stratosphere based on isentropic representation, 5th International Workshop on Global Change: Connection to the Arctic (GCCA5), Tsukuba, Japan, November 2004.
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+ More than 100 presentations at Japanese domestic conferences

Colloquia and Seminars

2025: Caltech

2023: Caltech, BIRS, JAMSTEC, IGAC AMIGO, Hokkaido University, KNMI

2022: UC Irvine, Harvard University, JPL Carbon Club, JAMSTEC, Caltech

2021: UCLA, NASA/NOAA Interagency COVID-AQ Discussion

2018: KNMI, University of Toronto, Environment and Climate Change Canada

2016: University of Toronto

2015: NCAR, JPL, Wageningen University, UC Berkeley

2013: University of Hawai'i, KNMI, University of Reading, Kyushu University, Ibaraki University

2012: Eindhoven University of Technology, KNMI, University of Tokyo

2010: KNMI, Nagoya University

2007: Japan Meteorological Agency

2006: Kyoto University, University of Tokyo

2004: University of Chicago, NCAR, NOAA

Peer review

Science, Nature, Nature communications, Science Advances, Proceedings of the National Academy of Sciences, Elementa, Earth System Science Data, Scientific Reports, Journal of the Atmospheric Sciences, Journal of Geophysical Research –Atmosphere, Journal of Advances in Modeling Earth Systems, Atmospheric Chemistry and Physics, Geoscientific Model Development, Journal of Atmospheric and Solar-Terrestrial Physics, Atmospheres, Environmental Pollution, Scientific Online Letters on the Atmosphere, Remote Sensing, Engineering and Applied Science Research, Geoscience letters, Environmental Research Letter, Geoscience Letters

Public lecture

2025:

- Elemental school science class in Japan
- High school visit and seminar in Japan
- Elementary school students STEM tour at JPL
- High school students STEM tour at JPL
- Boy scout troop STEM tour at JPL

2024:

- Middle school science class in Japan
- Cub scout STEM tour at JPL

2023:

- Public science lectures at explore JPL
- Elementary school science class in Japan
- Elementary school student tours at JPL

2022:

- Elementary school science class
- Middle school science class
- Elementary school student tours at JPL

2021:

- Elementary school science class

ひと 2024

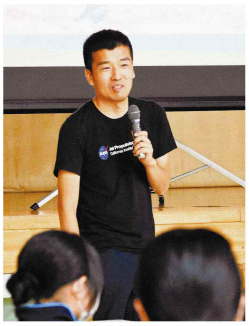
NASAで地球観測衛星の運用を担う科学者
宮崎（みやざき） 和幸（かずゆき）さん

米国カリフォルニア州パサデナにあり、無人探査機などの研究開発や運用に携わる米航空宇宙局（NASA）のジェット推進研究所（JPL）に2019年から勤務する。地球物理学が専門の科学者で、地球観測衛星の運用、大気の分析などを担う。「熱い思いを持った人が集まる場所。とても楽しく仕事をしている」。7月上旬、母親の実家がある北見市留辺蘂町の義務教育学校で特別授業を行い、子どもたちに充実した表情を見せた。

釧路市生まれ。8歳の頃、父の転勤に伴い東京へ移り、北海道の自然を恋しく思う日々を過ごした。理科と算数が好きで、自然の複雑さや美しさに理学的な視点から迫ろうと、東北大、同大院で学んだ。「最新のテクノロジーを駆使しつつ、自然をより良く理解し、人々の生活を良くしたい」との思いから科学者の道へ。日本やオランダ、米国の研究機関で経験を積んだ。

研究の意義は「もっと未来の人間が安心して過ごせる地球にするため」と語る。地球外にも物はいるのか、温暖化はどこへ向かうのか―。壮大な問いに立ち向かうとき、「守らなければならない自然の原風景」として頭に浮かぶのが、幼少期から長期休みの度に訪れた留辺蘂の景色だ。「都会だけで育っていたら、現在の仕事にたどり着いていなかったかもしれない」

米国での生活に持って行きたいものは「（留辺蘂の）温根湯の温泉」という46歳。（光嶋るい）



宇宙の仕事 面白いよ
NASA・宮崎さん 市内学校で講演

惑星探査の研究などを行う米航空宇宙局（NASA）ジェット推進研究所＝米カリフォルニア州＝に勤務する宮崎和幸さん（45）が4日、北見市留辺蘂町の義務教育学校、おんねゆ学園（泉次郎校長、48人）で講演し、宇宙の面白さや夢中になることの大切さについて語った。

おんねゆ学園の生徒に、米航空宇宙局（NASA）の研究所での仕事などを紹介する宮崎和幸さん

釧路市出身の宮崎さんは母親の実家が留辺蘂にあり、今回は一時帰国に合わせ「子供たちの役に立てることがあれば」と同校に申し出て実現した。

宮崎さんは無人探査機の映像をスクリーンで示したほか、「宇宙に人間以外の生き物が存在するか」「地球から宇宙への距離は」などの問題を出題。子供たちに答えてもらう形で、宇宙の知識をやさしく紹介した。

宮崎さんは、興味のある研究が続けられる環境を求めて国内外を飛び回った自身の経験を振り返り、子供たちに「自分が面白いと思うことはとことん突き詰めて」とエールを送った。

9年の山上晶穂さん（14）は「私はあまり自分から挑戦するタイプではないが、宮崎さんの話を聞いて頑張ってみようかなと思った」と刺激を受けた様子だった。（光嶋るい）