

Curriculum Vitae

2023/05/09

Name: Liu, Jann-Yenq (Tiger) 劉正彥

Date of Birth: February 1958

Citizenship: TAIWAN

Position and Institution: Chair Professor, Department of Space Science and Engineering, National Central University

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Education

1988-1990	PhD	Physics	Utah State University USA
1983-1988	MS	Physics	Utah State University USA
1976-1980	BS	Atmospheric Physics	National Central University TAIWAN

Specialized Field

1. Ionospheric Space Weather and Climate
2. GNSS Geospace Applications
3. Seismo-ionospheric Precursors and Disturbances
4. Ionospheric Tsunami Early Warning
5. Satellite Science and Engineering

Professional Background

2018/1-present	Director	Center for Astronautical Physics and Engineering (CAPE), NCU
2020/8-present	Professor	Dept. of Space Science and Engineering, National Central University
1997/8-2020/7	Professor	Graduate Institute of Space Science, National Central University (NCU)
2016/7-2019/6	Senior Consultant	National Space Organization (NSPO)
2017/5-2017/6	Visiting Professor	Faculty of Sciences, Chiba University
2017/3-2017/4	Visiting Professor	Dept. of Civil & Enviro. Engineering, National Univ. of Singapore
2017/1	Visiting Professor	Institut de Physique du Globe de Paris (IPGP)
2011/1-2015/6	Chief Scientist	National Space Organization (NSPO)
2011/1-2011/12	Director	Earth Sci. Res. Promotion Center (ESRPC)
2009/7-2010/7	Visiting Scholar	National Center for Atmosphere Res. (NCAR)
2008/4-2009/5	Director	GPS Sci. Application Res. Center (GPSARC)
2006/2	Visiting Professor	Faculty of Sciences, Kyushu University
2002/8-2005/7	Director	Institute of Space Science, NCU/ISS
2001/6-2001/9	Visiting Professor	RASC, Kyoto University
2001/2-2001/5	Visiting Professor	Academia Sinica
1994/8-1995/2	Visiting Scientist	EISCAT, Tromsø, Norway
1990/8-1997/7	Associ. Professor	NCU/ISS
1992	Trainee	FAIS, Toulouse Center, France
1992	Trainee	JHU/APL
1988-1990	RA/TA	CASS/Phys. Dept., USU
1987-1988	Instructor	HAFB, Ogden Area Center, USU
1985-1986	RA	NASA, Marshall Space Flight Center
1983-1985	RA/TA	CASS/Phys. Dept., USU

Academic Awards or Honors

- Future Tech Award “K/Ka-Band Communication Payload for Low Earth Orbit CubeSat” (2021)
- Future Tech Award “Made in Taiwan Spacecraft Avionics, Space Missions, and Ground Operations Capacity” (2021)
- Future Tech Award “Global Ionospheric Tsunami Monitoring and Warning System-Space Buoy” (2020)
- The Ministry of Education’s 63rd Annual Academic Awards (2019)
- International Space Science Institute (ISSI-Bern), Team Leader of Ionospheric Space Weather Studied by RO and Ground-based GPS TEC Observations: International Teams selected in 2016
- National Taitung University Distinguish Chair Professor (2016/9-2019/7)
- NCU Chair Professor (2015/8-2018/7)
- Ministry of Science and Technology Outstanding Research Award (2014/8-2017/7)
- NCU Distinguish Professor for Outstanding Research (2013/1-2015/12)
- National Science Council Outstanding Research Award (2010/8-2013/7)
- NCU Distinguish Professor for Outstanding Research (2010/1-2012/12)
- NCAR Advanced Study Program- Faculty Fellowship Program (2009/8-2010/7)
- National Science Council Outstanding Research Award (2006/8-2009/7)
- NCU Distinguish Professor for Outstanding Research (2006/8-2009/7)
- USU Presidential Fellowship (1989-1990)

Memberships

1. American Geophysical Union (AGU)
2. Chinese Geoscience Union (CGU)
3. European Geosciences Union (EGU)
4. Asia Oceania Geosciences Society (AOGS)
5. Japanese Geoscience Union (JpGU)
6. American Metrology Society (AMS)

Academic Activity and Service

- ✧ AOGS ST (Solar Terr.) Vice President (President Elected 2017/8): 2017/8-2021/7
- ✧ IAGA-Taiwan President: 2016/6-2021/7
- ✧ EMSEV- Bureau/IAGA Liaison: 2007-present
- ✧ CGU Secretary in General: 2011/2-2014/2
- ✧ COSPAR-Taiwan President: 2008/1-2012/7
- ✧ AOGS STI (Solar Terr. Ionosphere) Secretary: 2003/7-2005/6
- ✧ URSI (International Union of Radio Science)-SRS Secretary: 2002-2004
- ✧ Invited Member of 2014 International Team: 298 Multi-instrument Space-Borne Observations and Validation of the Physical Model of the Lithosphere-Atmosphere-Ionosphere-Magnetosphere Coupling (team leader: Pulinet S. (RU) & D. Ouzounov (US)) granted by International Space Science Institute, ISSI-Bern.
- ✧ Invited Member of 2015 International Team: 10 Validation of Lithosphere-Atmosphere- Ionosphere-Magnetosphere Coupling (LAIMC) (team leader: Ouzounov D. (US) & Zhang X. (CN)) granted by International Space Science Institute, ISSI-Beijing.
- ✧ Invited Member of 2015 International Team: 345 Understanding Solid Earth/Ocean-Ionosphere Coupling: Improving Models and Observational Capabilities for Monitoring Tsunamis from Space (2016-2017, (team leader: Makela J. (US) & Rolland L. (FR)) granted by International Space Science Institute, ISSI-Bern.

