RAMON E. LOPEZ (updated 7/20/17)

Address: University of Texas at Arlington
Department of Physics, Arlington, TX, 76019
phone (817) 272-0386
email relopez@uta.edu

Education:
B.S. (Physics), University of Illinois at Urbana-Champaign, 1980
M.S. (Space Physics), Rice University, 1984
Ph.D. (Space Physics), Rice University, 1986

Awards:
NSF Minority Graduate Fellowship, 1980
Space Foundation Space Industrial Fellowships, 1981, 1982
NASA Group Achievement Award, AMPTE mission operations, June 14, 1990
Outstanding Service to Education, Montgomery County MD Public Schools, 1992
Member, Sigma Circle of Omicron Delta Kappa, Initiated, April 9, 1995
NASA Group Achievement Award, Global Geospace Science, University of Maryland Theory Investigation Team, June 16, 1998
1999 Scientist in Education Achievement Award, awarded by the Space Science Institute
Fellow of the American Physical Society, 1999
2002 American Physical Society Nicholson Medal for Humanitarian Service to Science
14th Malmstrom Lecturer, Hamline University, St. Paul, MN, May 6, 2005
2006 Benson Lecturer, Miami University, Oxford, OH, March 6, 2006
2009-2010, Outstanding Researcher Award, UT Arlington
2009-2010, Outstanding Academic Advisor Honorable Mention, UT Arlington
2010 Society for the Advancement of Chicanos and Native Americans in Science Distinguished Scientist Award
Fellow of the American Association for the Advancement of Science, 2011
2012 American Physical Society Edward A. Bouchet Award
2016 Space Physics and Aeronomy Richard Carrington Award for Education and Outreach
2016-2017 Excellence in Doctoral Student Mentoring Award, UT Arlington
Fellow of the American Association of Physics Teachers, 2017
2017 Regents Outstanding Teaching Award, University of Texas System

Membership:
American Association for the Advancement of Science (AAAS)
American Association of Physics Teachers (AAPT)
American Geophysical Union (AGU)
American Physical Society (APS)
National Science Teachers Association (NSTA)
National Society of Hispanic Physicists (NSHP)
Soc. for the Advancement of Chicanos and Native Americans in Science (SACNAS)

Positions Held:

July 2007 - Present	Professor, Dept. of Physics, and Co-Director, UTeach Arlington, University of Texas at Arlington
Aug 2004 – July 2007	Professor, Dept. of Physics and Space Sciences, Florida Institute of Technology
Aug 1999 – Aug 2004	C. Sharp Cook Distinguished Professor, Dept. of Physics, University of Texas at El Paso (UTEP)
Aug 1999 - June 2001	Chair, Dept. of Physics, UTEP
May 1994 - June 1999	Director, Education and Outreach Programs, The American Physical Society
July 1993 - Aug 1999	Associate Research Scientist, Department of Astronomy, University of Maryland at College Park (UMCP)
Apr 1993 - June 1994	Assistant Director for Research, East-West Space Science Center, UMCP
June 1992 - July 1993	Research Associate, Department of Astronomy, UMCP
Dec 1985 - June 1992	Scientist (various ranks), Applied Research Corporation (on contract to The Johns Hopkins University Applied Physics Laboratory)
Aug 1985 – Dec 1985	Postdoctoral Research Fellow, Rice University, Department of Space Physics and Astronomy

Professional Activities:

Member, APS Task Force "Best Practices in Undergraduate Physics Programs", 2016 - present.

President-elect, National Society of Hispanic Physicists, Jan. 2016 - present; Secretary, Jan. 2008-Dec. 2015.

Member, National Academies Committee on NASA Science Mission Extensions, December, 2015 – present.

Member, Steering Committee, NASA Living with a Star program, 2014-2015.

Member, College Board Academic Advisory Committee, 2015 - present.

Member, External Review Committee, Division of Research in Learning, EHR Directorate of the NSF, 2015.

Member, College Board SAT Physics Committee, 2014 - 2017.

UCAR Member representative for UT Arlington, 2014 - present.

Member, Nominating Committee, Section Q, AAAS, February 2013 – February 2016.

Member, Group of Experts, Committee for Review of Undergraduate Physics Teaching and Learning, Council on Higher Education, Republic of South Africa, August 2012-March 2013.

Co-Chair, Writing Team, Next Generation Science Education Standards, October 2010-April 2013.

Convener, Scientific Sessions at AOGS meetings in Sapporo (2014), Brisbane (2013), Singapore (2017, 2015, 2012, 2009), Taipei (2011), Hyderabad (2010)

Convener of scientific symposia at the SACNAS annual meeting, 2000 - present.

Committee Member, The US Antarctic Program: Future Science Opportunities in the Antarctic and Southern Ocean, National Research Council, January, 2011-November, 2011.

Member, Steering Committee, Decadal Survey of Solar and Space Physics, National Research Council, June 2010-August 2012.

Member, Committee on Opportunities in Science, AAAS, February 2010 – February 2013.

Member, National Advisory Board Committee, Bridge Program, APS, August 2009 – present.

Adjunct Researcher, Spatial Intelligence Learning Center (Temple University), Oct. 2008 – present.

Chair, Scarf Award Selection Committee, Space Physics and Aeronomy (AGU), Jan. 2008 – Dec. 2010.

Member, Committee on Solar and Space Physics, National Research Council, Jan. 2008 – Dec. 2010.

Member, Writing team, College Board Standards for College Success, March 2008 – August 2009.

Member, Scientific Organizing Committee for Living With a Star Combined Data Analysis Workshop, held at Florida Institute of Technology, March 5-9, 2007; Chair, Local Organizing Committee.

Member, AP Physics Curriculum Realignment Committee, September 2006 - December 2007.

Member, NOAA Science Advisory Board Working Group to Evaluate NOAA's Extension, Outreach and Education, 2006-2007.

Member, Editorial Board, *Physical Review Special Topics: Physics Education Research*, 2004 -2007.

Chair, APS Committee on Education and representative to APS Physics Policy Committee, 2006; Member, Committee on Education, The American Physical Society, January 2003 – December 2006.

Working Group leader for Prediction of Geomagnetic Storms, Living With a Star Combined Data Analysis Workshop, George Mason University, March 15-18, 2005.

Member, Board on Atmospheric Sciences and Climate Ad-Hoc Committee on Strategic Guidance for NSF's Support of the Atmospheric Sciences, National Research Council, August 2004 – December 2006.

Reviewer, NRC Research Associate program, 2005.

Opponent, Ph.D. defense for Minna Palmroth "Solar Wind-Magnetosphere Interactions as Determined by Observation and a Global MHD Simulation", Finnish Meteorological Institute and the University of Helsinki, Helsinki, Finland, June 18, 2003.

Member, Committee on Undergraduate Science Education, National Research Council, Feb. 2002 - Jan. 2004.

Member, Advisory Committee on Physics Programs, American Institute of Physics, Jan. 2003 - Jan. 2006.

Chair (2005), APS Forum on Education (served in Chair line 2003-2006), Member, Executive Committee, APS Representative at Large, March 2000 – March 2003.

Co-Chair, AAPT Conference "The Introductory Calculus-based Physics Course", Arlington, VA, October 31 - November 2, 2003.

Council of Advisors, *Astronomy Education Review*, December 2001 – January, 2010.

Chair, Panel on Education and Society, Decadal Survey on Solar and Space Physics, Committee on Solar and Space Physics of the National Research Council, December 2000 – June 2003.

Chair, Sub-Commission D3, Magnetospheres, COSPAR, July 2000 – July 2004.

Organizer of sessions on space physics and science education at the 2002 World Space Congress in Houston, and 2004 COSPAR meeting in Paris.

Chair, Committee on Minorities, APS, January 2003 – December 2003; Member, January 2001 – December 2002.

Member, Advisory Committee, Interagency Education Research Initiative for Academic Achievement and Teacher Development, Tennessee State University, January 2002-August 2006.

Member, Advisory Group, NSF/GEO Diversity Initiative, 2000.

Member, Board of Directors, the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) January 2000 – December 2002.

Chair, Education Committee, Space Physics and Aeronomy (SPA) section of the AGU, May 1992 - May 1996, Member, May, 1991 – May, 1996; also Member, May 2006 – present.

Member, Board of Directors, Insights Science Museum, El Paso, Texas, December 1999 – June 2004.

Member, SPA Executive Committee, May, 1992 - May 1996.

Member, Committee on Education and Human Resources, AGU, Sept. 1992 - May 1998.

Chair, Subcommittee on Minorities in Geophysics, AGU, Jan. 1993 - July 1994.

Chair, Editorial Advisory Board for *Earth and Space*, AGU, May 1995 - May 1998, Member, Sept. 1992 - May, 1995.

Member, Educational Advisory Committee, Center for the Enhancement of Science and Mathematics Education, Boston, MA, July 1993 – June 2000.

Member, Board of Directors, Space Science Institute, Boulder, Colorado June 1992 – June 2001

U.S. Chair, U.S.-Finland Auroral Workshop Organizing Committee, April, 1991 - April 1996, U.S. Convenor, 1992 U.S.-Finland Auroral Workshop, Terahovi, Finland

Member, Program Committee, Division of Plasma Physics (APS), 1999 DPP meeting.

Reviewer, Science Standards, California and Maryland, 1998.

Member, Site Visit Teams, NSF, Educational Systemic Reform.

Member, Steering Committees for the "International Conference on Undergraduate Physics Education" (1996) and the "Conference on Revitalizing Undergraduate Physics Education" (1998).

Member, Organizing Committee for "Encounter Between Global Observations and Models in the ISTP Era" (1996), and "The New Millennium Magnetosphere: Integrating Imaging, Discrete Observations, and Global Simulations" (1998).

Convener of scientific session the IAGA Symposium, Buenos Aires, 1993.

Part-time staff with the National Science Resources Center, Washington, D. C., June 1992 - June 1994, Consultant, June 1994 - July 1996.

Consultant to The Discovery Channel as subject matter expert for the educational videodisc "The Solar Sea" October, 1992 - March, 1993.

Consultant to various school districts and organizations including, Montgomery County Public Schools, MD, Harrison School District, Colorado Springs, CO, Gilbert Public Schools, Gilbert, AZ, Arlington ISD, Arlington, TX, Texas Education Agency, North Carolina Department of Public Instruction, the National Science Foundation, the Center for Urban Science Education Reform, and the Brookings Institution.

Reviewer of papers submitted to *Journal of Geophysical Research, Geophysical Research Letters, Planetary and Space Science, Annales Geophysicae*, *Journal of Atmospheric and Solar-Terrestrial Physics*, *Advances in Space Research, Space Science Reviews, Space Weather, The American Journal of Physics, Astronomy Education Review, The Physical Review Special Topics: Physics Education Research* and several refereed conference proceedings and AGU monographs.

Reviewer of proposals to NSF, NASA, DOE, The Research Corporation, Howard Hughes Medical Institute.

Museum Exhibits:

Consultant and local point of contact for *Electric Space*: *The Plasma Universe* (750 sqft.), opened April, 1994 at the Maryland Science Center, Baltimore MD; toured for 4 years.

Co-Designer, *Electric Space*: *Bolts, Volts, and Jolts from the Sun* (3800 sqft.), opened August 1996 at the NOAA Visitor Center, Silver Spring, MD; toured science museums for 5 years.

Grant History:

PI on NASA grant "Global multipoint studies of substorm initiation and expansion", 1991-1994, $185K.

PI on contract from Johns Hopkins University Applied Physics Lab "Substorm studies with AMPTE/CCE data", 1992, $20K.

PI on NASA grant "Studies of westward electrojets and field-aligned currents in the magnetosphere during substorms - Implications for magnetic field models", 1992-1996, $120K.

Co-PI on NASA grant "Nuclear electric propulsion space test program environmental impact working group" (R. Sagdeev PI), 1993, $138K.

PI on NSF grant subcontract from the Space Science Institute "Electric Space: Exploring the plasma universe", 1993-1996, $71K.

PI on NASA grant "Precollege education workshop for space scientists", 1993-1996, $48K.

PI on NASA grant "Detailed quantitative comparison between global MHD models and observations", 1996-1999, $90K.

PI on NSF grant "Precision studies of the sequence of events during substorms", 1996-1999, $117K.
PI (at the APS) on NSF grant "Teacher Scientist Alliance Institutes", 1996-1999, $198K.PI on NASA grant "Data assimilative analysis of GGS data set using global MHD models" 1997-1999, $60K.
Co-PI on NSF grant "Science Connections" (G. Consuegra PI, Montgomery County Public Schools, MD, Local Systemic Change for Middle School science education reform), 1997-2002, $1.4 million; PI on subcontract from Montgomery County Public Schools "Science Connections", 1997-2002, $78K.
Co-PI on NASA grant "K-12 Education workshop for scientists and Engineers" (P. Dusenbery PI, Space Science Institute, Boulder CO) 1998-2001, $340K; PI on subcontract from Space Science Institute, 1998-2001, $63K.
PI on NASA grant "Science Education Instructional Materials for ISTP/Solarmax", 1997-2000, $169K.
PI on NASA grant "Data assimilative analysis of GGS data set using global MHD models" 1999-2000, $20K.
PI on subcontract from Boston University NSF grant "Coordination of Integrated Space Weather Modeling", 2000-2002, $50K.
PI on NASA grant "Connecting Sun City with Sun-Earth Connections" 2001-2004, $672K.
PI on NASA grant "Studies of solar wind-magnetosphere coupling through detailed comparison of observations and results of global MHD simulations" 2001-2004, $276K.
PI on subcontract for Howard University on NOAA grant, Readiness And Development of Academics and Research (RADAR): Talent for weather and space technologies, 2002-2005, $525K.
Co-I on NSF grant "A Conference on the Introductory Calculus-Based Physics Course", 2002, $67K.
Co-PI on NSF Science and Technology Center, the Center for Integrated Space weather Modeling (CISM), Boston University, $40 million, August 2002 – July 2011; PI on subcontract from Boston University, $2.5 million (Co-Director for Diversity).
PI on NASA grant "Sun City and Sun-Earth Connections: Using space science and educational outreach to recruit the next generation of scientists" 2004, $275K.
PI on NSF grant "Pilot Project for Research in Visualization for Geoscience Education", 2006-2009, $148K.
Co-PI on NSF grant "Robert Noyce Scholarship Program for Science and Mathematics Teachers", $749K, 2008-2013.
PI on NSF grant "Arlington Academy for Community College Excelling Science Students (AACCESS)", 2009-2014, $591K.
PI on NSF grant "ARRA: Solar wind energy transfer to geospace during periods with large transverse IMF", 2009-2013, $403K.
Co-PI on NSF grant "AURAS: Arlington undergraduate research-based achievement for STEM", 2009-2014, $1.9 million.
PI on NASA grant "Solar wind-magnetosphere coupling during periods with large IMF", 2009-2014, $340K.
Co-PI on grant "UTeach Arlington", $1.4 million, 2010-2015.
Co-PI on NSF grant "Robert Noyce Scholarship Program for Science and Mathematics Teachers", $1.45 million, 2010-2015.
Co-PI on NSF grant "Preparing Science and Mathematics Teachers at the University of Texas at Arlington", $800,000, 2015-2019.
PI "The Role of Solar Wind Fluctuations in Solar Wind-Geospace Coupling", $503K, NASA, 2015-2018.

