

CURRICULUM VITAE OF GANG LU

High Altitude Observatory, National Center for Atmospheric Research
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EDUCATION

DEGREES

B.A., Physics, 1982, Zhejiang University, China
Ph.D., Space Physics, 1991, Rice University, Houston

THESIS TITLE

Auroral Electrodynamics from Simultaneous Measurements at High and Low Altitudes

POST-DEGREE APPOINTMENT

2006 – present Senior Scientist, High Altitude Observatory (HAO), National Center for Atmospheric Research (NCAR)
2014 Jan.-Oct. Interim Director, HAO, NCAR
2010-2013 Deputy Director, HAO, NCAR
2001 – 2006 Scientist III, HAO, NCAR
1997 – 2001 Scientist II, HAO, NCAR
1993 – 1997 Scientist I, HAO, NCAR
1992 – 1993 Postdoctoral Fellow, HAO, NCAR
1991 Postdoctoral Research Associate, Department of Space Physics and Astronomy, Rice University

PROFESSIONAL SERVICE

2015-2016 Chair, AGU-SPA Scarf Award Committee
2012-2015 Member, the Management Operations Working Group (MOWG) for the Geospace Sciences of NASA's Heliophysics Division
2015 Co-convener, CEDAR workshop session on "Energy input and partitioning in the ionosphere-thermosphere system, Seattle, Washington, June 22-25, 2015.
2015-2016 Member, ISSI Working Group on Field-Aligned Currents
2015 Member, ISSI Workshop on Earth's Magnetic Fields
2014 Invited attendee and member of Scientific Organization Committee, NSF Geospace EarthCude Workshop, August 13-15, 2014, New Jersey Institute of Technology.
2014 Co-convener, Session ST03: Space Weather and Seismic Events: Plasma-Neutral-Wave-Field Coupling, AOGS, July 28 – August 1, 2014, Sapporo, Japan.
2014 Invited attendee, Workshop to review NSF's AGS Goals and Objectives document, March 31 – April 1, 2014, Washington, DC.
2013 Member, proposal review panel for NSF Magnetospheric Physics program

2013 Member, Scientific Program Committee, The 3rd International Space Weather Conference, November 11-14, 2013, Guilin, China.

2013 Co-convener, Session ST09 Dynamical Processes in the High-Latitude Ionosphere, AOGS, June 24-28, 2013, Brisbane, Australia

2013 Co-convener, Session ST01 Sun-Earth System Response to Extreme Solar and Seismic Events and Space Weather Effect, AOGS, June 24-28, 2013, Brisbane, Australia

2010-2012 Member, the Atmosphere-Ionosphere-Magnetosphere (AIM) Panel for the NRC Decadal Survey

2012 Member, Proposal Review Panel for NASA Geospace SR&T Program

2011-2012 Volume Editor, Advances in Geosciences (AdGeo) of Asian Oceania Geosciences Society (AOGS)

2011 Member, Proposal Review Panel for NASA Geospace Program

2010-2011 Guest Editor, Special issue on "Atmospheric Coupling Processes in the Sun-Earth System" in Journal of Atmospheric and Solar-Terrestrial Physics

2010 Co-convener, Session ST05 on "Atmospheric Coupling Processes in the Sun-Earth System", AOGS 2010 Annual Meeting, Hyderabad, India, 5-9 July

2009-2010 Member, Local Organization Committee for the 12th Quadrennial Solar Terrestrial Physics (STP-12) Symposium to be held in Berlin, Germany, on July 12-16, 2010

2010 Member, Proposal Review Panel for NASA Geospace Program

2009-2010 Member, Working Group on "A statistical investigation into coupled magnetospheric-ionospheric dynamics via multi-scale, multi-instrument, data assimilation", International Space Science Institute, Bern, Switzerland

2009 Program Committee Member, International Substorm Workshop, Beijing, China, October 12-16

2009 Lead convener, IAGA Session III04 on New perspectives of the magnetosphere-ionosphere system from global models, synoptic observations, and data assimilation, Sopron, Hungary, August 23-30

2009 Co-convener, Session ST10 on "Atmospheric Coupling Processes in the Sun-Earth System", AOGS 2009 Annual Meeting, Singapore, 11-15 August

2009 Local organizer, CAWSES-II Kick-off workshop, Boulder, Colorado, April 15-17

2008-2009 Member, NCR Committee on Heliophysics Performance Assessment

2008 Member, NASA LWS-TR&T Proposal Review Panel

2007 Member, NASA Review Panel for Heliophysics Guest Investigator Program

2007 Chair of NCAR ARG Investigative Subcommittee

2006 Moderator for the "First Sun-to-Earth Connections Virtual Conference"

2006-2010 Scientific Secretary, Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)

2005 Co-Editor, Corotating Solar Wind Streams and Recurrent Geomagnetic Activity, AGU Monograph

2005 Member, NASA Living With a Star Proposal Review Panel

2005 Co-Convener, Chapman Conference on "Corotating Solar wind streams and Recurrent Geomagnetic Activity", February 7-12, 2005, Manaus, Brazil

2005 Coordinator, Special Sections on "Violent Sun-Earth Connection Events of October-November 2003", JGR-Space Physics and GRL

2004-2006 Aeronomy Secretary for the Space Physics and Aeronomy Section of American Geophysical Union