- ✧ Terrestrial, Atmospheric and Oceanic Sciences (TAO) special issue: FORMOSAT-5, Guest Editor 2016
- ✧ Journal of Asian Earth Sciences (JAES) special issue: iSTEP, Guest Editor: 2014-2015
- ✧ Atmospheric Measurement Techniques (AMT) special issue Observing Atmosphere and Climate with Occultation Techniques - Results from the OPAC-IROWG 2013 Workshop, Guest Editor: 2014-2015
- ✧ Physics and Chemistry of the Earth (PCE) special issue: Electromagnetic phenomena associated with Earthquakes and Volcanoes, Guest Editor 2009
- ✧ Journal of Asian Earth Sciences (JAES) special issue: Validation of earthquake precursors-VESTO, Guest Editor 2009
- ✧ Terrestrial, Atmospheric and Oceanic Sciences (TAO) special issue: FORMOSAT-3/COSMIC, Guest Editor 2007
- ✧ Terrestrial, Atmospheric and Oceanic Sciences (TAO) special issue: Earthquake precursor, Guest Editor 2005
- ✧ Journal Referee: JGR, GRL, JAES, JASTP, EPS, AG, EPS, PCE, TAO, ASR.

Selected Publications. Liu, Jann-Yenq (Tiger) is the author of 324 publications, all in peer-reviewed scientific journals.

The publication PDF files are available at <https://irsl.ss.ncu.edu.tw/publication/>

*Corresponding Author

Refereed Journal Paper (2018-2023)

Web of Science, H-index: 48, Citation: 8894.

Google Scholar, H-index: 40, i10 index: 201, Citation: 6775.

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202303 · Liu, J. Y., K. W. Kan, C. K. Chao, F. Y. Chang, (2023 May). Nighttime wavenumber-four and plasma depletion bays observed by FORMOSAT-5/AIP, ICON/IVM, and COSMIC-2/RO data, *Advances in Space Research* doi:10.1016/j.asr.2023.04.047. In Press.

202302 · Cheng P. H., Charles C. H. Lin, Y. T. Jade Morton, S. C. Yang, and J. Y. Liu, (2023 Feb). A Bagged-Tree Machine Learning Model for High and Low Wind Speed Ocean Wind Retrieval From CYGNSS Measurements. *IEEE Transactions on Geoscience and Remote Sensing*, **61**, 1-10, doi:10.1109/TGRS.2023.3246019. (SCI)

202301 · Sun, Y. Y., C. H. Chen, X. Su, J. Wang, T. Yu, H. R. Xu, and J. Y. Liu, (2023 Feb). Occurrence of Nighttime Irregularities and Their Scale Evolution in the Ionosphere Due To the Solar Eclipse Over East Asia on 21 June 2020. *Journal of Geophysical Research: Space Physics*, **128**, e2022JA030936. 1-9, doi:10.1029/2022JA030936. (SCI)

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202215 · Chum J., T. Šindelářová, P. K. Knížová, K. Podolská, J. Rusz, J. Baše, H. Nakata, K. Hosokawa, M. Danielides, C. Schmidt, L. Knez, J. Y. Liu, M. G. Molina, M. Fagre, Z. Katamzi-Joseph, H. Ohya, T. Omori, J. Laštovička, D. O. Burešová, D. Kouba, J. Urbář and V. Truhlík, (2022 Dec). Atmospheric and ionospheric waves induced by the Hunga eruption on 15 January 2022; Doppler sounding and infrasound. *Geophysical Journal International*, **233**, 1429-1443, doi:10.1093/gji/ggac517. (SCI)