Thesis advisor: Past graduate students
Roberto Arceo, M.S., 2003, UTEP; **Elia Benitez-Marquez**, M.S., 2002, UTEP; **John Hernandez**, M.S., 2005, UTEP; **Plamen Krastev**, M.S., 2003, UTEP; **Alejandro Lugo-Solis,** M.S., 2003, UTEP; **Ismael Diaz**, M.S., 2007, Florida Tech; **Jorge Landivar**, M.S., 2007, Florida Tech; **Salvador Hernandez**, Ph.D., 2007, Florida Tech; **Sandra Brogl**, Ph.D., 2008, Florida Tech; **Fajer Jaafari**, Ph.D., 2009, UT Arlington; **Elizabeth Mitchell,** Ph.D., 2010, UT Arlington; **Ximena Cid**, Ph.D., 2011, UT Arlington; **Robert Bruntz**, Ph.D., 2012, UT Arlington; **Shree Bhattarai**, Ph.D., 2013, UT Arlington; **Kevin Pham** Ph.D., 2014, UT Arlington; **Alfonso Hinojosa** Ph.D., 2015, UT Arlington.

Thesis advisor: Current UT Arlington graduate students
Richard Bonde, 6th year graduate student, Hector Carranza, 2nd year graduate student, **Michael Greene**, 5th year graduate student

Post Doctoral Advisor for:
Robert Bruntz (now at JHU/APL), **Kevin Pham** (currently a Post Doc at WVU)

Books
Storms from the Sun, Michael J. Carlowicz and Ramon E. Lopez, Joseph Henry Press, Washington DC, May 2002.

Publications in Refereed Journals and Books (*H-index* = 33, 4574 total citations as of 7/20/17) https://scholar.google.com/citations?user=O3vi3bsAAAAJ&hl=en

1. Freeman, J. W. and R. E. Lopez, The cold solar wind, *J. Geophys. Res.*, *90*, 9885-9887, 1985.

2. Lopez, R. E. and J. W. Freeman, Solar wind proton temperature-velocity relationship, *J. Geophys. Res.*, *91*, 1701-1705, 1986.

3. Lopez, R. E., J. W. Freeman, and E. C. Roelof, The relationship between proton temperature and momentum flux density in the solar wind, *Geophys. Res. Lett.*, *13*, 640-643, 1986.

4. Lopez, R. E., M. J. Engebretson, R. W. McEntire, A. T. Y. Lui, L. J. Zanetti, T. A. Potemra, and S. M.Krimigis, The response of energetic particles to nightside magnetic pulsations as seen by AMPTE/CCE, *Adv. Space Res.*, *6*, No. 3, 235-239, 1986.

5. Takahashi, K., L. J. Zanetti, R. E. Lopez, R. W. McEntire, T. A. Potemra, and K. Yumoto, Disruption of the magnetotail current sheet observed by AMPTE/CCE, *Geophys. Res. Lett.*, *14*, 1019-1022, 1987.

6. Lopez, R. E., Secular invariance in solar wind proton temperature relationships, *J. Geophys. Res*., *92*, 11189-11194, 1987.

7. Sibeck, D. G., R. W. McEntire, A. T. Y. Lui, R. E. Lopez, S. M. Krimigis, R. B. Decker, L. J. Zanetti, and T. A. Potemra, Energetic magnetospheric ions at the dayside magnetopause: Leakage or merging?, *J. Geophys. Res.*, *92*, 12097-12114, 1987.

8. Sibeck, D. G., R. W. McEntire, A. T. Y. Lui, R. E. Lopez, and S. M. Krimigis, Magnetic field drift-shell splitting: Cause of unusual dayside particle pitch angle distributions during storms and substorms, *J. Geophys. Res.*, *92*, 13485-13497, 1987.

9. Takahashi, K., R. E. Lopez, R. W. McEntire, L. J. Zanetti, L. M. Kistler, and F. M. Ipavich, An eastward-propagating compressional Pc5 wave observed by AMPTE/CCE in the postmidnight sector, *J. Geophys. Res.*, *92*, 13472-13484, 1987.

10. Lopez, R. E., A. T. Y. Lui, D. G. Sibeck, R. W. McEntire, L. J. Zanetti, T. A. Potemra, and S. M. Krimigis, The longitudinal and radial distribution of magnetic reconfigurations in the near-earth magnetotail: An AMPTE/CCE statistical study, *J. Geophys. Res.*, *93,* 997-1001, 1988.

11. Lui, A. T. Y., R. E. Lopez, S. M. Krimigis, R. W. McEntire, L. J. Zanetti, and T. A. Potemra, A case study of magnetotail current sheet disruption and diversion, *Geophys. Res. Lett.*, *15*, 721-724, 1988.

12. Takahashi, K., S. Kokobun, T. Sakuri,R. W. McEntire, T. A. Potemra, and R. E. Lopez, AMPTE/CCE observations of substorm-associated standing Alfvén waves in the midnight sector, *Geophys. Res. Lett.*, *15*, 1287-1290, 1988.

13. Lopez, R. E., D. G. Sibeck, A. T. Y. Lui, K. Takahashi, R. W. McEntire, T. A. Potemra, and D. Klumpar, Substorm variations in the magnitude of the magnetic field, *J. Geophys. Res.*, *93*, 14444-14452, 1988.

14. Lopez, R. E., D. N. Baker, A. T. Y. Lui, D. G. Sibeck, R. D. Belian, R. W. McEntire, T. A. Potemra, and S. M. Krimigis, The radial and longitudinal propagation characteristics of substorm injections, *Adv. Space Res.*, *9*, (9)91-(9)95, 1988.

15. Tu, C.-Y., J. W. Freeman, and R. E. Lopez, The proton temperature and the total hourly variance of the magnetic field components in different solar wind speed regions, *Solar Physics*, *119*, 197-206, 1988.

16. Sibeck, D. G., W. Baumjohann, R. E. Lopez, Solar wind dynamic pressure variations and transient magnetospheric signatures, *Geophys. Res. Lett.*, *16*, 13-16, 1989.