- 2004-2008 Co-leader, Working Group on Theme 3.3: Atmospheric Coupling Processes - Coupling by electrodynamics including ionospheric/magnetospheric processes of the Climate And Weather of the Sun-Earth System (CAWSES) international program
- 2004 Member, NASA SR&T Proposal Review Panel
- 2004 Main organizer of Session SP-9 on "Magnetosphere-Ionosphere-Thermosphere Coupling" at the First Asia Oceania Geosciences Society (AOGS) annual meeting, 5-9 July 2004, Singapore.
- 2004 Member, Scientific Program Committee of the 7th International Substorm, March 22-26, 2004, Lapland, Finland
- 2003-2006 Member, National Academy of Science Committee on Solar and Space Physics (CSSP)
- 2002-2005 Member, Geospace Environment Modeling (GEM) Science Steering Committee
- 2002-2006 Associate Editor, Journal of Geophysical Research - Space Physics
- 2002 Member, Science Program Committee of the 6th International Substorm, March 25-29, 2002, Seattle, Washington
- 2000 Member, NASA ITM Program Proposal Review Panel
- 2000 Convener, Session SPA5 (Electrodynamic Coupling of the Magnetosphere-Ionosphere-Thermosphere System), Western Pacific Geophysics Meeting, Tokyo, Japan
- 2000 Co-convener, Session S5 on "Solar Wind Effects on Ionospheric Convection", the First S-RAMP Conference, Sapporo, Japan
- 1999 - 2008 Scientific Discipline Representatives, Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)
- 1999 - 2002 Member, Auroral Plasma Physics Working Group, International Space Science Institute, Bern, Switzerland
- 1999 Co-convener, Session GA3.06 (Auroral Processes and Magnetosphere-Ionosphere-Thermosphere Coupling), IUGG meeting, Birmingham, England
- 1999 Co-chair, Session SA32C (Ionosphere-Magnetosphere Coupling at High Latitudes and Globally), Fall AGU, San Francisco
- 1997 Co-convener, Session 3.13 (Interhemispheric Comparisons of High-latitude Phenomena), IAGA, Uppsala, Sweden
- 1995 Member, NASA ITM Program Proposal Review Panel
- 1991 - Present Referee for Journal of Geophysical Research - Space Physics, Journal of Atmospheric and Solar-Terrestrial Physics, Geophysical Research Letters, Annales Geophysicae
- 1992 - Present Reviewer of NSF and NASA Research Proposals

MANAGEMENT ACTIVITIES

- 2015-present Member, NCAR Appointment Review Group (ARG)
- 2016 Chair, NCAR ARG Investigative Committee
- 2015 Chair, HAO Scientist-I Search Committee
- 2015-present Co-chair, HAO Director's Scientific Advisory Committee
- 2015-present Co-chair, HAO Appointment Committee
- 2014 January-October HAO Interim Director
- 2010-2013 HAO Deputy Director
- 2012-2013 NCAR ARG member
- 2012-present Co-chair, NCAR/UCAR Asian Circle Committee

2009-2012	Co-chair, NCAR Scientist Assembly Executive Committee
2009	Member, HAO Director Search Committee
2009	Member, ESSL Reorganizing Science Working Group
2008	Member, NCAR ARG Subcommittee
2006-2008	Member, UCAR Award Jury
2006-2010	Deputy Section Head, HAO AIM section
2005-2006	Co-chair, HAO Space Weather Implementation Committee
2005-2009	HAO Scientific Liaison, CEDAR Database
2002	Chair, HAO Search Committee for a magnetospheric modeler
2002	Member, NCAR Scientist I Search Committee
1998 – 2003	Member, HAO Visitor Committee
1999	Member, HAO Task Group
1995 – 1998	Co-chair, HAO Colloquium Committee

EDUCATIONAL ACTIVITIES

2016	Writing mentor for SOARS student Shay Gilpin
2015	Writing mentor for SOARS student William Evonosky
2014	Volunteered at UCAR Super Science Saturday
2013	Helping and participating UCAR Super Science Saturday Event
2013	Writing mentor for SOARS student Jenine McKoy
2012	Helping and participating in UCAR Super Science Saturday Event
2012	Research mentor for SOARS student Alexandra Woolman
2011	Research mentor for SOARS student Alexandra Woolman
2006-2010	In charge of Capacity Building for SCOSTEP's CAWSES program, in particular, the website management and distribution of SCOSTEP/CAWSES educational comic books
2005	Visiting and presenting NCAR/HAO research activity to Rikubetsu middle and elementary schools' students in Hokkaido, Japan
2002-2006	Working with staffs at the UCAR Office of Education and Outreach on educational materials for K-12 classrooms through a NASA E/PO proposal
2005	Present a seminar at the NCAR Advanced Study Program Space Weather Colloquium, May 31 - June 10, 2005
2005	Presentation to Bear Creek Elementary School students on Space Weather, May 13, 2005
2003 -2004	Contributed to the NCAR-COMET E/PO website
2003	Presentation at 2003 NCAR Student Leadership Workshop
2002	Presentation at 2002 NCAR Student Leadership Workshop
1999	Member, Conferences on World Affairs Space Weather Panel, University of Colorado, April 12, 1999
1998	Development of web page and vedio for the January 1997 space weather event. The video was used by the UCAR media office and displayed at the Space Weather workshop at NOAA/SEC

HONORS

2016	UCAR Award for Scientific and Technical Advancement
2015	Walter O. Roberts Scientific and Technical Advancement Award, High Altitude Observatory, NCAR

- 2013 UCAR Award for Outstanding Achievement In Education and Outreach for the HAO Sun-Earth Connection Exhibition Team
- 2008 Outstanding Space Science PhD of the 1990' s, Space Science Institute, Rice University
- 2001 Editors' citation for Excellence in Refereeing for Journal of Geophysics Research - Space Physics
- 1996 Nominated for NCAR Outstanding Publication Award for paper, "Interhemispheric asymmetry of the high-latitude ionospheric convection pattern," Journal of Geophysical Research, 99, 6491-6510, 1994.
- 1988 William and Elva Gordon Scholar, Rice University
- 1988-1989 Zonta Amelia Earhart Award

