Aaron J. Ridley

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Professional Preparation

- B.S. in Physics, Eastern Michigan University, 1992.
- M.S. in Atmospheric and Space Sciences, University of Michigan, 1995.
- Ph.D. in Atmospheric and Space Sciences, University of Michigan, 1997.
- Graduate and Post Doctoral Advisors:
  - C. Robert Clauer (Ph.D., University of Michigan)
  - Gang Lu (Ph.D., High Altitude Observatory)
  - Geoff Crowley (postdoc, Southwest Research Institute)

Appointments

- Associate Professor, University of Michigan, Ann Arbor, 2006-.
- Associate Research Professor, University of Michigan, Ann Arbor, 2005-.
- Associate Research Scientist, University of Michigan, Ann Arbor, 2003-2005.
- Assistant Research Scientist, University of Michigan, Ann Arbor, 2000-2003.
- Research Scientist, Southwest Research Institute, San Antonio, Texas, 1997-1999.
- Research Assistant, High Altitude Observatory, National Center for Atmospheric Research, Boulder, Colorado, 1996-1997

Scientific Biography

Dr. Ridley was educated in space sciences at the University of Michigan. He studied ionospheric convection using the measurements from the Sondrestrom incoherent scatter radar. He received a fellowship from the High Altitude Observatory (HAO) while a graduate student, working at HAO for 1.5 years during this time. Dr. Ridley learned the use of the Assimilative Mapping of Ionospheric Electrodynamics (AMIE) technique while at HAO. His thesis work utilized AMIE to investigate the way that the global state of the ionospheric convection changes.

Dr. Ridley moved to Southwest Research Institute (SwRI) in 1997, where he studied thermospheric dynamics and the coupling between the magnetosphere, ionosphere, and thermosphere. At SwRI, Dr. Ridley learned the use of a global thermosphere-ionosphere model, and utilized this code for investigations of the thermospheric dynamics. In addition, he developed a real-time version of the AMIE technique, utilizing automated downloading and processing codes that he created. He further researched different methods of

propagating solar wind and interplanetary magnetic field (IMF) measurements from upstream satellites to the magnetosphere and statistically quantified the errors associated with each method.

In 2000, Dr. Ridley moved back to the University of Michigan to work with a recently developed global model of the magnetosphere. He developed a generalized ionospheric potential boundary condition that was self-consistent with the magnetospheric currents. Dr. Ridley then coupled the thermosphere-ionosphere-electrodynamics general circulation model (TIEGCM) to the global magnetosphere model to study how the thermospheric neutral winds influence the magnetospheric dynamics. Dr. Ridley strongly advocated using idealized simulations to better understand the magnetosphere, and this technique has been widely accepted.

Dr. Ridley further created a new global ionosphere-thermosphere model (GITM), which is the first non-hydrostatic self-consistent IT model ever created, and the first IT model to be written in almost 20 years. It is the most flexible IT model in existence in terms of the grid, the drivers, and the physics.

Currently, he is working on:

- Understanding the magnetosphere during extremely strong driving conditions, including the saturation of the ionospheric cross polar cap potential. These studies are being conducted using both modeling result and data analysis.
- Understanding the coupling between the ionosphere, thermosphere, and magnetosphere through the polar wind, conductance, neutral winds, and aurora.
- Understanding the controlling mechanisms for thermospheric Joule heating and the neutral winds.
- Understanding the magnetospheres of Saturn and Jupiter during different solar wind drivers and mass loading rates.
- Running AMIE for every minute of 1991-2002, and making these 5,000,000+ patterns available to the geospace community. The 1990, 2003, and 2004 time periods are currently being modeled.
- Creating a new version of AMIE based on a new type of basis function, to allow flexible grid resolution, instead of the static course resolution that currently exists.
- Validating the BATSRUS global magnetospheric MHD code during both quiet and super-storm time periods.
- Validating the GITM code through comparisons with satellite and ground-based instrumentation.
- Validating the current version of AMIE using DMSP satellite data.

Main Scientific Accomplishments

Dr. Ridley's contributions to the geospace sciences span many areas. A partial list of his most important scientific contributions include:

- He used the AMIE technique to describe how the ionospheric convection changes from one state to another on a global scale. Before these studies, the global state had never been examined, and it was thought that the changes in convection propagate from the dayside to the nightside of the ionosphere.
- He quantified the errors associated with propagating the measured solar wind and interplanetary magnetic field conditions from ACE to the magnetosphere using the most common propagations techniques, and showed that large errors can exist.
- Using the coupled MHD-TIEGCM code, he showed how the thermospheric neutral winds can control the global magnetospheric dynamics.
- Dr. Ridley has comprehensively shown how different features in the ionospheric conductance (i.e. day-night gradients, regions of constant conductance, the Hall conductance, the auroral conductance, etc.) control the magnetospheric state.

- He has investigated how the ionospheric outflow changes the time-scales in the magnetospheric dynamics, specifically showing that by increasing the outflow rate, the time-scale for a substorm onset increases.
- He developed an ionospheric potential solver for an inner magnetosphere model. Using this code, he has investigated the self-consistent feed-back between the inner magnetospheric pressure, field-align currents, electric fields, and ionospheric conductances, showing that inclusion of a self-consistent electric field description, along with a good specification of the high-latitude electric field can make a large difference in the pressure distribution of the inner magnetosphere.
- Dr. Ridley showed that, since Nitric Oxide formation in the lower thermosphere is controlled by the auroral precipitation, researchers should be using a magnetic coordinate system instead of a geographic coordinate system when examining satellite data.
- He has recently shown that the saturation of the ionospheric cross polar cap potential occurs when the solar wind Alfvénic Mach number decreases to low values and that this saturation may be caused by the shielding of the interplanetary electric field by Alfvén wings. This was shown both using magnetospheric simulation results and output from the AMIE technique.

