

Zhenyu He

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<https://jobsstroustrup.github.io/>

EDUCATION

Peking University	Beijing, China	09/2018–06/2022(expected)
School of Physics, Department of Atmospheric and Oceanic Sciences,		
• Major in Atmospheric and Oceanic Sciences		
• GPA: 3.83/4.0 , Ranking: 17/178		

RESEARCH EXPERIENCE

The Development of a Joint Aerosol Retrieval Algorithm for MODIS and CALIPSO Sensors

<i>Independent Research, Supervised by Prof. Jing Li, Peking University</i>	10/2021–present
• Replaced lookup tables of MODIS with retrieved aerosol extinction coefficient profile by CALIPSO.	
• Added retrieved AOD by MODIS as the boundary condition for retrieving aerosol extinction coefficient by CALIPSO.	
• Iterated the above steps until the results of retrieved AOD by MODIS and the aerosol extinction coefficient profile by CALIPSO are stable.	

Markov Chain Monte–Carlo (MCMC) to Do Retrievals

<i>Independent Research, Supervised by Prof. Yuk Yung, Caltech and Prof. King-Fai Li, UCR</i>	03/2021–present
• Used MCMC to solve the weakness of Rodgers' method to do retrievals.	
• Examined the MCMC method for the Earth Science applications.	
• Tried to retrieve the land and ocean distribution of Earth from DSCOVR with single-point light curve.	
• Applied different methods to find best regularization parameters to solve ill-conditioned problem in retrievals.	

Dependence of Walker Circulation on the Width of Ocean Basin

<i>Independent Research, Supervised by Prof. Yongyun Hu and Prof. Ji Nie, Peking University</i>	05/2020–06/2021
• Explored the dependences of Walker circulation on the width of ocean basin with idealized aquaplanet simulations	
• Developed diagnostic methods to reveal the controlling mechanisms of the above dependence	
• Examined and understood Walker circulation in paleo-climate simulations with realistic geography	

The Response of Walker Circulation and Hadley Circulation Under Global Warming

<i>Independent Research, Supervised by Prof. Ji Nie, Peking University</i>	10/2019–05/2020
• Found the change of the intensity of Walker Cell and Hadley Cell with different levels of CO ₂ .	
• Calculated the different contributions of Walker Cell and Hadley Cell to the total change of mass flux at tropical areas.	

SELECTED COURSE PROJECT

Introduction to Time Series Analysis in Atmospheric Sciences	11/2020–01/2021
• Constructed an appropriate Lanczos filter to process the 150-year daily average temperature series of Stockholm Station, and then adopted Fourier transform to extract the wavelets and gave the confidence interval	
• Calculated the autocorrelation function and linear warming trend of the 50-year daily average temperature in Beijing, and carried out AR(1) model fitting	
Global Environmental and Climate Change	10/2020–12/2020
• Collated the global and Chinese near-surface ozone concentration changes, compared the similarities and differences, and summarized the ozone change rules in each main area	
• Analyzed the temporal and spatial distribution of near-surface ozone caused by human activities and the underlying reasons, and then proposed suggestions on emission reduction to Chinese government.	

AWARDS AND HONORS

Merit Student, Peking University (10%)	09/2018–present
High scholarship - Petroleum Scholarship (6%)	10/2019
Lee Wai Wing Scholarship (11%)	10/2020
Weiming Scholarship for Physics Students (30%)	2019, 2020
Second Prize of Outstanding Volunteers of School of Physics, Peking University (4%)	11/2020
High Scholarship - Huatai Securities Technology Scholarship (6%)	10/2021

EXTRACURRICULAR ACTIVITIES

Homecoming High School Practice Group	Leader	11/2018–02/2019
• Recruited volunteers from different majors, collected information on major features, learning experience, career development etc.		
• Conducted lectures, launched a series of activities about introducing Peking University in high schools.		
• Won a school-level first prize in the Homecoming volunteers' activities.		
Volunteer Teaching in Majiang Middle School, Qishan, Shaanxi	Leader	06/2020–09/2020
• Formed a team of Chinese college student volunteers to the remote and poor areas and conducted 'Helping the Will and Cultivating the Wisdom' activities.		
• Gave lectures to students of Majiang Middle School and supervised self-study courses		
• Received positive feedbacks from 93% of participating students.		
Volunteer Club of PKU	Core Member	09/2018–present
• Led volunteer teams to the Angle House, took care of handicapped children every week, taught them to paint and sing songs, etc.		

Student Union, School of Physics, PKU

Minister

09/2019-09/2020

- Maintained good relationship with sustaining enterprise partners such as Valeon, DH International, achieved sponsorship funds about \$11,000 per year, did the annual financial report within the department.
- Organized cross-department activities such as balls, long distance carbon-reduction running, etc. Confirmed the number of participants, funds and plans with different departments before activities, and prepared the contingency plan for emergency situations.
- Organized the design of department shirts, planned for the cultural festival, exhibited the department culture to students in other departments.

Class 4 of Grade 2018, School of Physics, PKU

Monitor

09/2018-present

Baseball Team, PKU

Third Baseman

09/2018-present

ADDITIONAL INFORMATION

- TOEFL 108(R30, L29, S24, W25), GRE V156, Q 170, AW 3.5
- Programming & Software: Python, MATLAB, C++, R, Java, Fortran, Linux; LaTeX, Origin