I-CHUN TSAI

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Education

- **National Taiwan University**, Department of Atmospheric Sciences, Taipei, Taiwan
  Ph.D. Atmospheric Sciences (2009). Advisor: Jen-Ping Chen

Appointments

- Associate Research Fellow, Academia Sinica, Research Center for Environmental Changes, Taipei, Taiwan (2023- present)

Honors & Awards

- National Science Council's Postdoctoral Fellow Publication Award (2013)

Research Interests

- Aerosol Parameterization and Modeling
- Aerosol-Cloud-Climate interactions
- Cloud Physics
- Atmospheric Physical Chemistry

Publications

1. **Tsai, I-C.**, C.-W. Lin, S.-H. Su, C.-W. Chang, C.-W. Su, and S.-C. C. Lung, 2024c: Spatial and Temporal Analysis of Scooter-Induced Traffic Patterns and Their Environmental Implications. *Atmospheric Environmental:X*, ttps://doi.org/10.1016/j.aeaoa.2024.100291

2. **Tsai, I-C.**, S.-W. Yang, C.-J. Shiu, Y.-Y. Chen, Chen-An Chen, W.-L. Lee, and H.-H. Hsu, 2024: Aerosol Impacts on the East Asian Winter Monsoon: Insights from TaiESM1 and CMIP6 Simulations. *International Journal of Climatology*, 44(9), 2816–2832. https://doi.org/10.1002/joc.8483

3. **Tsai, I-C.**, P.-R. Hsieh, H.-H. Hsu, Y.-S. Tung, Y.-M. Chen, and C.-T. Cheng, 2024a: Climate Change-induced Impact on PM2.5 in Taiwan under 2 and 4 °C Global Warming. *Atmospheric Pollution Research*, https://doi.org/10.1016/j.apr.2024.102106.

4. Wu, C.-H., S.-Y. Lee, **I-C. Tsai**, C.-J. Shiu, Y.-Y. Chen, 2023: Volcanic contribution to the 1990s North Pacific climate shift in winter. *Scientific Reports*, 13 (1), 5672.

5. Wu, C.-H., C.-J. Shiu, Y.-Y. Chen, **I-C. Tsai**, S.-Y. Lee, 2023: Climatological changes in East Asian winter monsoon circulation in a warmer future, *Atmospheric Research*, 284, 106593, https://doi.org/10.1016/j.atmosres.2022.106593.

6. **Tsai, I-C.***, P.-R. Hsieh, C.-T. Cheng, Y.-S. Tung, L.-Y. Lin and H.-H. Hsu, 2023: Impacts of 2 and 4 °C global warmings on extreme temperatures in Taiwan, *International Journal of Climatology*. 43(2), 702-719, https://doi.org/10.1002/joc.7815.

7. Chen, Y.-C., P.-H. Lin, W.-N. Chen, **I-C. Tsai**, S. Laplace, C.-C. Ting, C. Fu, Charles, C.-K.

Chou, 2022: Decade long-term measurement for investigating vertical thermodynamic of urban boundary layer, *Urban Climate,* 46, 2022, 101301,https://doi.org/10.1016/j.uclim.2022.101301.

8. **Tsai, I-C.**, L.-S. Shu, J.-P. Chen, P.-R. Hsieh, and C.-T. Cheng, 2022: Projecting ozone impact on crop yield in Taiwan under climate warming, *Science of the Total Environment,* 846 (2022), 157437, https://doi.org/10.1016/j.scitotenv.2022.157437.

9. Lee, S.-Y., S.-C. C. Lung, P.-G. Chiu, W.-C. Wang, **I-C. Tsai**, T.-H. Lin, 2022: Northern hemisphere urban heat stress and associated labor hour hazard from ERA5 reanalysis. *Int. J. Environ. Res. Public Health*. 2022, 19, 8163. https://doi.org/10.3390/ijerph19138163

10. Su, S.-H., C.-W. Chang, **I.-C. Tsai**, J.-L.Chu, Y.-L. Chen, and T.-S. Yo, 2022: Taiwan Atmospheric Event Database. https://doi.org/10.17605/OSF.IO/4ZUTJ

11. **Tsai, I-C.***, P.-R. Hsieh, H. C. Cheung, and C. C.-K. Chou, 2021b: Aerosol impacts on fog microphysics over the western side of Taiwan Strait in April from 2015 to 2017, *Atmospheric Environment*, 118523, https://doi.org/10.1016/j.atmosenv.2021.118523.

12. **Tsai, I-C.** *, C.-Y. Lee, S.-C. C. Lung, C.-W. Su, 2021a, Characterization of the vehicle emissions in the Greater Taipei Area through vision-based traffic analysis system and its impacts on urban air quality, *Science of the Total Environment*, 782(2021), 146571, ISSN 0048-9697, https://doi.org/10.1016/j.scitotenv.2021.146571.

13. Lee, W.-L., Y.-C. Wang, C.-J. Shiu, **I-C. Tsai**, C.-Y. Tu, Y.-Y. Lan, J.-P. Chen, H.-L. Pan, and H.-H. Hsu, 2020, Taiwan Earth System Model Version 1: description and evaluation of mean state, *Geosci. Model Dev.*, 13, 3887–3904, https://doi.org/10.5194/gmd-13-3887-2020.

14. Zhang, L., T.-M. Fu, H. Tian, Y. Ma, J.-P. Chen, T.-C. Tsai, **I-C. Tsai**, Z. Meng, X. Yang. 2020: Anthropogenic Aerosols Significantly Reduce Mesoscale Convective System Occurrences and Precipitation over Southern China in April, *Geophysical Research Letters*. 47, e2019GL086204. https://doi.org/10.1029/2019GL086204.

