

## Curriculum Vitae



### **Associate Professor Koh Tieh Yong**

Associate Professor

School of Science and Technology

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### **Education Qualifications**

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| 2001 | PhD (Atmospheric Science), Massachusetts Institute of Technology |
| 1994 | BSc Hons I (Physics), Imperial College London                    |

### **Academic and Professional Experience**

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| 2021 – Present | Associate Professor, School of Science and Technology, Singapore University of Social Sciences   |
| 2017 – 2021    | Associate Professor, Centre for University Core, College of Lifelong and Experiential Learning, Singapore University of Social Sciences (*renamed from SIM University) |
| 2016 – 2017    | Associate Professor, UniSIM College, SIM University  |
| 2015 – 2016    | Associate Professor (with tenure), Asian School of the Environment, Nanyang Technological University (NTU)   |
| 2013 – 2015    | Associate Professor (with tenure), School of Physical & Mathematical Sciences, NTU   |
| 2009 – 2016    | Principal Investigator, Earth Observatory of Singapore, NTU  |
| 2008 – 2017    | Co-Investigator, Center for Environmental Sensing and Modeling (CENSAM), Singapore-MIT Alliance for Research and Technology (SMART)                                    |
| 2005 – 2014    | Principal Investigator, Temasek Laboratories, NTU  |
| 2004 – 2013    | Assistant Professor, School of Physical & Mathematical Sciences, NTU   |
| 2001 – 2004    | Research Scientist (A), Temasek Laboratories, National University of Singapore (NUS)   |
| 2001           | Visiting Scientist, Laboratoire de Meteorologie Dynamique (LMD), Ecole Polytechnique   |

### Consultancy Experience

2022	Consultant, Weather-related Incident, Pan-United Concrete Pte Ltd, Singapore
2021	Instructor, Training Course on Climate for Secondary and Pre-university Geography Teachers, Academy of Singapore Teachers, Ministry of Education, Singapore
2020	Consultant and Contributor, "ASEAN State of Climate Change Report", Institute of Global Environmental Strategies, Bangkok, Thailand / Centre for International Law, National University of Singapore, Singapore. Commissioned by ASEAN Working Group on Climate Change
2014 – 2015	Project Consultant, "Development of Weather Database in Singapore for Atmospheric Dispersion Modelling", DSO National Laboratories, Singapore
2012	Project Consultant, "Sensitivity of Dispersion Modelling Results to Perturbations in Wind Magnitude", DSO National Laboratories, Singapore

### Awards and Honours

2013	Nanyang Education Award, Nanyang Technological University
2012	Koh Boon Hwee Scholars Award, Nanyang Technological University
2011	Koh Boon Hwee Scholars Award, Nanyang Technological University (2× recipient)
1996 – 1999	Jule Charney Prize, Massachusetts Institute of Technology
1994	Granville Prize, University of London
1994	Governors' Prize, Imperial College London

### Selection of Courses Taught

2022	Mathematics Methods I & II
2022	Enterprise Leadership for Transformation 03, Session 10 – Sustainable Energy and Carbon Mitigation Policies
2022	Executive Management Programme 06, Session 10 – Why Do Good: Sustainable Development
2019 – 2021	Science for Sustainability
2014 – 2016	Climate and Climate Change
2008 – 2010	Atmospheric Physics
2007	Statistical Mechanics
2006 – 2013	Classical Mechanics
2005	Complex Methods for the Sciences
2005	Calculus for the Sciences I

### Selected Professional Activities (Scientific Profession)

2022	Invited Participant, "Geopolitics and Domestic Policy Implications of Climate Change", Inaugural LKYSPP Strategic Roundtable with Prime Ministers's Office Strategy Group and National Climate Change Secretariat, Lee Kuan Yew School of Public Policy (LKYSPP), National University of Singapore, Singapore
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2022 Accredited Participant, Asia Pacific Institute of Experts Membership Accreditation Course 2022, Singapore