PROFESSIONAL AFFILIATIONS

Member of American Geophysical Union since 1988

PUBLICATIONS

1. Lu, G., P. H. Reiff, M. R. Hairston, R. A. Heelis, and J. L. Karty, Distribution of convection potential around the polar cap boundary as a function of the interplanetary magnetic field, *J. Geophys. Res.*, 94, 13,447-13,461, 1989.
2. Reiff, P. H., G. Lu, D. R. Weimer, J. A. Slavin, and M. Sugiura, Auroral electric and magnetic fields, in *Physics of Space Plasma, SPI Conference Proceedings and Reprint Series, Number 8*, edited by T. Chang, Cambridge, Massachusetts, 287-307, 1989.
3. Lu, G., P. H. Reiff, J. L. Burch, and J. D. Winningham, On the auroral current-voltage relationship, *J. Geophys. Res.*, 96, 3523-3531, 1991.
4. Lu, G., P. H. Reiff, T. E. Moore, and R. A. Heelis, Upflowing ionospheric ions in the auroral region, *J. Geophys. Res.*, 97, 16,855-16,863, 1992.
5. Weiss, L. A., P. H. Reiff, R. V. Hilmer, J. D. Winningham, and G. Lu, Mapping the auroral oval into the magnetotail using Dynamics Explorer plasma data, *J. Geomagn. Geoelectr.*, 44, 1121-1144, 1992.
6. Reiff, P. H., G. Lu, J. L. Burch, J. D. Winningham, L. A. Frank, J. D. Craven, W. K. Peterson, and R. A. Heelis, On the high- and low-altitude limits of the auroral electric field region, in *Auroral Plasma Dynamics, Geophys. Monogr. Ser., Vol. 80*, edited by R. Lysak, pp. 143-154, AGU, Washington, D. C., 1993.
7. Lu, G., A. D. Richmond, B. A. Emery, P. H. Reiff, O. de la Beaujardiere, F. J. Rich, W. F. Denig, H. W. Kroehl, L. R. Lyons, J. M. Ruohoniemi, E. Friis-Christensen, H. Opgenoorth, M. A. L. Persson, R. P. Lepping, A. S. Rodger, T. Hughes, A. McEwin, S. Dennis, R. Morris, G. Burns, and L. Tomlinson, Interhemispheric asymmetry of the high-latitude ionospheric convection pattern, *J. Geophys. Res.*, 99, 6491-6510, 1994.
8. Knipp, D. J., B. A. Emery, and G. Lu, Application of the AMIE procedure to cusp identification, in *Physical Signatures of Magnetospheric Boundary Layer Processes*, edited by J. A. Holtet and A. Egeland, pp. 401-419, NATO Advanced Studies Institute Series C, Kluwer Academic Publishers, 1994.
9. Lu, G., L. R. Lyons, P. H. Reiff, W. F. Denig, O. de la Beaujardiere, H. W. Kroehl, P. T. Newell, F. J. Rich, H. Opgenoorth, M. A. L. Persson, J. M. Ruohoniemi, E. Friis-Christensen, L. Tomlinson, R. Morris, G. Burns, and A. McEwin, Characteristics of ionospheric convection and field-aligned current in the dayside cusp region, *J. Geophys. Res.*, 100, 11,845-11,861, 1995.
10. Lu, G., A. D. Richmond, B. A. Emery, and R. G. Roble, Magnetosphere-ionosphere-thermosphere

- coupling: Effect of neutral winds on Joule heating and field-aligned current, *J. Geophys. Res.*, 100, 19,643-19,659, 1995.
11. Lu, G., B. A. Emery, A. S. Rodger, M. Lester, J. R. Taylor, D. S. Evans, J. M. Ruohoniemi, W. F. Denig, O. de la Beaujardiere, R. A. Frahm, J. D. Winningham, and D. L. Chenette, High-latitude ionospheric electrodynamics as determined by the AMIE procedure for the conjunctive SUNDIAL/ATLAS-1/GEM period of March 28-29, 1992, *J. Geophys. Res.*, 101, 26,697-26,718, 1996.
 12. Baker, K. B., A. S. Rodger, G. Lu, HF-radar observations of the rate of magnetic merging: A GEM boundary layer campaign study, *J. Geophys. Res.*, 102, 9603-9617, 1997.
 13. Lyons, L. R., G. Lu, O. de la Beaujardiere, and F. J. Rich, Synoptic maps of polar caps for stable IMF intervals during January 1992 GEM campaign, *J. Geophys. Res.*, 101, 27,283-27,298, 1996.
 14. Troshichev, O. A., E. M. Shishkina, G. Lu, and A. D. Richmond, The relationship of the ionospheric convection reversal to the hard auroral precipitation boundary, *J. Geophys. Res.*, 101, 15,423-15,432, 1996.
 15. Szuszczewicz, E. P., D. Torr, P. Wilkinson, P. Richards, R. Roble, B. Emery, G. Lu, M. Abdu, D. Evans, R. Hanbaba, K. Igarashi, P. Jiao, M. Lester, S. Pulnits, B. M. Reddy, P. Blanchard, K. Miller, and J. Joselyn, F-Region climatology during the SUNDIAL/ATLAS-1 campaign of March 1992: Model-measurement comparisons and cause-effect relationships, *J. Geophys. Res.*, 101, 26,741-26,758, 1996.
 16. Emery, B. A., G. Lu, E. P. Szuszczewicz, A. D. Richmond, R. G. Roble, P. G. Richard, K. L. Miller, R. Niciejewski, D. S. Evans, F. J. Rich, W. F. Denig, D. L. Chenette, P. Wilkinson, S. Pulnits, K. F. O'Loughlin, R. Hanbaba, M. Abdu, P. Jiao, K. Igarashi, and B. M. Reddy, AMIE-TIGCM comparisons with global ionospheric and thermospheric observations during the GEM/SUNDIAL period of 28-29 March 1992, *J. Geophys. Res.*, 101, 26,681-26,696, 1996.
 17. Siscoe, G., and G. Lu, Dayside Birkeland currents during substorms: An AMIE test of a substorm model, *J. Geophys. Res.*, 101, 19,937-19,940, 1996.
 18. Lu, G., G. Siscoe, A. Richmond, T. I. Pulkkinen, N. Tsyganenko, H. Singer, B. Emery, Mapping of the ionospheric field-aligned currents to the equatorial magnetosphere, *J. Geophys. Res.*, 102, 14,467-14,476, 1997.
 19. Ridley, A. J., G. Lu, C. R. Clauer, V. O. Papitashvili, Ionospheric convection during nonsteady interplanetary magnetic field conditions, *J. Geophys. Res.*, 102, 14,563-14,579, 1997.
 20. Richmond, A.D., G. Lu, B.A. Emery, and D.J. Knipp, The AMIE procedure: prospects for space weather specification and prediction, *Adv. Space Res.*, 22(1), 103-112, 1997.
 21. G. Siscoe, and G. Lu, Energy transfer via region 2 currents: An AMIE test of the Vasylunas MIC theory, *J. Geophys. Res.*, 102, 4637-4647, 1997.
 22. Farrugia, C. J., J. D. Scudder, M. P. Freeman, L. Janoo, G. Lu, M. Quinn, R. L. Arnoldy, R. B. Torbert, L. F. Burlaga, K. W. Ogilvie, R. P. Lepping, A. J. Lazarus, J. T. Steinberg, F. T. Gratton, and G. Rostoker, Geoeffectiveness of three WIND magnetic clouds: A comparative study, *J. Geophys. Res.*, 103, 17,261-17,278, 1998.
 23. Lu, G., X. Pi, A. D. Richmond, and R. G. Roble, Variations of total electron content during geomagnetic disturbances: A model/observation comparison, *Geophys. Res. Lett.*, 25, 253-256, 1998.
 24. Lu, G., D. N. Baker, C. J. Farrugia, D. Lummerzheim, J. M. Ruohoniemi, F. J. Rich, D. S. Evans, R. P. Lepping, M. Brittnacher, X. Li, R. Greenwald, G. Sofko, J. Villain, M. Lester, J. Thayer, T. Moretto, D. Milling, O. Troshichev, A. Zaitzev, G. Makarov, and K. Hayashi, Global energy deposition during the January 1997 magnetic cloud event, *J. Geophys. Res.*, 103, 11,695-11,684, 1998.
 25. Ridley, A. J., G. Lu, C. R. Clauer, and V. O. Papitashvili, A statistical study of the ionospheric convection response to changing interplanetary magnetic field conditions using the assimilative

- mapping of ionospheric electrodynamics technique, *J. Geophys. Res.*, 103, 4023-4039, 1998.
26. Kurth, W. S., T. Murata, G. Lu, D. A. Gurnett, H. Matsumoto, Auroral kilometric radiation and the auroral electrojet index for the January 1997 magnetic cloud event, *Geophys. Res. Lett.*, 25, 3027-3030, 1998.
 27. Jordanova, V. K., C. J. Farrugia, J. M. Quinn, R. M. Thorne, K. W. Ogilvie, R. P. Lepping, G. Lu, A. J. Lazarus, M. F. Thomsen, and R. D. Belian, Effect of wave-particle interactions on ring current evolution for January 10-11, 1997: Initial results, *Geophys. Res. Lett.*, 25, 2971-2974, 1998.
 28. Pinnock, M., A. S. Rodger, K. B. Baker, G. Lu, and M. Hairston, Conjugate observations of the day side reconnection electric field: A GEM boundary layer campaign, *Ann. Geophys.*, 17, 443-454, 1999.
 29. Lu, G., N. A. Tsyganenko, A. T. Y. Lui, H. J. Singer, T. Nagai, and S. Kokubun, Modeling of time-evolving magnetic fields during substorms, *J. Geophys. Res.*, 104, 12,327-12,337, 1999.
 30. Li, X., D. N. Baker, M. Temerin, T. E. Cayton, G. D. Reeves, R. S. Selesnick, J. B. Blake, G. Lu, S. G. Kenehal, and H. J. Singer, Rapid enhancements of relativistic electrons deep in the magnetosphere during the May 15, 1997 magnetic storm, *J. Geophys. Res.*, 104, 4467-4476, 1999.
 31. Buonsanto, M. J., S. A. Gonzalez, G. Lu, B. W. Reinisch, and J. P. Thayer, Coordinated incoherent scatter radar study of the January, 1997 storm, *J. Geophys. Res.*, 104, 24,625-24,637, 1999.
 32. Ridley, A. J., G. Lu, C. R. Clauer, V. O. Papitashvili, Reply to Comment by M. Lockwood and S. W. H. Cowley on "A statistical study of the ionospheric convection response to changing interplanetary magnetic field conditions using the assimilative mapping of ionospheric electrodynamics technique" by Ridley et al., *J. Geophys. Res.*, 104, 4393-4396, 1999.
 33. Chun, F. K., D. J. Knipp, M. G. McHarg, G. Lu, B. A. Emery, and S. Vennerstrom, Polar cap index as a proxy for hemispheric Joule heating, *Geophys. Res. Lett.*, 26, 1101-1104, 1999.
 34. Lu, G., A synthetic view of the magnetospheric-ionospheric current system associated with substorms, in *Magnetospheric Current Systems*, AGU monograph, edited by S. Ohtani, R. Fujii, R.L. Lysak, and M. Hesse, pp. 199-207, 2000.
 35. Pi, Xiaoqing, Michael Mendillo, W. Jeffrey Hughes, Michael J. Buonsanto, Dwight P. Sipler, John Kelly, Qihou Zhou, Gang Lu, and Terrence J. Hughes, Dynamical effects of geomagnetic storms and substorms in the middle-latitude ionosphere: An observational campaign, *J. Geophys. Res.*, 105, 7403-7417, 2000
 36. Russell, C. T., G. Lu, and J. G. Luhmann, Lessons from the ring current injection during the September 24-25, 1998 storm, *Geophys. Res. Lett.*, 27, 1371-1374, 2000
 37. Lu, G., M. Brittnacher, G. Parks, and D. Lummerzheim, On the magnetospheric source regions of substorm-related field-aligned currents and auroral precipitation, *J. Geophys. Res.*, 105, 18,483-18,493, 2000
 38. Richmond, A. D., and G. Lu, Upper-atmospheric effects of magnetic storms: A brief tutorial, *J. Atmo. Solar Terr. Phys.*, 62, 1115-1127, 2000
 39. Boonsititheth, A., R. M. Thorne, G. Lu, V. K. Jordanova, M. F. Thomsen, and D. M. Ober, A semi-empirical equatorial mapping of AMIE convection electric potentials (MACEP) for the January 10 magnetic storm, *J. Geophys. Res.*, 106, 12,903-12,917, 2001
 40. Le, G. J. Raeder, C. T. Russell, G. Lu, S. M. Petrinec, and F. Mozer, Polar cusp and vicinity under strongly northward IMF on April 11, 1997: Observations and MHD simulations, *J. Geophys. Res.*, 106, 21,083-21,093, 2001
 41. Lu, G., M. Brittnacher, G. Parks, and D. Lummerzheim, On the magnetospheric source regions of substorm-related field-aligned currents and auroral precipitation, *J. Geophys. Res.*, 105, 18,483-18,493, 2000.
 42. 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, 27,167-27,177, 2000.

43. Raeder, J., R. L. McPherron, L. A. Frank, W. R. Paterson, J. B. Sigwarth, G. Lu, H. Singer, S. Kokubun, T. Mukai, and R. P. Lepping, Global simulation for the Geospace Modeling Substorm Challenge event, *J. Geophys. Res.*, 106, 361-395, 2001
44. Lu, G., A. D. Richmond, J. M. Ruohoniemi, R. A. Greenwald, M. Hairston, F. J. Rich, and D. S. Evans, An Investigation of the influence of data and model inputs on assimilative mapping of ionospheric electrodynamics, *J. Geophys. Res.*, 106, 417-433, 2001
45. Lyons, L. R., J. M. Ruohoniemi, and G. Lu, Substorm-associated changes in large-scale convection during November 24, 1996 Geospace Environment Modeling event, *J. Geophys. Res.*, 106, 397-405, 2001
46. Russell, C. T., J. G. Luhmann, and G. Lu, The non-linear response of the polar ionosphere to large values of the interplanetary electric field, *J. Geophys. Res.*, 106, 18,495-18,504, 2001
47. Liemohn, M. W., J. U. Kozyra, M. F. Thomsen, J. L. Roeder, G. Lu, J. E. Borovsky, and T. E. Cayton, The dominant role of the asymmetric ring current in producing the stormtime Dst*, *J. Geophys. Res.*, 106, 10,883-10,904, 2001
48. Pulkkinen, T. I., N. Yu. Ganushkina, E. I. Tanskanen, G. Lu, D. N. Baker, N. E. Turner, T. A. Fritz, J. F. Fennell, and J. Roeder, Energy dissipation during a geomagnetic storm: May 1998, *Adv. Space Res.*, 30, No. 10, 2231-2240, 2002.
49. Lu, G., S. W. H. Cowley, S. E. Milan, D. G. Sibeck, R. A. Greenwald, and T. Moretto, Solar wind effects on ionospheric convection: A review, *J. Atmo. Solar Terr. Phys.*, 64, 145-157, 2002.
50. Lu, G., A. D. Richmond, R. G. Roble, and B. A. Emery, Coexistence of ionospheric positive and negative storm phases under northern winter conditions: A case study, *J. Geophys. Res.*, 106, 24,493-24,504, 2001
51. Opgenoorth, M. Lockwood, D. Alcayde, E. Donovan, M. J. Engebretson, A. P. van Eyken, K. Kauristie, M. Lester, J. Moen, J. Watermann, H. Alleyne, M. Andre, M. W. Dunlop, N. Cornilleau-Wehrin, P. M. E. Decreau, A. Fazakerley, H. Reme, R. Andre, O. Amm, A. Balogh, R. Behlke, P. L. Blelly, H. Boholm, E. Boralv, J. M. Bosqued, S. Buchert, M. Candidi, J. C. Cerisier, C. Cully, W. F. Denig, R. Doe, P. Eglitis, R. A. Greenwald, B. Jackal, J. D. Kelly, I. Krauklis, G. Lu, I. R. Mann, M. F. Marcucci, I. W. McCrea, M. Maksimovic, S. Massetti, A. Masson, D. K. Milling, S. Orsini, F. Pitout, G. Provan, J. M. Ruohoniemi, J. C. Samson, J. J. Schott, F. Sedgemore-Schulthess, R. Stamper, P. Stauning, A. Stromme, M. Taylor, A. Vaivads, J. P. Villain, I. Voronkov, J. Wild, and M. Wild, Coordinated ground-based, low altitude satellite and Cluster observations on global and local scales during a transient postnoon sector excursion of the magnetospheric cusp, *Ann Geophys.*, 19, 1367-1398, 2001
52. Lockwood, M., H. Opgenoorth, A.P. van Eyken, A. Fazakerley, J.-M. Bosqued, W. Denig, M.A. Hapgood, M.N. Wild, R. Stamper, M. Dunlop, J. Wild, G. Lu, M. Taylor, O. Amm, I. McCrea, K. Kauristie, T. Pulkkinen, A. Strommer, P. Prikryl, F. Pitout, A. Balogh, H. Reme, R. Behlke, T. Hansen, R. Greenwald, G. Provan, P. Eglitis, S. Morley, D. Alcayde, P.-L., Blelly, J. Moen, E. Donovan, M. Engebretson, M. Lester, J. Watermann, M. F. Marcucci, Coordinated Cluster, ground-based instrumentation and low-altitude satellite observations of transient poleward-moving events in the low and high altitude mantle regions, *Ann Geophys.*, 19, no. 10-12 part I, 1589-1612, 2001
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INVITED TALKS at Meetings:

1. Lu, G., A. D. Richmond, B. A. Emery, "Effects of Magnetospheric Energy Deposition on the Ionosphere and Thermosphere During GEM Campaign Periods", Western Pacific Geophysics Meeting, Hong Kong, July 25-29, 1994.
2. Lu, G., and A. D. Richmond, "High-Latitude Ionospheric Convection as Determined by the AMIE Procedure During Coordinated Campaign Studies", Second Workshop for Cluster Ground-Based Coordination, Rome, Italy, April 24-27, 1995.
3. Lu, G., and A. D. Richmond, "Specification and Forecast of Ionospheric Conditions with AMIE", Space Weather Workshop, Boulder, CO, June 19-20, 1996.
4. Lu, G., "Energy Coupling Between the Solar Wind, Magnetosphere, and Ionosphere During Coordinated ISTP Campaigns", Fall AGU meeting, San Francisco, December, 1997.
5. Lu, G., "Global Ionospheric Convection and Field-aligned Currents During Substorms", the 4th International Conference on Substorms, Lake Hamana, Japan, March 9-13, 1998.
6. Lu, G., X. Pi, A. D. Richmond, and R. G. Roble, "Total Electron Content Variations: GSP and TIEGCM Comparisons", CEDAR Workshop, Boulder, CO, June 12, 1998.
7. Lu, G., A. D. Richmond, and R. G. Roble, "Ionospheric/Thermospheric Dynamics During Geomagnetic Storms", Cambridge Symposium Workshop on Plasma Physics, Cascais, Portugal, June 22- July 3, 1998.
8. Lu, G., and A. D. Richmond, "Mapping of Ionospheric Electrodynamics Using the AMIE Procedure", Huntsville 98 Meeting, Gunsterville, Alabama, October 26-30, 1998.
9. Lu, G., and A. D. Richmond, "Estimation of Energy Inputs from Multiple Data Sources", Fall AGU, San Francisco, December 6-10, 1998.
10. Lu, G., "A Synthetic View of the Magnetospheric-Ionospheric Current Systems during Substorms", AGU Chapman Conferences on Magnetospheric Current Systems, Kona, Hawaii, January 11-15, 1999.
11. Lu, G., N. A. Tsyganenko, A. T. Y. Lui, H. J. Singer, T. Nagai, and S. Kokubun, "Modeling of time-evolving magnetic fields during substorms", IUGG 1999, Birmingham, UK, July 19-30, 1999.
12. Lu, G., A. D. Richmond, R. G. Roble, X. Pi, and M. Codrescu, "Global modeling of ionospheric total electron content during geomagnetic storms", IUGG 1999, Birmingham, UK, July 19-30, 1999.
13. Lu, G., A. D. Richmond, and D. Lummerzheim, "Global Modeling of Ionospheric Electrodynamics Using Polar UVI Images Along With Electric and Magnetic Field Observations", 1999 Fall AGU, San Francisco, December 13-17, 1999.
14. Lu, G., "Ionospheric Upflowing Ions: Observations and Modeling", GEM workshop, Snowmass, CO, June 19-23, 2000.
15. Lu, G., B.A. Emery, and A. D. Richmond, "Estimate of Global Energy Deposition During the May 1998 Storm", The First S-RAMP Conference, Sapporo, Japan, October 2-6, 2000.
16. Lu, G., and A. D. Richmond, "Estimate of Joule Heating Rate from Multi-Instrument Measurements", Asia-Pacific Radio Science Conference 2001, Tokyo, Japan, August 1-4, 2001.
17. Lu, G., E. Donovan, T. Nagai, J. Sigwarth, L. Frank, D. Lummerzheim, M. Brittnacher, and G. Parks, "Substorm development as seen through coordinated multi-instrument observations", the 6th International Conference on Substorms, Seattle, WA, March 25-29, 2002.
18. Lu, G., A.D. Richmond, S. Vennerstrom, N. Olsen, H. Luehr, and M. Rother, "Exploring the external geomagnetic field using space- and ground-based magnetometers", EGS-AGU, Nice, France, April 7-11, 2003.
19. Lu, G., "Sun-Earth Connection: Energy and Momentum Transfer from the Solar Wind to the Magnetosphere and Ionosphere", CISM Tutorial, HAO/NCAR, April 30, 2003.
20. Lu, G., A.D. Richmond, and R. G. Roble, "Ionosphere and thermosphere response to the April 2002