15. Wu, C.-H., **I-C. Tsai,** P.-C. Tsai and Y.-S. Tung, 2019, Large-Scale Seasonal Control of Air Quality in Taiwan, *Atmospheric Environment*, 214, 116868, doi:https://doi.org/10.1016/j.atmosenv.2019.116868.

16. Huang C.-C., S.-H. Chen, Y.-C. Lin, K. Earl, T. Matsui, H.-H. Lee, **I-C. Tsai**, J.-P. Chen, C.-T. Cheng, 2019, Impacts of Dust-Radiation versus Dust-Cloud Interactions on the Development of a Modeled Mesoscale Convective System over North Africa. *Monthly Weather Review*, 147, 3301–3326, https://doi.org/10.1175/mwr-d-18-0459.1.

17. **Tsai, I-C.**, W.-Y. Chen, J.-P. Chen, and M.-C. Liang, 2019, Kinetic mass-transfer calculation of water isotope fractionation due to cloud microphysics in a regional meteorological model, *Atmos. Chem. Phys.*, 19, 1753-1766, https://doi.org/10.5194/acp-19-1753-2019.

18. Lung, S.-C., S.-W. Chou, J.-P. Chen, P.-C. Wen, H.-J. J. Su, **I-C. Tsai**, and Y.-S. Shen, 2018: Science Plan of "Climate Change and Health Adaptation", *Journal of Taiwan Land Research*, 21, 2, 209-239 (in Chinese).

19. **Tsai, I-C.***, W.-C. Wang, H.-H. Hsu, and W.-L. Lee, 2016: Aerosol effects on summer monsoon over Asia during 1980s and 1990s, *J. Geophys. Res. Atmos.*, 121, 11761–11776, doi:10.1002/2016JD025388.

20. Chen, J.-P, I-J. Chen and **I-C. Tsai**, 2016: Dynamic feedback of aerosol effect on the East Asian summer monsoon. *Journal of Climate*, 29(17):6137-6149.

21. Li, N., J.-P. Chen, **I-C. Tsai,** Q. He, S.-Y. Chi, Y.-C. Lin, and T.-M. Fu, 2016: Potential impacts of electric vehicles on air quality in Taiwan. *Science of the Total Environment,* 566-567(2016).

22. **Tsai, I-C.**, J.-P. Chen, C. S.-C. Lung, N. Li, W.-N. Chen, T.-M. Fu, C.-C. Chang, and G.-D. Hwang, 2015b: Sources and formation pathways of organic aerosol in a subtropical metropolis during summer. *Atmospheric Environment*, 117, 51-60.

23. **Tsai, I-C.,** J.-P. Chen, Y.-C. Lin, C C.-K. Chou, and W.-N. Chen, 2015a: Numerical investigation of the coagulation mixing between dust and hygroscopic aerosol particles and its impacts. *Journal of Geophysical Research: Atmospheres,* 120, 9, 4313-4233, doi:10.1002/2014JD022899.

24. Chen, J.-P., C.-E. Yang and **I-C. Tsai,** 2015: Estimation of foreign versus domestic contributions to Taiwan's air pollution. *Atmospheric Environment*, 112,9-19, doi:10.1016/j.atmosenv.2015.02.022

25. Lin, Y.-C., J.-P. Chen, T.-Y. Ho and **I-C. Tsa**i, 2015: Atmospheric Iron deposition in the Northwestern Pacific Ocean and its Adjacent Marginal Seas: the Importance of Coal Burning. *Global Biogeochemical Cycles,* 29, 139–159, doi:10.1002/2013GB004795.

26. Chen, J.-P., **I-C. Tsai**, and Y.-C. Lin, 2013: A statistical–numerical aerosol parameterization scheme, *Atmos. Chem. Phys.*, 13, 10483-10504, doi:10.5194/acp-13-10483-2013.

27. **Tsai, I-C.**, M.-C. Liang, and J.-P. Chen, 2012: Methane-Nitrogen binary nucleation: a new microphysical mechanism for cloud formation in Titan's atmosphere. *Astrophys. J.*, 747.

28. **Tsai, I-C.**, J.-P. Chen, P.-Y. Lin, W.-C. Wang and I. S. A. Isaksen, 2010: Sulfur cycle and sulfate radiative forcing simulated from a coupled global climate-chemistry model. *Atmos. Chem. Phys.*, 10, 3693-3709.

29. Chen, J.-P., Z. Wang, C.-Y. Young, F. Tsai, **I-C. Tsai**, G.-J. Wang, W.-C. Shieh, H.-W. Lin, J.-Y. Huang, and M.-J. Lu, 2004: Simulations of Asian Yellow Dust Incursion Over Taiwan for the Spring of 2002 and 2003, *Terrest. Atmos. Ocean. Vol 15,* No. 5, 949-981.

Book and Chapter in Book

1. Wang, W.-C., J.-P. Chen, I. S. A. Isaksen, **I-C. Tsai**, K. Noone and K. McGuffie, 2012: Climate-chemistry interaction: Future tropospheric ozone and aerosol. In A. Henderson-Sellers and K. McGuffie (eds): *The Future of the World's Climate*. World Survey of Climatology series, Elsevier Science, ISBN: 978-0-12-386917-3, pp. 367-399. (2012 ASLI Choice Award)

2. Chen, J.-P., A. Hazra, C.-J. Shiu, **I-C. Tsai,** and H.-H. Lee, 2008: Interaction between aerosols and clouds: current understanding. In Liou, K.-N., M.-D. Chou and H.-H. Hsu (eds.): *Recent Progress in Atmospheric Sciences: Application to the Asia-Pacific Region*. World Scientific, ISBN-13 978-981-281-890-4, QC861.3.R43, pp. 231-281.