

# 柳荆 (LIU, JING)

空间物理学博士

✉ liujing@must.edu.mo (单位)

✉ jingl90ys@gmail.com (其他)

☎ +86 13261780573 (国内)

☎ +1 (978) 805-8440 (其他)



## 工作经历

2026 年 4 月 – 至今

助理教授 | 澳门科技大学 | 氹仔偉龍馬路, 中國澳門

2023 年 9 月 – 2026 年 1 月

Postdoc Associate | 麻省理工 Haystack 天文台 | 99 Millstone Rd, Westford, MA, US

2020 年 9 月 – 2023 年 8 月

博雅博士后 | 北京大学 | 海淀区颐和园路 5 号, 中国北京

## 教育背景

2013 年 9 月 – 2020 年 8 月

理学博士 (空间物理) | 北京大学 | 北京市海淀区颐和园路 5 号

2008 年 9 月 – 2012 年 7 月

工学学士 (电子信息科学与技术) | 南京航空航天大学 | 南京市秦淮区御道街 29 号

2005 年 9 月 – 2008 年 7 月

徐州市第一中学 | 江苏省徐州市鼓楼区汉城东路 1 号

## 研究领域

主要关注电离层动力学与低层大气-电离层耦合, 特别关注: **赤道电离异常 (EIA)** 的形态, 事件期间特征和气候学变化; **平流层突然增温 (SSW)** 期间的电离层响应; 中尺度和大尺度**行进式电离层扰动 (TID)** 的事件期间特征和气候学变化; 电离层**威德尔海异常 (WSA)** 变化性; 电离层数值模拟; **机器学习和图像识别**的科研应用; 大语言模型的科研应用与软件开发。

## 研究技能

**数据掌握:** 测高仪、GNSS RINEX、TEC、低轨卫星、磁强计、流星雷达、高频多普勒等, 以及 Madrigal、OMNI 等综合数据库。**分析方法:** TEC 计算、小波分析、Lomb-Scargle 分析、谐波分析、傅里叶分析、扰动滤波、主成分分析, 经验建模、TIEGCM、WACCM-X、SAMI3 等模型, 以及机器学习、图像识别等方法。**计算机能力:** 大语言模型的科研应用, AI Agents 开发, Python、MATLAB、Fortran 语言, Linux/Unix 环境等。

## 所获奖项

- 2021 年: 第四届中国大地测量与地球物理学学术大会青年科学家杰出论文奖
- 2021 年: 子午工程年度十大优秀成果奖

- 2019 年: 子午工程年度十大优秀成果奖
- 2014 年: 博士生专项奖学金
- 2013–2017 年: 博士生二等奖学金

## 研究成果

1. **Liu, J.**, Zhang, S.-R., Coster, A. J., Erickson, P. J., & Liu, H. (2026). Climatology of Medium-Scale Traveling Ionospheric Disturbances over Continental US using GNSS TEC from 2012 to 2023. *J. Geophys. Res.: Space Physics*. doi:10.1029/2025JA034134.
2. **Liu, J.**, Zhang, D., Li, Q., Tian, Y., Coster, A., Hao, Y., & Xiao, Z. (2024). Controlling Factors of the Seasonal Variation of the Latitudinal Location of the Equatorial Ionization Anomaly Crest. *J. Geophys. Res.: Space Physics*, 129(2). doi:10.1029/2023ja031807.
3. **Liu, J.**, Zhang, D., Sun, S., Hao, Y., & Xiao, Z. (2022). Ionospheric Semidiurnal Lunitidal Perturbations During the 2021 Sudden Stratospheric Warming Event: Latitudinal and Inter-Hemispheric Variations in the American, Asian-Australian, and African-European Sectors. *J. Geophys. Res.: Space Physics*. doi:10.1029/2022ja030313.
4. **Liu, J.**, Zhang, D., Sun, S., Hao, Y., & Xiao, Z. (2022). Latitudinal and interhemispheric differences of the ionospheric semi-diurnal lunitidal perturbations during the 2009 Arctic sudden stratospheric warming event in the eastern Asia–Australia sector. *Earth, Planets and Space*. doi:10.1186/s40623-022-01581-x.
5. **Liu, J.**, Zhang, D., Hao, Y., & Xiao, Z. (2021). The time delay between the equatorial ionization anomaly and the equatorial electrojet in the eastern Asian and American sectors. *Adv. Space Res.* doi:10.1016/j.asr.2021.10.004.
6. **Liu, J.**, Zhang, D., Goncharenko, L. P., Zhang, S., He, M., Hao, Y., & Xiao, Z. (2021). The Latitudinal Variation and Hemispheric Asymmetry of the Ionospheric Lunitidal Signatures in the American Sector During Major Sudden Stratospheric Warming Events. *J. Geophys. Res.: Space Physics*. doi:10.1029/2020ja028859.
7. **Liu, J.**, Zhang, D., Mo, X., Xiong, C., Hao, Y., & Xiao, Z. (2020). Morphological Differences of the Northern Equatorial Ionization Anomaly Between the Eastern Asian and American Sectors. *J. Geophys. Res.: Space Physics*, 125(3). doi:10.1029/2019ja027506.
8. **Liu, J.**, Zhang, D., Hao, Y., & Xiao, Z. (2020). Multi-instrumental Observations of the Quasi-16-Day Variations From the Lower Thermosphere to the Topside Ionosphere in the Low-Latitude Eastern Asian Sector During the 2017 Sudden Stratospheric Warming Event. *J. Geophys. Res.: Space Physics*, 125(3). doi:10.1029/2019ja027505.
9. **Liu, J.**, Zhang, D.-H., Hao, Y.-Q., & Xiao, Z. (2019). The Comparison of Lunar Tidal Characteristics in the Low-Latitudinal Ionosphere Between East Asian and American Sectors During Stratospheric Sudden Warming Events: 2009–2018. *J. Geophys. Res.: Space Physics*. doi:10.1029/2019ja026722.
10. **Liu, J.**, Zhang, D., Coster, A., Zhang, S., Ma, G., Hao, Y., & Xiao, Z. (2019). A case study of the large-scale traveling ionospheric disturbances in the eastern Asian sector during the 2015 St. Patrick's Day geomagnetic storm. *Ann. Geophys.*, 37, 673–687. doi:10.5194/angeo-37-673-2019.
11. Zhang, S.-R., **Liu, J.**, Coster, A. J., Derghazarian, S., Erickson, P. J., Goncharenko, L. P., et al. (2026). Global GNSS observation of mesoscale ionospheric irregularities (2006–2024). *Journal of Geophysical Research: Space Physics*, 131. doi: 10.1029/2025JA034951
12. Zhang, S.-R., Coster, A. J., Erickson, P. J., Goncharenko, L. P., & **Liu, J.** (2025). Mesoscale Ionospheric Irregularity Oval at High Latitudes Observed by Global GNSS Networks (2010–2024). *Journal of Astronomy and Space Sciences*, 42(4), 119–134. doi: 10.5140/jass.2025.42.4.119.
13. Mo, X., Zhang, D., **Liu, J.**, et al. (2021). Lunar Tidal Effect on Equatorial Ionization Anomaly Region in China Low Latitude. *J. Geophys. Res.: Space Physics*. doi:10.1029/2021JA029845.

