

Delores J. Knipp

Professional Address:

Smead Aerospace Engineering Sciences Department
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University of Colorado Boulder
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ORCID: 0000-0002-2047-5754

Education:

1986 - 1989 University of California, Los Angeles
Ph.D. in Atmospheric Science (emphasis, Space and Upper Atmosphere Physics)
Dissertation Title: Quantifying and reducing uncertainty in the Assimilative Mapping of Ionospheric Electrodynamics Procedure
M.S. in Atmospheric Science (emphasis, Space and Upper Atmosphere Physics), 1987

1983 - 1984 University of Missouri
M.S. in Atmospheric Science (emphasis, Remote Sensing)

1972 - 1976 University of Missouri
B.S. in Agriculture (emphasis Atmospheric Science, cum laude)

Current Positions and Appointments:

Research Professor, Smead Aerospace Engineering Sciences Department
Member Colorado Center for Astrodynamics Research
Graduate Course Instructor in Aerospace Environment
Principle Investigator Space Environment Data Analysis Group
2013 - Present University of Colorado, Boulder, CO

Senior Research Associate, High Altitude Observatory
2008 – present National Center for Atmospheric Research

Adjunct Professor of Atmospheric Science
College of Agriculture, Food and Natural Resources
2017 – present University of Missouri, Columbia

Previous Positions and Professional Experience:

Visiting Professor, Aerospace Engineering Sciences Department
2009-2013 University of Colorado, Boulder, CO

Senior Research Associate NOAA Space Weather Prediction Center
2009 - 2010 National Research Council, resident at NOAA

Professor of Physics
1996 - 2008 US Air Force Academy (USAFA)
Physics Department Director of Operations and Director of Meteorology;
Initiated Space Physics and Atmospheric Research Center at USAFA
Taught: Astronomy, Physics, and Meteorology at all undergrad levels
1977 - 1999 US Air Force Officer, Meteorologist, Physicist

Research Interests:

Prof. Knipp's research focuses on the space environment and the atmospheric and solar events that disturb it. She works with students to investigate methods for: 1) specifying satellite drag; 2) describing how structures on the Sun produce disturbances in near-Earth space; 3) improving scientific use of space environment measurements from DoD, NASA and international space missions; 4) inter-comparing measurements from research and commercial satellites with an eye toward making broader use of commercial satellite 'housekeeping' data to monitor environmental conditions in near-Earth space. 5) estimating the conductivity of Earth's upper atmosphere. She also studies historical space weather events to understand the impacts these events have had on society and the US military. Prof. Knipp is participating in a current AFOSR-sponsored Multi University Research Initiative entitled: Next Generation Advances in Ionosphere-Thermosphere Coupling at Multiple Scales for Environmental Specification and Prediction

Editorships:

*Editor in Chief for the American Geophysical Union's **Space Weather-the International Journal of Research and Applications** (2014-2019)*

Guest editor for Journal of Atmospheric and Solar Terrestrial Physics (2000-2001)

Memberships in Professional Societies:

American Geophysical Union (AGU)

American Meteorological Society (AMS)

Recent Professional Service Activities:

2019 Chair Coupling Energetic & Dynamics of Atmospheric Regions (CEDAR) Science Steering Committee

2019 Member Next Step Space Weather Benchmarks Working Group (Ionizing Radiation)

2019 Convener AGU Chapman Conference on Forecasting Space Weather Including Extremes

2017-2018 AMS Ad Hoc Committee on Space Weather Certification

2017-2018: Participant in Solar Week (March & October) MultiVerse UC Berkeley outreach

2017 Invited Plenary Speaker on Space Weather at 230th AAS Meeting

2015-2016 Portfolio Review Committee, National Science Foundation

(NSF) Geospace Section, Division of Atmospheric and Geospace Sciences

2012-2103: Convener and Instructor for 1st AMS Space Weather Short Course

2005 – 2006: Member of the National Space Weather Program Assessment Committee

Awards and Honors:

2019 International Marcel Nicolet Medal for Space Weather and Space Climate

2019 Michael J. Buonsanto 20th Annual Memorial Lecture, MIT Haystack

2019 Fellow of the American Meteorological Society

2017 NSF Coupling Energetic and Dynamics of Atmospheric Regions (CEDAR) Prize Lecture

2013 American Geophysical Union Citation for Excellence in Refereeing

2008 USAF Academy Professor of the Year 2008

Publications and Presentations:

Textbooks

Knipp D. J. *Understanding Space Weather and the Physics Behind It*, McGraw Hill, 2011, now in 2nd Edition as e-book by Space Technology Series: <http://store.spacetechnologyseries.com/ebooks/17-understanding-space-weather-and-the-physics-behind-it.html>

Teaching Materials

[Simulating Satellite Orbits and Atmospheric Drag - Teaching Materials Collection](https://nagt.org/nagt/teaching_resources/teachingmaterials/11311.html)

https://nagt.org/nagt/teaching_resources/teachingmaterials/11311.html

This activity was selected for the On the Cutting-Edge Exemplary Teaching Collection.