- 202214 · Liu, J. Y.*, T. Y. Wu, C. Y. Lin, and Loren C. Chang, (2022 Dec). The three-dimensional plasma structures and flows of the Earth's upper atmosphere due to the Moon's gravitational force. *Scientific Reports*, **12**, Article number: 21003, 1-8, doi:10.1038/s41598-022-25449-y. (SCI)
- 202213 · Chen C. H., Charles C. H. Lin, C. J. Lee, J. Y. Liu, and A. Saito, (2022 Nov). Ionospheric responses on the 21 August 2017 solar eclipse by using three-dimensional GNSS tomography. *Earth, Planets and Space*, **74**(173), 1-12, doi:10.1186/s40623-022-01734-y. (SCI)
- 202212 · Cheng, C. C., J. Y. Liu*, Charles C. H. Lin, and Y. C. Cheng, (2022 Nov). Daily Dynamo Electric Fields Derived by Using Equatorial Ionization Anomaly Crests of the Total Electron Content. *Space Weather*, **20**(11), 1-10, doi:10.1029/2022SW003073. (SCI)
- 202211 · Gao Y. X., T. Li, G. Q. Zhou, C. H. Chen, Y. Y. Sun, X. M. Zhang, J. Y. Liu, J. Wen, C. Yao, and X. D. Bai, (2022, Sep). Acoustic-gravity waves generated by a point source on the ground in a stratified atmosphere-Earth structure. *Geophysical Journal International*, **232**(2), 764-787, doi:10.1093/gji/ggac364. (SCI)
- 202210 · Rajesh, P. K., C. C. H. Lin, J. T. Lin, C. Y. Lin, J. Y. Liu, T. Matsuo, C. Y. Huang, M. Y. Chou, J. Yue, M. Nishioka, H. Jin, J. M. Choi, S. P. Chen, M. Chou, and H. F. Tsai, (2022 Aug). Extreme Poleward Expanding Super Plasma Bubbles Over Asia-Pacific Region Triggered by Tonga Volcano Eruption During the Recovery-Phase of Geomagnetic Storm. *Geophysical Research Letters*, **49**(15), 1-10, doi:10.1029/2022GL099798. (SCI)
- 202209 · Sun, Y. Y., C. H. Chen, P. Zhang, S. Li, H. R. Xu, T. Yu, K. Lin, Z. Mao, D. Zhang, C. Y. Lin, and J. Y. Liu, (2022, Aug). Explosive Eruption of the Tonga Underwater Volcano Modulates the Ionospheric E-Region Current on 15 January 2022. *Geophysical Research Letters*, **49**(15), e2022GL099621. doi:10.1029/2022GL099621. (SCI)
- 202208 · Tiger Liu J. Y.*, Charles C. H. Lin, C. Y. Lin, I. T. Lee, Y. Y. Sun, S. P. Chen, F. Y. Chang, P. K. Rajesh, C. T. Hsu, T. Matsuo, C. H. Chen, and H. F. Tsai, (2022, Jul). Retrospect and prospect of ionospheric weather observed by FORMOSAT-3/COSMIC and FORMOSAT-7/COSMIC-2. *Terrestrial Atmospheric and Oceanic Sciences*, **33**(20), doi:10.1007/s44195-022-00019-x. (SCI)
- 202207 · Huang, C. Y., J. Y. Liu*, F. Y. Chang, C. Y. Lin, C. K. Chao, Loren C. Chang, and Cissi Y. Lin, (2022, May). Instantaneous amplitude of low-latitude ionospheric irregularities probed by ROCSAT-1, DEMETER, and FORMOSAT-7/COSMIC-2. *Advances in Space Research*, **70**(3), 723-732, doi:10.1016/j.asr.2022.05.024. (SCI)
- 202206 · Chen, C. H., X. Zhang, Y. Y. Sun, F. Wang, T. C. Liu, C. Y. Lin, Y. Cao, J. Lyu, X. Jin, X. Zhao, X. Cheng, P. Zhang, Q. Chen, D. Zhang, Z. Mao, and J. Y. Liu, (2022, May). Individual Wave Propagations in Ionosphere and Troposphere Triggered by the Hunga Tonga-Hunga Ha'apai Underwater Volcano Eruption on 15 January 2022. *Remote sensing*, **14**(9), 1-8, doi:10.3390/rs14092179. (SCI)
- 202205 · Liu, J. Y.*, C. H. Lin*, P. K. Rajesh, C. Y. Lin, F. Y. Chang, I. T. Lee, T. W. Fang, D. Fuller-Rowell, and S. P. Chen, (2022, May). Advances in Ionospheric Space Weather by Using FORMOSAT-7/COSMIC-2 GNSS Radio Occultations. *Atmosphere* 2022, **13**, 858, 1-24, doi:10.3390/atmos13060858. (SCI)

- 202204 · Lin, J. T., P. K. Rajesh, Charles C. H. Lin, M. Y. Chou, J. Y. Liu, J. Yue, T. Y. Hsiao, H. F. Tsai, H. M. Chao, and M. M. Kung, (2022, Apr). Rapid Conjugate Appearance of the Giant Ionospheric Lamb Wave Signatures in the Northern Hemisphere After Hunga-Tonga Volcano Eruptions. *Geophysical Research Letters*, **49**, e2022GL098222. doi:10.1029/2022GL098222. (SCI)
- 202203 · Liu J. Y.*, Y. I. Chen, P. H. Lee, C. S. Huang, and T. W. Fang, (2022, Mar). Severe weather disasters in China linked to solar activity during 1-1825 Common Era. *Geoscience Letters*, **9**(13), 1-13, doi:10.1186/s40562-021-00210-x. (SCI)
- 202202 · Chiu, Y. C., C. W. Chang, C. K. Chao, T. Y. Tai, K. L. Cheng, H. T. Liu, R. Tsai-Lin, C. T. Liao, W. H. Luo, G. P. Chiu, K. J. Hou, R. Y. Wang, G. F. Gacal, P. A. Lin, S. Denduonghatai, T. R. Yu, J. Y. Liu, A. Chandran, K. B. Naren Athreyas, P. Hari, J. J. Varghese, and M. Meftah, (2022, Jan). Lessons Learned from IDEASSat: Design, Testing, on Orbit Operations, and Anomaly Analysis of a First University CubeSat Intended for Ionospheric Science. *Aerospace*, 2022, 9, 110. doi:10.3390/aerospace9020110. (SCI)
- 202201 · Chen, C. H., Y. Y. Sun, R. Xu, K. Lin, F. Wang, D. Zhang, Y. Zhou, Y. Gao, X. Zhang, H. Yu, and J. Y. Liu, (2022, Jan). Resident Waves in the Ionosphere Before the M6.1 Dali and M7.3 Qinghai Earthquakes of 21–22 May 2021. *Earth and Space Science*, **9**(2), 1-7, doi:10.1029/2021EA002159. (SCI)

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- 202116 · Lee, P. H., J. Y. Liu*, C. Y. Lin, and F. Y. Chang, (2021, Nov). Intensive GNSS radio occultation observations by FORMOSAT-7/COSMIC-2 in the dawn, noon, dusk, and midnight ionosphere. *Terrestrial Atmospheric and Oceanic Sciences*, **32**(6), 989-999, doi:10.3319/TAO.2021.11.08.02.
- 202115 · Chen C. H., Y. Y. Sun, K. Lin, C. Zhou, R. Xu, H. Qing, Y. Gao, T. Chen, F. Wang, H. Yu, P. Han, C. C. Tang, X. Su, X. Zhang, L. Yuan, Y. Xu, J. Y. Liu, and S. Yu, (2021, Oct). A New Instrumental Array in Sichuan, China, to Monitor Vibrations and Perturbations of the Lithosphere, Atmosphere, and Ionosphere. *Survey in Geophysics*, **42**, 1425-1442, doi:10.1007/s10712-021-09665-1. (SCI)
- 202114 · Lin, C. Y., J. Y. Liu, Y. Y. Sun, Charles C. H. Lin, Loren C. Chang, C. Y. Chen, and C. H. Chen, (2021, Aug). Ionospheric tilting of 21 August 2017 total solar eclipse sounded by GNSS ground-based receivers and radio occultation. *Terrestrial Atmospheric and Oceanic Sciences*, **32**(4), 531-539, doi:10.3319/TAO.2021.08.17.01. (SCI)
- 202113 · Liu, J. Y.*, and S. A. Wu, (2021, Aug). Global observations of ROTI by using ground-based GNSS receivers. *Terrestrial Atmospheric and Oceanic Sciences*, **32**(4), 519-530, doi:10.3319/TAO.2021.07.26.03. (SCI)
- 202112 · Wu, T. Y., J. Y. Liu*, L. C. Chang, C. H. Lin and Y. C. Chiu, (2021, Jul). Equatorial ionization anomaly response to lunar phase and stratospheric sudden warming. *Scientific Reports*, **11** (14695), 1-9, doi:10.1038/s41598-021-94326-x. (SCI)
- 202111 · Kakinami Y., H. Saito, T. Yamamoto, C. H. Chen, M. Y. Yamamoto, K. Nakajima, J. Y. Liu, and S. Watanabe, (2021, Jul). Onset Altitudes of Co-Seismic Ionospheric Disturbances Determined by Multiple Distributions of GNSS TEC After the Foreshock of the 2011 Tohoku Earthquake on March 9, 2011. *Earth and Space Science*, **8**(8), 1-12, doi:10.1029/2020EA001217. (SCI)

- 202110 · Song R., K. Hattori, X. Zhang, J. Y. Liu, and C. Yoshino, (2021, Jun). Detecting the Ionospheric Disturbances in Japan Using the Three-Dimensional Computerized Tomography. *Journal of Geophysical Research: Space Physics*, **126**(6), 1-14, doi:10.1029/2020JA028561. (SCI)
- 202109 · Chen C. H., Y. Y. Sun, L. C. Lin, P. Han, H. Z. Yu, X. M. Zhang, C. C. Tang, C. R. Chen, H. Y. Yen, C. H. Lin, J. Y. Liu, and Ching-Ren Lin, (2021, Jun). Large air pressure changes triggered by P-SV ground motion in a cave in northern Taiwan. *Scientific Reports* **11**(12850), 1-8, doi:10.1038/s41598-021-92216-w.
- 202108 · Chen L. W., S. B. Jiang, T. L. Yeh, J. Y. Liu, C. W. Huang, C. C. Liu, and C. K. Chiang, (2021, Mar). Innovative airglow instrument based on constant photon count control. *Advances in Space Research*, **68**, 105-116, doi:10.1016/j.asr.2021.02.043. (SCI)
- 202107 · Chen C. H., C. R. Chen, S. Sun, S. Wen, J. Du, C. H. Lin, Y. H. Huang, P. Han, and J. Y. Liu, (2021, Mar). Novel approaches of magnetic inversion using seismic tomography in Taiwan area. *Physics of the Earth and Planetary Interiors*, **312**, 1-9, doi:10.1016/j.pepi.2021.106663. (SCI)
- 202106 · Rajesh, P. K., C. H. Lin, C. Y. Lin, C. H. Chen, J. Y. Liu, and T. Matsuo, (2021, Feb). Extreme positive ionosphere storm triggered by a minor magnetic storm in deep solar minimum revealed by FORMOSAT-7/COSMIC-2 and GNSS observations. *Journal of Geophysical Research: Space Physics*, **126**(3), 1-17, doi:10.1029/2020JA028261. (SCI)
- 202105 · Chang Loren C., Cornelius Csar Jude H. Salinas, Y. C. Chiu, M. J. Jr, P. K. Rajesh, C. K. Chao, J. Y. Liu, Charles C. H. Lin, and T. Y. Hsiao, (2021, Feb). Implication of Tidal Forcing Effects on the Zonal Variation of Solstice Equatorial Plasma Bubbles. *Journal of Geophysical Research: Space Physics*, **126**(3), 1-17, doi:10.1029/2020JA028295. (SCI)
- 202104 · Sun, Y. Y., M. M. Shen, Y. L. Tsai, C. Y. Lin, M. Y. Chou, T. Yu, K. Lin, Q. Huang, J. Wang, L. Qiu, C. H. Chen, and J. Y. Liu, (2021, Feb). Wave steepening in ionospheric total electron density due to the 21 August 2017 total solar eclipse. *Journal of Geophysical Research: Space Physics*, **126**(3), 1-8, doi:10.1029/2020JA028931. (SCI)
- 202103 · Chen, C. H., J. Y. Lin, Y. Gao, C. H. Lin, P. Han, C. R. Chen, L. C. Lin, R. Huang, and J. Y. Liu, (2021, Feb). Magnetic pulsations triggered by microseismic ground motion. *Journal of Geophysical Research: Solid Earth*, **126**(3), 1-13, doi:10.1029/2020JB021416. (SCI)
- 202102 · Chen, S. P., C. H. Lin, P. K. Rajesh, J. Y. Liu, R. Eastes, M. Y. Chou, and J. M. Choi, (2021, Jan). Near real-time global plasma irregularity monitoring by FORMOSAT-7/COSMIC-2. *Journal of Geophysical Research: Space Physics*, **126**(1), 1-15, doi:10.1029/2020JA028339. (SCI)
- 202101 · Parrot, M., V. Tramutoli, Tiger J. Y. Liu, S. Pulinet, D. Ouzounov, N. Genzano, M. Lisi, K. Hattori, and A. Namgaladze, (2021, Jan). Atmospheric and ionospheric coupling phenomena associated with large earthquakes. *European Physical Journal Special Topics*, **230**, 197-225, doi:10.1140/epjst/e2020-000251-3. (SCI)