2022 Covener AS40, Co-covener AS06, Speaker AS13, 19<sup>th</sup> Annual Meeting (Online), Asia-Oceania Geosciences Society

2022 Invited Speaker, 18<sup>th</sup> ASEAN Climate Outlook Forum, Philippine Atmospheric Geophysical and Astronomical Services Administrator (PAGASA)

2021 Invited Panellist, Conversations on “UN Sustainable Development Goals” and “Climate Change (UN IPCC A6R)”, 18<sup>th</sup> Annual Meeting, Asia-Oceania Geosciences Society, Singapore

2021 Invited Speaker, “Weather Prediction by Numerical Methods Module 2” Workshop, Meteorological Service Singapore and ASEAN Specialised Meteorological Centre

2021 Invited Speaker, Third Workshop on ASEAN Regional Climate Data, Analysis and Projections, Meteorological Service Singapore and ASEAN Specialised Meteorological Centre

2021 – Present Lead Coordinator, Sustainability Cluster @ SUSS, Singapore University of Social Sciences

2017 – 2020 Member, Stratospheric and Tropospheric Influences on Tropical Convective Systems, Stratosphere-Troposphere Processes and their Role in Climate, World Climate Research Programme, World Meteorological Organisation

2016 – Present Editor, Scientific Online Letters on the Atmosphere, Meteorological Society of Japan

2016 – Present Co-Chair (member before May 2022), Asia-Australia Monsoon Working Group, CLIVAR/GEWEX Monsoons Panel, World Meteorological Organisation

2015 Invited Speaker, International Student Energy Summit

2014 – Present Member, Madden-Julian Oscillation Task Force, Working Group on Numerical Experimentation, World Meteorological Organisation

2013 Expert Reviewer, 5<sup>th</sup> Assessment Report, Working Group 1, Inter-governmental Panel for Climate Change

2012 Member, Climate Science Experts Network, Meteorological Service Singapore

2012 Reviewer, White Paper for Competitive Research Programme (CRP) 10<sup>th</sup> Call-for-Proposals, National Research Foundation, Singapore

2012 Editor, Advances in Geosciences, Vol. 28 - Atmospheric Science and Ocean Science

2011 Editor, Advances in Geosciences, Vol. 22 - Atmospheric Science

2010 – Present Secretary, Atmospheric Sciences Section, Asia-Oceania Geosciences Society

2004 Conference Publication Chair, 2<sup>nd</sup> Annual Meeting, Asia-Oceania Geosciences Society

2004 – Present Member, Asia-Oceania Geosciences Society

2002 Reviewer, Atmospheric Sciences Research Grant, Natural Environment Research Council, United Kingdom

### **Selected Professional Activities (Education and Outreach)**

2022	Organiser and Lecturer, Online Workshop on Atmospheric Dynamics, College of Science, Nanyang Technological University, Singapore
2021	Invited Lecturer, "Climate Change and Physics", CY1308 Physics, CN Yang Scholars Programme, Singapore
2021	Invited Expert, "Inter-varsity Singapore Green Plan 2030 Youth Conversation", National Youth Council, Singapore
2021	Invited Panelist, "Perspectives on Opportunities for Geography Students in Universities", 2021 Geography Symposium, Singapore
2021	Invited Speaker, Presentation on "Perspectives of Climate Change in Singapore", Anderson Serangoon Junior College, Singapore
2020	Member, Academic Audit Committee, Singapore University of Social Sciences
2020	Member, Syllabus Development Committee for Pre-University Geography, Ministry of Education, Singapore
2019	Member, Curriculum Review Committee for Pre-University Geography, Ministry of Education, Singapore
2015	Invited Panelist, Earth Day Film Screening "Chasing Ice", organized by Asian Venture Philanthropy Network
2014 – 2016	Member, NTU Teaching Council, Nanyang Technological University
2014	Examiner, Asian Physics Olympiad
2013 – 2014	Member, Advisory Committee, Climate Change Exhibition II, Singapore Science Centre
2009 – 2010	Member, 'A'-level Mathematics Syllabuses Consultative Committee, Ministry of Education
2007 – 2008	Member, Advisory Committee, Climate Change Exhibition I, Singapore Science Centre
2008 – Present	Member, Selection Panel, WSPC-ICAAS Most Outstanding Junior College Science Student Award, jointly awarded by Imperial College Alumni Association of Singapore (ICAAS) and World Scientific Publishing Company (WSPC) and facilitated by the Ministry of Education
2006	Examiner, International Physics Olympiad
2005	Member, Steering Committee, Science.05, annual science activity month jointly organized by Singapore Science Centre and A*STAR

