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Principal Investigator, Earth Observatory of Singapore, Nanyang Technological University
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1. Education Background

2006 Ph.D., Geology, University of Minnesota, Minneapolis
1996 M.S., Geology, Nanjing University, Nanjing, China
1993 B.S., Geology, Nanjing University, Nanjing, China

2. Research Interests

Paleoclimatology, isotope geochemistry, the use of isotopic and elemental tracers and chronometers to study climate history and ocean chemistry

3. Professional Experience

03/2019 - Associate Professor, Asian School of the Environment,
Nanyang Technological University (NTU), Singapore
07/2011 - Principal Investigator, Earth Observatory of Singapore, NTU
07/2011 - 02/2019 Nanyang Assistant Professor, ASE, NTU of Singapore

4. Professional Membership

American Geophysical Union, Geochemical Society

5. Awards

2011 Singapore National Research Foundation Fellowship
2009-2011 Postdoctoral Research Fellowship, LDEO, Columbia University
2006-2008 Gary Comer Science & Education Postdoctoral Fellowship

6. Supervision and mentoring at NTU

Ph.D. students:

Current: Wong Minn Lin (2018-); Zhang Yilin (2021-).

Graduated:

Yang Liu DongQing (2022); Yudha Djamil (2019); Shufang Yuan (2019); Guangxin Liu (2018).

Postdoc advisees:

He Shaoneng (2020-), Gonzalo Carrasco (2020-), Guleed Ali (2019-2021), David Cook (2019-2020), Yama Dixit (2018-2020), Lu Yanbin (2016-2019), Sylvain Rigaud (2015-2017), Frederique Leclerc (2014-2016), Reshmi Das (2012-2016), Chiang Hong-Wei (2011-2016)

7. Service Activities

Journal Editorial Board member:

Quaternary International by Elsevier on behalf of the INQUA

Science China - Earth Sciences by CAS, NSFC and Springer
National Science Review by Chinese Academy of Sciences, China

Journal Reviewer:

Nature, Nature Geoscience, Nature Communications, Proceedings of the National Academy of Sciences, Science Advances, Earth and Planetary Science Letters, Quaternary Science Reviews, Geology, Geochimica et Cosmochimica Acta, Climate of the Past, Quaternary Research, Geophysical Research Letters, Chemical Geology, JGR-Atmospheres, Quaternary International, Chinese Science Bulletin, Science Bulletin, Quaternary Geochronology, Journal of Quaternary Science, Journal of Asian Earth Science, Holocene, Palaeogeography Palaeoclimatology Palaeoecology, Global and Planetary Change, Regional Studies for Marine Science

Proposal Reviewer:

European Research Council, National Science Foundation, Israel Science Foundation, National Geographic Research and Exploration, Taiwan National Science Council, Hong Kong Research Grants Council

