Zhenyi Zhang

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EDUCATION

GNSS Research Center, Wuhan University, China

M.Sc in Geodesy and Survey Engineering 09/2020 – 06/2023(expected)

- Weighted average score: 90/100
- Supervisors: Prof. Yidong Lou and Prof. Weixing Zhang
- Areas of interest: GNSS data processing, GNSS meteorology, InSAR atmospheric correction, Numerical weather models
- Courses: Space Geodesy, GNSS Precise Point Positioning, Satellite Orbiting Theory and Method, Optimal Estimation Theory and Method, Time Series Analysis and Applications, etc.

School of Geodesy and Geomatics, Wuhan University, China

B.Sc in Navigation Engineering 09/2016 – 06/2020

- **GPA: 3.96/4.0, weighted average score: 94/100, rank 1/51 with distinction**
- Thesis: "Study on InSAR tropospheric delay correction method using GNSS/NWMs combining products", awarded excellent bachelor's degree thesis
- Supervisors: Prof. Wanke Liu and Prof. Weixing Zhang
- Areas of interest: GNSS data processing, Integration of GNSS, INS, and Vision, InSAR atmospheric correction
- Courses: C, Matlab, Linux, Optimal Estimation Theory, Geoscience, Geodesy, Geomatics, GNSS, GNSS Receiver Designing, GIS, Inertial Navigation, Satellite Orbiting, Astronomical Navigation, Electronic Map for Navigation, etc.

SUMMARY

- Superior learning and research skills and quality of diligence, with the highest GPA (3.96/4.0) in my faculty out of over 300+ students, two peer-reviewed papers published in high-impact journals (JCR Q1), and twice winning the National Scholarship P.R. China awarding only the top 0.2% of Chinese students.
- Great research interest in science and sensitivity to applying geodetic techniques to scientific problems. Good at investigating interdisciplinary subjects and always looking forward to challenging great academic problems and exploring the unknown.
- Outstanding team player and collaborator with good teamwork and leadership skills through the six-years monitor and one-year teaching assistant and tutor experience.

RESEARCH EXPERIENCES

GNSS Precise Point Positioning software and Meteorology Applications 10/2020 – 03/2022

- Developed a high-precision GNSS data processing software—GMET featuring flexible functions: single- and multi-system, static- and kinetic-positioning, post- and real-time, float- and fixed-ambiguity.
- Accomplished the real-time GNSS-based water vapor monitoring project for China Meteorological Administration and our GMET software has been working successfully on three GNSS stations from 07/2021 to the present.

InSAR Atmospheric Corrections and Analysis 07/2019 – 06/2022

- Developed InSAR atmospheric products producing tools and InSAR atmospheric correcting tools.
- Investigated the usability of the numerical weather models (especially ERA5 and its predecessor ERA-Interim) for InSAR atmospheric corrections and found their region- and season- and even topography-related characters.

GNSS data processing for high-dynamic platforms 10/2021 – present

- Proposed a dynamic stochastic process noise model for GNSS tropospheric delay estimation, with high kinetic UAV experiments demonstrating the significant improvement of the new model for GNSS ZTD estimation.
- Investigating GNSS precise point positioning for high dynamic platforms (airplanes and drones) and high accuracy tropospheric parameters determination thereof.

Numerical Weather Forecast and GNSS Data Assimilation 03/2020 – present

- Improving extreme weather prediction by assimilating GNSS data into weather research and forecast (WRF) models, where the "7.20" rainstorm in Henan Province, China, is investigated.
- Heading the complete procedure from generating ground-based GNSS meteorology observations to assimilating them into WRF models and forcing weather forecasts. Pursuing the development of high-dynamic platforms-based GNSS data assimilation theory and methods.

PUBLICATIONS

2022

[1] **Zhenyi Zhang**, Yidong Lou, Weixing Zhang, Zhipeng Wang, Yaozong Zhou, Jingna Bai, Chuang Shi. (2022). "Dynamic Stochastic Model for Estimating GNSS Tropospheric Delays from Air-borne Platforms" *GPS Solutions*, 27, 39. (SCI, impact factor: 4.517)

[2] **Zhenyi Zhang**, Yidong Lou, Weixing Zhang, Hua Wang, Yaozong Zhou, Jingna Bai. (2022). "Assessment of ERA-Interim and ERA5 reanalysis data on atmospheric corrections for InSAR" *International Journal of Applied Earth Observation and Geoinformation*, 111, 102822. (SCI, impact factor: 7.672)

[3] Yaozong Zhou, Yidong Lou, Weixing Zhang, Peida Wu, Jingna Bai, **Zhenyi Zhang**. (2022). "Tropospheric Second-Order Horizontal Gradient Modeling for GNSS PPP" *Remote Sensing*, 2022, 14(19), 4807. (SCI, impact factor: 5.349)