- geomagnetic storm", IUGG 2003, Sapporo, Japan, June 30- July 11, 2003.
21. Lu, G., "Global Ionospheric and Magnetospheric Response to the October-November 2003 Geomagnetic Storm", Living With a Star Workshop, Boulder, CO, March 23-26, 2004.
 22. Lu, G., and A. D. Richmond, "Interhemispheric conjugacy of ionospheric convection and field-aligned currents", Spring AGU, Montreal, Canada, 17-21 May 2004.
 23. Lu, G., "Ionospheric electrodynamic states during the 18-20 April 2002 sawtooth events", Sawtooth Workshop, Taos, New Mexico, September 20-24, 2004.
 24. Lu, G., "Auroral boundaries: Finding them in data and models", Joint CEDAR/GEM Tutorial, Joint CEDAR/GEM Workshop, June 26 - July 1, 2005, Santa Fe, NM.
 25. Lu, G., Corotating High-Speed Streams, Coronal Mass Ejections, Interplanetary Shocks: A Comparative Study of Geoeffectiveness, Symposium on Earth-Sun System Exploration: Energy Transfer, Kona Hawaii, January 16-20, 2006.
 26. Lu, G., J. U. Kozyra, M. Liemohn, L. Goncharenko, and A. Coster, Studies of Magnetosphere-Ionosphere-Thermosphere Coupling During CAUSES Campaigns, Spring AGU, Baltimore, May 23-26, 2006.
 27. Lu, G., Effects of Solar and Magnetospheric Forcing on the Ionosphere and Upper Atmosphere, International Symposium on Recent Observations and Simulations of the Sun-Earth System (ISROSES), Varna, Bulgaria, September 17-22, 2006
 28. Lu, G., A. D. Richmond, R. G. Roble, A. J. Mannucci, and A. J. Coster, Global Modeling of Ionospheric Total Electron Content During Solar Flare and Geomagnetic Storms, Chapman Conference on Mid-latitude Ionospheric Dynamics and Disturbances, Yosemite National Park, California, 3-6 January 2007.
 29. Lu, G., and A. Richmond, Mapping of High-Latitude Ionospheric Electrodynamics Using the AMIE Procedure, Greenland Science Symposium, Kangerlussuaq, Greenland, 4-9 May 2007.
 30. Lu, G., L. Goncharenko, A. Richmond, R. Roble, N. Aponte, Ionospheric Positive Storm Phase: A Model-data Comparison, IUGG General Assembly, Perugia, Italy, 2-13 July 2007.
 31. Lu, G., P.C. Brandt, A.T.Y. Lui, J.U. Kozyra, and M. Liemohn, A Case Study of Global Energy Partitioning During a Stormtime Substorm, Asia Oceania Geoscience Society 4th Annual Meeting, Bangkok, Thailand, 30 July - 4 August 2007.
 32. Lu, G., Energetic and Electrodynamic Coupling of the Sun-Earth System, Asia Oceania Geoscience Society 4th Annual Meeting, Bangkok, Thailand, 30 July - 4 August 2007.
 33. Lu, G., L. Goncharenko, A. Richmond, R. Roble, N. Aponte, A Dayside Ionospheric Positive Storm Phase Driven by Neutral Winds, AOGS Assembly, Busan, Korea, 16-20 June 2008.
 34. Lu, G., Coordinated multi-instrument investigations of magnetosphere-ionosphere coupling, The Third International Symposium on KuaFu Project (ISKP-III), Kunming, Yunnan, China, September 14-19, 2008.
 35. Lu, G., Effects of Prompt Penetration Electric Field and Neutral Wind Dynamo on the Ionosphere and Thermosphere: A Comparative Study of Observations and Simulations, IAGA General Assembly, August 24-29, 2009, Sopron, Hungary.
 36. Lu, G., R. Roble, D. Evans, C. Jackman, and X. Fang, Sources of Energetic Particles and Their Impact on the Upper Atmosphere, Workshop on High Energy Particle Precipitation in the Atmosphere, October 6-8, 2009, Boulder, CO
 37. Lu, G., Solar Wind Structures and Their Geoeffectiveness, The 2nd International Space Weather Conference, Nanjing, China, October 17-21, 2009.
 38. Lu, G., Magnetospheric field modeling and its implication on M-I coupling, TWINS Team Science meeting, APL, Laurel, MD, August 16-18, 2010

39. Lu, G., Plasma Convection, Joule Heating, and The TAD Generation: A review”, Workshop on Coupling Between Earth's Atmosphere and its Plasma Environment, International Space Science Institute, September 27 – October 1, 2010, Bern, Switzerland.
40. Lu, G., Energetic Coupling of the Solar Wind-Magnetosphere-Ionosphere System During High-Speed Streams, Fall AGU meeting, San Francisco, December 12-17, 2010.
41. Lu, G., Auroral Electric Fields and Currents: Local Manifestations and Global Consequences, Fall AGU meeting, San Francisco, December 12-17, 2010.
42. Lu, G., Energetic Particle Precipitation in the Upper Atmosphere: Sources and Consequences, Workshop on Earth-Sun System Exploration: Variability in Space Plasma Phenomena, January 16-21, 2011, Kona, Hawaii.
43. Lu, G., Magnetospheric and Ionospheric Response to High-Speed Solar Wind Streams, AOGS Assembly, Taipei, Taiwan, 8-12 August 2011.
44. Lu, G., W. H. Li, J. Raeder, and Y. Deng, Dual Reversed Ionospheric Convection Under Strongly Northward IMF Conditions, AOGS Assembly, Taipei, Taiwan, 8-12 August 2011.
45. Lu, G., Effects of Energetic Particle Precipitation on the Upper Atmosphere, International Space Plasma Symposium, Tainan, Taiwan, 15-19 August 2011.
46. Lu, G., “Energetic and Dynamic Response of the magnetosphere and Ionosphere to Geomagnetic Storms”, AOGS Assembly, Singapore, August 11-17, 2012.
47. Lu, G., "Effects of Solar and Magnetospheric Forcing on the Ionosphere and Upper Atmosphere", Session 5.5, IAGA2013, Merida, Mexico, August 26-31, 2013.
48. Lu, G., "Assimilative Mapping of Ionospheric Electrodynamics Based on Geomagnetic Observations and Other Ground- and Space-based Measurements", Session 5.5, IAGA2013, Merida, Mexico, August 26-31, 2013.
49. Lu, G., “Modeling Ionospheric Super-Fountain Effect”, The 3rd International Space Weather Conference, Guilin, China, November 11-14, 2013.
50. Lu, G., “Global Dynamics Coupling of the Magnetosphere-Ionosphere-Thermosphere System”, AGU Chapman Conference on Magnetosphere-Ionosphere Coupling in the Solar System”, Yosemite National Park, California, February 10-14, 2014.
51. Lu, G., “Effects of High-Speed Solar Wind Streams on the Magnetosphere and Ionosphere/Thermosphere: Similarities and Differences”, SCOSTEP 13th Quadrenial Solar-Terrestrial Physics Symposium, Xi'an, China, October 12-18, 2014.
52. Lu, G., M. Hagan, K. Hausler, E. Doornbos, S. Bruinsma, J. Forbes, and X. Zhang, “Quantifying Storm-Time Thermospheric Density and Neutral Wind Variations”, JPL Technical Interchange Meeting, Pasadena, California, October 21-23, 2014.
53. Lu, G., “Mapping High-Latitude Ionospheric Current System Based on Ground Magnetometers and Other Data Sets”, Fall AGU meeting, San Francisco, December 15-19, 2014.
54. Lu, G., “Hemispheric Asymmetry of Ionospheric Convection and Joule Heating and its Impact on the Thermosphere”, Fall AGU meeting, San Francisco, December 15-19, 2014.
55. Lu, G., “Modeling of Ionospheric Electrodynamics and its Influence on the Thermosphere”, ISSI Working Group on Field-Aligned Currents, Bern, Switzerland, March 16-18, 2015.
56. Lu, G., and A. D. Richmond, “Assimilative Mapping of Ionospheric Electrodynamics (AMIE)”,