17. Sibeck, D. G., W. Baumjohann, R. C. Elphic, D. H. Fairfield, J. F. Fennell, W. B. Gail, L. J. Lanzerotti, R. E. Lopez, H. Lühr, A. T. Y. Lui, C. G. Maclennan, R. W. McEntire, T. A. Potemra, T. J. Rosenberg, and K. Takahashi, The magnetospheric response to 8-minute period strong-amplitude upstream pressure variations, *J. Geophys. Res.*, *94*, 2505-2519, 1989.

18. Sibeck, D. G., W. Baumjohann, and R. E. Lopez, Reply, 1200-1202, *Geophys. Res. Lett.*, *16*, 1989.

19. Lopez, R. E., A. T. Y. Lui, D. G. Sibeck, K. Takahashi, R. W. McEntire, L. J. Zanetti, and S. M. Krimigis, On the relationship between the energetic particle morphology and the change in the magnetic field magnitude during substorms, *J. Geophys. Res.*, *94*, 17105-17119, 1989.

20. Lopez, R. E., D. G. Sibeck, R. W. McEntire, and S. M. Krimigis, The energetic ion substorm injection boundary, *J. Geophys. Res.*, *94*, 109-117, 1990.

21. Lopez, R. E., A. T. Y. Lui, R. W. McEntire, T. A. Potemra, and S. M. Krimigis, A statistical study of magnetic field magnitude changes during substorms in the near-earth tail, *Adv. Space Res.*, *10*, Supplement, (S)37-(S)41, 1990.

22. Bering, E. A., III, L. J. Lanzerotti, J. R. Benbrook, Z.-M. Lin, C. G. Maclennan, A. Wolfe, R. E. Lopez, and E. Friis-Christensen, Solar wind properties during high-latitude impulsive perturbation events, *Geophys. Res. Lett.*, *17*, 579-582, 1990.

23. Lopez, R. E., D. N. Baker, R. D. Belian, R. W. McEntire, and T. A. Potemra, A possible case of a radially antisunward propagating local substorm onset in the near-Earth Magnetotail, *Planet. Space Sci.*, *38*,771-784, 1990.

24. Lopez, R. E. and A. T. Y. Lui, A multi-satellite case study of the expansion of a substorm current wedge in the near-earth magnetotail, *J. Geophys. Res.*, *85*, 8009-8017, 1990.

25. Nagai, T., K. Takahashi, T. A. Potemra, R. E. Lopez, R. W. McEntire, and D. Klumpar, The structure of the Birkeland current system in the post-midnight plasma sheet, *Geophys. Res. Lett.*, *17*, 1057-1060, 1990.

26. Lopez, R. E., The position of the magnetotail neutral sheet in the near-Earth region, *Geophys. Res. Lett.*, *17*, 1617-1620, 1990.

27. Lopez, R. E., H. Lühr, B. J. Anderson, P. T. Newell, and R. W. McEntire, Multipoint observations of a small substorm, *J. Geophys. Res.*, *95*, 18897-18912, 1990.

28. Lopez, R. E., Magnetospheric Substorms, *Johns Hopkins APL Tech. Dig.*, *11*, nos. 3 and 4, 264-271, 1990.

29. Erlandson, R. E., D. G. Sibeck, R. E. Lopez, L. J. Zanetti, and T. A. Potemra, Observations of solar wind pressure initiated fast mode waves at geostationary orbit and in the polar cap, *J. Atmos. and Terr. Physics*, *53*, 231-239, 1991.

30. Sibeck, D. G., R. E. Lopez and E. C. Roelof, Solar wind control of magnetopause shape, location, and motion, *J. Geophys. Res.*, *96*, 5489-5495, 1991.

31. Lopez, R. E., H. Spence, and C.-I. Meng, DMSP F7 observations of a substorm field-aligned current, *J. Geophys. Res.*, *96*, 19409-19415, 1991.

32. Lopez, R. E., H. Spence, and C.-I. Meng, Simultaneous observation of the westward electrojet and the cross-tail current during substorms, in *Magnetospheric Substorms*, AGU monograph, edited by T. Iijima, T. A. Potemra, and J. R. Kan, 123-130, 1991.

33. Pulkkinen, T. I., D. N. Baker, D. H. Fairfield, R. J. Pellinen, J. S. Murphree, R. D. Elphinstone, R. L. McPherron, J. F. Fennel, R. E. Lopez, and T. Nagai, Modeling the growth phase of a substorm using the Tsyganenko model and multi-spacecraft observations: CDAW-9, *Geophys. Res. Lett.*, *18*, 1963-1966, 1991.

34. Lui, A. T. Y., R. E. Lopez, B. J. Anderson, K. Takahashi, L. J. Zanetti, R. W. McEntire, T. A. Potemra, D. M. Klumpar, E. M. Greene, and R. Strangeway, Current disruptions in the near-Earth neutral sheet region, *J. Geophys. Res.*, *97*, 1461-1480, 1992.

35. Lopez, R. E., and T. von Rosenvinge, A statistical relationship between the geosynchronous magnetic field and substorm electrojet magnitude, *J. Geophys. Res.*, *98*, 3851-3857, 1993.

36. Taktakishvili, A. L., L. M. Zelenyi, E. T. Sarris, Lopez, R. E., and D. V. Sarafopoulous, Temporal dispersion structures of proton and electron bursts in the Earth's magnetotail, *Planet. Space Sci.*, *41*, no. 6, 461-467, 1993.

37. Lopez, R. E., H. E. Spence, and C.-I. Meng, Substorm aurorae and their connection to the inner magnetosphere, *J. Geomag. Geoelec.*, *44*, 1251-1260, 1992.

38. Koskinen, H. E. J., R. E. Lopez, R. J. Pellinen, T. I. Pulkkinen, D. N. Baker, and T. Bosinger, Pseudobreakup and substorm growth phase in the ionosphere and magnetosphere, *J. Geophys. Res.*, *97*, 5801-5813, 1993.

39. Pulkkinen,T. I., D. N. Baker, R. J. Pellinen, J. Büchner, H. E. J. Koskinen, R. E. Lopez, R. L. Dyson, and L. A. Frank, Particle scattering and current sheet stability in the geomagnetic tail during substorm growth phase, *J. Geophys. Res.*, *97*, 19283-19297, 1992.

40. Burkhart, G. R., R. E. Lopez, P. B. Dusenbery, and T. W. Speiser, Observational support for the current sheet disruption catastrophe model of substorm current disruption, *Geophys. Res. Lett.*, *16*, 1635-1638, 1992.

41. Sibeck, D. G., R. E. Lopez, and E. C. Roelof, Reply, *J. Geophys. Res.*, *97*, 10879-10882, 1992.

42. Lopez, R. E., H. E. J. Koskinen, T. I. Pulkkinen, T. Bösinger, T. A. Potemra, and R. W. McEntire, Simultaneous observation of the poleward expansion of substorm electrojet activity and the tailward expansion of current sheet disruption in the near-Earth magnetotail, *J. Geophys. Res.*, *98*, 9285-9295, 1993.

43. Lopez, R. E., On the location of the substorm initiation region, *Adv. Space Res.*, *13*, (4)189- (4)198, 1993.

44. Baker, D. N., T. I. Pulkkinen, R. L. McPherron, J. D. Craven, L. A. Frank, R. D. Elphinstone, J. S. Murphree, J. F. Fennel, R. E. Lopez, and T. Nagai, CDAW 9 analysis of magnetospheric events on 3 May 1986: Event C, *J. Geophys. Res.*, *98*, 3815-3834, 1993.

45. Burkhart, G. R., P. B. Dusenbery, T. W. Speiser, and R. E. Lopez, One-D simulation studies of current sheet catastrophe; 1. Comparison to observations, 21373-21390, *J. Geophys. Res.*, 1993.

46. Ohtani, S., B. J. Anderson, D. G. Sibeck, P. T. Newell, K. Takahashi, L. J. Zanetti, T. A. Potemra, R. E. Lopez, V. Angelopoulos, R. Nakamura, D. M. Klumpar, and C. T. Russell, A multisatellite study of a pseudosubstorm onset in the near-Earth magnetotail, *J. Geophys. Res.*, *98*, 19355-19367, 1993.

47. Lopez, R. E., and D. N. Baker, Evidence for particle acceleration during magnetospheric substorms, *Ap. J. S.*, *90*, no. 2, 531-539, 1994.

48. Lopez, R. E., C. C. Goodrich, G. D. Reeves, R. D. Belian, and A. Taktakishvili, Mid-tail plasma flows and the relationship to near-Earth substorm activity: A case study, *J. Geophys. Res.*, *99*, 23561-23569, 1994.

49. Taktakishvili, A., R. E. Lopez, and C. C. Goodrich, Energization of Ions in Near-Earth Current Sheet Disruption, *Geophys. Res. Lett.*, *22*, 627-630, 1995.

50. Lopez, R. E., An interdisciplinary undergraduate space physics course, *Journal of College Science Teaching*, 263-269, Feb, 1996.

51. Lopez, R. E., C. C. Goodrich, M. Wiltberger, and J. G. Lyon, Simulation of the March 9, 1995 Substorm and Initial Comparison to Data, *Geospace Mass and Energy Flow: Results From the International Solar-Terrestrial Physics Program*, AGU Monograph 104, edited by J. L. Horowitz, D. L. Gallagher, and W. K. Peterson, 237-245, 1998.

52. Pullkinen, T., D. N. Baker, M. Wiltberger, C. C. Goodrich, R. E. Lopez, and J. G. Lyon, Pseudobreakup and substorm onset: Observations and MHD simulations compared, *J. Geophys. Res*.,*103*, 14847, 1998.

53. Lyon, J., R. E. Lopez, C. Goodrich, M. Wiltberger, and K. Papadopoulos, Simulation of the March 9, 1995 Substorm: Auroral Brightening and the Onset of Lobe Reconnection, *Geophys. Res. Lett.*, *25*, 3039-3042, 1998.

54. Goodrich, C. C., M. Wiltberger, R. E. Lopez, and K. Papadopoulos, and J. G. Lyon, An Overview of the Impact of the January 10-11 Magnetic Cloud on the Magnetosphere via Global MHD Simulation, *Geophys. Res. Lett.*, *25*, 2537-2540, 1998.

55. Papadopoulos, K., C. C. Goodrich, M. Wiltberger, R. E. Lopez, and J. G. Lyon, Physics of substorms as revealed by the ISTP, *Phys. Chem. Earth (C)*, vol. 24, No. 1-3, 189-202, 1999.

56. Lopez, R. E., M. Wiltberger, J. G. Lyon, C. C. Goodrich, and K. Papadopoulos (1999), MHD simulations of the response of high-latitude potential patterns and polar cap boundaries to sudden southward turnings of the interplanetary magnetic field, *Geophys. Res. Lett.*, *26*, 967-970.

57. Lopez, R. E., The current sheet disruption model for substorm expansion initiation: Background, arguments, and relationship to the global evolution of the substorm, *Adv. Space Res.*, Vol. 25, No. 7/8, 1667-1677, 2000.

58. Lopez, R. E., C. C. Goodrich, M. Wiltberger, and J. G. Lyon, Solar wind-Magnetosphere Energy Coupling under Extreme Interplanetary Conditions: MHD simulations, *J. Atmos. Sol. Terr. Phys., 62*, 865-874, 2000.

59. Lopez, R. E., Science Education Reform and Roles for Scientists, Engineers, and their Organizations, in *Proceedings of the Conference on K-12 Outreach from University Science Departments*, edited by David G. Hasse and Brenda S. Wojnowski, The Science House, North Carolina State University, 99-103, 2000.

60. Lopez, R. E., J. G. Lyon, M. Wiltberger, C. C. Goodrich, Comparison of global MHD simulation results with actual storm and substorm events, *Adv. Space Res.*, *28*, no 12, 1701-1706, 2001.

61. Lopez, R. E., and T. Schultz, Two revolutions in K-8 science education, *Physics Today*, September, 44-49, 2001.

62. Taktakishvili, A., R. E. Lopez, L. Zelenyi, A. Greco, G. Zimbardo, and P. Veltri, Ion dynamics in the magnetotail current sheet: Opposite effects of magnetic turbulence and normal component, *J. Atmos. Sol. Terr. Phys.,* 65, 315-322, 2003.

63. Lopez, R. E., E. Benitez-Marquez, M. Wiltberger, J. G. Lyon, and R. Figueroa, Evidence for Quasi-Steady Near-Earth Reconnection During Magnetic Storms Using Global MHD Simulation Results and Magnetotail Magnetic Field Observations, *Adv. Space Res., 31*, 1167-1176, 2003, doi:10.1016/S0273-1177(02)00931-6.

64. Wiltberger, M., R. E. Lopez, and J. G. Lyon, Magnetopause Erosion: A global view from MHD simulations, *J. Geophys. Res*., 108 (A6), 1235, doi:10.1029/2002JA009564, 2003.

65. Taktakishvili, A., A. Greco, G. Zimbardo, P. Veltri, G. Cimino, L. Zelenyi, and R. E. Lopez, The penetration of ions into the magnetosphere through the magnetopause turbulent current sheet, *Annales Geophysicae*, 21, 1965-1973, 2003.

66. Greco, A., A. L. Taktakishvili, G. Zimbardo, P. Veltri, G. Cimino, L. M. Zelenyi, and R. E. Lopez, Ion transport and Lévy random walk across the magnetopause in the presence of magnetic turbulence, *J. Geophys. Res.,* 108(A11), 1395, doi:10.1029/2003JA010087, 2003.

67. Decadal Survey of Solar and Space Physics, Panel report on Education and Society, R. E. Lopez, Chair, National Research Council, 2004.

68. Lopez, R. E., M. Wiltberger, J. G. Lyon, Coupling between the solar wind and the magnetosphere during strong driving: MHD simulations, IEEE Transactions on Plasma Science, *32*(4), 1439, ISSN: 0093-3813, 2004.

69. Lopez, R. E., Space Science Education: The Emergence of a Professional Community, in *NASA Office of Space Science Education and Public Outreach Conference*, Eds. C. Narasimhan, B. Beck-Winchatz, I. Hawkins and C. Runyon, Astronomical Society of the Pacific, 213-218, Vol. CS-319, 2004.

70. Lopez, R. E., M. Wiltberger, S. Hernandez, and J. G. Lyon, Solar wind density control of energy transfer to the magnetosphere, *Geophys. Res. Lett.*, 31, L08804, doi:10.1029/ 2003GL018780, 2004.