14. Mo, X. H., Zhang, D. H., Liu, J., et al. (2018). Morphological Characteristics of Equatorial Ionization Anomaly Crest Over Nanning Region. *Radio Science*, 53(1), 37-47. doi:10.1002/2017RS006386.

## 参会和学习经历

---

### 国际

- **AGU Fall Meeting 2025.** Leveraging LLMs in Science: a Prototype Agent-based Research Copilot App. 口头报告
- **AGU Fall Meeting 2025.** MSTID Climatology over the Continental U.S.: Longterm Observation and WACCM-X Simulation. 口头报告
- **AtmoSense Meeting 2025.** Climatology of MSTIDs over Continental US from 2012–2023. 口头报告
- **LWS FST Meeting 2025.** Climatology of MSTIDs over Continental US from 2012–2023. 口头报告
- **AGU Fall Meeting 2024.** Statistical Analysis of Medium-scale Traveling Ionospheric Disturbance. 张贴报告
- **CEDAR Workshop 2024.** Statistical Analysis of Medium-scale Traveling Ionospheric Disturbance over the American sector. 口头报告
- **EGU General Assembly 2022.** The latitudinal and inter-hemispheric differences of the ionospheric M2 signatures during the 2021 Sudden Stratospheric Warming. 口头报告
- **EGU General Assembly 2021.** The hemispheric asymmetry of ionospheric lunitidal signatures during Sudden Stratospheric Warmings in the eastern Asian and American sectors. 口头报告
- **AGU Fall Meeting 2019.** Morphological Differences of the Northern Equatorial Ionization Anomaly between the Eastern Asian and American sectors. 口头报告
- **Japan Geoscience Union Meeting 2019.** The Comparison of Lunar Tidal Characteristics in the Low-Latitudinal Ionosphere Between East Asian and American Sectors During Stratospheric Sudden Warming Events: 2009–2018. 口头报告
- **AGU Fall Meeting 2018.** The difference of low-latitudinal ionosphere response to the stratospheric sudden warming events between East Asian and American Sectors. 张贴报告
- **AGU Fall Meeting 2017.** Periodic Variations in Low-Latitudinal Ionosphere during Stratospheric Sudden Warming Event in 2016/2017 Winter. 张贴报告
- **URSI-ICTP School on Radio Physics 2017.**
- **AGU Fall Meeting 2016.** A Large-scale Traveling Ionospheric Disturbance during 2015 St. Patrick's Day Geomagnetic Storm. 口头报告

### 国内

- **中国大地测量与地球物理大会 2021.** Studies of the Ionospheric Perturbations during the Sudden Stratospheric Warming events. 口头报告
- **中国空间物理研讨会 2021.** The time delay between the Equatorial Ionization Anomaly and the Equatorial Electrojet in the eastern Asian and American sectors. 口头报告
- **子午工程研讨会 2019.**
- **子午工程研讨会 2017.**
- **中国空间物理研讨会 2017.** A statistical study of the EIA in the eastern Asian sector. 口头报告
- **中国空间物理研讨会 2016.** A case study of large-scale traveling ionospheric disturbance. 口头报告
- **子午工程研讨会 2016.**
- **中国空间物理研讨会 2015.** The occurrence time of the daytime most developed EIA crest. 口头报告