CURRICULUM VITAE: Zhenning LI

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EDUCATION

09/2014 – 06/2019 **Ph.D.**

Major in Meteorology, Sun Yat-sen University, Supervisor: Prof. Song Yang

09/2016 – 09/2017 **Visiting Ph.D. Student**

Department of Geography, University of California, Berkeley, Co-Supervisor: Prof. John Chiang

09/2010 – 06/2014 **B.S.**

Major in Atmospheric Sciences, Sun Yat-sen University, GPA: 4.1/5.0 (Top 5%)

PROFESSIONAL EMPLOYMENTS

10/2019 – 12/2020* **Postdoctoral Fellow**

Institute of Environment, Energy and Sustainability, the Chinese University of Hong Kong

SKILLS

Languages

English: Generally fluent, **TOEFL: 101/120 (R25+L30+S22+W24) & CET6: 552**

Chinese (Mandarin): Mother tongue

Expertise

Modeling: Substantial experience in application of **the NCAR CESM** model in hierarchical configurations ranging from **dynamical core** to **fully-coupled earth system simulation**, proficient in designing and executing **prescribed-forcing, nudging, and pacemaker** experiments which require targeting and modifying the model source code tree (developed toolkits: 1 2); also familiar with customization of the COAWST (WRF+ROMS+SWAN) regional coupling framework.

System Architecture: Proficient in **the Linux (UNIX-like)** environments, **high-performance computers** (e.g. **NERSC-Cori,** "Tianhe-2") and cloud services (e.g. Amazon AWS); rich experience in **porting, customizing, and optimizing** comprehensive models (e.g. WRF, CESM, including **SPCAM**, and GFDL FMS etc.) onto new parallel platforms; experienced in **load-balancing**, troubleshooting, and maintaining of computing systems; skilled in building real-time regional forecast systems.

Toolbox Stack: {Proficient in: **NCL, shell scripts (bash/csh), FORTRAN, and MATLAB**}; {Familiar with: **python** (np, pd, matplotlib), **OOP** (**C++**, VB), ML (sklearn), Web (js, php, WordPress)}; {Knowledge of: **parallel programming** (**MPI**), scipy, C}; {Certificates: China National Computer Rank Examination, both in Grade 2 (VB), and Grade 3 (**Network**)}.

RESEARCH INTERESTS

When I was a Ph.D. student, I used to focus on climate responses to tropical atmospheric convection by conducting comprehensive GCM experiments, and developed a set of open-source toolkits. Recently, I started to design and execute hierarchical fully-coupled experiments to understand some fundamentals of the climate system. As a postdoctoral researcher at the CUHK, I am developing a regional coupling framework to investigate how ocean and sea wave physics affect the evolution of tropical cyclones. I consider myself a fast learner,

* Contract period

fascinated by sheer joy of making things work via coding. Gradually I find model development is my most desired research direction. The fascination and fulfillment of fashioning complex objects inter-connectedly into comprehensive climate models, and observing them work in subtle cycles really make me excited.

PROJECTS & PROFESSIONAL SERVICES

10/2019 – 12/2020 Developer of Regional Air-Wave-Sea Coupling System over the South China Sea

Cooperated project with the Hong Kong Observatory, customize the COAWST (WRF+ROMS+SWAN) architecture, optimize grid system and bathymetry over the SCS region, and configure task-based CPU load-balancing among individual models. [Ref]

07/2019 – 04/2020 Developer of the L1-Regularization Monthly Anomaly Forecast System

Cooperated project with the National Climate Center (NCC), China, use Lasso regression to extract predictors from circulation feature libs, carry out pilot forecast in the South China station-based temperature, and an event-listening demo is already deployed on the testbed in the NCC. [Refer: Prof. Song Yang and Dr. Qingquan Li]

01/2018 – 03/2018 Developer of Real-Time WRF Forecast Platform for Shandong Peninsula

Use idle computing resources to drive the WRF model to carry out operational 72-hr numerical forecast for the Shandong Peninsula, with forecast results uploaded and displayed on GitHub page.[Ref]

03/2014 – 06/2019 Administrator of Research Group IT Facilities and Website

Establish an internal team website for fresh member training and data distribution, ensure servers and storage clusters functioning properly, be responsible for technical negotiation with high-performance computing providers, and train basic Linux and modeling skills among team members. [Refer: Prof. Song Yang]

11/2012 – 11/2013 Leader for the Laboratory Open Fund Project for Undergraduates

Leader for the laboratory open fund project "Automatic All-sky Cloud Cover Observation System" for undergraduate students in Sun Yat-sen University, with achievements including an operational webpage and a set of image processing and pattern recognition algorithms for cloud cover detection [GitHub Repo].

AWARDS

11/2017 First Prize in the poster session of International Workshop on Tropical-Subtropical Weather, Climate and Oceans, Guangzhou, China **(Top 5%)**

12/2014 Third Prize in the China Graduate Student Forum on Climate Change, Beijing, China **(Top 10%)**

09/2013 China National Scholarship for Undergraduate Students **(Top 1%)**

SELECTED CONFERENCES

12/2018 2018 AGU's Fall Meeting, San Francisco, USA, poster presentation

11/2017 Workshop on Analysis and Modeling of Climate Variations, Seoul, South Korea, oral presentation

02/2017 2017 BASC SYMPOSIUM, Berkeley, USA, poster presentation

01/2017 97th AMS Annual Meeting, Seattle, USA, poster presentation

08/2016 2016 AOGS Annual Meeting, Beijing, China, oral presentation

PUBLICATIONS

Since 2015, I have totally published **4** papers as **the first or corresponding author** and **14** co-authored papers, with Google Scholar **citation of 99** and **H-Index 6**† (please check the full list in the appendix).