### **Research Interests**

- Weather and climate of Southeast Asia
- Atmospheric modelling and prediction
- Mixing and transport of tracers in fluids
- Geophysical fluid dynamics

## Research Grants

### Total funding of \$7,734,400 (SGD) over 15 years

2015 - 2017	\$276,000	Rainfall as Self-Organized Criticality: Observations and Models
2013 - 2017	\$1,093,100	Monsoon Dynamics, Predictability and Tropical Paleoclimate
2013 - 2015	\$192,000	Rainfall, Mesoscale Weather, Climate Change and Urban Boundary Layer
2012 - 2014	\$540,000	Weather Research IV
2011 - 2015	\$562,700	Combined statistical downscaling and disaggregation of regional climate data
2011 - 2012	\$184,800	Urban Boundary Layer and Mesoscale Weather Modelling
2010 - 2012	\$184,800	Atmospheric Modelling of Singapore and Southeast Asia
2010 - 2011	\$91,200	Urban Canyon and Boundary Layer Modelling
2009 - 2014	\$579,800	Regional Climate Downscale of El Nino and Indian Ocean Dipole
2009 - 2012	\$1,600,000	Weather Research III
2005 - 2008	\$1,200,000	Weather Research II
2005 - 2016	\$150,000	Geophysical Fluid Dynamics of Tropical Atmospheres
2002 - 2005	\$1,080,000	Weather Research I

## Selected Publications

### Journal Articles (Refereed):

- Koseki, S., R. Fonseca, T.-Y. Koh and C.-K. Teo (2022), "Upper tropospheric cloud-radiation interaction induced by monsoon surge over the South China Sea", *Meteorol. Appl.*, *under review*.
- Feng, L., T. Zhang, T.-Y. Koh and E. Hill (2021), "Selected years of monsoon variations and extratropical dry-air intrusions compared with the Sumatran GPS Array observations in Indonesia", *J. Meteorol. Soc. Japan*, 99(2), 505-536. DOI: 10.2151/jmsj.2021-026.
- Teo, C.-K., T.-Y. Koh, K. K. W. Cheung, B. Legras, H. N. Huynh, L. Y. Chew and L. Norford (2021), "Scaling characteristics of modelled tropical oceanic rain clusters", *Quart. J. Roy. Meteorol. Soc.*, 147(735), 1055-1069. DOI: 10.1002/qj.3959.
- Tay, K, T.-Y. Koh and M. Skote (2021), "Characterizing mesoscale variability in low-level jet simulations for CBLAST-LOW 2001 campaign", *Meteorol. Atmos. Phys.*, 133(2), 163-179. DOI: 10.1007/s00703-020-00736-3.
- Fonseca, R., T.-Y. Koh and C.-K. Teo (2019), "Multi-scale interactions in a high-resolution tropical-belt experiment and observations", *Clim. Dyn.*, 52(5), 3503-3532. DOI: 10.1007/s00382-018-4332-y.
- Tieo, J.-J., T.-Y. Koh, M. Skote and N. Srikanth (2018), "Variance characteristics of tropical radiosonde winds using a vector-tensor method", *Energies*, 11(1), 137. DOI: 10.3390/en11010137.
- Teo, C.-K., H.-N. Huynh, T.-Y. Koh, K. K. W. Cheung, B. Legras, L.-Y. Chew and L. Norford (2017), "The universal scaling characteristics of tropical oceanic rain clusters", *J. Geophys. Res.*, 122(11), 5582–5599. DOI: 10.1002/2016JD025921.

- Lestari, R. K. and T.-Y. Koh (2016), "Statistical evidence for asymmetry in ENSO-IOD interaction", *Atmos. Ocean*, 54(5), 498-504. DOI: 10.1080/07055900.2016.1211084.
- Li, X. X., T.-Y. Koh, J. Panda and L. K. Norford (2016), "Impact of urbanization patterns on the local climate of a tropical city Singapore: an ensemble study", *J. Geophys. Res.*, 121(9), 4386-4403. DOI: 10.1002/2015JD024452.
- Koh, T.-Y. and R. Fonseca (2016), "Subgrid-scale cloud-radiation feedback for the Betts-Miller-Janjic convection scheme", *Quart. J. Roy. Meteorol. Soc.*, 142(695), 989-1006. DOI: 10.1002/qj.2702.
- Fonseca, R. M., T. Zhang and K. T. Yong (2015), "Improved simulation of precipitation in the tropics using a modified BMJ scheme in the WRF model", *Geosci. Model Dev.*, 8, 2915-2928, DOI: 10.5194/gmd-8-2915-2015.
- Chen, H., P. Malanotte-Rizzoli, T.-Y. Koh, G. Song (2014), "The relative importance of the wind-driven and tidal circulations in Malacca Strait", *Cont. Shelf Res.*, 88, 92-102. DOI: 10.5194/acp-15-2571-2015.
- Koseki, S., T.-Y. Koh and C.-K. Teo (2014), "Borneo vortex and meso-scale convective rainfall", *Atmos. Chem. and Phys.*, 14, 4539-4562, DOI: 10.5194/acp-14-4539-2014.
- Li, X. X., T.-Y. Koh, D. Entekhabi, M. Roth, J. Panda and L. K. Norford (2013), "A multi-resolution ensemble study of a tropical urban environment and its interactions with the background regional atmosphere", *J. Geophys. Res.*, 118(17), 9804-9818. DOI: 10.1002/jgrd.50795.
- Koseki, S., T. Y. Koh and C. K. Teo (2013), "Effects of the Cold Tongue in the South China Sea on the Monsoon, Diurnal Cycle and Rainfall in the Maritime Continent", *Quart. J. Roy. Meteorol. Soc.*, 139(675), 1566-1582. DOI: 10.1002/qj.2052.
- Koh, T. Y., S. Wang and B. C. Bhatt (2012), "A diagnostic suite to assess NWP performance", *J. Geophys. Res.*, 117, D13109, DOI: 10.1029/2011JD017103.
- Li, X. X., R. E. Britter, L. K. Norford, T. Y. Koh and D. Entekhabi (2012), "Flow and pollutant transport in urban street canyons of different aspect ratios with ground heating: large-eddy simulation", *Bound. Layer Meteorol.*, 142(2), 289-304. DOI: 10.1007/s10546-011-9670-9.
- Teo, C. K., T. Y. Koh, C. F. Lo, B. C. Bhatt (2011), "Principal Component Analysis of observed and modelled diurnal rainfall in the Maritime Continent", *J. Clim.*, 24(17), 4662-4675. DOI: 10.1175/2011JCLI4047.1.
- Koh, T. Y., Y. S. Djamil and C. K. Teo (2011), "Statistical dynamics of tropical wind in radiosonde data", *Atmos. Chem. and Phys.*, 11, 4177-4189, DOI: 10.5194/acp-11-4177-2011.
- Koh, T. Y. and C. K. Teo (2009), "Towards a mesoscale observation network in Southeast Asia", *Bull. Amer. Meteor. Soc.*, 90(4), DOI: 10.1175/2008BAMS2561.1.
- Joseph, B., B. C. Bhatt, T. Y. Koh and S. Chen (2008), "Sea breeze simulation over Malay Peninsula over an intermonsoon period", *J. Geophys. Res.*, 113, D20122, DOI: 10.1029/2008JD010319.
- Koh, T. Y. and R. A. Plumb (2004), "Isentropic zonal average formalism and the near-surface

- circulation", *Quart. J. Roy. Meteorol. Soc.*, 130(600), pp. 1631-1654. DOI: 10.1256/qj.02.219.
- Koh, T. Y. and B. Legras (2002), "Hyperbolic lines and the stratospheric polar vortex", *Chaos*, 12(2), pp. 382-394. DOI: 10.1063/1.1480442. [ **\*most cited paper\*** ]
- Koh, T. Y. and R. A. Plumb (2000), "Lobe dynamics applied to barotropic Rossby-wave breaking", *Phys. Fluids*, 12(6), pp. 1518-1528. DOI: 10.1063/1.870400.

### **Book Chapters:**

- Annamalai, H., W. R. Boos, G. Martin, B. Mapes, Y. Ming, P. Mukhopadhyay, T.-Y. Koh and S. Rao (2021), "Grand Challenges in Asian Summer Monsoon Modeling — Representation of Processes and Sources of Model Error" in *The Multiscale Global Monsoon System*, C.-P. Chang, K.-J. Ha, R. H. Johnson, D. Kim, G. N. C. Lau and B. Wang, Eds., Vol. 11, World Scientific Series on Asia-Pacific Weather and Climate, World Scientific Publishing Co, pp. 420. ISBN: 978-981-121-659-6 (hardcover), 978-981-121-661-9(e-book).
- Robertson, A. W., V. Moron, C.-P. Chang, F. Tangang, E. Aldrian, T. Y. Koh, L. Juneng (2011), "The Maritime Continent Monsoon" in *The Global Monsoon System - Research and Forecast*, C.-P. Chang, Y. Ding, N.-C. Lau, R. H. Johnson, B. Wang and T. Yasunari, Eds., Vol. 5, World Scientific Series on Asia-Pacific Weather and Climate, World Scientific Publishing Co, pp. 594. ISBN: 978-981-4343-40-4.
- Koh, T. Y. and P. Linden (2011), "Geophysical and Environmental Fluid Mechanics" in *Environmental Hazards, the Fluid Dynamics and Geophysics of Extreme Events*, H. K. Moffatt and E. Shuckburgh, Eds., Vol. 21, Lecture Notes Series, Institute for Mathematical Sciences, National University of Singapore, World Scientific Publishing Co, pp. 315. ISBN: 978-981-4366-99-1.

### **Proceeding Papers:**

- T.-Y. Koh (2015), "Statistical Distributions and Climate Change", *Procedia IUTAM*, 17, 53-58, DOI: 10.1016/j.piutam.2015.06.009.
- Panda, J. and T.-Y. Koh (2014), "Interaction between urban surface boundary and mesoscale weather", *Proceedings of the 11th Symposium on the Urban Environment*, American Meteorological Society, 2-6 February 2014.

### **Technical Reports:**

- K. Saito, T. Kuroda, S. Hayashi, H. Seko, M. Kunii, Y. Shoji, M. Ueno, T. Kawabata, S. Yoden, S. Otsuka, N. J. Trilaksono, T.-Y. Koh, S. Koseki, L. Duc, K. T. Xin, W.-K. Wong and K. C. Gouda (2011), "International Research for Prevention and Mitigation of Meteorological Disasters in Southeast Asia", *Technical Reports of the Meteorological Research Institute*, 65, pp.198, ISSN: 0386-4049.

**PhD Thesis:**

Koh, T. Y. (2001), "Isentropic diagnostics of mid-latitude circulation and transport", Ph.D. thesis, Massachusetts Institute of Technology, USA, 288pp.

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