Main Personal Activities

- Modeling Work
  - Created data processing codes to shorten the time taken to conduct an AMIE run from months to a less than one week. These codes were further modified to allow AMIE to run in real-time. The real-time version of AMIE was introduced in 1999, and has been running ever since.
  - Rewrote AMIE to have an easier interface, allowing people to learn how to use AMIE in a very short time-period. In addition, native formats of different data sets were incorporated, significantly reducing the amount of data processing necessary to conduct and AMIE run and further simplifying the inversions.
  - Created an ionospheric electrodynamics model for the BATSRUS global magnetospheric MHD code.
  - Coupled the BATSRUS code to the NCAR TIEGCM.
  - Developed an extremely flexible, easy to use and modify, state-of-the-art global ionosphere-thermosphere model (GITM).
  - Modified the GITM code to work for the Martian thermosphere and ionosphere.
  - Helped to develop the Space Weather Modeling Framework.
  - Assisted a graduate student in porting the GITM code to work for Titan, a moon of Saturn.
- *Research Funding*. Presently Dr. Ridley is PI of research grants totaling approximately $250K per year. His main research funds have been from:
  - A series of NSF space weather grants to develop the real-time AMIE technique.
  - A NASA Geospace SR&T grant to investigate magnetosphere-ionosphere coupling during storms.
  - A NASA Living with a Star small grant to make AMIE patterns available to the general community.
- *Publications*. Dr. Ridley has authored or co-authored over 60 peer reviewed scientific publications and over 140 conference presentations.

PhD Thesis Supervision

1. Jaganath Chandrasekhar (Co-Chair, Aerospace Engineering, 2007)
2. Harish Palanthandalam-Madapusi (Co-Chair, Aerospace Engineering, 2007)
3. Xia Cai (Committee Member, Atmospheric and Space Sciences, University of Michigan, 2007)
4. Yue Deng (Atmospheric and Space Sciences, University of Michigan, 2006)
5. Jichun Xhang (Committee Member, Atmospheric and Space Sciences, University of Michigan, 2006)
6. Joseph Baker (Committee Member, Atmospheric and Space Sciences, University of Michigan, 2001)
7. Dr. Ridley helps to directly supervise six additional graduate students.
8. He has presided over numerous oral examinations for students.

Service

- International Organizations
  - "Geophysics the Future" Working Group for International Union of Geodicy and Geophysics (2002-2003)
  - Co-leader of the international organization ICESTAR (2004-)
- National Organizations
  - Geospace Environment Modeling Steering Committee (2002-)
  - NASA Sun Solar System Connections Science Data and Computing Working Group (2003-)
  - NOAA Data Archive Access Requirements Working Group (2006-)
- University of Michigan Committees
  - Department of Atmospheric, Oceanic, and Space Sciences Executive Committee (2002-)
  - Department of Atmospheric, Oceanic, and Space Sciences Graduate Committee (2004-)
  - Assisted in the restructuring of the Department of Atmospheric, Oceanic, and Space Sciences graduate program (2003)
  - Department of Atmospheric, Oceanic, and Space Sciences Awards Committee (2004-)
- Scientific Meetings
  - Created and organized the Geospace Environment Modeling student tutorials, 1997.
  - Organized many scientific sessions at the Geospace Environment Modeling and CEDAR Workshops.
  - Helped to organized a workshop on the 1859 Carrington Event, October, 2003.
  - Co-organized many sessions at the American Geophysical Union Meetings.

Membership in Scientific Societies

- American Geophysical Union

Awards

- University of Michigan's College of Engineering Outstanding Research Scientist Award, 2004.
- National Center for Atmospheric Research High Altitude Observatory's Newkirk Fellowship, 1996.