Peer-reviewed

PEER-REVIEWED JOURNAL ARTICLES

- 1.
2. Hayakawa, Hisashi, Frédéric Clette, Toshihiro Horaguchi, Tomoya Iju, Delores J. Knipp, Huixin Liu and Takashi Nakajima, (2019), Sunspot Observations by Hisako Koyama: 1945 – 1996, accepted, Monthly News of the Royal Astronomical Society, <https://doi.org/10.1093/mnras/stz3345>
3. Hayakawa, Hisashi, Paulo Ribeiro, José M. Vaquero, María Cruz Gallego, Delores J. Knipp, Florian Mekhaldi, Ankush Bhaskar, Denny M. Oliveira, Yuta Notsu, Víctor M. S. Carrasco, Ana Caccavari, Bhaskara Veenadhari, Shyamoli Mukherjee, and Yusuke Ebihara (2020), The Extreme Space Weather Event in 1903 October/November: An Outburst from the Quiet Sun, *The Astrophysical Journal Letters*, 888(2), <https://doi.org/10.3847/2041-8213/ab6a18>
4. Shi, Y., Knipp, D. J., Matsuo, T., Kilcommons, L., & Anderson, B. (2020). Modes of (FACs) variability and their hemispheric asymmetry revealed by inverse and assimilative analysis of iridium magnetometer data. *Journal of Geophysical Research: Space Physics*, 125, e2019JA027265. <https://doi.org/10.1029/2019JA027265>
5. Shi, Y., Knipp, D. J., Matsuo, T., Kilcommons, L., & Anderson, B. (2020). Event studies of high-latitude FACs with inverse and assimilative analysis of AMPERE magnetometer data. *Journal of Geophysical Research: Space Physics*, 125, e2019JA027266. <https://doi.org/10.1029/2019JA027266>
6. Zhu, Q., Deng, Y., Richmond, A., Maute, A., Chen, Y.-J., Hairston, M., et al. (2020). Impacts of binning methods on high-latitude electrodynamic forcing: Static versus boundary-oriented binning methods. *Journal of Geophysical Research: Space Physics*, 125, e2019JA027270. <https://doi.org/10.1029/2019JA027270>
7. Shi, Y., Oliveira, D. M., Knipp, D. J., Zesta, E., Matsuo, T., & Anderson, B. (2019). Effects of Nearly Frontal and Highly Inclined Interplanetary Shocks on High-latitude Field-aligned Currents (FACs). *Space Weather*, 17, 1659– 1673. <https://doi.org/10.1029/2019SW002367>
8. Wu, Q., Knipp, D., Liu, J., Wang, W., Varney, R., Gillies, R., et al (2019). HIWIND observation of summer season polar cap thermospheric winds. *Journal of Geophysical Research: Space Physics*, 124, 9270– 9277. <https://doi.org/10.1029/2019JA027258>
9. Li, Z., Knipp, D., Wang, W., Shi, Y., Wang, M., Su, Y., & Li, J. (2019). An EOFs Study of Thermospheric Nitric Oxide Flux Based on TIEGCM simulations. *Journal of Geophysical Research: Space Physics*, 124, 9695– 9708. <https://doi.org/10.1029/2019JA027004>
10. Lin, C. Y., Deng, Y., Knipp, D. J., Kilcommons, L. M., & Fang, X. (2019). Effects of Energetic Electron and Proton Precipitations on Thermospheric Nitric Oxide Cooling during shock-led Interplanetary Coronal Mass Ejections. *Journal of Geophysical Research: Space Physics*, 124, 8125-8137. <https://doi.org/10.1029/2019JA027089>
11. Hayakawa, H., Ebihara, Y., Willis, D. M., Toriumi, S., Iju, T., Hattori, K., et al (2019). Temporal and spatial evolutions of a large sunspot group and great auroral storms around the Carrington event in 1859. *Space Weather*, 17, 1553-1569. <https://doi.org/10.1029/2019SW002269>
12. Wu, Q., Knipp, D., Liu, J., Wang, W., Häggström, I., Jee, G., et al. (2019). What do the new 2018 HIWIND thermospheric wind observations tell us about high-latitude ion-neutral coupling during