8. Journal Publications

- Wang, Z., Chen, S., Wang, Y., Zhao, K., Liang, Y., Cheng, H., Shao, Q., **Wang, X.**, Zhang, J., Wang, Q., Zhai, X. and Edwards, R.L., 2022. A high-resolution stalagmite record from Luoshi Cave, Central China over the past 23.5 kyr. *Quaternary Science Reviews*, 282, 107443.
- Yang, L., Budisulistiorini, S.H., Chen, G., **Wang, X.**, and Kuwata, M., 2021. The relationship between molecular size and polarity of atmospheric organic aerosol in Singapore and its implications for volatility and light-absorption properties. *ACS Earth and Space Chemistry*, 5, 3182-3196.
- Ali, G.A.H., Lin, K., Hemming, S.R., Cox, S.E., Ruprecht, P., Zimmerman, S.R.H., Stine, S., and **Wang, X.** Emergence of wet conditions in the Mono Basin of the Western US coincident with inception of the Last Glaciation. *Geological Society of America Bulletin*, doi.org/10.1130/B36084.1.
- Wang, M., Chen, S., Wang, Y., Zhao, K., **Wang, X.**, Liang, Y., Wang, Z., Zhang, Z., and Chen, G., 2022. Stalagmite multi-proxy evidence of wet and dry intervals in the middle Yangtze Valley during the last glacial period. *Palaeogeography, Palaeoclimatology, Palaeoecology* 586, 110764.
- Djamil, Y.S., Lestari, R.K., and **Wang, X.**, 2021. Sea surface temperatures in the South China Sea as a natural thermostat to the rainfall over Borneo: preliminary results. *IOP Conf. Series: Earth and Environmental Science* 925 (2021) 012009 doi:10.1088/1755-1315/925/1/012009.
- Cheng, H., Xu, Y., Dong, X., Zhao, J., Li, H., Baker, J., Sinha, A., Spötl, C., Zhang, H., Du, W., Zong, B., Jia, X., Kathayat, G., Liu, D., Cai, Y., **Wang, X.**, Strikis, N.M., Cruz, F.W., Auler, A.S., Gupta, A.K., Singh, R.K., Jaglan, S., Dutt, S., Liu, Z., and Edwards, R.L., 2021. Onset and termination of Heinrich Stadial 4 and the underlying climate dynamics. *Communications Earth and Environment*. <https://doi.org/10.1038/s43247-021-00304-6>.
- Wong, M.L., **Wang, X.**, Latrubesse, E.M., He, S., and Bayer, M., 2021. Variations in the South Atlantic Convergence Zone over the mid-to-late Holocene inferred from speleothem $\delta^{18}\text{O}$ in central Brazil. *Quaternary Science Reviews*, 270, 107178.

- Zhang, H., Cheng, H., Spotl, C., Zhang, X., Cruz, F.W., Sinha, A., Auler, A., Strikis, N.M., **Wang, X.**, Kathayat, G., Li, X., Li, H., Perez-Mejias, C., Cai, Y., Ning, Y., and Edwards, R.L., 2021. Gradual South-north climate transition in the Atlantic realm within the Younger Dryas. *Geophysical Research Letters*, 48, e2021GL092620. <https://doi.org/10.1029/2021GL092620>.
- Kayee, J., Bureekul, S., Sompongchaiyakul, P., **Wang, X.**, and Das, R., 2021. Sources of atmospheric lead (Pb) after quarter century of phasing out of leaded gasoline in Bangkok, Thailand. *Atmospheric Environment* 253, 118355.
- Kench, P.S., McLean, R.F., **Wang, X.**, Owen, S.D., Ryan, E., Morgan, K.M., Lin, K., and Roy, K., 2021. Reply to: Climate did not drive Common Era Maldivian sea-level lowstands. *Nature Geoscience*, <https://doi.org/10.1038/s41561-021-00731-2>.
- He, S., Jackisch, D., Samanta, D., Kho, P.Y.Y., Liu, G., **Wang, X.**, and Goodkin, N.F., 2021. Understanding tropical convection through triple oxygen isotopes of precipitation from the Maritime Continent. *Journal of Geophysical Research-Atmospheres* 126, e2020JD033418
- Novello, V.F., Cruz, F.W., Vuille, M., Campos, J.L.P.S., Strikis, N.M., Apaestegui, J., Moquet, J.S., Azevedo, V., Ampuero, A., Utida, G., **Wang, X.**, Paula-Santos, M.P., Jaqueto, P., Pessenda, L.C.R., Breecker, D.O., and Karmann, I., 2021. Investigating $\delta^{13}\text{C}$ values in stalagmites from tropical South America for the last two millennia. *Quaternary Science Reviews*, 255, 106822.
- Wan, J.X.W., Meltzner, A.J., Switzer, A.D., Lin, K., **Wang, X.**, Bradley, S.L., Natawidjaja, D.H., Suwargadi, B.W., and Horton, B.P., 2020. Relative sea-level stability and the radiocarbon marine reservoir correction at Natuna Island, Indonesia, since 6400 yr BP. *Marine Geology* 430, 106342.
- Kayee, J., Sompongchaiyakul, P., Sanwlan, N., Bureekul, S., **Wang, X.**, and Das, R., 2020. Metal concentrations and source apportionment of PM_{2.5} in Chiang Rai and Bangkok, Thailand during a biomass burning season. *ACS Earth and Space Chemistry*, 4, 1213-1226.
- Chawchai, S., Liu, G., Bissen, R., Scholz, D., Riechelmann, D., Vonhof, H., Mertz-Kraus, R., Chiang, H.-W., Tan, L., and **Wang, X.**, 2020. Hydroclimate variability of western Thailand during the last 1400 years. *Quaternary Science Reviews*, 241, 106423.
- Baldermann, A., Mittermayr, F., Bernasconi, S., Dietzel, M., Grengg, C., Hipper, D., Kluge, T., Leis, A., Lin, K., **Wang, X.**, Zunterl, A., and Boch, R., 2020. Fracture dolomite as an archive of continental palaeo-environmental conditions. *Nature Communications Earth and Environment*, 1:35, doi.org/10.1038/s43247-020-00040-3.
- Nguyen, C., Chen, Y.-G., Lin, Y., Chiang, H.-W., Lam, D., **Wang, X.**, Yuan, S., Lone, M., Yu, T.-L., Kuo, Y.-T., and Shen, C.-C., 2020. A decadal-resolution stalagmite record of strong Asian summer monsoon from Northwestern Vietnam over the Dansgaard-Oeschger events 2-4. *Journal of Asian Earth Sciences: X*, 3, 100027.
- Liu, G., Li, X., Chiang, H.-W., Cheng, H., Yuan, S., Chawchai, S., He, S., Lu, Y., Aung, L.T., Maung, P.M., Tun, W.N., Oo, K.M., and **Wang, X.**, 2020. On the glacial-interglacial variability of speleothem-inferred Asian Monsoon over the past 180,000 years. *Science Advances* eaay8189.
- Kench, P.S., McLean, R.F., Owen, S.D., Ryan, E., Morgan, K.M., Lin, K., **Wang, X.**, and Roy, K., 2020. Climate-forced sea-level lowstands in the Indian Ocean during the last two millennia. *Nature Geoscience* 13, 61-64.
- Liu, X., Liu, J., Shen, C.-C., Yang, Y., Chen, J., Chen, S., **Wang, X.**, Wu, C.-C., and Chen, F., 2019. Inconsistency between records of $\delta^{18}\text{O}$ and trace element ratios from