Talks and Publications
Aaron J. Ridley

Articles in Major Peer Reviewed Journals

1. D.J. Pawlowski, **A.J. Ridley**, I. Kim, D. S. Bernstein, Global Model Comparison with Millstone Hill During September 2005, *J. Geophys. Res.*, Submitted, 2007.
2. H. Wang and **A.J. Ridley**, Bursts of ionospheric flows and related variations of ionospheric Pedersen conductivity, *Geophys. Res. Lett.*, Submitted, 2007.
3. M.M. Kuznetsova, M. Hesse, L. Rastaetter, A. Taktakishvili, G. Toth, D. De Zeeuw, **A. Ridley**, T. I. Gombosi, Multi-Scale Modeling of Magnetospheric Reconnection, *J. Geophys. Res.*, Submitted, 2007.
4. M. Kivelson and **A.J. Ridley**, Saturation of the polar cap potential: Inference from Alfvén wing arguments, *J. Geophys. Res.*, Submitted, 2007.
5. H. Palanthandalam-Madapusi, D. S. Bernstein, and **A. J. Ridley**, "Space Weather Forecasting: Identifying Periodically Switching Block-structured Models to Predict Magnetic-field Fluctuations," *IEEE Contr. Sys. Mag.*, submitted.
6. M. Watanabe, G. Sofko, K. Kabin, R. Rankin, **A. Ridley**, C. R. Clauer, T. I. Gombosi, The origin of the interhemispheric potential mismatch of merging cells for IMF BY-dominated periods, *J. Geophys. Res.*, Submitted, 2006.
7. Y. Deng and **A.J. Ridley**, Possible reasons for underestimating Joule heating in global models: E-field variability, spatial resolution and vertical velocity, *J. Geophys. Res.*, Submitted, 2006.
8. D.H. Fairfield, M.M. Kuznetsova, T. Mukai, T. Nagai, T.I. Gombosi, and **A.J. Ridley**, Waves on the Dusk Flank Boundary Layer During Very Northward IMF Conditions: Observations and Simulation, *J. Geophys. Res.*, Submitted, 2006.
9. X. Fang, **A.J. Ridley**, M. Liemohn, J. Kozyra, and D. Evans, Global 30-240 keV proton precipitation in the 17-18 April 2002 geomagnetic storms: 3. Impact on the ionosphere and thermosphere, *J. Geophys. Res.*, Submitted, 2006.
10. **A.J. Ridley**, The magnetosphere and ionosphere during sub-Alfvénic solar wind conditions, *Ann. Geophys.*, In Press, 2007.
11. D. Green, C. Waters, H. Korth, B. Anderson, **A. Ridley**, R. Barnes, Technique: Large-scale ionospheric conductance estimated from combined satellite and ground-based electromagnetic data, *J. Geophys. Res.*, In Press, 2007.
12. J. Zhang, M. Liemohn, D. De Zeeuw, J. Borovsky, **A. Ridley**, G. Toth, S. Sazykin, M. Thomsen, J. Kozyra, T. Gombosi, R. Wolf, Understanding storm-time ring current sources through data-model comparisons of a moderate storm, *J. Geophys. Res.*, In Press, 2007.
13. **A.J. Ridley**, Effects of seasonal changes in the ionospheric conductances on magnetospheric field-aligned currents, *Geophys. Res. Lett., 34*, L05101, doi:10.1029/2006GL028444, 2007.
14. Glocer A., T. I. Gombosi, G. Toth, K. C. Hansen, **A. J. Ridley**, A. Nagy, Polar wind outflow model: Saturn results, *J. Geophys. Res., 112*, A01304, doi:10.1029/2006JA011755, 2007.
15. B. Zieger; Vogt, J.; **Ridley, A. J.**; Glassmeier, K.-H., A parametric study of magnetosphere-ionosphere coupling in the paleomagnetosphere,Âdv. in Space Res., 38, p. 1707-1712, 2006.
16. I.R. Mann and others, The outer radiation belt injection, transport, acceleration and loss satellite (ORBITALS): A canadian small satellite mission for ILWS, Âdv. in Space Res., 38, p. 1838-1860, 2006.

17. X. Cai, C.R. Clauer, **A.J. Ridley**, Statistical analysis of ionospheric potential patterns for isolated substorms and sawtooth events, *Annales Geophysicae, 24*, 1977-1991, 2006.
18. E.A. Kihn, R. Redmon, **A.J. Ridley**, M.R. Hairston, A statistical comparison of the AMIE derived and DMSP-SSIES observed high-latitude ionospheric electric field, *J. Geophys. Res., 111*, A08303, doi:10.1029/2005JA011310, 2006.
19. M. Liemohn, **A. Ridley**, J. Kozyra, D. Gallagher, M. Thomsen, M. Henderson, M. Denton, P. Brandt, J. Goldstein, Analyzing electric field morphology through data-model comparisons of the Geospace Environment Modeling Inner Magnetosphere/Storm Assessment Challenge events, *J. Geophys. Res., 111*, A11S11, 2006.
20. M.W. Liemohn, J.U. Kozyra, **A.J. Ridley**, M.F. Thomsen, M.G. Henderson, J.E. Borovsky, P.C. Brandt, D.G. Mitchell, Modeling the ring current response to a sawtooth oscillation event, *J. Atmos. Sol-Terr. Phys., 69*, 67, 2006
21. **A.J. Ridley**, D.L. De Zeeuw, W.B. Manchester, K.C. Hansen, The magnetospheric and ionospheric response to a very strong interplanetary shock and coronal mass ejection, *Adv. Space Res., 38*, 263, 2006.
22. W. Manchester, IV, **A. Ridley**, T. Gombosi, D. De Zeeuw, Modeling the Sun-Earth Propagation of a Very Fast CME, *Advances in Space Research, 38*, 253, 2006.
23. Cai, X., C.R. Clauer, **A.J. Ridley**, Statistical analysis of ionospheric potential patterns for isolated substorms and sawtooth events, *Ann. Geophys., 24*, 1977, 2006.
24. Deng Y., **A. J. Ridley**, Dependence of neutral winds on convection E-field, solar EUV, and auroral particle precipitation at high latitudes, *J. Geophys. Res., 111*, A09306, doi:10.1029/2005JA011368, 2006.
25. Deng Y., **A. J. Ridley**, Role of vertical ion convection in the high-latitude ionospheric plasma distribution, *J. Geophys. Res., 111*, A09314, doi:10.1029/2006JA011637, 2006.
26. Liemohn M. W., **A.J. Ridley**, J. U. Kozyra, D. L. Gallagher, M. F. Thomsen, M. G. Henderson, M. H. Denton, P. C. Brandt, J. Goldstein, Analyzing electric field morphology through data-model comparisons of the Geospace Environment Modeling Inner Magnetosphere/Storm Assessment Challenge events, *J. Geophys. Res., 111*, A11S11, doi:10.1029/2006JA011700, 2006.
27. **A.J. Ridley**, Y. Deng, G. Tóth, The global ionosphere-thermosphere model, *J. Atmos. Sol-Terr. Phys., 68*, 839, 2006.
28. **A.J. Ridley**, A new formulation for the ionospheric cross polar cap potential including saturation effects, *Annales Geophys., 23*, 3522, 2005.
29. H. Bekerat, R. Schunk, L. Scheirles, **A. Ridley**, Comparison of satellite ion drift velocities with AMIE derived convection patterns to AMIE, *J. Atmos. Sol-Terr. Phys., 67*, 1463, 2005.
30. G. Tóth, I. V. Sokolov, T. I. Gombosi, D. R. Chesney, C.R. Clauer, D. L. De Zeeuw, K. C. Hansen, K. J. Kane, W. B. Manchester, K. G. Powell, **A. J. Ridley**, I. I. Roussev, Q. F. Stout, O. Volberg, Richard A. Wolf, S. Sazykin, A. Chan, Bin Yu, József Kóta, Space Weather Modeling Framework: A New Tool for the Space Science Community, *J. Geophys. Res., 110*, A12226, doi:10.1029/2005JA011126, 2005.
31. M. McHarg, F.K. Chun, D.J. Knipp, G. Lu, B. Emery, **A. Ridley**, High-Latitude Joule Heating Response to IMF Inputs, *J. Geophys. Res., 110*, A08309, doi:10.1029/2004JA010949, 2005.
32. M. Liemohn, **A. Ridley**, P. Brandt, D. Gallagher, J. Kozyra, D. Ober, D. Mitchell, E. Roelof, R. Demajistre, Parametric analysis of nightside conductance effects on inner magnetospheric dynamics for the 17 April 2002 storm, *J. Geophys. Res., 110*, A12S22, doi:10.1029/2005JA011109, 2005.
33. M. Watanabe, K. Kabin, G.J. Sofko, R. Rankin, T.I. Gombosi, **A.J. Ridley**, C.R. Clauer, Internal reconnection for northward interplanetary magnetic field, *J. Geophys. Res., 110*, A06210, 10.1029/2004JA010832, 2005.