- daytime? *Journal of Geophysical Research: Space Physics*, 124, 6173–6181. <https://doi.org/10.1029/2019JA026776>
13. Li, Z., Knipp, D., & Wang, W. (2019). Understanding the behaviors of thermospheric Nitric Oxide cooling during the 15 May 2005 geomagnetic storm. *Journal of Geophysical Research: Space Physics*, 124. <https://doi.org/10.1029/2018JA026247>
 14. Knipp, D. J., Fraser, B. J., Shea, M. A., & Smart, D. F. (2018). On the little-known consequences of the 4 August 1972 ultra-fast coronal mass ejecta: Facts, commentary, and call to action. *Space Weather*, 16, 1635–1643. <https://doi.org/10.1029/2018SW002024>
 15. Li, Z., Knipp, D., Wang, W., Sheng, C., Qian, L., & Flynn, S. (2018). A comparison study of NO cooling between TIMED/SABER measurements and TIEGCM simulations. *Journal of Geophysical Research: Space Physics*, 123. <https://doi.org/10.1029/2018JA025831>
 16. Lu, Y., Deng, Y., Sheng, C., Kilcommons, L., & Knipp, D. J. (2018). Poynting flux in the dayside polar cap boundary regions from DMSP F15 satellite measurements. *Journal of Geophysical Research: Space Physics*, 123. <https://doi.org/10.1029/2018JA025309>
 17. Flynn, S., Knipp, D. J., Matsuo, T., Mlynczak, M. & Hunt, L. (2018). Understanding the Global Variability in Thermospheric Nitric Oxide Flux Using Empirical Orthogonal Functions (EOFs). *Journal of Geophysical Research: Space Physics*, 123. <https://doi.org/10.1029/2018JA025353>
 18. Knipp, D. J. (2018). The Reprise Special Collection for the 2001 Space Weather Monograph. *Space Weather*, 16. <https://doi.org/10.1002/2018SW001807>
 19. Mlynczak, M. G., Knipp, D. J., Hunt, L. A., Gaebler, J., Matsuo, T., Kilcommons, L. M. & Young, C. L. (2018). Space-Based Sentinels for Measurement of Infrared Cooling in the Thermosphere for Space Weather Nowcasting and Forecasting. *Space Weather*, 16. <https://doi.org/10.1002/2017SW001757>
 20. Hayakawa, Hishasi, Kiyomi Iwahashi, Yusuke Ebihara, Harufami Tamazawa, Kazunari Shibata, Delores J. Knipp, Akito Davis Kawamura, Kentaro Hattori, Kumiko Mase, Ichiro Nakanishi, Hiroaki Isobe (2017), Long-Lasting Extreme Magnetic Storm Activities in 1770 Found in Historical Documents, *Astrophys. J. Lett.*, 850, <https://doi.org/10.3847/2041-8213/aa9661>
 21. Knipp, D., Liu, H., & Hayakawa, H. (2017). Ms. Hisako Koyama: From amateur astronomer to long-term solar observer. *Space Weather*, 15, 1215–1221 <https://doi.org/10.1002/2017SW001704>
 22. Eriksson, S., M. Maimaiti, J. B. H. Baker, K. J. Trattner, D. J. Knipp, and F. D. Wilder (2017), Dual $\mathbf{E} \times \mathbf{B}$ flow responses in the dayside ionosphere to a sudden IMF By rotation, *Geophys. Res. Lett.*, 44, 6525–6533, doi:[10.1002/2017GL073374](https://doi.org/10.1002/2017GL073374).
 23. Kilcommons, L., Redmon, R. J., Knipp, and D. J. (2017). A New DMSP Magnetometer Dataset and Estimates of Field Aligned Currents in Dynamic Auroral Boundary Coordinates, *J. Geophys. Res. Space Physics*, 122, 9068–9079, doi:[10.1002/2016JA023342](https://doi.org/10.1002/2016JA023342).
 24. Redmon, Robert, Liam Kilcommons, William Denig, and Delores Knipp, New DMSP Database of Precipitating Auroral Electrons and Ions, (2017), *J. Geophys. Res. Space Physics*, 122, 9056–9067, doi:[10.1002/2016JA023339](https://doi.org/10.1002/2016JA023339).
 25. Knipp, D. J. (2017), Essential science for understanding risks from radiation for airline passengers and crews, *Space Weather*, 15, 549–552, doi:[10.1002/2017SW001639](https://doi.org/10.1002/2017SW001639).
 26. Knipp, D. J., D. V. Pette, L. M. Kilcommons, T. L. Isaacs, A. A. Cruz, M. G. Mlynczak, L. A. Hunt and C. Y. Lin (2017), Thermospheric Nitric Oxide Response to Shock-led Storms, *Space Weather*, 15, 325–342, doi:[10.1002/2016SW001567](https://doi.org/10.1002/2016SW001567).
 27. Knipp, D. J., et al. (2016), The May 1967 great storm and radio disruption event: Extreme space weather and extraordinary responses, *Space Weather*, 14, 614–633, doi:[10.1002/2016SW001423](https://doi.org/10.1002/2016SW001423).

28. Zhang, B., W. Wang, Q. Wu, D. Knipp, L. Kilcommons, O. J. Brambles, J. Liu, M. Wiltberger, J. G. Lyon, and I. Häggström (2016), Effects of magnetospheric lobe cell convection on dayside upper thermospheric winds at high latitudes, *Geophys. Res. Lett.*, 43, 8348–8355, doi:[10.1002/2016GL069834](https://doi.org/10.1002/2016GL069834).
29. McGranaghan, R., D. J. Knipp, and T. Matsuo (2016), High-latitude ionospheric conductivity variability in three dimensions, *Geophys. Res. Lett.*, 43, 7867–7877, doi:[10.1002/2016GL070253](https://doi.org/10.1002/2016GL070253).
30. McGranaghan, R. M., D. J. Knipp, T. Matsuo, and E. Cousins (2016) Optimal interpolation analysis of high-latitude ionospheric Hall and Pedersen conductivities: Application to assimilative ionospheric electrodynamics reconstruction, *J. Geophys. Res. Space Physics*, 121, 4898–4923, doi:[10.1002/2016JA022486](https://doi.org/10.1002/2016JA022486).
31. Rastätter Lutz, Ja Soon Shim, Maria M. Kuznetsova, Liam M. Kilcommons, Delores J. Knipp, Mihail Codrescu, Tim Fuller-Rowell, Barbara Emery, Daniel R. Weimer, Russell Cosgrove, Michael Wiltberger, Joachim Raeder, Wenhui Li, Gábor Tóth, and Daniel Welling (2016), GEM-CEDAR challenge: Poynting flux at DMSP and modeled Joule heat, *Space Weather*, 14, doi:[10.1002/2015SW001238](https://doi.org/10.1002/2015SW001238).
32. McGranaghan, R., D. J. Knipp, T. Matsuo, H. Godinez, R. J. Redmon, S. C. Solomon, and S. K. Morley (2015), Modes of high-latitude auroral conductance variability derived from DMSP energetic electron precipitation observations: Empirical orthogonal function analysis, *J. Geophys. Res. Space Physics*, 120, 11,013–11,031, doi:[10.1002/2015JA021828](https://doi.org/10.1002/2015JA021828).
33. Knipp, D. J. (2015), Synthesis of Geomagnetically Induced Currents: Commentary and Research, *Space Weather*, 13, 727–729, doi:[10.1002/2015SW001317](https://doi.org/10.1002/2015SW001317).
34. Knipp, D. J. (2015), Forward to space weather collection on geomagnetically induced currents: Commentary and research, *Space Weather*, 13, 742–746, doi:[10.1002/2015SW001318](https://doi.org/10.1002/2015SW001318).
35. Knipp, D. J., and D. A. Biesecker (2015), Changing of the guard: Satellite will warn Earth of solar storms, *Eos*, 96, doi:[10.1029/2015EO026579](https://doi.org/10.1029/2015EO026579).
36. Redmon, R. J., J. V. Rodriguez, J. C. Green, D. Ober, G. Wilson, D. Knipp, L. Kilcommons, and R. McGuire (2015), Improved Polar and Geosynchronous Satellite Data Sets Available in Common Data Format at the Coordinated Data Analysis Web, *Space Weather*, 13, 254–256. doi:[10.1002/2015SW001176](https://doi.org/10.1002/2015SW001176).
37. Deng, Y., C. Sheng, Y.-J. Su, M. R. Hairston, D. Knipp, C. Y. Huang, D. Ober, R. J. Redmon, and R. Coley (2015), Correlation between Poynting flux and soft electron precipitation in the dayside polar cap boundary regions, *J. Geophys. Res. Space Physics*, 120, 9102–9109, doi:[10.1002/2015JA021075](https://doi.org/10.1002/2015JA021075).
38. Matsuo, T., D. J. Knipp, A. D. Richmond, L. Kilcommons, and B. J. Anderson (2015), Inverse procedure for high-latitude ionospheric electrodynamics: Analysis of satellite-borne magnetometer data, *J. Geophys. Res. Space Physics*, 120, 5241–5251, doi:[10.1002/2014JA020565.2](https://doi.org/10.1002/2014JA020565.2).
39. McGranaghan, R., D. J. Knipp, S. C. Solomon, and X. Fang (2015), A fast, parameterized model of upper atmospheric ionization rates, chemistry, and conductivity. *J. Geophys. Res. Space Physics*, 120, 4936–4949. doi: [10.1002/2015JA021146](https://doi.org/10.1002/2015JA021146).
40. Knipp, D. J., L. M. Kilcommons, J. Gjerloev, R. J. Redmon, J. Slavin, and G. Le, (2015) A Large-Scale View of Space Technology 5 Magnetometer Response to Solar Wind Drivers, *Earth and Space Science*, DOI: [10.1002/2014EA000057](https://doi.org/10.1002/2014EA000057)
41. McGranaghan, R., D. J. Knipp, R. L. McPherron, and L. A. Hunt (2014), Impact of equinoctial high-speed stream structures on thermospheric responses, *Space Weather*, 12, 277–297, doi:[10.1002/2014SW001045](https://doi.org/10.1002/2014SW001045).