- stalagmites: Evidence for increasing mid-late Holocene moisture in arid central Asia. *Holocene*, doi:10.1177/0959683619887431.
- Das, R., **Wang, X.**, Itoh, M., Shiodera, S., and Kuwata, M., 2019. Estimation of metal emissions from tropical peatland burning in Indonesia by controlled laboratory experiments. *Journal of Geophysical Research-Atmospheres* 124, 6583-6599.
 - Ward, B., Wong, C., Novello, V.F., McGee, D., Santos, R., **Wang, X.**, Edwards, R.L., Silva, L.C.R., and Cheng, H., 2019. Reconstruction of Holocene coupling between the South America Monsoon System and local moisture variability from speleothem $\delta^{18}\text{O}$ and $^{87}\text{Sr}/^{86}\text{Sr}$ records. *Quaternary Science Reviews* 210, 51-63.
 - Wendt, K.A., Hauselmann, A.D., Fleitmann, D., Berry, A.E., **Wang, X.**, Auler, A.S., Cheng, H., and Edwards, R.L., 2019. Three-phased Heinrich Stadial 4 recorded in NE Brazil stalagmites. *Earth and Planetary Science Letters* 510, 94-102.
 - Liu, X., Rao, Z., Shen, C.-C., Liu, J., Chen, J., Chen, S., **Wang, X.**, and Chen F., 2019. Holocene solar activity imprint on centennial- to multidecadal-scale hydroclimatic oscillations in arid central Asia. *Journal of Geophysical Research-Atmospheres* 124, 2562-2573.
 - Comas-Bru, L., Harrison, S.P., Werner, M., Rehfeld, K., Scroxton, N., Veiga-Pires, C., and SISAL working group members, 2019. Evaluating model outputs using integrated global speleothem records of climate change since the last glacial. *Climate of the Past* 15, 1557-1579.
 - Chiang, H.-W., Lu, Y., **Wang, X.**, Lin, K., and Liu, X., 2019. Optimizing MC-ICP-MS with SEM protocols for determination of U and Th isotope ratios and ^{230}Th ages in carbonates. *Quaternary Geochronology* 50, 75-90.
 - Boch, R., **Wang, X.**, Kluge, T., Leis, A., Lin, K., Pluch, H., Mittermayr, F., Baldermann, A., Bottcher, M.E., and Dietzel, M., 2019. Aragonite-calcite veins of the 'Erzberg' iron ore deposit (Austria): Environmental implications from young fractures. *Sedimentology* 66, 604-635.
 - Das, R., Mohtar, A.T.B.M., Rakshit, D., Shome, D., and **Wang, X.**, 2018. Sources of atmospheric lead (Pb) in and around an Indian megacity. *Atmospheric Environment*, 193, 57-65.
 - Majewski, J.M., Switzer, A.D., Meltzner, A.J., Parham, P.R., Horton, B.P., Bradley, S., Pile, J., Chiang, H.-W., **Wang, X.**, Ng, C.T., Tanzil, J., Muller, M., and Mujahid, A., 2018. Relative sea level proxy records from fossil coral microatolls in western Borneo, South China Sea: Sea-level stability by 7 ka and possible Holocene faulting. *Holocene* doi:10.1177/095968361877061.
 - He, S., Goodkin, N.F., Kurita, N., **Wang, X.**, and Rubin, C.M., 2018. Stable isotope of precipitation during tropical Sumatra Squalls in Singapore. *Journal of Geophysical Research-Atmospheres* 123, 3812-3829.
 - Atsawaranunt, K., and SISAL Working Group Members, 2018. The SISAL database: a global resource to document oxygen and carbon isotope records from speleothems. *Earth System Science Data* 3, 1687-1713.
 - Chawchai, S., Liu, G., Bissen, R., Jankaham, K., Paisonjumlongsri, W., Kanjanapayont, P., Chutakositkanon, V., Choowong, M., Pailoplee, S., and **Wang, X.**, 2018. Stalagmites from western Thailand: preliminary investigations and challenges for paleoenvironmental research. *Boreas* 47, 367-376.
 - Zhu, J., Liu, Z., Brady, E.C., Otto-Bliesner, B.L., Marcott, S.A., Zhang, J., **Wang, X.**, Nusbaumer, J., Wong, T.E., Jahn, A., and Noone, D., 2017. Investigating the direct meltwater effect in oxygen-isotope paleoclimate records using an isotope-enabled Earth System model. *Geophysical Research Letters* 44, 12,501-12,510.

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- **Wang, X.**, Edwards, R.L., Auler, A.S., Cheng, H., Kong, X., Wang, Y., Cruz, F., Dorale, J.A., and Chiang, H.-W., 2017. Hydroclimate changes across the Amazon lowlands over the past 45,000 years. *Nature* 541: 204-207.
- Dominguez-Villar, D., **Wang, X.**, Krklec, K., Cheng, H., and Edwards, R.L., 2017. The control of the tropical North Atlantic on Holocene millennial climate oscillations. *Geology* 45, 303-306.
- Philibosian, B., Sieh, K., Avouac, J.-P., Natawidjaja, D., Chiang, H.-W., Wu, C.-C., Shen, C.-C., Daryono, M., Perfettini, H., Suwargadi, B., Lu, Y., and **Wang, X.** 2017. Earthquake supercycles on the Mentawai segment of the Sunda Megathrust in the 17th century and earlier. *Journal of Geophysical Research-Solid Earth* 122, 642-676.
- Chen, S., Wang, Y., Cheng, H., Edwards, R.L., **Wang, X.**, Kong, X., and Liu, D., 2016. Strong coupling of Asian Monsoon and Antarctic climates on sub-orbital timescales. *Scientific Reports* 6: 32995.
- Bernal, J.P., Cruz, F.W., Strikis, N.M., **Wang, X.**, Deininger, M., Catunda, M.C.A., Ortega-Obregon, C., Cheng, H., Edwards, R.L., and Auler, A.S., 2016. High-resolution Holocene South American monsoon history recorded by a speleothem from Botuvera Cave, Brazil. *Earth and Planetary Science Letters* 450, 186-196.
- Cheng, H., Edwards, R.L., Sinha, A., Spötl, C., Yi, L., Chen, S., Kelly, M., Kathayat, G., **Wang, X.**, Li, X., Kong, X., Wang, Y., Ning, Y., and Zhang, H., 2016. The Asian monsoon over the past 640,000 years and ice age terminations. *Nature* 534, 640-646.
- Diong, H.T., Das, R., Khezri, B., Srivastava, B., **Wang, X.**, Sikdar, P.K., and Webster, R.D., 2016. Anthropogenic platinum group element (Pt, Pd, Rh) concentrations in PM₁₀ and PM_{2.5} from Kolkata, India. *SpringerPlus* 5: 1242.
- Das, R., **Wang, X.**, Sikdar, P.K., and Datta, S., 2016. Mercury isotopes of atmospheric particle bound mercury for source apportionment study in an urban setting. *Elementa*, 4: doi: 10.12952/journal.elementa.000098.
- Yu, J., Menviel, L., Jin, Z., Thornalley, D.J.R., Barker, S., Marino, G., Rohling, E.J., Cai, Y., Zhang, F., **Wang, X.**, Dai, Y., Chen, P., and Broecker, W.S., 2016. Deep Atlantic carbon sequestration and atmospheric CO₂ decline during the last glaciation. *Nature Geoscience* 9, 319-324.
- Campos, L.C.S., Teixeira, R.J.S., Rodrigues, A.I.P.C., **Wang, X.**, MacLeod, K., and Bassett, D., 2015. The isotope geochemistry of speleothems in the comprehension of Holocene climate dynamics at Natural Monument Cuevas de Fuentes de Leon region, Extremadura, Spain. *Comunicacoes Geologicas* 102, 137-141.

- Das, R., Khezri, B., Srivastava, B., Datta, S., Sikdar, P.K., Webster, R.D., and **Wang, X.**, 2015. Trace element composition of PM2.5 and PM10 from Kolkata – a heavily polluted Indian metropolis. *Atmospheric Pollution Research* 6, 742-750.
- Cai, Y.J., Fung, I., Edwards, R.L., An, Z.S., Cheng, H., Lee, J.-E., Tan, L.C., Shen, C.-C., **Wang, X.**, Day, J., Zhou, W.J., Kelly, M., and Chiang, J.C.H., 2015. Variability of stalagmite-inferred Indian Monsoon precipitation over the past 252,000 years. *Proceedings of the National Academy of Sciences* 112, 2954-2959.
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- **Wang, X.**, and Broecker, W.S., 2013. Long-term reworking of volcanic ash deposited in the abyssal ocean based on uranium and thorium measurements. *Journal of Volcanology and Geothermal Research* 264, 66-71.
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- Cheng, H., Sinha, A., **Wang, X.**, Cruz, F.W., and Edwards, R.L., 2012. The global paleomonsoon as seen through speleothem records from Asia and the Americas. *Climate Dynamics* 39, 1045-1062.
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- Cai, Y.J., Tan, L.C., Cheng, H., An, Z.S., Edwards, R.L., Kelly, M.J., Kong, X.G., and **Wang, X.**, 2010. The variations of summer monsoon precipitation in central China since the last deglaciation. *Earth and Planetary Science Letters* 291, 21-31.
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- Domínguez-Villar, D., Fairchild, I.J., Baker, A., **Wang, X.**, Edwards, R.L., and Cheng, H., 2009. Oxygen isotope precipitation anomaly in the North Atlantic region during the 8.2 ka event. *Geology* 37, 1095-1098.
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