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- 202012 · Liu, J. Y.*, T. Y. Wu, Y. Y. Sun, N. M. Pedatella, C. Y. Lin, Loren C. Chang, Y. C. Chiu, C. H. Lin, C. H. Chen, F. Y. Chang, I. T. Lee, C. K. Chao, and A. Krankowski, (2020, Dec). Lunar Tide Effects on Ionospheric Solar Eclipse Signatures: The August 21, 2017 Event as an Example.

- Journal of Geophysical Research: Space Physics*, **125**(12), 1-11, doi:10.1029/2020JA028472. (SCI)
- 202011 · Chen, C. H., Y. Y. Sun, S. Wen, P. Han, L. C. Lin, H. Yu, X. Zhang, Y. Gao, C. C. Tang, C. H. Lin, and J. Y. Liu, (2020, Dec). Spatiotemporal changes of seismicity rate during earthquakes. *Natural Hazards and Earth System Sciences*, **20**, 3333–3341, doi:10.5194/nhess-20-3333-2020. (SCI)
- 202010 · Lin, C. Y., C. H. Lin, J. Y. Liu, P. K. Rajesh, T. Matsuo, M. Y. Chou, H. F. Tsai, and W. H. Yeh, (2020, Oct). The Early Results and Validation of FORMOSAT-7/COSMIC-2 Space Weather Products: Global Ionospheric Specification and Ne-Aided Abel Electron Density Profile. *Journal of Geophysical Research: Space Physics*, **125**(10), 1-12, doi:10.1029/2020JA028028. (SCI)
- 202009 · Chen, C. H., L. C. Lin, T. K. Yeh, S. Wen, H. Yu, C. Yu, Y. Gao, P. Han, Y. Y. Sun, J. Y. Liu, C. H. Lin, C. C. Tang, C. M. Lin, H. H. Hsieh, and P. J. Lu, (2020, Oct). Determination of Epicenters before Earthquakes Utilizing Far Seismic and GNSS Data: Insights from Ground Vibrations. *Remote Sensing*, **12**(19), 1-13, doi:10.3390/rs12193252. (SCI)
- 202008 · Chang, F. Y., J. Y. Liu*, T. W. Fang, P. K. Rajesh, and C. H. Lin, (2020, Aug). Plasma Depletion Bays in the Equatorial Ionosphere Observed by FORMOSAT-3/COSMIC during 2007–2014. *Journal of Geophysical Research: Space Physics*, **125**(9), 1-11, doi:10.1029/2019JA027501. (SCI)
- 202007 · Liu, J. Y.*, C. Y. Lin, Y. L. Chen, T. R. Wu, M. J. Chung, T. C. Liu, Y. L. Tsai, Loren C. Chang, C. K. Chao, D. Ouzounov, and K. Hattori, (2020, Aug). The source detection of 28 September 2018 Sulawesi tsunami by using ionospheric GNSS total electron content disturbance. *Geoscience Letters*, **7**(11), 1-7. doi:10.1186/s40562-020-00160-w. (SCI)
- 202006 · Jiang, S. B., T. L. Yeh, J. Y. Liu, C. K. Chao, Loren C. Chang, L. W. Chen, C. J. Chou, Y. J. Chi, Y. L. Chen, and C. K. Chiang, (2020, Jul). New algorithms to estimate electron temperature and electron density with contaminated DC Langmuir probe onboard CubeSat. *Advances in Space Research*, **66**(1), 148-161, doi:10.1016/j.asr.2019.11.025. (SCI)
- 202005 · Chiang, C. K., T. L. Yeh, J. Y. Liu, C. K. Chao, Loren C. Chang, L. W. Chen, C. J. Chou, and S. B. Jiang, (2020, Jul). An algorithm for deriving the electron temperature and electron density probed by Langmuir probe onboard cube satellites. *Advances in Space Research*, **66**(1), 135-147, doi:10.1016/j.asr.2019.06.007. (SCI)
- 202004 · Duann Y., Loren C. Chang, C. K. Chao, Y. C. Chiu, L. R. L. Tsai, T. Y. Tai, W. H. Luo, C. T. Liao, H. T. Liu, C. J. Chung, R. Duann, C. L. Kuo, J. Y. Liu, Z. M. Yang, G. F. Galal, A. Chandran, H. Priyadarshan, A. Verma, T. W. Fang, and S. Srivastava, (2020, Jul). IDEASSat: A 3U CubeSat mission for ionospheric science. *Advances in Space Research*, **66**(1), 116-134, doi:10.1016/j.asr. 2020.01.012. (SCI)
- 202003 · Mao, Z. Q., C. H. Chen, S. Q. Zhang, A. Yisimayili, H. Z. Yu, Y. Chen, and J. Y. Liu, (2020, Jun). Locating Seismo-Conductivity Anomaly before the 2017 Mw 6.5 Jiuzhaigou Earthquake in China Using Far Magnetic Stations. *Remote Sensing*, **12**(11), 1-14, doi:10.3390/rs12111777.