42. Knipp, D. J., T. Matsuo, L. Kilcommons, A. Richmond, B. Anderson, H. Korth, R. Redmon, B. Mero, and N. Parrish (2014), Comparison of magnetic perturbation data from LEO satellite constellations: Statistics of DMSP and AMPERE, *Space Weather*, 12, doi:10.1002/2013SW000987.
43. Tobiska, W. K., D. Knipp, W. J. Burke, D. Bouwer, J. Bailey, D. Odstrcil, M. P. Hagan, J. Gannon, and B. R. Bowman (2013), The ANEMOMILOS prediction methodology for Dst, *Space Weather*, 11, 490–508, doi:10.1002/swe.20094
44. Deng, Y., T. J. Fuller-Rowell, A. J. Ridley, D. Knipp, and R. E. Lopez (2013), Theoretical study: Influence of different energy sources on the cusp neutral density enhancement, *J. Geophys. Res. Space Physics*, 118, 2340–2349, doi:10.1002/jgra.50197.
45. Knipp, D., L. Kilcommons, L. Hunt, M. Mlynczak, V. Pilipenko, B. Bowman, Y. Deng, and K. Drake (2013), Thermospheric damping response to sheath-enhanced geospace storms, *Geophys. Res. Lett.*, 40, doi:10.1002/grl.50197.
46. Deng, Y., Y. Huang, S. Solomon, L. Qian, D. Knipp, D. R. Weimer, and J.-S. Wang (2012), Anomalously low geomagnetic energy inputs during 2008 solar minimum, *J. Geophys. Res.*, 117, A09307, doi:10.1029/2012JA018039
47. Knipp, D., S. Eriksson, L. Kilcommons, G. Crowley, J. Lei, M. Hairston, and K. Drake, (2011), Extreme Poynting flux in the dayside thermosphere: Examples and statistics, *Geophys. Res. Lett.*, 38, L16102, doi:10.1029/2011GL048302.
48. Li, W., D. Knipp, J. Lei, and J. Raeder, (2011) The relation between dayside local Poynting flux enhancement and cusp reconnection, *J. Geophys. Res.*, 116, A08301, doi:10.1029/2011JA016566.
49. Crowley, G., D. J. Knipp, K. A. Drake, J. Lei, E. Sutton, and H. Lühr, (2010) Thermospheric density enhancements in the dayside cusp region during strong B_y conditions, *Geophys. Res. Lett.*, 37, L07110, doi:10.1029/2009GL042143.
50. Sutton, E. K., J. M. Forbes, and D. J. Knipp, (2009) Rapid response of the thermosphere to variations in Joule heating, *J. Geophys. Res.*, 114, A04319, doi:10.1029/2008JA013667.
51. Gross, N. A., N. Arge, R. Bruntz, A. G. Burns, W. J. Hughes, D. Knipp, J. Lyon, S. McGregor, M. Owens, G. Siscoe, S. C. Solomon, and M. Wiltberger, (2009) Space Physics Concepts for Graduate Students: An Activities-Based Approach, *EOS*, Vol 90, p. 13-14, 13 January 2009
52. Turner, N., E. J. Mitchell and D. J. Knipp, Energetics of Magnetic Storms Driven by Corotating Interaction Regions: A Study of Geoeffectiveness, *AGU Monograph of Geoeffectiveness*, American Geophysical Union, Washington, D. C. doi: 10.1029/167GM11
53. Knipp, D. J., E. T. Patterson, J. H. Head, T. A. Summers, A. Franz, and E. L. Zirbel, Simulating the Physics of Realistic Satellite Orbits in the Undergraduate Classroom, (2005) *The Physics Teacher*, *The Physics Teacher* 43, 452; <https://doi.org/10.1119/1.2060645>
54. McHarg, M., F. Chun, D. Knipp, G. Lu, B. Emery, and A. Ridley (2005), High-latitude Joule heating response to IMF inputs, *J. Geophys. Res.*, 110, A08309, doi:10.1029/2004JA010949, 2005
55. Knipp, D. J., T. Welliver, M. G. McHarg, F. K Chun. W. K. Tobiska and D. Evans, Climatology of extreme upper atmospheric heating events, *Advances in Space Research* 36, 2506-2510, 2005, doi:10.1016/j.asr.2004.02.019
56. Knipp, D. J., W. K. Tobiska and B. A. Emery Solar Direct and Indirect Thermospheric Heating Sources for Solar Cycles 21-23, *Solar Physics*, 224:495-505, 2004, <https://doi.org/10.1007/s11207-005-6393-4>
57. Nuhfer Edward and Delores J. Knipp, The Knowledge Survey: A Tool for All Reasons, *To Improve the Academy*, Vol 21, 2002.
58. Chun, F. K., D. J. Knipp, M. G. McHarg, J. R. Lacey, G. Lu, and B. A. Emery, Joule heating patterns as a function of polar cap index, *J. Geophys. Res.*, 107(A7), 10.1029/2001JA000246, 200