† Data collected by Feb 22, 2020

APPENDIX: PUBLICATION LIST

Li, Z., Yang, S., Hu, X., Dong, W., and He, B., 2018. Charge in long-lasting El Niño events by convection-induced wind anomalies over the western Pacific in boreal spring. *J. Climate*, 31(10), 3755-3763.

Li, Z. and Yang, S., 2017. Influences of spring-to-summer sea surface temperatures over different Indian Ocean domains on the Asian summer monsoon. *Asia-Pac. J. Atmos. Sci.*, 53(4), 471-487.

Li, Z., Yang, S., He, B. and Hu, C., 2016. Intensified springtime deep convection over the South China Sea and the Philippine Sea dries southern China. *Sci. Rep.*, 6, 30470.

Lu, M., Huang, B., **Li, Z.*,** Yang, S. and Wang, Z., 2018. Role of Atlantic air–sea interaction in modulating the effect of Tibetan Plateau heating on the upstream climate over Afro-Eurasia–Atlantic regions. *Climate Dyn.*, 53, 509-519.

Yang, S., Zhang, T., **Li, Z.** and Dong, S., 2019. Climate variability over the Maritime Continent and its role in global climate variation: A review. *J. Meteorol. Res.*, 33(6), 993-1015.

Fan, H., Huang, B., Yang, S., **Li, Z.** and Deng, K., 2019. Seasonally-dependent impact of easterly wind bursts on the development of El Niño events. *Climate Dyn.*, 53(3-4), 1527-1546.

Hu, X., Sejas, S. A., Cai, M., **Li, Z.,** and Yang, S., 2019. Atmospheric dynamics footprint on the January 2016 ice sheet melting in West Antarctica. *Geophys. Res. Lett.*, doi: 10.1029/2018GL081374.

He, S., Yang, S., Lu M., and **Li Z.**, 2018. Afro-Eurasian intermediate-frequency teleconnection and modulation by ENSO. *J. Climate*, 31, 8121–8139, https://doi.org/10.1175/JCLI-D-18-0130.1

Li, G., Jian, Y., Yang, S., Du, Y., Wang, Z., **Li, Z.,** Zhuang, W., Jiang, W. and Huang, G., 2018. Effect of excessive equatorial Pacific cold tongue bias on the El Niño-Northwest Pacific summer monsoon relationship in CMIP5 multi-model ensemble. *Climate Dyn.*, 52, 6195-6212.

Yang, S., **Li, Z.,** Yu, J.-Y., Hu, X., Dong, W. and He, S., 2018. El Niño–Southern Oscillation and its impact in the changing climate. *Natl. Sci. Rev.*, doi: 10.1093/nsr/nwy046.

Deng, T., Huang, Y., **Li, Z.,** Wang, N., Wang, S., Zou, Y., Yin, C. and Fan, S., 2018. Numerical simulations for the sources apportionment and control strategies of $PM_{2.5}$ over Pearl River Delta, China, part II: Vertical distribution and emission reduction strategies. *Sci. Total Environ.*, doi:10.1016/j.scitotenv.2018.04.209.

Huang, Y., Deng, T., **Li, Z.,** Wang, N., Yin, C., Wang, S. and Fan, S., 2018. Numerical simulations for the sources apportionment and control strategies of $PM_{2.5}$ over Pearl River Delta, China, part I: Inventory and $PM_{2.5}$ sources apportionment. *Sci. Total Environ.*, doi: 10.1016/j.scitotenv.2018.04.208.

Jiang, X., Wang, Z. and **Li, Z.**, 2018. Signature of the South China Sea summer monsoon onset on spring-to-summer transition of rainfall in the middle and lower reaches of the Yangtze River basin. *Climate Dyn.*, 51, 3785–3796.

Lu, M., Yang, S., **Li, Z.**, He, B., He, S. and Wang, Z., 2017. Possible effect of the Tibetan Plateau on the "upstream" climate over West Asia, North Africa, South Europe and the North Atlantic. *Climate Dyn.*, 51, 1485-1498.

He, S., Yang, S. and **Li, Z.**, 2017. Influence of latent heating over the Asian and western Pacific monsoon region on Sahel summer rainfall. *Sci. Rep.*, 7(1), p.7680.

Hu, C., Yang, S., Wu, Q., **Li, Z.**, Chen, J., Deng, K., Zhang, T., and Zhang, C., 2016. Shifting El Niño inhibits summer Arctic warming and Arctic sea-ice melting over the Canada Basin. *Nat. Comm*., doi: 10.1038/ncomms11721.

Hu, C., Wu, Q., Yang, S., Yao, Y., Chan, D., **Li, Z.** and Deng, K., 2016. A Linkage Observed between Austral Autumn Antarctic Oscillation and Preceding Southern Ocean SST Anomalies. *J. Climate*, 29(6), 2109-2122.

He, B., Yang, S. and **Li, Z.**, 2015. Role of atmospheric heating over the South China Sea and western Pacific regions in modulating Asian summer climate under the global warming background. *Climate Dyn.*, 46(9), 2897–2908.