34. E.A. Kihn and **A.J. Ridley**, A statistical analysis of the AMIE auroral specification, *J. Geophys. Res., 110*, A07225, 10.1029/2004JA010775, 2005.
35. K.C. Hansen, **A.J. Ridley**, G.B. Hospodarsky, N. Achilleos, M.K. Dougherty, T.I. Gombosi, G. Tóth, Global MHD simulations of Saturn's magnetosphere at the time of Cassini approach *Geophys. Res. Lett., 32*, L20S06 10.1029/2005GL022835, 2005.
36. D.L. De Zeeuw, S. Sazykin, R. A. Wolf, T. I. Gombosi, **A. J. Ridley**, and G. Tóth (2004), Coupling of a global MHD code and an inner magnetospheric model: Initial results, *J. Geophys. Res.*, 109, A12219, doi:10.1029/2003JA010366.
37. G. Siscoe, R.L. McPherron, M.W. Liemohn, **A.J. Ridley**, and G. Lu Reconciling prediction algorithms for Dst, *J. Geophys. Res.*, 110, A02215, doi:10.1029/2004JA010465, 2005
38. J. Vogt, B. Zieger, A. Stadelmann, K.-H. Glassmeier, T. I. Gombosi, K. Hansen, A. Ridley, MHD simulations of quadrupolar paleomagnetospheres, *J. Geophys. Res.*, 109, A12221, doi:10.1029/2003JA010273, 2004
39. G. Siscoe, J. Raeder, and **A. J. Ridley**, Transpolar Potential Saturation Models Compared, *J. Geophys. Res.*, 109, A09203, doi:10.1029/2003JA010318.
40. I.V. Sokolov, T.I. Gombosi, and **A.J. Ridley**, Non-Potential Electric Field Model of Ionosphere-Magnetosphere Coupling, *J. Geophys. Res.*, submitted, doi:10.1029/2003JA009899, 2003.
41. **A.J. Ridley** and E.A. Kihn, Polar cap index comparisons with AMIE cross polar cap potential, electric field, and polar cap area, *Geophys. Res. Lett., 31*, doi:10.1029/2003GL019113, 2004.
42. Liemohn, M. W., **A. J. Ridley**, D. L. Gallagher, D. M. Ober, and J. U. Kozyra, Dependence of plasmaspheric morphology on the electric field description during the recovery phase of the 17 April 2002 magnetic storm, *J. Geophys. Res.*, 109, A03209, doi:10.1029/2003JA010304, 2004.
43. Khazanov, G. V., M. W. Liemohn, M. Fok, T. S. Newman, and **A. J. Ridley**, Stormtime particle energization with high temporal resolution AMIE potentials, *J. Geophys. Res., 109*, A05209, doi:10.1029/2003JA010186, 2004.
44. K. Kabin, R. Rankin, R. Marchand, J. Rae, **A. J. Ridley**, T.I. Gombosi, C.R. Clauer, D.L. De Zeeuw, Open-closed field line boundary position: A parametric study using an MHD model, *J. Geophys. Res., 109*, doi:10.1029/2003JA010168, 2004.
45. T.I. Gombosi, K.G. Powell, D.L. De Zeeuw, C.R. Clauer, K.C. Hansen, W.B. Manchester, **A.J. Ridley**, I.I. Roussev, I.V. Sokolov, Q.F. Stout, and G. Tóth, Solution Adaptive MHD for Space Plasmas: Sun-to-Earth Simulations, *Computing in Science and Engineering*, *6*, No 2, 14-35, 2004.
46. W.B. Manchester, T.I. Gombosi, **A.J. Ridley**, I. Roussev, D.L. De Zeeuw, I.V. Sokolov, K.G. Powell, G. Tóth, Modeling a space weather event from the Sun to the Earth: CME generation and interplanetary propagation *J. Geophys. Res.*, *109*(A2), A02107, doi:10.1029/2003JA010150, 2004.
47. I.J. Rae, K. Kabin, R. Rankin, F.R. Fenrich, W. Liu, J.A. Wanliss, **A.J. Ridley**, T.I. Gombosi, and D.L. De Zeeuw, Comparison of Photometer and Global MHD determination of the Open-Closed Field Line Boundary, *J. Geophys. Res.*, *109*(A1), A01204, doi:10.1029/2003JA009968, 2004.
48. G.V. Khazanov, M.W. Liemohn, T.S. Newman, M.-C. Fok, and **A.J. Ridley**, Magnetospheric convection electric field dynamics and stormtime particle energization: Case study of the magnetic storm of 4 May 1998, *Annales Geophysicae, 22*, 497, 2004.
49. S. Alden, E.E. Brodsky, T. Oki, **A.J. Ridley**, L. Sanchez, C. Simionato, K. Yoshizawa, and U. Shamir, New report charts course for future of geosciences, *EOS, 85*, 25, 2004
50. **A.J. Ridley**, T.I. Gombosi, and D.L. De Zeeuw, Ionospheric control of the magnetosphere: Conductance, *Annales Geophysicae, 22*, 567, 2004.
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52. K. Kabin, R. Rankin, R. Marchand, T.I. Gombosi, C.R. Clauer, **A. J. Ridley**, V.O. Papitashvili, D.L. De Zeeuw, Dynamic response of the Earth's magnetosphere to B_y reversals, *J. Geophys. Res., 108*(A3), 1132, doi: 10.1029/2002JA009480, 2003.
53. J.B. Baker, **A.J. Ridley**, V.O. Papitashvili, and C.R. Clauer, Dependence of the winter aurora on interplanetary parameters, *J. Geophys. Res., 108*A(4), 10.1029/2002JA009352, 2003.
54. Y. Kamide, E. A. Kihn, **A.J. Ridley**, E. W. Cliver, and Y. Kadowaki, Real-time spaceifications of the Geospace environment, *Space Science Reviews, 107*, 307, 2003.
55. M.W. Liemohn, J.U. Kozyra, T.H. Zurbuchen, **A.J. Ridley**, G. Lu, M. Hairston, and D. Weimer, Consequences of a saturated convection electric field on the ring current, *Geophys. Res. Lett., 29*, 2001GL014270, 2002.
56. Kozyra, J.U. , M. W. Liemohn, C.R. Clauer, **A.J. Ridley**, M.F. Thomsen, J. E. Borovsky, J. L. Roeder, and V. K. Jordanova, Multistep D_{st} development and ring current composition changes during the 4-6 June 1991 magnetic storm, *J. Geophys. Res, 107*, 2001JA000023, 2002.
57. M.W. Liemohn and **A.J. Ridley**, Comment on "Nonlinear response of the polar ionosphere to large values of the interplanetary electric field" by C.T. Russell et al., *J. Geophys. Res, 107*(A12), 1460, doi: 10.1029/2002JA009440, 2002.
58. **A. J. Ridley**, D.L. De Zeeuw, T.I. Gombosi, K.G. Powell, University of Michigan MHD results of the GGCM Metrics challenge, *J. Geophys. Res*, 10.1029/2001JA000253, 2002.
59. K. Shiokawa, Y. Otsuka, T. Ogawa, N. Balan, K. Igarashi, D.K. Knipp, **A.J. Ridley**, A. Saito, and K. Yumoto, Comprehensive observations of large-scale traveling ionospheric disturbances during the magnetic storm of September 15, 1999, *J. Geophys. Res.*, 10.1029/2001JA00245, 2002.
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64. P. Song, T.I. Gombosi, and **A.J. Ridley**, Three-fluid Ohm's Law *J. Geophys. Res, 106*, 8149, 2001.
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Peer Reviewed Book Chapters and Conference Proceedings

1. J. Chandrasekhar, I. S. Kim, D. S. Bernstein, and **A. Ridley**, "Cholesky-Based Reduced-Rank Square-Root Kalman Filtering," *Proc. Amer. Contr. Conf.*, New Orleans, LA, June 2007.

2. J. Chandrasekar, D. S. Bernstein, and **A. Ridley**, "A Comparison of the Extended and Unscented Kalman Filters for Discrete-Time Systems with Nondifferentiable Dynamics," *Proc. Amer. Contr. Conf.*, New York, NY, June 2007.

3. I. S. Kim, J. Chandrasekar, H. J. Palanthandalam-Madapusi, **A. Ridley**, and D. S. Bernstein, "State Estimation for Large-Scale Systems Based on Reduced-Order Error-Covariance Propagation," *Proc. Amer. Contr. Conf.*, New York, NY, June 2007.

4. J. Chandrasekar, I. S. Kim, **A. Ridley**, and D. S. Bernstein, "Reduced-Order Covariance-Based Unscented Kalman Filtering with Complementary Steady-State Correlation," *Proc. Amer. Contr. Conf.*, New York, NY, June 2007.

5. S. Gillijns, O. Barrero Mendoza, J. Chandrasekar, B. De Moor, D. S. Bernstein, and **A. Ridley**, "What Is the Ensemble Kalman Filter and How Well Does it Work?," *Proc. Amer. Contr. Conf.*, pp. 4448–4453, Minneapolis, MN, June 2006.

6. I. Kim, J. Chandrasekar, **A. Ridley**, and D. S. Bernstein, "Data Assimilation Using the Global Ionosphere-Thermosphere Model," *Proc. ICCS*, pp. 489–496, Reading, UK, May 2006.

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8. J. Chandrasekar, **A. J. Ridley**, and D. S. Bernstein, An SDRE-Based Asymptotic Observer for Nonlinear Discrete-Time Systems, *Proc. Amer. Contr. Conf.*, Portland, OR, pp. 3630–3635, June 2005.

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10. H. Palanthandalam-Madapusi, D. S. Bernstein, and **A. J. Ridley**, Subspace Identification of Periodically Switching Hammerstein-Wiener Models for Magnetospheric Dynamics, *Proc. 14th IFAC Symposium on System Identification*, pp. 535–540, Newcastle, Australia, March 2006.

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12. J. Chandrasekar, O. Barrero, **A. J. Ridley**, D. S. Bernstein, and De Moor, State Estimation for Linearized MHD Flow, *Proc. Conf. Dec. Contr.*, pp. 2584-2589, Paradise Island, The Bahamas, December 2004.

13. H. Palanthandalam-Madapusi, S. Gillijns, **A. J. Ridley**, and D. S. Bernstein, Electric Potential Estimation with Line-of-Sight Measurements Using Basis Function Optimization, *Proc. Conf. Dec. Contr.*, pp. 3625-3630, Paradise Island, The Bahamas, December 2004.

14. T.I. Gombosi, D.L. De Zeeuw, K.G. Powell, **A.J. Ridley**, I.V. Sokolov, Q.F. Stout, and G. Tóth, Adaptive Mesh Refinement MHD for Global Space Weather Simulations, in "*Space Plasma Simulation*", edited by J. Büchner, C. T. Dum, M. Scholer, *Lecture Notes in Physics*, *615*, 251-279, Springer, Berlin-Heidelberg-New York, 2003.

Colloquia

1. **A.J. Ridley**, *Sun-Earth System Science at the University of Michiagn*, NCAR Summer Colloquia on Space Weather, National Center for Atmospheric Research, June 8, 2005.
2. **A.J. Ridley**, *The Ionosphere/Thermosphere as and Interactive Boundary in the BATS-R-US Global MHD Code*, Center for Space Physics, Boston University, January 22, 2004.
3. **A.J. Ridley**, *Extreme Space Weather*, Department of Atmospheric, Oceanic, and Space Sciences, University of Michigan, January 23, 2004.

4. **A.J. Ridley**, *The Solar Wind and the Magnetosphere*, Physics Department, Eastern Michigan University, Ypsilanti, Michigan, April 3, 2002.
5. **A.J. Ridley**, *Ionospheric control of magnetospheric dynamics: How the ionospheric conductance, neutral winds, and outflow effect the magnetosphere*, High Altitude Observatory, NCAR, Boulder, Colorado, September 19, 2001.
6. **A.J. Ridley**, *High-Latitude Ionospheric Convection* Los Alamos National Labs, Los Alamos, New Mexico, February 2, 1999.

Invited Talks

1. **A.J. Ridley**, Global MHD Simulations and M-I Coupling, *8th International School/Symposium for Space Simulations*, Kauai, HI, February 25 - March 3, 2007.
2. **A.J. Ridley**, G. Toth, I.V. Sokolov, D.L. De Zeeuw, M.W. Liemohn, T.I. Gombosi, Computational Considerations in Modeling the Space Environment, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
3. G. Toth, **A. Ridley**, T. Gombosi, D. De Zeeuw, W. Manchester, I.V. Sokolov, Sun-to-Thermosphere Simulation with the Space Weather Modeling Framework, *2006 EGU Meeting*, Vienna, Austria, April 2-7, 2006.
4. **A.J. Ridley**, T.I. Gombosi, Interhemispheric Differences in the Ionospheric Potential, *2006 EGU Meeting*, Vienna, Austria, April 2-7, 2006.
5. T.I. Gombosi, **A.J. Ridley**, D.L. De Zeeuw, I.V. Sokolov, G. Toth, Multiple Scales in the Solar Wind Interaction with the Magnetosphere, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
6. J.U. Kozyra, L.J. Paxton, **A.J. Ridley**, The Future of Systems Aeronomy in Addressing New Science Frontiers, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
7. **A. Ridley**, J. Baker, E. Donovan, T. Immel, E. Kihn, J. Kozyra, I. Mann, L. Paxton, Incorporating global and meso-scale ionospheric measurements in global models of the thermosphere, ionosphere, and magnetosphere, *10^{th} Scientific Assembly of the International Association of Geomagnetism and Aeronomy*, Toulouse, France, July 18-29, 2005.
8. M. Kuznetsova, M. Hesse, L. Rastaetter, G. Tóth, D. De Zeeuw, **A. Ridley**, T. Gombosi, Magnetic reconnection in global MHD modeling of Earth's magnetospheric dynamics, *10^{th} Scientific Assembly of the International Association of Geomagnetism and Aeronomy*, Toulouse, France, July 18-29, 2005.
9. J. Vogt, B. Zieger, K.-H. Glassmeier, A. Stadelmann, T.I. Gombosi, K.C. Hansen, **A.J. Ridley**, *10^{th} Scientific Assembly of the International Association of Geomagnetism and Aeronomy*, Toulouse, France, July 18-29, 2005.
10. **A.J. Ridley**, The Tribulations and Exultations in Coupling Models of the Magnetosphere with Ionosphere-Thermosphere Models, *Geospace Environment Modeling Workshop*, Santa Fe, NM, July 1, 2005.
11. E.A. Kihn, **A.J. Ridley**, and R. Redmon, Solar Cycle Variations Observed in the High-Latitude Ionosphere, *2005 Spring AGU Meeting*, New Orleans, LA, May 23-27, 2005.
12. T.I. Gombosi, G. Toth, I.V. Sokolov, Q.F. Stout, C.R. Clauer, D.L. De Zeeuw, K.C. Hansen, W.B. Manchester, K.G. Powell, **A.J. Ridley**, I.I. Roussev, Cross-Disciplinary Modeling of Heliospheric Phenomena with the Space Weather Modeling Framework, *2005 Spring AGU Meeting*, New Orleans, LA, May 23-27, 2005.
13. **A.J. Ridley**, An analysis of ionospheric data availability and quality, *2004 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2004.

14. J. U. Kozyra, B.J. Anderson, P.C. Brandt, C.A. Cattell, J.P. Dombeck, M.R. Hairston, R.A. Heelis, C.Y. Huang, H. Korth, M.W. Liemohn, M.J. Mendillo, D.G. Mitchell, L.J. Paxton, C.J. Pollock, **A.J. Ridley**, K. Shiokawa, M.F. Thomsen, L.J. Zanetti, Coupling Processes in the Inner Magnetosphere Associated with Midlatitude Red Auroras during Superstorms, *2004 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2004.
15. **A.J. Ridley**, Ionospheric Outflow Influence on Magnetospheric Configuration, *Huntsville 2004 Workshop*, Huntsville, AL, October 18-22, 2004.
16. **A.J. Ridley**, T. Gombosi, G. Toth, O. Volberg, I. Sokolov, D. De Zeeuw, K. Hansen, D. Chesney, K. Powell, K. Kane, R. Oehmke, Q. Stout, Space Weather Modeling Framework: An Overview and Application to the October 29, 2003 Storm, *Huntsville 2004 Workshop*, Huntsville, AL, October 18-22, 2004.
17. **A.J. Ridley**, D. De Zeeuz, I. Sokolov, G. Toth, C. Clauer, W. Manchester, T.I. Gombosi, K. Powell, The Possible Magnetospheric, Ionospheric, and Thermospheric Response to the 1859 Carrington CME, *2004 Spring AGU Meeting*, Montreal, Canada, May 17-21, 2004.
18. W. Manchester, **A.J. Ridley**, T.I. Gombosi, D. De Zeeuz, I. Sokolov, G. Toth, Modeling the Carrington Event: sun-to-earth propagation of a very fast CME, *2004 Spring AGU Meeting*, Montreal, Canada, May 17-21, 2004.
19. **A.J. Ridley**, Real-time AMIE Operation, Validation, and Plans for the Future, *2004 Space Weather Week*, Boulder, CO, April 13-16, 2004.
20. **A.J. Ridley**, T. Gombosi, G. Toth, O. Volberg, I. Sokolov, D. De Zeeuw, K. Hansen, D. Chesney, K. Powell, K. Kane, R. Oehmke, Q. Stout, Comprehensive Solar-Terrestrial Environment Model for Space Weather Predictions: Progress of the Space Weather MURI Project, *2004 Space Weather Week*, Boulder, CO, April 13-16, 2004.
21. **A.J. Ridley**, W. Manchester, I. Roussev, T.I. Gombosi, Magnetospheric, Ionospheric, and Thermospheric results for the May 1-4, 1998 CME using a coupled Sun to Earth Model, *2003 Fall AGU Meeting*, San Francisco, CA, December 8-12, 2003.
22. W.B. Manchester, I. Roussev, I. Sokolov, **A.J. Ridley**, T.I. Gombosi, D. De Zeeuw, K. Hansen, and G. Toth, Modeling the May 1, 1998 CME propagation from the Sun to the Earth, *2003 Fall AGU Meeting*, San Francisco, CA, December 8-12, 2003.
23. **A.J. Ridley**, T.I. Gombosi, C.R. Clauer, Data Assimilation in ionospheric and magnetospheric models, *2003 Fall AGU Meeting*, San Francisco, CA, December 8-12, 2003.
24. **A.J. Ridley**, T.I. Gombosi, The Space Weather Modeling Framework, *CCMC Workshop*, Maui, HI, October 28-31, 2003.
25. **A.J. Ridley**, and M. W. Liemohn, The Future of Space Physics, IUGG General Assembly, Sapporo, Japan, June 30-July 11, 2003.
26. T.I. Gombosi, R. Clauer, K. Powell, Q. Stout, D. Chesney, D. De Zeeuw, K. Hansen, K.Kane, J. Kozyra, M. Liemohn, W. Manchester, **A. Ridley**, I. Roussev, I. Sokolov, G. Tóth, O. Volberg, Center for Space Environment Modeling (CSEM), *2003 GEM Meeting*, Snowmass, Colorado, June 23-27, 2003.
27. T.I. Gombosi, W.B. Manchester, **A.J. Ridley**, D.L. De Zeeuw, K.C. Hansen, I.V. Sokolov, G. Tóth, K.G. Powell, Modeling a space weather event from the Sun to the Earth, *2003 IUGG Meeting*, Sapporo, Japan, June 30 - July 11, 2003.
28. **A.J. Ridley**, The Space Weather Modeling Framework, *CEDAR Workshop*, Boulder, CO, June 16-20, 2003.
29. T.I. Gombosi, D.S. Berstein, C.R. Clauer, K.G. Powell, **A.J. Ridley**, Q.F. Stout, Data Assimilation into global MHD magnetosphere-ionosphere models: A new challenge for space physics, *2002 Fall AGU Meeting*, San Francisco, CA, December 6-10, 2002.

30. M.W. Liemohn, **A.J. Ridley**, J.U. Kozyra, C.R. Clauer, D.L. Gallagher, D.M. Ober, P. C:son Brandt, G.V. Khazanov, Quantifying the magnitude of the stormtime subauroral currents and electric fields from data-theory comparisons, *2002 Fall AGU Meeting*, San Francisco, CA, December 6-10, 2002.
31. **A.J. Ridley**, T.I. Gombosi, D.L. De Zeeuw, K.C. Hansen, K.G. Powell, I.V. Sokolov, G. Tóth, Ionospheric Control of Magnetospheric Dynamics: How the Ionospheric Conductance, Neutral Winds, and Outflow Effect the Magnetosphere, *Western Pacific Geophysics Meeting*, Wellington, New Zealand, July 9-12, 2002.
32. M.W. Liemohn, D.L. Gallagher, D.M. Ober, **A.J. Ridley**, J.U. Kozyra, P. C:son Brandt, G.V. Khazanov, and M.L. Adrian, Nightside plasmasphere variations produced by the stormtime ring current, *2002 Spring AGU Meeting*, Washington, D.C., May 28-31, 2002.
33. T. Gombosi, D. De Zeeuw, **A. Ridley**, Global Simulations of Ionospheric Control of the Magnetosphere, *10th International Ionospheric Effects Symposium*, Alexandria, Virginia, May 7-9, 2002.
34. E.A. Kihn and **A.J. Ridley**, rtAMIE: a Nowcast/Forecast model for Ionospheric Electrodynamics, *Space Weather Workshop*, Boulder, CO, April 16-19, 2002.
35. **A.J. Ridley**, T.I. Gombosi, C.R. Clauer, D.L. De Zeeuw, K. Powell, Neutral Wind Effects on Magnetospheric Dynamics, *Community Coordinated Modeling Workshop*, Washington, DC, April 9-10, 2002.
36. **A.J. Ridley**, D.L. De Zeeuw, T.I. Gombosi, C.R. Clauer, K. Powell, Magnetospheric and Ionospheric Configuration During Extreme Solar Wind Conditions, *2001 Fall AGU Meeting*, San Francisco, CA, December 10-14, 2001.
37. **A.J. Ridley**, Ionospheric control of magnetospheric dynamics: How the ionospheric conductance and outflow effect the magnetosphere, *2001 Yellowstone Meeting*, Yellowstone National Park, October 1-5, 2001.
38. T.I. Gombosi, D.L. De Zeeuw, K.G. Powell, **A.J. Ridley** and G. Tóth, Global magnetosphere simulations with the Michigan AMR MHD code, *A New View of Geospace*, Callaway Gardens, Georgia, October 30 - November 3, 2000.
39. **A.J. Ridley**, T. Gombosi, C. Clauer, D. De Zeeuw, K. Powell, Neutral Wind Effects on Magnetospheric Convection and Ionospheric Joule Heating, *2000 Spring AGU Meeting*, Washington, DC, May 30-June 3, 2000.
40. **Ridley, A.J.**, rtAMIE: Results of the Auroral Electrojet Challenge, *Space Weather Workshop*, Boulder, CO, May, 2000.
41. **A.J. Ridley**, The global magnetispheric convection response to changes in the solar wind and interplanetary magnetic field orientation, *1999 IUGG Meeting*, The University of Birmingham, UK, July 18-30, 1999.

Contributed Talks

1. **Ridley, A.J.**, Drake, P., Gilchrist, B., Gombosi, T., Liemohn, M.W., Renno, N., Ruf, C., Zurbuchen, T.H., The Space Weather Concentration at the University of Michigan, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
2. DeJong, A.D., C.R. Clauer, **A.J. Ridley**, Characterizing SMCs by the Balance of Reconnection Rates, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
3. Bell, J.M., S.W. Bougher, J.H. Waite, **A.J. Ridley**, Dynamics and Other Processes in Titan's Thermosphere, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
4. Glocer, A., T. Gombosi, G. Toth, K. Hansen, A. Ridley, Modeling the "gap" region between the ionosphere and magnetosphere, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.

5. **Ridley, A.J.**, Y. Deng, D. Pawlowski, H. Liu, Global Ionosphere Thermosphere Model results of the Halloween Storm, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
6. Zhang, J., R.A. Wolf, S. Sazykin, F.R. Toffoletto, M.W. Liemohn, D.L. De Zeeuw, **A.J. Ridley**, G. Toth, T.I. Gombosi, Ring Current Decay of Moderate Storms at Solar Maximum: Global Modeling Using Superposed Epoch Upstream Conditions, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
7. Nagy, A., A. Glocer, T. Gombosi, G. Toth, K. Hansen, A. Ridley, The Polar Wind Outflow Model: Saturn Results, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
8. Lavraud, B., E. Pogue, J.E. Borovsky, M.F. Thomsen, **A.J. Ridley**, H. Reme, A.N. Fazakerley, E.A. Lucek, Strong bulk plasma acceleration in Earth magnetosheath: A magnetic slingshot effect, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
9. Deng, Y., **A.J. Ridley**, T. Zhan, M. Larsen, R. Pfaff, Comparison between GITM simulation and JOULE rocket observation, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
10. Green, D.L., C.L. Waters, H. Korth, B.J. Anderson, **A.J. Ridley**, R.J. Barnes, Large-Scale Ionospheric Conductance from Combined Satellite and Ground-Based Electromagnetic Data, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
11. Kabin, K., M. Watanabe, R. Rankin, G.J. Sofko, **A.J. Ridley**, C.R. Clauer, T.I. Gombosi, Ionospheric Convection and Reconnection Signatures in a Global Circulation Model of the Earth Magnetosphere for Northward IMF and for IMF By, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
12. Kivelson, M.G., **A.J. Ridley**, Saturation of the Polar Cap Potential: Inference from Alfvén Wing Arguments, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
13. Clauer, C.R., S. