

# Yu-Heng Tseng

## Professor

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**Research Room :** Room 123, Institute of Oceanography

**Field :** High performance computing, oceanic and atmospheric modeling, air-sea interaction, earth system modeling, climate change, turbulence modeling

## Academic Background :

1995 B.Sc. Mechanical Engineering, National Taiwan University, Taipei, Taiwan.

1995 B.Sc. Mechanical Engineering, National Taiwan University, Taipei, Taiwan.

1999 M.Sc. in Biomechanical Engineering, Mechanical Engineering, Stanford University, Stanford CA.

2003 Ph. D. in Environmental Fluid Mechanics and Hydrology, Department of Civil and Environmental Engineering, Stanford University, Stanford CA.

2003/10-2004/10 Post-doctoral fellow, Mechanical Engineering, Johns Hopkins University, U.S.A.

2003/12-2004/12 Consultant, Central Weather Bureau, Taipei, Taiwan

2005/01-2005/05 Lecturer, Department of Civil and Environmental Engineering, University of California at Berkeley, U.S.A.

2004/11-2006/08 Post-doctoral researcher, Computational Research Division, Lawrence Berkeley National Laboratory, U.S.A.

2007/09-2008/02 Adjunct Assistant Professor, Institute of Marine Environmental Science and Technology, National Taiwan Normal University

2007/10-2008/08 Adjunct Associate Researcher, Preparatory office of Taiwan Typhoon and Flood Research Institute, National Applied Research Laboratory

2006/08-2012/03 Associate Professor, Department of Atmospheric Sciences, National Taiwan University

2012/03-2017/02 Project Scientists II, Climate and Global Dynamics Laboratory, National Center for Atmospheric Research, U.S.A.

2012/04-2017/02 Adjunct Associate Professor, Department of Atmospheric Sciences, National Taiwan University

02/2017-present Professor, Institute of Oceanography, National Taiwan University

## Research Achievements/Publications :

A. Journal Papers:

Ding\*, R., Tseng, Y. H., Li, J. P., Sun, C., Fei, X. and Hou, Z. L. (2019) Relative Contributions of North and South Pacific Sea Surface Temperature Anomalies to ENSO. Journal of Geophysical Research- Atmospheres, 10.1029/2018JD030181.

Sun\*, Q., Whitney, M. M., Bryan, F. O. and Tseng Y. H. (2019) Assessing the Skill of the Improved Treatment of Riverine Freshwater in the Community Earth System Model (CESM) Relative to a New Salinity Climatology. *Journal of Advances in Modeling Earth Systems*, 10.1029/2018MS001349.

Arpe, K., Tsuang\*, B. J., Tseng, Y. H., Liu, X. Y. and Leroy, S. A. G. (2019) Quantification of climatic feedbacks on the Caspian Sea level variability and impacts from the Caspian Sea on the large-scale atmospheric circulation. *Theoretical and Applied Climatology*, 136(1-2), 475-488. doi: 10.1007/s00704-018-2481-x

Ding\*, R. Q., J. P. Li, Y. H. Tseng, C. Sun, Y. Li, N. Xing, and X. F. Li (2019) Linking the North American Dipole to the Pacific Meridional Mode. *Journal of Geophysical Research-Atmospheres*, 124(6), 3020-3034. doi:10.1029/2018JD029692

Sun, Z. K., Liu\*, H. L., Lin, P. F., Tseng\*, Y. H., Small, J. and Bryan F. (2019) The Modeling of the North Equatorial Countercurrent in the Community Earth System Model and its Oceanic Component. *Journal of Advances in Modeling Earth Systems*, 11(2), 531-544. doi: 10.1029/2018MS001521

Huang, X., Hu, C., Huang, X., Chu, Y., Tseng, Y. H., Zhang, G. J., Guang J. and Lin\*, Y. L. (2018) A long-term tropical mesoscale convective systems dataset based on a novel objective automatic tracking algorithm. *Climate Dynamics*, 51, 3145-3159.

Chen, H. C., Sui\*, C. H., Tseng, Y. H. and Huang, B. H. (2018) Combined Role of High- and Low-Frequency Processes of Equatorial Zonal Transport in Terminating an ENSO Event. *Journal of Climate*, 31 (14):5461-5483. doi: 10.1175/JCLI-D-17-0329.1

Ding\*, R. Q., Li, J. P., Tseng, Y. H., Li, L. J., Sun, C. and Xie, F. (2018) Influences of the North Pacific Victoria Mode on the South China Sea Summer Monsoon. *Atmosphere*, 9 (6):10.3390/atmos9060229

Yuan\*, Y. C., C. H. Yang, Y. H. Tseng, X. H. Zhu, H. Q. Wang and H. Chen (2017) Analysis of longer period variation of the Kuroshio Current intrusion into the Luzon Strait using rectified wavelet power spectra. *Progress in Oceanography*, 156, 61-77. doi: 10.1016/j.pocean.2017.04.013.

Yang, X. D., Song\*, Z. Y., Tseng, Y. H., Qiao, F. L. and Shu, Q. (2017) Evaluation of three temperature profiles of a sublayer scheme to simulate SST diurnal cycle in a global ocean general circulation model. *Journal of Advances in Modeling Earth Systems*, 9 (4), 1994-2006. doi:10.1002/2017MS000927.

Ding, R., Li\*, J., Tseng, Y. H., Sun, C. and Zheng F. (2017) Linking a sea level pressure anomaly dipole over the North America to the central Pacific El Niño. *Climate Dynamics*, 49(4), 1321-1339. doi:10.1007/s00382-016-3389-8.

Chow, C. H., Y. H. Tseng\*, H. H. Hsu and C. C. Young (2017) Interannual variability of the subtropical countercurrent eddies in the North Pacific associated with the Western-Pacific teleconnection pattern. *Continental Shelf Research*, 143, 175-184. doi:10.1016/j.csr.2016.08.006.

Hu\*, Z. Z., Kumar, A., Zhu, J. S., Huang, B. H., Tseng, Y. H. and Wang, X. C. (2017) On the Shortening of the Lead Time of Ocean Warm Water Volume to ENSO SST Since 2000. *Scientific Reports*, 7, 4294. Doi: 10.1038/s41598-017-04566-z.

Tseng\*, Y. H., R. Q. Ding and X. M. Huang (2017) The warm Blob in the northeast Pacific-the bridge leading to the 2015/ 16 El Nino. *Environmental Research Letters*, 12 (5), 054019. Doi:

10.1088/1748-9326/aa67c3.

Sun\*, Q., M. M. Whitney, F. O. Bryan and Y. H. Tseng (2017) A box model for representing estuarine physical processes in Earth system models. *Ocean Modelling*, 112, 139-153. Doi: 10.1016/j.ocemod.2017.03.004.

Hu\*, Z. Z., Huang, B., Tseng, Y. H., Wang, W., Kumar, A. Zhu, J. and Jha, B. (2017) Does vertical temperature gradient of the atmosphere matter for El Niño development? *Climate Dynamics*, 48(5-6), 1413-1429. doi: 10.1007/s00382-016-3149-9.

Tseng\*, Y. H., Z. Z. Hu, R. Ding and H. C. Chen (2017) An ENSO prediction approach based on ocean conditions and ocean-atmosphere coupling. *Climate Dynamics*, 48(5-6), 2025-2044. doi: 10.1007/s00382-016-3188-2.

Ding\*, R., Li, J., Tseng, Y. H., Sun, C. and Xie F. (2017) Joint impact of North and South Pacific extratropical atmospheric variability on the onset of ENSO events. *Journal of Geophysical Research –Atmospheres*, 122(1), 279-298. doi:10.1007/s00382-016-3389-8.

Tseng, Y.H.\*, Y.H. Lin, M.H. Lo, and S.C. Yang (2016) Diagnosing the possible dynamics controlling Sahel precipitation in the short-range ensemble community atmospheric model hindcasts. *Climate Dynamics*, 47(9-10), 2747-2764.

Ding, R., Tseng, Y. H., Ha, K. J., Lee, J. Y. and Li\*, J. (2016) Interdecadal change in the lagged relationship between the Pacific-South American pattern and ENSO, *Climate Dynamics*, 47(9-10), 2867-2884.

Tseng\*, Y. H., Bryan, F. O. and Whitney, M. M. (2016) Impacts of the representation of riverine freshwater input in the community earth system model, *Ocean Modelling*, 105, 71-86.

Wada\*, Y., Lo, M. H., Yeh, P. J.-F., Reager, J. T., Famiglietti, J. S., Wu, R. J. and Tseng, Y. H. (2016) Fate of water pumped from underground and contributions to sea-level rise. *Nature Climate Change*, 6(8), 777-+.

Tseng\*, Y. H. and co-authors (2016) North and equatorial Pacific Ocean circulation in the CORE-II hindcast simulations. *Ocean Modelling*, 104, 143-170.

Baker\*, A. H., Hu, Y., Hammerling, D.M., Tseng, Y. H., Xu, H., Huang, X and Bryan, F. O. (2016) Evaluating statistical consistency in the ocean model component of the Community Earth System Model (pyCECT v2.0). *Geoscientific Model Development*, 9(7), 2391-2406.

Huang\*, X., Tang, Q., Tseng, Y., Hu, Y., Baker, A. H., Bryan, F. O., Dennis, J., Fu, H., and Yang, G. (2016) P-CSI v1.0, an accelerated barotropic solver for the high-resolution ocean model component in the Community Earth System Model v2.0. *Geoscientific Model Development*, 9(11), 4209-4225. doi: 10.5194/gmd-9-4209-2016.

Yang\*, Y. J., Jan, S., Chang, M. H., Wang, J., Mensah, V., Kuo, T. H., Tsai, C. J., Lee, C. Y., Andres, M., Centurioni, L. R., Tseng, Y. H., Liang, W. D. and Lai, J. W. (2015) Mean structure and fluctuations of the Kuroshio East of Taiwan from in situ and remote observations. *Oceanography*, 28(4), 74-83.

Chen, H. C., Sui\*, C. H., Tseng, Y. H. and Huang, B. H. (2015) An Analysis of the Linkage of Pacific Subtropical Cells with the Recharge-Discharge Processes in ENSO Evolution. *Journal of Climate*, 28(9), 3786-3805.

Ding, R., Li\*, J. and Tseng, Y. H. (2015) The impact of South Pacific extratropical forcing on ENSO and comparisons with the North Pacific. *Climate Dynamics*, 44(7-8), 2017-2034.

Ding, R., Li\*, J., Tseng, Y. H. and Ruan, C. (2015) Influence of the North Pacific Victoria mode on the Pacific ITCZ summer precipitation. *Journal of Geophysical Research –Atmospheres*,

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Jo\*, Y. H., Breaker, L. C., Tseng, Y. H. and Yeh, S. W. (2014) A Temporal Multiscale Analysis of the Waters off the East Coast of South Korea over the Past Four Decades. *Terrestrial Atmospheric and Oceanic Sciences*, 25(3), 415-434.

Griffies\*, S. M., Yin, J. J., Durack, P. J., Goddard, P., Bates, S. C., Behrens, E., Bentsen, M., Bi, D. H., Biastoch, A., Boning, C. W., Bozec, A., Chassignet, E., Danabasoglu, G., Danilov, S., Domingues, C. M., Drange, H., Farneti, R., Fernandez, E., Greatbatch, R. J., Holland, D. M., Ilıcak, M., Large, W. G., Lorbacher, K., Lu, J. H. S., Marsland, J., Mishra, A., Nurser, A. J. G., Melia, D. S. Y., Palter, J. B., Samuels, B. L., Schroter, J., Schwarzkopf, F. U., Sidorenko, D., Treguier, A. M., Tseng, Y. H., Tsujino, H., Uotila, P., Valcke, S., Voldoire, A., Wang, Q., Winton, M. and Zhang X. B. (2014) An assessment of global and regional sea level for years 1993-2007 in a suite of interannual CORE-II simulations. *Ocean Modelling*, 78, 35-89.

Farmer\*, D., Jan, S., Tseng, Y. H., Yuan, D. L. and Lee S. (2014) Special issue of 16th PAMS Meeting: Recent advances in the oceanography of Pacific-Asian Marginal Seas Preface. *Progress in Oceanography*, 121, 1-6.

Shen, M. L., Tseng\*, Y. H., Jan, S., Young, C. C. and Chiou, M. D. (2014) Long-term variability of the Kuroshio transport east of Taiwan and the climate it conveys. *Progress in Oceanography*, 121, 60-73.

Young, C. C., Liang, Y. C., Tseng\*, Y. H. and Chow, C. H. (2014) Characteristics of the RAW-Filtered Leapfrog Time-Stepping Scheme in the Ocean General Circulation Model. *Monthly Weather Review*, 142(1), 434-447.

Young, C. C., Tseng\*, Y. H., Shen, M. L., Liang, Y. C., Chen, M. H. and Chien, C. H. (2012) Software development of the Taiwan Multi-scale Community Ocean Model (TIMCOM). *Environmental Modelling & Software*, 38, 214-219.

Tseng, Y. H.\*, Shen, M. L., Jan, S., Dietrich, D. E. and Chiang, C. P. (2012) Validation of the Kuroshio Current System in the dual-domain Pacific Ocean Model framework. *Progress in Oceanography*, 105 (SI), 102-124.

Tsai, Y. M., Kuo\*, H. C., Chang, Y. C. and Tseng, Y. H. (2012) A New Parallel Domain-Decomposed Chebyshev Collocation Method for Atmospheric and Oceanic Modeling.

Terrestrial Atmospheric and Oceanic Sciences, 23(4), 439-450.

Tseng, Y. H.\*, Chien, S. H., Jin, J. M. and Miller, N. L. (2012) Modeling Air-Land-Sea Interactions Using the Integrated Regional Model System in Monterey Bay, California. Monthly Weather Review, 140(4), 1285-13