71. Lopez, R. E., D. Baker, and J. Allen, Sun Unleashes Halloween Storm, *EOS, 85*, pages 105 and 108, March 16, 2004.

72. *Space Science Education, Adv. Space Res., Vol 34, no.10*, edited by R. E. Lopez, and C. A. Morrow, 2004.

73. Lopez , R. E., and C. A. Morrow, Preface, *Adv. Space Res., Vol 34, no.10*, p 2109, 2004.

74. Lopez, R. E., and K. Hamed (2004), Student Interpretations of 2-D and 3-D Renderings of the Substorm Current Wedge, *J. Atmos. Sol. Terr. Phys*., *66(15-16)*, 1509-1517. doi:10.1016/j.jastp.2004.03.03

75. Hernandez, S., R. E. Lopez, and M. J. Wiltberger (2005), Ionospheric joule heating during magnetic storms: MHD simulations, *Adv. Space Res*., doi: 10.1016/j.asr.2005.05.132.

76. Lugo-Solis, A, R. E. Lopez, J. C. Ingraham and R. Friedel, Energetic electron bursts at high magnetic latitudes: Correlation with magnetospheric activity, *Adv. Space Res.,* doi:10.1016/j.asr.2005.07.06*,* 2005.

77. Krastev, P., R. E. Lopez, M. Wiltberger, and J.G. Lyon, Adiabatic convection in MHD simulations, *Adv. Space Res*., doi: 10.1016/j.asr.2005.07.061, 2005.

78. Bruntz, R., R. E. Lopez, N. Turner, and M. J. Wiltberger, Ring current development in MHD simulations, *Adv. Space Res*., doi: 10.1016/j.asr.2005.07.082, 2005.

79. Arceo, R., R. E. Lopez, M. Wiltberger, and J.G. Lyon, Polar cap potential during magnetic storms: MHD simulations, *Adv. Space Res*., doi: 10.1016/j.asr.2005.07.063, 2005.

80. Wiltberger, M., R. E. Lopez, and J.G. Lyon, Results from Magnetospheric Gedanken Experiments Using the LFM, *Adv. Space Res*., doi:10.1016/j.asr.2004.11.043, 2005.

81. Savin, S., L. Zelenyi, E. Amata, J. Buechner, J. Blecki, A. Greco, S. Klimov, R. E. Lopez, B. Nikutowskic, E. Panova, J. Pickettg, J.L. Rauchh, S. Romanova, P. Song, A. Skalsky, V. Smirnova, A. Taktakishvili, P. Veltri, G. Zimbardo, Magnetosheath interaction with high latitude magnetopause: Dynamic flow chaotization, *Planetary and Space Science*, *53*, 133–140, doi:10.1016/j.pss.2004.09.037, 2005.

82. Lopez, R. E., S. Hernandez, M. Wiltberger, J Lyon, and, C. Goodrich (2006), Initial results from the Simulation of the Halloween 2003 storms, *Advances in Geosciences*, Volume 2: Solar Terrestrial (ST), 191-200.

83. Dwyer, J. R., L. M. Coleman, R. Lopez, Z. Saleh, D. Concha, M. Brown, and H. K. Rassoul (2006), Runaway breakdown in the Jovian atmospheres, *Geophys. Res. Lett.*, *33*, L22813, doi:10.1029/2006GL027633.

84. Lopez, R. E., S. Hernandez, M. Wiltberger, C.-L. Huang, E. L. Kepko, H. Spence, C. C. Goodrich, and J. G. Lyon (2007), Predicting magnetopause crossings at geosynchronous orbit during the Halloween storms, *Space Weather*, *5*, S01005, doi:10.1029/2006SW000222.

85. Taktakishvili, A., G. Zimbardo, E. Amata, S. Savin, A. Greco, P. Veltri, and R. E. Lopez (2007), Ion escape from the high latitude magnetopause: analysis of oxygen and proton dynamics in the presence of magnetic turbulence, *Ann. Geophys*., *25*, 1877–1885, doi:10.5194/angeo-25-1877-2007.

86. Lopez, R. E. (2008), Space physics and the teaching undergraduate electromagnetism, *Adv. Space Res., 42*, pp. 1859-1863, doi:10.1016/j.asr.2007.11.010

87. Lopez, R. E. and N. A. Gross (2008), Active Learning for Advanced Students: The Center for Integrated Space Weather Modeling Graduate Summer School, *Adv. Space Res., 42*, pp. 1864-1868, doi:10.1016/j.asr.2007.06.056.

88. Lopez, R. E., S. Hernandez, K. Hallman, R. Valenzuela, J. Seiler, P. Anderson, and M. Hairston (2008), Field-Aligned Currents in the Polar Cap during Saturation of the Polar Cap Potential, *J. Atmos. Sol. Terr. Phys., 70*, 555-563, doi:10.1016/j.jastp.2007.08.072.

89. Burns, A. G., W. Wang, M. Wiltberger, S. C. Solomon, H. Spence, T. L. Killeen, R. E. Lopez, and J. E. Landivar (2008), An event study to provide validation of TING and CMIT geomagnetic middle-latitude electron densities at the F_2 peak, *J. Geophys. Res.*, *113*, A05310, doi:10.1029/2007JA012931.

90. Lopez, R. E., J. G. Lyon, E. Mitchell, R. Bruntz, V. G. Merkin, S. Brogl, F. Toffoletto, and M. Wiltberger (2009), Why doesn't the ring current injection rate saturate?, *J. Geophys. Res.*, *114*, A02204, doi:10.1029/2008JA013141.

91. Cid, X., R. E. Lopez, and S. Lazarus (2009), Issues Regarding Student Interpretation of Color as a Third Dimension on Graphical Representations, *J. Geosci. Ed.,* v. 57, n. 5, November, p. 372-378, doi:10.5408/1.3559675.

92. Gross, N. A. and R. E. Lopez (2009), Advanced Undergraduate and Early Graduate Physics Students' Misconception About Solar Wind Flow: Evidence of Students' Difficulties in Distinguishing Paradigms, *Astronomy Education Review, 8,* p. 010102, doi:10.3847/AER2009013.

93. Brogl, S., R. E. Lopez, M. Wiltberger, and H. K. Rassoul (2009), Studies of Magnetotail Dynamics and Energy Evolution During Substorms Using MHD Simulations, *Ann. Geophys., 27*, 1717-1727, doi: 10.5194/angeo-27-1717-2009.

94. Lopez, R. E., R. Bruntz, E. J. Mitchell, M. Wiltberger, J. G. Lyon, and V. G. Merkin (2010), The role of magnetosheath force balance in regulating the dayside reconnection potential, *J. Geophys. Res.*, *115*, A12216, doi: 10.1029/2009JA014597.

95. Cid, X., and R. E. Lopez (2010), The Impact of Stereo Display on Student Understanding of Phases of the Moon, *Astronomy Education Review*, *9*, 010105, doi:10.3847/AER2009044

96. Mitchell, E. J., Lopez, R. E., R. Bruntz, M. Wiltberger, J. G. Lyon, R. C. Allen, S. J. Cockrell, and P. L. Whittlesey (2010), Saturation of Transpolar Potential for Large Y-component Interplanetary Magnetic Field, *J. Geophys. Res.,* 115, A06201, doi:10.1029/2009JA015119.

97. Deng, Y., Y. Huang, J. Lei, A. J. Ridley, R. Lopez, and J. Thayer (2011), Energy input into the upper atmosphere associated with high-speed solar wind streams in 2005, *J. Geophys. Res., 116*, A05303, doi:10.1029/2010JA016201.

98. Huang, Y., Y. Deng, J. Lei, A. Ridley, R. E. Lopez, R. C. Allen, and B. M. Butler (2012), Comparison of Joule heating associated with high-speed solar wind between different models and observations, *J. Atmos. Sol. Terr. Phys.*, doi:10.1016/j.jastp.2011.05.013.

99. Lopez, R. E., V. G. Merkin, and J. G. Lyon (2011), The role of the bow shock in solar wind-magnetosphere coupling, *Ann. Geophys.*, *29,* 1129–1135, doi:10.5194/angeo-29-1129-2011.

100. Bruntz, R., R. E. Lopez, S. Bhattarai, K. Pham, M. Wiltberger, J. G. Lyon, Y. Deng, and Y. Huang (2012), Investigating the Viscous Interaction and its Role in Generating the Ionospheric Potential During the Whole Heliospheric Interval, *J. Atmos. Sol. Terr. Phys.,* doi:10.1016/j.jastp.2012.03.016.

101. Bruntz, R., R. E. Lopez, M. Wiltberger, J. G. Lyon (2012), Investigation of the viscous potential using an MHD simulation, *J. Geophys. Res., 117,* A03214, doi:10.1029/2011JA017022.

102. Lopez, R. E., S. K. Bhattarai, R. Bruntz, K. Pham, M. Wiltberger, J. G. Lyon, Y. Deng, and Y. Huang (2012), The Role of Dayside Merging in Generating the Ionospheric Potential During the Whole Heliospheric Interval, *J. Atmos. Sol. Terr. Phys.,* 10.1016/j.jastp.2012.03.001.

103. Bhattarai, S. K., R. E. Lopez, R. Bruntz, J. G. Lyon, and M. Wiltberger (2012), Simulation of the polar cap potential during periods with northward interplanetary magnetic field, *J. Geophys. Res.*, *117*, A04219, doi: 10.1029/2011JA017143.

104. Wiltberger, M., L. Qain, C.-L. Huang, W. Wang, R. E. Lopez, A. G. Burns, S. C. Solomon, Y. Deng, Y. Huang (2012), CMIT study of CR2060 and 2068 comparing L1 & and MAS solar wind drivers, *J. Atmos. Sol. Terr. Phys.*, doi:10.1016/j.jastp.2012.01.005.

105. Mitchell, E. J., M.-C. H. Fok, R. E. Lopez, and J. G. Lyon (2013), Simulated ring current response during periods of dawn-dusk oriented interplanetary magnetic field (B_y), J. Geophys. Res. Space Physics, 118, doi:10.1002/jgra.50269.

106. 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*, doi:10.1002/jgra.50197.

107. Bhattarai, S. K., and R. E. Lopez (2013), Reduction of Viscous Potential for Northward Interplanetary Magnetic Field as seen in the LFM Simulation, *J. Geophys. Res. Space Physics, 118*, doi:10.1002/jgra.50368.

108. Peterson, L., J. Epperson, R. Lopez, K. Schug, and C. Tiernan (2013), "Experience with a Modified Emerging Scholars Program in High-Loss Mathematics and Chemistry Courses", proceedings of *First Year Engineering Experience Conference, August 2013*.

109. Lopez, R., E. (2014), A space physicist's perspective on energy transformations and some implications for teaching about energy conservation at all levels, in Chen, R. F., Eisenkraft, A., Fortus, F., Krajcik, J., Neumann, K., Nordine, J. C. & Scheff, A., in *Teaching and Learning of Energy in K-12 Education*. New York: Springer.

110. Lopez, R. E., Hale, G., and Cavallo, A. (2014), The Preparation of Physics Teachers and the Next Generation Science Standards in the United States, in *ICPE-EPEC 2013 Conference Proceedings,* Eds. Leoš Dvořák and Věra Koudelková, Charles University in Prague, MATFYZPRESS publisher, Prague, 2014 ISBN 978-80-7378-266-5, pp. 501-508.

111. Hale, G. R., Lopez, R. E., Cavallo, A. M. L., and Gonzalez, E. E. (2014), Increasing Physics Teacher Production by Replicating the UTeach Preparation Model and Awarding Noyce Scholarships, in *ICPE-EPEC 2013 Conference Proceedings,* Eds. Leoš Dvořák and Věra Koudelková, Charles University in Prague, MATFYZPRESS publisher, Prague, 2014 ISBN 978-80-7378-266-5, pp. 711-718.

112. Cavallo, A., Lopez, R., and Hale, G. (2014), Examining Factors that Influence High School Physics Students' Choice of Science as a Career, in *ICPE-EPEC 2013 Conference Proceedings,* Eds. Leoš Dvořák and Věra Koudelková, Charles University in Prague, MATFYZPRESS publisher, Prague, 2014 ISBN 978-80-7378-266-5, pp. 122-131.

113. Lopez, R. E., R. Bruntz, and K. Pham (2014), Linear separation of orthogonal merging component and viscous interactions in solar wind-geospace coupling, *J. Geophys. Res. Space Physics*, *119*, 7566–7576, doi: 10.1002/2014JA020153.

114. Lopez, R. E., Gonzalez, W. D., Vasyliūnas, V., Richardson, I. G., Cid, C., Echer, E., Reeves, G. D., and Brandt, P. C. (2015), Decrease in SYM-H during a storm main phase without evidence of a ring current injection. *Journal of Atmospheric and Solar-Terrestrial Physics*, *134*, 118-129, doi:10.1016/j.jastp.2015.09.016.

115. Němeček, Z., Šafránková, J., Lopez, R. E., Dušík, Š., Nouzák, L., Přech, L., Šimůnek, J., and Shue, J. H. (2015), Solar cycle variations of magnetopause locations. Adv. Space Res, doi: 10.1016/j.asr.2015.10.012

116. Pham, K. H., R. E. Lopez, and R. Bruntz (2016), The effect of a brief northward turning in IMF Bz on solar wind-magnetosphere coupling in a global MHD simulation, *J. Geophys. Res. Space Physics*, 121, 4291–4299, doi: 10.1002/2015JA021982.

117. Lopez, R. E. (2016), The integrated dayside merging rate is controlled primarily by the solar wind, J. Geophys. Res. Space Physics, 121, doi:10.1002/ 2016JA022556.

118. Clauer, C. R., Z. Xu, M. Maimaiti, J. M. Ruohoneimi, W. Scales, M. D. Hartinger, M. J. Nicolls, S. Kaeppler, F. D. Wilder, and R. E. Lopez (2016), Investigation of a rare event where the polar ionospheric reverse convection potential does not saturate during a period of extreme northward IMF solar wind driving, J. Geophys. Res. Space Physics, 121, 5422–5435, doi:10.1002/2016JA022557.

119. Wang, C., J. Y. Wang, R. E. Lopez, L. Q. Zhang, B. B. Tang, T. R. Sun, and H. Li (2016), Effects of the interplanetary magnetic field on the location of the open-closed field line boundary, J. Geophys. Res. Space Physics, 121, doi:10.1002/2016JA022784.

120. Lopez, R. E. (2017), The bow shock current system, in "Electric Currents in Geospace and Beyond", AGU Monograph, A. Keiling, O. Marghitu, and M. Wheatland, eds., in press.

121. Lopez, R. E., and W. D. Gonzalez (2017), Magnetospheric balance of solar wind dynamic pressure, Geophys. Res. Lett., 44, 2991–2999, doi:10.1002/2017GL072817.

122. Lopez. R. E., M. Greene, and X. Cid, Student response to the use of a flipped, active-engagement approach in classical mechanics for graduate and upper-level undergraduate physics students, submitted to Phys. Rev. Phys. Ed. Res., June 2017.

Unrefereed Publications:

1. Lopez, R. E., Early history of the British East Indies Company: A parallel to the commercialization of space at Space Station, Space Solar Power Review, 4, 307, 1984.

2. Lopez, R. E., Argon ion pollution of the magnetosphere, in Spacecraft Environmental Interactions Technology Conference, 685-692, NASA Conference Publication 2359, AFGL-TR-85-0018, 1985.

3. Freeman, J. W. and R. E. Lopez, Solar cycle variations, in Solar Wind - Magnetosphere Coupling, ed. Y. Kamide and J. A. Slavin, p. 179-190. Terra Scientific Publishing Company, Tokyo, 1986.

4. Lopez, R. E., Implications of multipoint substorm studies in the inner magnetotail, in *Plasma Astrophysics*, Proceedings of the Varenna-Abastumani Plasma Astrophysics Workshop, T. D. Guyenne, ed., 69-76, ESA SP-311, 1990.

5. Koskinen, H. E. J., T. I. Pulkkinen, R. J. Pellinen, T. Bosinger, D. N. Baker, and R. E. Lopez, Characteristics of Pseudobreakups, in *Proc. International Conference on Substorms*, ESA, SP-335, 111-116, 1992.

6. Lopez, R. E, On the relative importance of magnetospheric and ionospheric processes during substorm breakup and expansion: A case study, in *Proc. International Conference on Substorms*, ESA, SP-335, 425-428, 1992.

7. Lopez, R. E., Working Conference for Scientists and Engineers, *EOS*, *Trans. Amer. Geophys. Union*, vol. 73, no. 26, p. 276, June 30, 1992.

8. Lopez, R. E., Democracy demands science education, letter to *Physics Today*, 112, December, 1992.

9. Lopez, R. E., Getting Scientists Involved in Science Education, Article written for National Academy of Sciences Op-Ed Service that appeared in 34 newspapers, Summer, 1992; also published in *Headline News, Science Views II*, pp. 27-29, edited by David Jarmul, National Academy Press, Washington, DC, 1993.

10. Lopez, R. E., M. J. Engebretson, and P. D. Dusenbery, Space Physicists and Education: Activities of the Space Physics and Aeronomy section of the American Geophysical Union, *Proc. 43rd IAF Congress*, IAF-92-0475, 1992.

11. Lopez, R. E., Partners in Space, published in Op-Ed section of *The Baltimore Sun*, Baltimore, Maryland, April 21, 1993.

12. Lopez, R. E., On the role of reconnection during substorms, *Proc. International Conference on Substorms-2*, edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Insitute, University of Alaska, 175-182, 1994.

13. Cattell, C., C. Roller, and R. Lopez, Multi-spacecraft observations of substorm onsets and precursor events, *Proc. International Conference on Substorms-2*, edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Insitute, University of Alaska, 247-254, 1994.

14. Lopez, R. E. and J. Tuomi, Student-centered inquiry, *Educational Leadership*, 78-79, May, 1995.

15. Lopez, R. E., The role of the physics department in the preparation of future pre-college teachers: A summary from the International Conference on Physics Education, in *The Changing role of Physics Departments in Modern Universities: Proceedings of the International Conference on Undergraduate Physics Education (part one: Presentations*), ed. J. Rigden, and E. Redish, AIP Conference Proceedings 399, American Institute of Physics, Woodbury, New York, 497-505, 1997.

16. Black, P., D. F. Holcomb, H. L. Jodl, L. Jossem, R. Lopez, F. Matar, J. S. Rigden, J. Smit, J. Stith, and Y. Ying., A call for change in undergraduate physics education, in *The Changing role of Physics Departments in Modern Universities: Proceedings of the International Conference on Undergraduate Physics Education (part one: Presentations),* ed. J. Rigden, and E. Redish, AIP Conference Proceedings 399, American Institute of Physics, Woodbury, New York, 1-7, 1997.

17. Lopez, R. E., Storms in Space, Article in Bob Ryan's 1998 Almanac, published Fall 1997 by Channel 4 WRC-TV and Giant Foods, Washington, DC.

18. Education and Outreach Supplement, *APS News*, January 1998, R. Lopez contributor and Editor.

19. Lopez, R., C. Goodrich, M. Wiltberger, K. Papadopoulos, and J. Lyon, Coupling between local and global activity during the substorm expansion phase: Results from MHD simulations and comparison to observations, in Substorms-4, edited by S. Kokobun and Y. Kamide, published by Terra Scientific Publishing Company and Kluwer Academic Publishers, 169-174, 1998.

20. Goodrich, C., M. Wiltberger, R. Lopez, K. Papadopoulos, and J. Lyon, MHD simulation of actual magnetospheric substorm events, in Substorms-4, edited by S. Kokobun and Y. Kamide, published by Terra Scientific Publishing Company and Kluwer Academic Publishers, 645-650, 1998.

21. Wiltberger, M., K. Papadopoulos, R. Lopez, C. Goodrich, and J. Lyon, Effects of northward turnings on the intiation of substorms in global MHD simulations, in Substorms-4, edited by S. Kokobun and Y. Kamide, published by Terra Scientific Publishing Company and Kluwer Academic Publishers, 287-290, 1998.

22. Lopez, R., C. Goodrich, M. Wiltberger, K. Papadopoulos, and J. Lyon, Substorm Onset and Evolution: Coupling Between Tail Regions in MHD Simulations, in *Physics of Space Plasmas*, *no. 15*, edited by T. Chang and J. R. Jaspere, MIT Center for Theoretical Geo/Cosmo Plasma Physics, Cambridge, MA, 227-232, 1998.

23. Lopez, R. E., Book review of Nearest Star: The surprising science of our Sun, in *Physics Today*, November, 2001.

24. Lopez, R., Promoting Diversity in Physics, Newsletter of the Forum on Education of the American Physical Society, Summer, 2001.

25. Lopez, R., Connecting Sun City with Sun-Earth Connections, Voyages in Education and Public Outreach, NASA Office of Space Science Newsletter, May. 2002.

26. Lopez R., From the Chair, column in the APS Forum on Education Newsletter, Summer 2005, Fall 2005, and Spring 2006 issues.

27. Lopez, R. E., Hale, G. R., and Cavallo, A. M. L., "Computational Models in the Next Generation Science Standards" EDULEARN 2015 Proceedings, ISBN: 978-84-606-8243-1.