59. Shiokawa, K., Y. Otuska, T. Ogawa, N. Balan, K. Igarashi, A. J. Ridley, D. J. Knipp, A. Saito and K. Yumoto, A large scale traveling ionospheric disturbance during the magnetic storm of September 15, 1999, *J. Geophys. Res.*, Vol 107, SIA 5-1 to SIA 5-11, 2001JA000245, 2002
60. Knipp, D. J. and C.-H. Lin, B. A. Emery, J. M. Ruohoniemi, and D. S. Evans, "Hemispheric asymmetries in ionospheric electrodynamics during the solar wind void of 11 May 1999," *G R L.*, 27, 4013, 2000.
61. Habash-Krause, L., B. K. Dichter, D. J. Knipp, and K. P. Ray, The Relationship Between DSCS III Sunlit Surface Charging and Geomagnetic Activity Indices, *IEEE Trans. Nuclear Sci.*, 47, 2224, 2000, DOI: [10.1109/23.903757](https://doi.org/10.1109/23.903757)
62. Crowley, G. A. J. Ridley, D. Deist, S. Wing, D. J. Knipp, B. A. Emery, J. Foster, R. Heelis and M. Hairston and B. W. Reinisch, "The transformation of high-latitude ionospheric F-region patches into Blobs during the March 21, 1990 storm, *J. Geophys. Res.*, 105, 5215, 2000.
63. Ballatore, P. L. J. Lanzerotti, G. Lu, and D. J. Knipp, "Relationship between the Northern Hemisphere Joule Heating and Geomagnetic activity in the Southern Polar Cap, *J. Geophys. Res.*, 105, 27617, 2000.
64. Chun, F. K., D. J. Knipp, M. G. McHarg, G. Lu, B. A. Emery, S. Vennerstrøm, and O. A. Troshichev, Polar cap index as a proxy for hemispheric Joule heating, *Geophys. Res. Lett.*, 26 (8), 1101-1104, 1999.
65. Emery, B. A., C. Lathuillere, P. G. Richards, R. G. Roble, M. J. Buonsanto, D. J. Knipp, P. Wilkinson, D. P. Sipler and R. Niecejewski, Time dependent thermospheric neutral response to the 2-11 November 1993 storm period, *J. Atmos. Solar Terr. Phys.*, 61, 329-350, 1999.
66. Knipp, D. J. (1998), Foreword [to Special Section on The November 1993 Geomagnetic Storm], *J. Geophys. Res.*, 103(A11), 26193–26195, doi:[10.1029/98JA01558](https://doi.org/10.1029/98JA01558).
67. Knipp, D. J., B. A. Emery, M. Engebretson, X. Li, A. H. McAllister, T. Mukai, S. Kokubun, G. D. Reeves, D. Evans, T. Obara, X. Pi, T. Rosenberg, A. Weatherwax, M. G. McHarg, F. Chun, K. Mosely, M. Codrescu, L. Lanzerotti, F. J. Rich, J. Sharber and P Wilkinson, "An overview of the early November 1993 geomagnetic storm," *J. Geophys. Res.*, 103, 26197, 1998.
68. McAllister, A.H., D. Knipp, N. U. Crooker, T. Mukai, and S. Kokubun, "Identification of solar drivers: The 3-4 November 1993 geomagnetic storm," *J. Geophys. Res.*, 103, 26221, 1998.
69. Lui, A. T. Y., D. J., Williams, R. W., McEntire, S. P. Christon, A. B. Gavin, and D. J. Knipp, "Energetic Ion composition and charge state of solar wind plasma during the November 3, 1993, magnetic storm," *J. Geophys. Res.*, 103, 26235, 1998.
70. Kozyra, J. U., V. K. Jordanova, J. E. Borovosky, M. F. Thomsen, D. J. Knipp, D. S. Evans, D. J. McComas and T. E. Cayton, "Effects of a high-density plasma sheet on ring current development during the November 2-6 1993, magnetic storm," *J. Geophys. Res.*, 103, 26285, 1998.
71. Borovsky, J., M. F. Thomsen, D. J. McComas, T.E. Cayton, and D. J. Knipp, "Magnetospheric dynamics and mass flow during the November 1993 storm," *J. Geophys. Res.*, 103, 26373, 1998.
72. Knipp, D. J. and B. A. Emery, "Report on the Community Study of the Early November 1993 Geomagnetic Storm," *Adv. Space Res.*, 22, 41, 1998.
73. Knipp, D. J. and B. A. Emery, "Mapping Ionospheric Substorm Response," *Adv. Space Res.*, 20, 895, 1997.
74. Taylor, J. R., M. Lester, T. K. Yeoman, B. Emery, D. J. Knipp, D. Orr, S. I. Solovyer, and T. J., Hughes, "The Response of the Magnetosphere to the Passage of a Coronal Mass Ejection on March 20-21 1990," *Ann. Geophys.*, 15, 671, 1997.
75. Knipp, D. J. and B. A. Emery, "Polar Cap Contraction Associated with the Edge of a Magnetic Cloud," *Geophys. Res. Lett.*, 23, 305, 1996.

76. Knipp, D. J., B. A. Emery, A. D. Richmond, and M. R. Hairston, "Mapping Ionospheric Convection Response to IMF B_y Negative and B_z positive Conditions," *J. Atmos. Terr. Phys.*, 1994.
77. Knipp, D. J., et al. (1993), Ionospheric convection response to slow, strong variations in a northward interplanetary magnetic field: A case study for January 14, 1988, *J. Geophys. Res.*, 98(A11), 19273– 19292, doi:[10.1029/93JA01010](https://doi.org/10.1029/93JA01010).
78. Knipp, D. J., A. D. Richmond, B. Emery, N. U. Cooker, O. de la Beaujardiere, D. Evans, and H. Kroehl (1991), Ionospheric Convection Response to Changing IMF Direction, *Geophys. Res. Lett.*, 18, 721, <https://doi.org/10.1029/90GL02592>
79. G. Crowley, B. A. Emery, R. G. Roble, H. C. Carlson, and D. J. Knipp, "Thermospheric Dynamics During September 18-19, 1984, 1. Model Simulations," *J. Geophys. Res.*, 94, 16925 1989.
80. Knipp, D. J., Richmond, A. D., Crowley, G., de la Beaujardière, O., Friis-Christensen, E., Evans, D. S., Foster, J. C., McCrea, I. W., Rich, F. J., and Waldock, J. A. (1989), Electrodynamical patterns for September 19, 1984, *J. Geophys. Res.*, 94(A12), 16913– 16923, doi:[10.1029/JA094iA12p16913](https://doi.org/10.1029/JA094iA12p16913).

