

CURRICULUM VITAE

Akio KITO (appears as Akio KITO in the passport)

Researcher

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DATE OF BIRTH: 1 April 1953

PLACE OF BIRTH: Osaka, JAPAN

Gender: Male

Nationality: Japanese

EDUCATION

B.Sc.: Geophysics Kyoto University 1975

M.S.: Geophysics Kyoto University 1977

D.Sc.: Geophysics Kyoto University 1991

Thesis: "A Study of Low-Frequency Response of the Atmosphere to the Sea Surface Temperature Variations"

EMPLOYMENT RECORD

Technical Official, Osaka District Meteorological Observatory / Japan Meteorological Agency (JMA), Osaka, Japan, 1978-1980

Researcher, Third Research Laboratory, Forecast Research Department, Meteorological Research Institute (MRI) / JMA, Tsukuba, Japan, 1980-1987

Staff Research Associate, Department of Atmospheric Science, University of California at Los Angeles, Los Angeles, U.S.A., 1983-1985

Senior Researcher, First Research Laboratory, Climate Research Department, MRI/JMA, Tsukuba, Japan, 1987-1994

Head, First Research Laboratory, Climate Research Department, MRI/JMA, Tsukuba, Japan, 1994-2007

Director, Climate Research Department, MRI/JMA, Tsukuba, Japan, 2007-2013

Senior Researcher, Faculty of Life and Environmental Sciences, University of Tsukuba, Tsukuba, Japan, 2013-2017

Director, Office of Climate and Environmental Research Promotion, Japan Meteorological Business Support Center, Tsukuba, Japan, 2017-2020

Researcher, Japan Meteorological Business Support Center, Tsukuba, Japan, 2020-2022

Affiliated Professor, University of Tsukuba, Tsukuba, Japan, 1995-2004
Visiting Professor, University of Tsukuba, Tsukuba, Japan, 2004-2013
Visiting Professor, Kyoto University, Kyoto, Japan, 2009-2012
Member, Science Council of Japan, 2011-2017
Guest Researcher, MRI/JMA, 2013-present

PROFESSIONAL EXPERIENCE

Member, Meteorological Society of Japan (MSJ), 1978-
Member, American Meteorological Society (AMS), 1983-2018
Member, American Geophysical Union (AGU), 2005-2018
Member, Japan Geoscience Union (JpGU), 2006-

Lead Author, Chapter 5 "Climate Models - Evaluation", IPCC WGI Second Assessment Report (SAR), 1992-1995
Member, CLIVAR Working Group on Seasonal to Interannual Prediction (WGSIP), 1994-2000
Lead Author, Chapter 8 "Model Evaluation", IPCC WG1 Third Assessment Report (TAR), 1998-2001
Member, Scientific Advisory Committee, International Pacific Research Center (IPRC), 2002-2004
Lead Author, Chapter 10 "Global Climate Projections", IPCC WGI Fourth Assessment Report (AR4), 2004-2007
Lead Author, IPCC Technical Paper on Climate Change and Water, 2007-2008
Member, CLIVAR Asian-Australian Monsoon Panel (AAMP), 2009-2013
Member, Scientific Advisory Committee, Beijing Climate Center (BCC), 2009-2013
Lead Author, Chapter 14 "Climate Phenomena and their Relevance for Future Regional Climate Change", IPCC WGI Fifth Assessment Report (AR5), 2010-2013
Member, IPCC National Liaison Committee of Japan, 2004-present
Member, International Scientific Advisory Panel, Centre for Climate Research Singapore (CCRS), 2009-2015
Member, Steering Committee on Arctic Research, National Institute of Polar Research, 2011-2016
Member, Advisory Committee, Central Environment Council, Ministry of the Environment, 2013-2015
Lead Author, Chapter 10 "Asia", IPCC WGII Sixth Assessment Report (AR6), 2018-2022

AWARD

The Award of the Meteorological Society of Japan, Meteorological Society of Japan, 1993
The Okada Award, Japan Weather Association, 2008
Fujiwhara Award, Meteorological Society of Japan, 2021

RESEARCH EXPERIENCE

Engaged in development of MRI AGCM/AOGCM/ESM since 1980 at MRI.
Numerical experiments and analyses on monsoons, ENSO, extremes, past (LGM and Mid-Holocene) and future climate.