[4] Yaozong Zhou, Yidong Lou, Weixing Zhang, Peida Wu, Jingna Bai, **Zhenyi Zhang**. (2022). "WTM: the site-wise empirical Wuhan University Tropospheric Model" *Remote Sensing*, 2022, 14(20), 5182. (SCI, impact factor: 5.349)

[5] Yaozong Zhou, Yidong Lou, Weixing Zhang, Jingna Bai, **Zhenyi Zhang**. (2022). "On the Accuracy and PPP Performance Evaluation of the Latest Generation of Real Time Tropospheric Mapping Function" *Geomatics and Information Science of Wuhan University*, 46(12):1881-1888. (EI)

[6] Yaozong Zhou, Yidong Lou, Weixing Zhang, Zhixiang Mo, Jingna Bai, **Zhenyi Zhang**. (2022). "Review on the High-accuracy and High-resolution Processing of Ground-based BDS/GNSS Water Vapor and Applications" *Journal of Geomatics*, 47.05(2022):1-11.

2021

[7] **Zhenyi Zhang**, Yidong Lou, Weixing Zhang, Hua Wang, Yaozong Zhou, Jingna Bai. (2021). "On the Assessment GPS-Based WRFDA for InSAR Atmospheric Correction: A Case Study in Pearl River Delta Region of China". *Remote Sensing* 13(16): 3280. (SCI, impact factor: 5.349)

[8] Yaozong Zhou, Yidong Lou, Weixing Zhang, Jingna Bai, **Zhenyi Zhang**. (2021). "An improved tropospheric mapping function modeling method for space geodetic techniques" *Journal of Geodesy*, 95, 98. (SCI, impact factor: 4.809)

[9] Jingna Bai, Yidong Lou, Weixing Zhang, Yaozong Zhou, **Zhenyi Zhang**, Chuang Shi. (2021). "Assessment and calibration of MODIS precipitable water vapor products based on GPS network over China" *Atmospheric Research*, 254, 105504. (SCI, impact factor: 5.965)

[10] Mengjie Liu, Weixing Zhang, **Zhenyi Zhang**, Yidong Lou, Hong Liang, Yunchang Cao. (2021). "On the applicability of CRA40 in GNSS precipitable water vapor retrieval over China" *Journal of Nanjing University of Information Science & Technology, Natural Science Edition*, 13.02(2021):138-144.

PRESENTATIONS

[1] **Zhenyi Zhang**, Weixing Zhang, Yidong Lou, Yaozong Zhou, Jingna Bai, Zhixuan Zhang. (2022). "NWM/GNSS tightly coupled tropospheric delay estimation and application on an unmanned aerial vehicle (UAV) platform", *EGU General Assembly 2022*. (Oral, top 20%)

[2] **Zhenyi Zhang**, Weixing Zhang, Yidong Lou, Hua Wang, Yaozong Zhou, Jingna Bai. (2021). "On the Assessment of ERA5 and GPS-Based WRFDA for InSAR Atmospheric Correction", *Scientific Assembly of IAG 2021*. (Oral)

SOCIAL ACTIVITIES

- Monitor (For Undergraduates) 06/2017 – 06/2020
- Monitor (For Graduate Students) 09/2020 – present
- Teaching Assistant in Course *'Optimal Estimation Theory and Method'* 01/2019 – 01/2020
- Tutor (For Undergraduates) 09/2019 – 09/2020

AWARDS & HONOURS

- National Scholarship for Graduate Students, P.R. China, 2022 (top 0.2% Chinese Students) 2022
- Jin Tongyin Scholarship, Wuhan University (rank 1/200) 2021
- First Prize Scholarship for Graduate Students, Wuhan University (top 10%) 2021, 2022
- Merit Student for Graduate Students, Wuhan University 2021, 2022
- Top Ten Youths Honour, Wuhan University (10 out of 58,000+ students) 2020
- Excellent Bachelor's Degree Thesis, Wuhan University (rank 4/450, top 1%) 2020
- Distinct Graduate, School of Geodesy and Geomatics, Wuhan University (top 1%) 2020
- Good Role Models Honors, Wuhan University (12 out of all 29,000+ Undergraduates) 2019
- Pacemaker to Merit Student for Undergraduates, Wuhan University (rank 1/450) 2018, 2019
- Merit Student for Undergraduates, Wuhan University 2017
- Outstanding Student Leaders, Wuhan University 2018, 2019, 2021
- First Prize Scholarship for Undergraduates, Wuhan University (top 5% of Undergraduates) 2017~2019
- Lei Jun Scholarship, Wuhan University (rank 1/450) 2019
- Yu Gang & Song Xiao Scholarship, Wuhan University (rank 1/450) 2018
- National Scholarship for Undergraduates, P. R. China (top 0.2% Chinese Students) 2017

SKILLS

Computer Skills: C, C++, Matlab, FORTRAN, Python, Perl, GMT, WRF, Microsoft Office.
Language: IELTS 7.0 (L: 8.0, R: 8.5, W: 6.0, S: 6.0, C1 level)