202002 · Wu, T. Y., J. Y. Liu*, C. Y. Lin, and Loren C. Chang, (2020, Mar). Response of Ionospheric Equatorial Ionization Crests to Lunar Phase. *Geophysical Research Letters*, **47**(7), 1-10, doi:10.1029/2019 GL086862. (SCI)

202001 · Chen, C. H., T. K. Yeh, S. We, G. Meng, P. Han, C. C. Tang, J. Y. Liu, and C. H. Wang, (2020, Jan). Unique Pre-Earthquake Deformation Patterns in the Spatial Domains from GPS in Taiwan. *Remote Sensing*, **12**(3), 1-22, doi:10.3390/rs12030366. (SCI)

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201914 · Liao, W. T., K. H. Tseng, I. T. Lee, A. Liibus, J. C. Lee, J. Y. Liu, C. P. Chang, and Y. C. Lin, (2019, Dec). Sentinel-1 interferometry with ionospheric correction from global and local TEC maps for land displacement detection in Taiwan. *Advances in Space Research*, **65**(5), 1447-1465. doi:10.1016/j.asr.2019.11.041. (SCI)

201913 · Yeh, W. H., C. Y. Lin, J. Y. Liu, S. P. Chen, T. Y. Hsiao, and C. Y. Huang, (2019, Aug). Superposition Property of the Ionospheric Scintillation S4 Index. *IEEE Geoscience and Remote Sensing Letters*, **17**(4), 597-600, doi:10.1109/LGRS.2019.2928588. (SCI)

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- 201803 · Jiang, S. B., T. L. Yeh, L. W. Chen, J. Y. Liu, M. H. Yu, Y. Q. Huang, C. K. Chiang, and C. J. Chou, (2018, Mar). Development and verification of an innovative photomultiplier calibration system with a 10-fold increase in photometer resolution. *Advances in Space Research*, **61**(10), 2673-2679. doi:10.1016/j.asr.2018.02.039. (SCI)
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- 201801 · Sun, Y. Y., J. Y. Liu*, Charles C. H. Lin, C. Y. Lin, M. H. Shen, C. H. Chen, C. H. Chen, and M. Y. Chou, (2018, Jan). Ionospheric Bow Wave Induced by the Moon Shadow Ship Over the Continent of United States on 21 August 2017. *Geophysical Research Letters*, **45**, 538-544. doi:10.1002/2017GL075926. (SCI)

Recent Plenary or Invited Speeches/Papers (2018-2023)

1. Liu J. Y., IGL-1 2018 Workshop First International Workshop on Innovating GNSS and LEO Occultations & Reflections for Weather, Climate and Space Weather, Beijing China, 6-11 September, 2018. (Invited)
2. Liu J. Y. et al., Seismo-ionospheric precursors of the 2017 M7.3 Iran-Iraq Border Earthquake and the 2018 M5.9 Osaka Earthquake observed by FORMOSAT-5/AIP, EMSEV 2018 International Workshop, Potenza, Italy, 17-21 September, 2018. (Solicited)
3. Liu J.Y. et al., Seismo-ionospheric precursors associated with the 12 November 2017 M7.3 Iran-Iraq Border Earthquake observed by Advanced Ionospheric Probe onboard FORMOSAT-5, AGU Fall Meeting 2018, USA Washington, 10-14 December, 2018. (Highlighted)
4. Liu J. Y. et al., Ionospheric Weather Observations with FORMOSAT-3/COSMIC and Prospects with FORMOSAT-7/COSMIC-2, ION Pacific PNT 2019, Honolulu Hawaii 8-11 April, 2019. (Plenary)
5. Liu, J. Y. (Tiger), and CAPE Group, Ionospheric Weather Observed by Radio Occultation, ION Pacific PNT 2019, Honolulu Hawaii 8-11 April, 2019. (Invited)
6. Liu J. Y. et al., FORMOSAT-5/AIP Probing Electric Signals Generated by Earthquakes, 27th IUGG General Assembly, Montreal Canada, 8-18 July, 2019. (Solicited)
7. Liu J. Y. et al., Seismo-ionospheric Precursors of Ground-based GNSS Receiver Remote Sensing