PROJECTS

Integrated Climate Change Projection (TOUGOU: Integrated Model Advanced Research Program), funded by Ministry of Education, Culture, Sports, Science and Technology (MEXT) (FY2017-2021)

Development of Basic Technology for Risk Information on Climate Change (SOUSEI: Program for Risk Information on Climate Change), funded by Ministry of Education, Culture, Sports, Science and Technology (MEXT) (FY2012-2016)

Research on Prediction of Climate and Environmental Change to Contribute to Mitigation Plan Decision Making Against Climate Change, funded by Japan Meteorological Agency (JMA) (FY2010-2014)

Projection of the Change in Future Weather Extremes Using Super-High Resolution Atmospheric Models (KAKUSHIN: Innovative Program of Climate Change Projection for the 21st Century), funded by Ministry of Education, Culture, Sports, Science and Technology (MEXT) (FY2007-2011)

RESEARCH TOPICS

Climate modeling

Climate variability, extremes, monsoon and ENSO

Seasonal prediction

Global warming

Paleoclimate simulation

EDITORIAL BOARD

Journal of the Meteorological Society of Japan (JMSJ), 1992-1998

Advances in Atmospheric Sciences, 2000-2012

SOLA, Scientific Online Letters on the Atmosphere, Meteorological Society of Japan, 2004-2012

Asia-Pacific Journal of Atmospheric Sciences (APJAS) (former Journal of the Korean Meteorological Society), 2008-2012

JOURNAL REVIEWS

Journal of the Meteorological Society of Japan, Annals of Glaciology, Monthly Weather Review, Papers in Meteorology and Geophysics, Geophysical Research Letters, Theoretical and Applied Climatology, Climate Dynamics, Climate Research, Advances in Atmospheric Sciences, Journal of Climate, Paleoceanography, Meteorologische Zeitschrift, SOLA (Scientific Online Journal of the Atmosphere), Annales Geophysicae, Global Planetary Change, International Journal of Ecology & Development, Climate of

the Past, Journal of Disaster Research, Science, Nature Climate Change, Global Environmental Research, Hydrological Sciences Journal, Atmospheric Science Letters, Ecological Modeling, Bulletin of the American Meteorological Society, Nature Communications, Weather and Climate Extremes, Progress in Earth and Planetary Science, Engineering, Geoscientific Model Development, Nature, Scientific Reports, Earth's Future, Environmental Research, Environmental Research Letters, npj Climate and Atmospheric Science, Atmosphere, Science Bulletin

RECENT PUBLICATIONS (since 2015)