PAPERS IN PRESS, REVISION, REVIEW AND PREPARATION

- Bernstein, V., Marcin, M and Knipp, D. Evidence for Drag Coefficient Modeling Errors Near and Above the Oxygen-to-Helium Transition, accepted in *Journal of Spacecraft and Rockets*
- Haonan Wu, Xian Lu, Gang Lu, Xinzhao Chu, Wenbin Wang, Zhibin Yu, Liam M. Kilcommons, Delores J. Knipp, Boyi Wang, Yukitoshi Nishimura, Importance of Auroral Precipitation and Electrical Field Variability to the Storm-Time Thermospheric Temperature Enhancement and Inversion Layer (TTEIL) in the Antarctic E Region, submitted to *JGR Space Physics*
- Maute, A., A.D Richmond, G. Lu, D. Knipp, Y. Shi, B. Anderson, Magnetosphere-ionosphere coupling via prescribed field-aligned current simulated by the TIEGCM submitted to *Journal of Advances in Modeling Earth Systems (JAMES)*.

CONFERENCE PROCEEDINGS & PAPERS, GUIDES, STANDARDS, NATIONAL STUDIES

Reviewed:

1. Knipp, Delores, J., Devin J. Della-Rose, Omar Nava, and W. Kent Tobiska, Long- and Short-Term Variations in Thermospheric Heating Sources, AIAA 2005 Reno Nevada
2. Jeffrey Forbes, Sean Bruinsma, Delores Knipp, Jiuhou Lei, Xiaoli Zhang, Eric Sutton, and R. Nerem. Response characteristics of orbit-mean satellite drag to varying geomagnetic conditions AIAA/AAS 2008 Astrodynamics Specialist Conference and Exhibit, Honolulu, HI <https://doi.org/10.2514/6.2008-6945>
3. ANSI-AIAA Guide: Guide to Reference and Standard Ionosphere Models, ANSI_AIAA_G-034A-2014, <https://doi.org/10.2514/4.102707.001>
4. Science & Technology Policy Institute, (2019), Next Step Space Weather Benchmarks, Institute for Defense IDA Group Report NS GR-10982, <https://www.ida.org/-/media/feature/publications/n/ne/next-step-space-weather-benchmarks/gr-10982.ashx>

Non-Reviewed:

5. Knipp, Delores and Patrick Market, Where and why does space weather occur?, 86th AMS Annual Meeting, 2006 Atlanta GA

POPULAR PRESS, REVIEWED EDITORIALS, EDITOR'S VOX AND BOOK REVIEWS

6. Knipp, D. J. and Lanzerotti, L. (2006), The Important Role of Data Centers in Space Climate and Weather. *Space Weather*, 4: DOI: 10.1029/2006SW000233
7. Tretkoff, E. (2010), Teaching Space Weather to Undergraduates: An Interview with Delores Knipp. *Space Weather*, 8: n/a. doi: 10.1029/2010SW000610
8. Knipp, D. J. (2012), Review of “Future Global Shocks: Geomagnetic Storms”. *Space Weather*, 10: n/a. doi: 10.1029/2011SW000747
9. Knipp, D. J. (2014), Space Weather Journal: Retrospective and Prospective, *Space Weather*, 12, 567–567, doi:10.1002/2014SW001128
10. Knipp, D. J. (2015), Space Weather and Citizen Science, *Space Weather*, 13, 97–98, doi: 10.1002/2015SW001167.
11. Knipp, D., and W. Lotko (2015), Now Is the Time to be Heard!, *Space Weather*, 13, 251–252. doi:10.1002/2015SW001207.
12. Knipp D. J. (2015), Celebrating Accomplishments and Anniversaries of Space Weather Observations and Forecasting. *Space Weather* 13(6):357-358
13. Knipp, D. J., and L. J. Lanzerotti (2015), Appreciation of *Space Weather* Peer Reviewers for 2014 *Space Weather*, 13, 395–395, doi:10.1002/2015SW001253.
14. Knipp, D. J. (2016), Advances in Space Weather Ensemble Forecasting, *Space Weather*, 14, 52–53, doi:10.1002/2016SW001366.
15. Knipp, D. J. (2016) Space Weather Research and Forecasting Act Introduced to Senate, *Eos Editor’s Vox*
16. Knipp, D. J., and B. L. Giles (2016), Global Positioning System Energetic Particle Data: The Next Space Weather Data Revolution, *Space Weather*, 14, 526–527, doi:10.1002/2016SW001483.
17. Carter, B and D. J. Knipp, (2016) It’s never been more important to keep an eye on space weather, <https://theconversation.com/its-never-been-more-important-to-keep-an-eye-on-space-weather-65648>, Theconversation.com > 17,000 reads
18. Hapgood, M., and D. J. Knipp (2016), Data Citation and Availability: Striking a Balance Between the Ideal and the Practical, *Space Weather*, 14, doi:10.1002/2016SW001553.
19. Knipp, D. J. (2017) Global Positioning System Sparks New Data Revolution, *Eos Editor’s Vox*, <https://eos.org/editors-vox/global-positioning-system-sparks-new-data-revolution>
20. Knipp, D. J. (2017), Space Weather Editors in Transition: Hail and Farewell, *Space Weather*, 15, 279, doi:10.1002/2017SW001611.
21. Knipp, D. J., M. A. Hapgood, D. Welling, and T. Paul O'Brien (2017), Thank You to Space Weather Peer Reviewers, *Space Weather*, 15, 542–544, doi:10.1002/2017SW001621.
22. Knipp, D. J. (2017). On space weather during a total eclipse. *Space Weather*, 15, 1092. <https://doi.org/10.1002/2017SW001723>
23. Knipp, D. J., Hapgood, M. A., & Welling, D. T. (2017). Maintaining a strong signal and strong impact. *Space Weather*, 15, 1560–1561. <https://doi.org/10.1002/2017SW001783>
24. Knipp, D. J. (2018). Advances in Space Weather Data Interpretation and Simulations. *Space Weather*, 16. <https://doi.org/10.1002/2018SW001824>
25. Knipp, D. J. (2019). Fall 2018 AGU Editors' highlights: Living within the Sun's stormy atmosphere. *Space Weather*, 17. <https://doi.org/10.1029/2019SW002154>
26. Knipp, D. J., & Gannon, J. L. (2019). The 2019 National Space Weather Strategy and Action Plan and Beyond. *Space Weather*, 17. <https://doi.org/10.1029/2019SW002254>
27. Knipp, Delores, Lessons from the Sun: The Great Solar Storm of August 1972, (2019) ROOM the Space Journal of Asgardia, Summer 2019, pp15-19, ISBN7447058068
28. Knipp, D. J., and M. Hapgood (2019), Space weather aviation forecasting on a global scale, *Eos*, 100, <https://doi.org/10.1029/2019EO135277>.

29. Knipp, D. J. (2019). Space Weather Journal: Into the future. *Space Weather*, 17. <https://doi.org/10.1029/2019SW002337>

DATA SETS

30. Magnetometer data set from the Space Technology-5 (ST-5) Demonstration Mission, Associated with Knipp, et al. (2015), DOI: 10.1002/2014EA000057
https://cdaweb.gsfc.nasa.gov/misc/NotesS.html#ST5-155_1SEC_MAG
https://cdaweb.gsfc.nasa.gov/misc/NotesS.html#ST5-224_1SEC_MAG
https://cdaweb.gsfc.nasa.gov/misc/NotesS.html#ST5-094_1SEC_MAG
31. DMSP Magnetometer Data Set (2010-2014)
Associated with Kilcommons, Redmon, & Knipp, (2017), doi:[10.1002/2016JA023342](https://doi.org/10.1002/2016JA023342).
https://cdaweb.gsfc.nasa.gov/cgi-bin/eval2.cgi?dataset=DMSP-F16_SSM_MAGNETOMETER&index=sp_phys
https://cdaweb.gsfc.nasa.gov/cgi-bin/eval2.cgi?dataset=DMSP-F17_SSM_MAGNETOMETER&index=sp_phys
https://cdaweb.gsfc.nasa.gov/cgi-bin/eval2.cgi?dataset=DMSP-F18_SSM_MAGNETOMETER&index=sp_phys
32. DMSP Precipitating Particle Data Set (2010-2014)
Associated with Redmon et al., (2017), doi:[10.1002/2016JA023339](https://doi.org/10.1002/2016JA023339)
https://cdaweb.gsfc.nasa.gov/cgi-bin/eval2.cgi?dataset=DMSP-F16_SJ_PRECIPITATING-ELECTRONS-IONS&index=sp_phys
https://cdaweb.gsfc.nasa.gov/cgi-bin/eval2.cgi?dataset=DMSP-F17_SJ_PRECIPITATING-ELECTRONS-IONS&index=sp_phys
https://cdaweb.gsfc.nasa.gov/cgi-bin/eval2.cgi?dataset=DMSP-F18_SJ_PRECIPITATING-ELECTRONS-IONS&index=sp_phys
33. Knipp, Delores, & Mannucci, Anthony. (2020). Table of Contents for Meeting Artifacts from Chapman Conference on Scientific Challenges Pertaining to Space Weather Forecasting Including Extremes (Version V1.0) [Data set]. Zenodo. <http://doi.org/10.5281/zenodo.3693004>

WEB PRESENCE

How a Record-Breaking Solar Storm Sparked a Vietnam War Mystery (2019)
<https://www.youtube.com/watch?v=xTHngFzi8mY>

The Sun and the Exploding Sea (2019)
<https://thirdpodfromthesun.com/2019/08/19/centennial-e9-the-sun-and-the-exploding-sea/>