- TECs and FORMOSAT-5/AIP Satellite In Situ Plasma, 27th IUGG General Assembly, Montreal Canada, 8-18 July, 2019. (Solicited)
8. Liu, J. Y., Ionospheric GNSS Radio Occultation observations of FORMOSAT-3/COSMIC and FORMOSAT-7/COSMIC, 20th International Beacon Satellite Symposium, Mazury and Olsztyn, 19-23 August 2019. (Invited)
 9. Liu, J. Y., CSES Observations on Seismo-Ionospheric Precursors of the 4 August 2018 M7.0 Lombok Earthquake, The 4th International Workshop of China Seismo-Electromagnetic Satellite Mission, Changsha, China, 17-20 October 2019. (Invited)
 10. Liu, J. Y., Ionospheric GNSS Total Electron Content Disturbance Induced by the 28 September 2018 Sulawesi Tsunami, The 11th South China Sea Tsunami Workshop, Hangzhou Zhejiang, China, 27-29 October 2019. (Invited)
 11. Liu, J. Y., F. Y. Chang, C. Y. Lin, Y.I. Chen, and iSTEP group, Ionospheric Earthquake Precursors and Space Weather Observed by FORMOSAT-7/COSMIC-2, NH005-02, AGU Fall Meeting, Virtual, 7 December 2020. (Invited).
 12. Liu, J. Y., F. Y. Chang, C. H. Lin, C. Y. Lin, Advances in Low-Latitude Ionosphere Observed by FORMOSAT-7/COSMIC-2, SA038-04, AGU Fall Meeting, Virtual, 16 December 2020. (Invited)
 13. Liu, J. Y. et al., Space Weather observed by ionospheric GNSS Radio Occultation, 8th International Radio Occultation Working Group Meeting - IROWG-8, April 7-9, 12 and 13, 2021. (Invited)
 14. Liu, J. Y., Seismo-ionospheric precursors and tsunami-ionospheric disturbances of the 2004 M9.3 Sumatra Earthquake, BMKG meeting, Indonesia, April 14, 2021. (Invited)
 15. Liu, J. Y. (Tiger), Equatorial Ionospheric Weather Observed by FORMOSAT-3/COSMIC and FORMOSAT-7/COSMIC-2, EAR 20th Anniversary Symposium and Joint program of INternational Conference on Radioscience, Equatorial Atmospheric Science and Environment (INCREASE) and the 6th Asia Research Node (ARN), Padang, West Sumatra, Indonesia + Remote participation (= Hybrid meeting), LAPAN/BRIN, Indonesia and Kyoto University, Japan, September 20-21, 2021. (Keynote)
 16. Liu, J. Y., FORMOSAT-7 GNSS Radio Occultations Monitor Tsunamis and Volcanic Eruptions, Workshop on FORMOSAT-7/COSMIC-2 Radio Occultation Data and Applications, virtual, 23-24 September 2021. (invited)
 17. Liu, Jann-Yenq (Tiger), Ionospheric ground-based and radio occultation GNSS Observations, third season of space physics online seminar series, Voov/Tencent Meeting, October 20, 2021. (Invited)
 18. Liu, J. Y. et al., Seismo-Ionospheric Precursors and Ionospheric Storm Observed by China Seismo-Electromagnetic Satellite, AOGS 19th annual Meeting, Virtual, August 1-5, 2022. (Invited)
 19. Liu, J. Y. et al., Ionosphere response to earthquakes and magnetic storms observed by FORMOSAT-5/AIP, AOGS 19th annual Meeting, Virtual, August 1-5, 2022. (Invited)
 20. Liu, Tiger J.Y. et al., Earth's magnetic field disturbances by the 15 January 2022 Tonga volcano eruption observed in Taiwan, EMSEV2022, Taiwan, August 22-26, 2022. (invited)
 21. Liu, J. Y., Traveling oceanic, atmospheric, and ionospheric disturbances triggered by the 15 January 2022 Tonga volcano eruption 2022 Taiwan Geosciences Assembly, 7-9 June. (invited)

Organize International Workshop

1、2022 EMSEV, IUGG Inter Association, 2022/08/22~26

- 2 · 2017 COSPAR Capacity Building Workshop, International Reference Ionosphere, 2017/11/06~17
- 3 · 2016 International Workshop on Earthquake Precursors, 2016/05/16~17
- 4 · 2016 International Mini Workshop on Earthquake Precursors, 2016/01/20~21
- 5 · 2013 International Workshop on Earthquake Precursors, 2013/04/24~26
- 6 · 2012 The international mini-workshop for Electromagnetic phenomena associated with seismic activities, 2012/02/14

Important Academic Research Results

Since 1990 Dr. Jann-Yenq (Tiger) Liu has been devoting his time and efforts to theoretical developments, data assimilations, observations, etc., in the research areas of (1) ionospheric space weather and climate, (2) GNSS Geospave Application, (3) ionospheric tsunami early warning, (4) seismo-ionospheric precursors, and (5) satellite science and engineering.

- Ionospheric space weather and climate: JY Liu pioneered assimilating FORMOSAT-3/COSMIC ionospheric radio occultation electron density profiles into models to conduct ionospheric weather monitoring, nowcast, and forecast, and developed ionospheric S4 scintillation models for communication, positioning, and navigation applications. These models shall have a significant impact on ionospheric space weather communities, as well as positioning, navigation, and communication applications.
- GNSS Geospace Applications: JYL Established a routine procedure to derive the ionospheric total electron content (TEC) from measurements of ground-based GPS receivers in 1994. Applied the developed TEC routine to investigate the ionospheric signatures of solar flares, solar eclipses, magnetic storms, ionospheric storms, severe weather, etc. as well as the equatorial ionization anomaly since 1996. Conducted projects of Tiny Ionospheric Photometer (TIP) and Gps Occultation eXperiment (GOX) onboard FORMOSAT-3/COSMIC, as well as integrated observations of TIP, GOX, ground-based ionospheric radars, GPS TEC and cross compared with ionospheric simulations to study the global 3D ionospheric structure and dynamics of equatorial ionization anomaly, middle latitude trough, Weddell Sea Anomaly, etc. and reported new findings of plasma depletion bay, plasma cave, and middle latitude electron density enhancement during 2006-2020. Examined FORMOSAT-7/COSMIC-2, RO (radio occultation) and IVM (ion velocity meter) observations to study seismo-ionospheric precursors, ionospheric space weather, and ionospheric tsunami disturbances since 2019.
- Ionospheric tsunami early warning: JY Liu is a leading scientist who for the first time observed the tsunami origin from space by the total electron content (TEC) derived from ground-based GNSS (global navigation satellite system) receivers, and vertical fluctuations in FORMOSAT-3/COSMIC ionospheric electron density profiles triggered by seismic and tsunami waves. He employs existing ground-based GNSS TEC and constructs regional and global networks for ionospheric tsunami monitoring and early warning. 2020 Future Tech Award “Global Ionospheric Tsunami Monitoring and Warning System-Space Buoy.”
- Seismo-ionospheric precursors: JY Liu discovers pre-earthquake ionospheric anomalies, observes the statistical evidence of seismo-ionospheric temporal and spatial precursors, and finds physical mechanisms of seismo-ionospheric precursors. He was ranked 10th among the top twenty authors with the largest number of scientific articles of 100 papers on seismic events published by the International Seismological Centre (ISC) in 2021. The ISC is a non-governmental organization (NGO) established in 1964 with the assistance of the United Nations Educational Scientific and Cultural Organization (UNESCO). The ISC is the very first organization that collects data on seismicity worldwide. It is recognized that the seismic data possessed by the ISC is the most rapid, stable, and reliable in the world.

- Satellite science and engineering: JYL established Center for Astronautical Physics and Engineering (CAPE) at National Central University to conduct a university CubeSat program in 2018. CAPE is now in full operation. The first CubeSat IDEASSat/INSPIRESat-2 (International Satellite Program in Research and Education-2) was launched on 24 January 2021 to explore ionospheric plasma irregularities. INSPIRESat-1 developed by jointly by University of Colorado Boulder, National Central University, and The Indian Space Research Organization (ISRO) was launched on 14 February 2022 to advance our understanding of ionosphere dynamics and plasma transport as well as to observe coronal flares. The Center carries out satellite missions on ionospheric space weather forecasts, tsunami warnings, earthquake precursor researches, air pollution remote sensing, and LEO (low earth orbit) communication satellite experiment. CAPE received the 2021 Future Tech Award for “K/Ka-Band Communication Payload for Low Earth Orbit CubeSat” and the 2021 Future Tech Award entitled “Made in Taiwan Spacecraft Avionics, Space Missions, and Ground Operations Capacity”.

Biography

LIU, Jann-Yenq (Tiger) currently is a chair professor at Department of Space Science and Engineering, as well as Director of Center for Astronautical Physics and Engineering (CAPE), National Central University, TAIWAN. His research specialty is ionospheric space weather and climate, GNSS geospace applications, lithosphere-atmosphere-ionospheric coupling, ionospheric tsunami early warning, and satellite science and engineering. He received BS, Atmospheric Physics Department, National Central University in 1980, as well as MS and PhD, Physics Department, Utah State University, USA in 1988 and 1990, respectively. He has been an academic faculty member at the Department of Space Science and Engineering, National Central University since 1990. He has been offering 14 core courses in physics and space sciences to over 3000 undergraduate students and 200 graduate students. In total, 64 MS and 20 Ph.D. students have graduated under his supervision. He has led 25 postdoctoral research fellows and invited 8 foreign visiting scholars to jointly carry out scientific research in ionospheric physics. As the Director of the Graduate Institute of Space Science from 2002-2005, he incubated the establishment of the Department of Space Science and Engineering, National Central University in 2020. He has been running the Ionospheric Radio Science Laboratory, and has led four domestic and one international research teams carrying out scientific research on ionospheric space weather, ionospheric tsunami warning, and seismo-ionospheric precursors. In 2018, he received a grant for a 5-year project from the Featured Area Research Center program within the framework of the Higher Education Sprout Project by the Ministry of Education (MOE) in Taiwan and established the Center for Astronautical Physics and Engineering (CAPE), which serves to integrate the 50 years of space science education and research heritage, as well as the 30 years of space engineering and technology development at National Central University. Based on the project goals, CAPE provides ionospheric space weather forecasts to help mitigate impacts on global navigation satellite system (GNSS) accuracy, telecommunications, and public safety, while also building observation networks for tsunami warnings, earthquake precursors, and air pollution. His research areas are in ionospheric space weather (solar flare, solar eclipse, and magnetic storm signatures), ionospheric data assimilation, ionospheric radar science, space- (radio occultation, RO) and ground-based GNSS geospace applications (ionospheric total electron content, TEC), seismo-traveling ionospheric disturbance (ionospheric tsunami signature), and seismo-ionospheric precursors. He has been publishing more than 300 referred journal papers since 1988. Based on the ionospheric GNSS observations, he has been promoting developments of ionospheric weather monitoring/nowcast/forecast models; finds several ionospheric new features, ionospheric plasma caves, ionospheric depletion bays, middle latitude electron density enhancement, ionospheric tsunami wave perturbations, and pre-earthquake ionospheric signatures; as well as investigates 3D electron density structures/dynamics of equatorial ionization anomaly, ionospheric tides, middle latitude trough, and Weddell Sea Anomaly.