- Endo, H., **A. Kitoh**, and R. Mizuta, 2022: Future changes in extreme precipitation and their association with tropical cyclone activity over the western North Pacific and East Asia in 20 km AGCM simulations. SOLA, 18, 58-64, doi:10.2151/sola.2022-010.
- Endo, H., **A. Kitoh**, R. Mizuta, and T. Ose, 2021: Different future changes between early and late summer monsoon precipitation in East Asia. J. Meteor. Soc. Japan, 99, 1501-1524, doi:10.2151/jmsj.2021-073.
- Hsu, P.-C., K.-C. Chen, C.-H. Tsou, H.-H. Hsu, C.-H. Hong, H.-C. Liang, C.-Y. Tu, and **A. Kitoh**, 2021: Future changes in the frequency and destructiveness of landfalling tropical cyclones over East Asia projected by high-resolution AGCMs. Earth's Future, 9, e2020EF001888, doi:10.1029/2020EF001888.
- Hong, C.-C., C.-H. Tsou, P.-C. Hsu, K.-C. Chen, H.-C. Liang, H.-H. Hsu, C.-Y. Tu, and **A. Kitoh**, 2021: Future changes in tropical cyclone intensity and frequency over the western North Pacific based on 20-km HiRAM and MRI models. J. Climate, 34, 2235-2251, doi:10.1175/JCLI-D-20-0417.1.
- Kitoh, A.**, E. Mohino, Y. Ding, K. Rajendran, T. Ambrizzi, J. Marengo, and V. Magaña, 2021: Combined Oceanic Influences on Continental Climates. In: C. R. Mechoso (ed.), Interacting Climates of Ocean Basins: Observations, Mechanisms, Predictability, and Impacts. Cambridge University Press. ISBN 978-1-108-49270-6, doi:10.1017/9781108610995, pp.216-257.
- Wang, B., M. Biasutti, M. P. Byrne, C. Castro, C.-P. Chang, K. Cook, R. Fu, A. Grimm, K.-J. Ha, H. Hendon, **A. Kitoh**, R. Krishnan, J.-Y. Lee, J. Li, J. Liu, A. Moise, S. Pascale, M. K. Roxy, A. Seth, C.-H. Sui, A. Turner, S. Yang, K.-S. Yun, L. Zhang, T. Zhou, 2021: Monsoons climate change assessment. Bull. Amer. Meteor. Soc., 102(1), E1-E19, doi:10.1175/BAMS-D-19-0335.1.
- Kitoh, A.**, and H. Endo, 2020: Future Changes in Global Monsoon Precipitation and their Uncertainty: Results from 20-km and 60-km MRI-AGCM Ensemble Simulations. In: C.-P. Chang, K.-J. Ha, R. H. Johnson, D. Kim, G. N.-C. Lau, and B. Wang (eds.), The Multiscale Global Monsoon System. World Scientific Publishing, ISBN 978-981-121-659-6, doi:10.1142/11723, pp.343-353.
- Ito, R., T. Ose, H. Endo, R. Mizuta, K. Yoshida, **A. Kitoh**, and T. Nakaegawa, 2020: Seasonal characteristics of future climate change over Japan and the associated atmospheric circulation anomalies in global model experiments. Hydrol. Res. Lett., 14, 130-135.
- Varghese, S. J., S. Surendran, B. Ajithkumar, K. Rajendran, and **A. Kitoh**, 2020: Future changes in rice yield over Kerala using climate change scenario from high resolution global climate model projection. Journal of Earth System Science, 129, 192, doi:10.1007/s12040-020-01459-0.
- Sun, N., T. Zhou, X. Chen, H. Endo, **A. Kitoh**, and B. Wu, 2020: Amplified tropical Pacific rainfall variability related to background SST warming. Clim. Dyn., 54, 2387-2402, doi:10.1007/s00382-020-05119-3.

- Varghese, S. J., S. Surendran, K. Rajendran, and **A. Kitoh**, 2020: Future projections of Indian summer monsoon under multiple RCPs using a high resolution global climate model multiforcing ensemble simulations. *Clim. Dyn.*, 54, 1315-1328, doi:10.1007/s00382-019-05059-7.
- Kitoh, A.**, 2019: Climate Change We Human Are Responsible for. In: Himiyama, Y., Satake, K., Oki, T. (eds), *Human Geoscience. Advances in Geological Science*. Springer, Singapore. ISBN 978-981-32-9223-9, doi:10.1007/978-981-32-9224-6_20, pp.283-293.
- Kitoh, A.**, 2019: Atmosphere – The Gaseous Realm Which Supports Human Life. In: Himiyama, Y., Satake, K., Oki, T. (eds), *Human Geoscience. Advances in Geological Science*. Springer, Singapore. ISBN 978-981-32-9223-9, doi:10.1007/978-981-32-9224-6_2, pp.21-26.
- Chen, C.-A., H.-H. Hsu, C.-C. Hong, P.-G. Chiu, C.-Y. Tu, S.-J. Lin, and **A. Kitoh**, 2019: Seasonal precipitation change in the Western North Pacific and East Asia under global warming in two high-resolution AGCMs. *Clim. Dyn.*, doi:10.1007/s00382-019-04883-1.
- Huang, W.-R., P.-H. Huang, Y.-H. Chang, C.-T. Cheng, H.-H. Hsu, C.-Y. Tu, and **A. Kitoh**, 2019: Dynamical downscaling simulation and future projection of extreme precipitation activities in Taiwan during the Mei-Yu season. *J. Meteor. Soc. Japan*, 97, 481-499, doi:10.2151/jmsj.2019-028.
- Kitoh, A.**, 2019: Climate Change Projection over Turkey with a High-Resolution Atmospheric General Circulation Model. In: T. Watanabe, S. Kapur, M. Aydin, R. Kanber and E. Akca (eds.), *Climate Change Impacts on Basin Agro-ecosystems*, Springer, ISBN 978-3-030-01036-2, pp.19-32.
- Kitoh, A.** and H. Endo, 2019: Precipitation extremes associated with tropical cyclones and their future changes projected by large-ensemble simulations. *J. Meteor. Soc. Japan*, 97, 141-152, doi:10.2151/jmsj.2019-007.
- Widlansky, M. J., H. Annamalai, S. B. Gingerich, C. D. Storlazzi, J. J. Marra, K. I. Hodges, B. Choy, and **A. Kitoh**, 2019: Tropical cyclone projections: Changing climate threats for Pacific Island defense installations. *Weather, Climate and Society*, 11, 3-15, doi:10.1175/WCAS-D-17-0112.1.
- Noda, S., K. Kodera, Y. Adachi, M. Deushi, **A. Kitoh**, R. Mizuta, S. Murakami, K. Yoshida, and S. Yoden, 2018: Mitigation of global cooling by stratospheric chemistry feedbacks in a simulation of the Last Glacial Maximum. *J. Geophys. Res. Atmos.*, 123, doi:10.1029/2017JD028017.
- Endo, H., **A. Kitoh**, and H. Ueda: A unique feature of the Asian summer monsoon response to global warming: the role of different land-sea thermal contrast change between the lower and upper troposphere. *SOLA*, 14, 57-63, doi:10.2151/sola.2018-010.
- Surendran, S., S. Gadgil, K. Rajendran, S. J. Varghese, and **A. Kitoh**, 2018: Monsoon rainfall over India in June and link with Northwest tropical Pacific. *Theor. Appl. Climatol.*, <https://doi.org/10.1007/s00704-018-2440-6>.
- Mizuta, R., A. Murata, M. Ishii, H. Shiogama, K. Hibino, N. Mori, O. Arakawa, Y. Imada, K. Yoshida, T. Aoyagi, H. Kawase, M. Mori, Y. Okada, T. Shimura, T. Nagatomo, M. Ikeda, H. Endo, M. Nosaka, M. Arai, C. Takahashi, K. Tanaka, T. Takemi, Y. Tachikawa, K. Temur, Y. Kamae, M. Watanabe, H. Sasaki, **A. Kitoh**, I. Takayabu, E. Nakakita, and M. Kimoto, 2017: Over 5,000 years of ensemble future climate simulations by 60-km global and 20-km regional atmospheric models. *Bull. Amer. Meteor. Soc.*, 98, 1383-1398, doi:10.1175/BAMS-D-16-0099.1.
- Ha, K.-J., J.-Y. Lee, B. Wang, S.-P. Xie and **A. Kitoh**, 2017: Asian monsoon climate change ? understanding and prediction. *Asia-Pac. J. Atmos. Sci.*, 53(2), 179-180.
- Sperber, K.R., E. Cusiner, **A. Kitoh**, C.R. Mechoso, A.F. Moise, W. Moufouma-Okia, K. Schiro and A.G. Turner, 2017: Modelling Monsoons. In: C.-P. Chang, H.-C. Kuo, N.-C. Lau, R. H. Johnson, B. Wang and M. C. Wheeler (eds.), *The Global*

- Monsoon System, Research and Forecast 3rd Edition. World Scientific Series on Asia-Pacific Weather and Climate, Volume 9, ISBN: 978-981-3200-90-6, 79-101, doi:10.1142/9789813200913_0007.
- Kitoh, A.**, and H. Endo, 2017: Monsoon Precipitation in a Future Warmer World. In: C.-P. Chang, H.-C. Kuo, N.-C. Lau, R. H. Johnson, B. Wang and M. C. Wheeler (eds.), The Global Monsoon System, Research and Forecast 3rd Edition. World Scientific Series on Asia-Pacific Weather and Climate, Volume 9, ISBN: 978-981-3200-90-6, 303-313, doi:10.1142/9789813200913_0024.
- Noda, S., K. Kodera, Y. Adachi, M. Deushi, **A. Kitoh**, R. Mizuta, S. Murakami, K. Yoshida and S. Yoden, 2017: Impact of interactive chemistry of stratospheric ozone on Southern Hemisphere paleoclimate simulation. *J. Geophys. Res. Atmos.*, 122, 878-895, doi:10.1002/2016JD025508.
- Kitoh, A.**, 2017: The Asian monsoon and its future change in climate models: A review. *J. Meteor. Soc. Japan*, 95, 7-33, doi:10.2151/jmsj.2017-002.
- Endo, H., **A. Kitoh**, R. Mizuta and M. Ishii, 2017: Future changes in precipitation extremes in East Asia and their uncertainty based on large ensemble simulations with a high-resolution AGCM. *SOLA*, 13, 7-12, doi:10.2151/sola.2017-002.
- Kitoh, A.**, and O. Arakawa, 2016: Reduction in the east-west contrast in water budget over the Tibetan Plateau under a future climate. *Hydrol. Res. Lett.*, 10(4), 113-118, doi:10.3178/hrl.10.113.
- Xue, Y., F. De Sales, W.K.-M. Lau, A. Boone, K.-M. Kim, C.R. Mechoso, G. Wang, F. Kucharski, K. Schiro, M. Hosaka, S. Li, L.M. Druyan, I. Seidou Sanda, W. Thiaw, N. Zeng, R.E. Comer, Y.-K. Lim, S. Mahanama, G. Song, Y. Gu, S.M. Hagos, M. Chin, P. Dirmeyer, L.R. Leung, E. Kalnay, **A. Kitoh**, C.-H. Lu, N.M. Mahowald, and Z. Zhang, 2016: West African monsoon decadal variability and drought and surface-related forcings: Second West African Monsoon Modeling and Evaluation Project Experiment (WAMME II). *Clim. Dyn.*, 47, 3517-3545, doi:10.1007/s00382-016-3224-2.
- Huang, W.-R., Y.-H. Chang, C.-T. Cheng, H.-H. Sui, C.-Y. Tu, and **A. Kitoh**, 2016: Summer convective afternoon rainfall simulation and projection using WRF driven by global climate model. Part I: Over Taiwan. *Terr. Atmos. Ocean. Sci.*, 27, 659-671, doi:10.3319/TAO.2016.05.02.01
- Su, Y.-F., C.-T. Cheng, J.-J. Liou, Y.-M. Chen, and **A. Kitoh**, 2016: Bias correction of MRI-WRF dynamic downscaling datasets. *Terr. Atmos. Ocean. Sci.*, 27, 649-657, doi:10.3319/TAO.2016.07.14.1.
- Kitoh, A.** and H. Endo, 2016: Future changes in rainfall extremes associated with El Niño projected by a global 20-km mesh atmospheric model. *SOLA*, 12A, 1-6, doi:10.2151/sola.12A-001.
- Rajendran, K., S. Surendran, **A. Kitoh**, and S. J. Varghese, 2016: Reduction of uncertainty associated with future changes in Indian summer monsoon projected by climate models and assessment of monsoon teleconnections. *Proc. SPIE 9882, Remote Sensing and Modeling of the Atmosphere, Oceans, and Interactions VI*, 98820D (May 3, 2016), doi:10.1117/12.2229392.
- Kitoh, A.**, and H. Endo, 2016: Changes in precipitation extremes projected by a 20-km mesh global atmospheric model. *Weather and Climate Extremes*, 11, 41-52, doi:10.1016/j.wace.2015.09.001.
- Kieu, X., H. Vu, T. Nguyen, D. Le, L. Nguyen, I. Takayabu, H. Sasaki, and **A. Kitoh**, 2016: Rainfall and tropical cyclone activity over Vietnam simulated and projected by the Non-hydrostatic regional climate model - NHRCM. *J. Meteor. Soc. Japan*, 94A, 135-150, doi:10.2151/jmsj.2015-057.
- Muramatsu, T., T. Kato, M. Nakazato, H. Endo, and **A. Kitoh**, 2016: Future change of tornadogenesis-favorable environmental conditions in Japan estimated by a 20-km-mesh atmospheric general circulation model. *J. Meteor. Soc. Japan*, 94A, 105-120, doi:10.2151/jmsj.2015-053.

- Kitoh, A.**, T. Ose and I. Takayabu, 2016: Dynamical downscaling for climate projection with high-resolution MRI AGCM-RCM. *J. Meteor. Soc. Japan*, 94A, 1-16, doi:10.2151/jmsj.2015-022.
- Yun, K.-S., Y.-W. Seo, K.-J. Ha, J.-Y. Lee, and **A. Kitoh**, 2016: The seasonally varying effect of the Tibetan Plateau on Northern Hemispheric blocking frequency and amplitude. *Clim. Dyn.*, doi:10.1007/s00382-016-2981-2.
- Endo, H., and **A. Kitoh**, 2016: Projecting Changes of the Asian Summer Monsoon Through the Twenty-First Century. In: L.M.V. Carvalho and C. Jones (eds.), *The Monsoons and Climate Change: Observations and Modeling*, Springer, ISBN 978-3-319-21649-2, 47-66.
- Ueda, H., Y. Kamae, M. Hayasaki, **A. Kitoh**, S. Watanabe, Y. Miki and A. Kumai, 2015: Combined effects of recent Pacific cooling and Indian Ocean warming on the Asian monsoon. *Nature Commun.*, 6, 8854, doi:10.1038/ncomms9854.
- Lee, J.-Y., B. Wang, K.-H. Seo, K.-J. Ha, **A. Kitoh**, and J. Liu, 2015: Effects of mountain uplift on global monsoon precipitation. *Asia-Pacific J. Atmos. Sci.*, 51, 275-290, doi:10.1007/s13143-015-0077-2.
- Kitoh, A.**, and T. Zhou, 2015: Long-term anthropogenic drivers of monsoons. *CLIVAR Exchanges*, 66, 35-37.
- Tsuboki, K., M.K. Yoshioka, T. Shinoda, M. Kato, S. Kanada, and **A. Kitoh**, 2015: Future increase of supertyphoon intensity associated with climate change. *Geophys. Res. Lett.*, 42, doi:10.1002/2014GL061793.

[195 peer reviewed articles (54 first authored) + 3 Books + 32 Book chapters]

INVITED/KEYNOTE TALKS (since 2015)

- Kitoh, A., 2019.10.22: TOUGOU-C: Integrated Climate Change Projection. 2019 TCCIP International Workshop on Climate Change, 22-24 October 2019, Taipei, Taiwan. [Keynote Address]
- Kitoh, A. and H. Endo, 2019.4.28: Future changes in precipitation extremes associated with tropical cyclones projected by large-ensemble simulations. EAC 14th Workshop, 27-29 April 2019, Hong Kong.
- Kitoh, A. and H. Endo, 2018.6.5: Rainfall extremes associated with tropical cyclones and their future changes. AOGS 2018 Conference, Honolulu, HI, USA, AS20-A007.
- Kitoh, A., H. Endo, R. Mizuta, H. Kawai and O. Arakawa, 2017.11.17: Future changes in global monsoon precipitation and their uncertainty: Results from high-resolution MRI-AGCM ensemble simulation with multi-SSTs and multi-physics. IWM-VI, 13-17 November 2017, Singapore.
- Kitoh, A. and H. Endo, 2016.8.2: Future changes of the monsoon precipitation by CMIP5 models and high-resolution MRI-AGCM ensemble simulations. 13th Annual Meeting Asia Oceania Geosciences Society, 1-5 August 2016, Beijing, China.
- Kitoh, A., 2015.11.12: High-resolution modeling under the Program for Risk Information on Climate Change (SOUSEI Program). Eighth Jeremy Grantham Lecture on Climate Change, Devesha Centre for Climate Change, Indian Institute of Science, Bengaluru, India.