ISSI Workshop on Earth's Magnetic Field, Bern, Switzerland, May 18-22, 2015.

57. Lu, G., "Energetic and Dynamic Coupling of the Magnetosphere and Ionosphere During Geomagnetic Storms", workshop on Unsolved Problems of Magnetospheric Physics, Scarborough, UK, September 6-12, 2015.
58. Lu, G., "Effects of Storm-time Neutral Winds and Penetration Electric Fields on the Mid- and Low-Latitude Ionosphere and Thermosphere", 14th International Symposium on Equatorial Aeronomy, Bahir Dar, Ethiopia, October 19-23, 2015.
59. Lu, G., M. Conde, and E. Doornbos, "Global and Meso-scale Thermospheric Neutral Wind Response to Geomagnetic Storm", Fall AGU meeting, San Francisco, California, December 14-18, 2015.
60. Lu, G., "Unusual Ionospheric/Magnetospheric Responses to 21-22 January 2005 Storm", ISSI Workshop on Field-Aligned Currents, Bern, Switzerland, March 21-23, 2016.
61. Lu, G., A. D. Richmond, and A. Maute, "Ionospheric Currents and Their Coupling to the Magnetosphere", AGU Chapman Conference on Currents in Geospace and Beyond, Dubrovnik, Croatia, May 23-27, 2016.
62. Lu, G., "What are the most significant inputs for drivers and/or validation required for coupled ITM models", CEDAR workshop, Santa Fe, New Mexico, June 20-24, 2016.

Invited Colloquia and Seminars:

1. Ionospheric Convection and its Driving Forces, NOAA Space Environment Center Seminar, April 7, 1994
2. High-Latitude Ionospheric Convection and Its Driving Mechanisms, Rice University Space Physics and Astronomy Department, April 8, 1996
3. Solar Wind-Magnetosphere-Ionosphere Coupling: Estimate of Global Energy Deposition, UCLA Institute of Geophysics and Planetary Physics, November 25, 1997
4. A Time-Dependent Magnetic Field Model and its Application to Substorm Studies, NOAA Space Environment Center Seminar, October 7, 1999
5. Solar Wind-Magnetosphere-Ionosphere Coupling: Tracing the Energy Flow, SEC/NOAA, August 23, 2001.
6. Sun-Earth Connection: Energy and Momentum Transfer from the Solar Wind to the Magnetosphere and Ionosphere, SEC/NOAA, May 8, 2003.
7. Corotating High-Speed Streams, Magnetic Clouds, and Interplanetary Shocks: A Study of Geoeffectiveness, CU-LASP Seminar, April 28, 2005.
8. Global Ionospheric and Magnetospheric Response to the October-November 2003 Geomagnetic Storm, NCAR Summer Colloquium on Space Weather, 31 May - 10 June 2005, Boulder, CO.
9. Corotating High-Speed Streams, Magnetic Clouds, and Interplanetary Shocks: A Study of Geoeffectiveness, LASP Seminar, April 28, 2005.
10. Global Ionospheric and Magnetospheric Response to the October-November 2003 Geomagnetic Storm, NCAR Summer Colloquium on Space Weather, May 31 - 10 June 2005, Boulder, CO
11. Earth's Atmosphere, Tutorial Lecture at 2007 Summer School for REU, LASP/CU, 13 June 2007
12. Energetic and Dynamic Coupling of the Sun-Earth System, Polar Research Institute of China, Shanghai, China, September 26, 2008
13. Introduction to SCOSTEP and its CAWSES Program, Polar Research Institute of China, Shanghai, China, September 26, 2008

14. Study of Ionospheric Electrodynamics using AMIE, School of Earth and Space Sciences, Peking University, China, October 15, 2009
15. Coupling of the Ionosphere and Magnetosphere, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China, October 16, 2009
16. Study of Ionospheric Electrodynamics using AMIE, Polar Research Institute of China, Shanghai, China, October 22, 2009
17. Large scale high-latitude ionospheric electrodynamic fields and currents derived from AMIE, Space Weather Institute, Beijing, China, August 4, 2016
18. High-latitude energy input and its impact on the thermosphere, National Space Science Center, Beijing, China, October 13, 2016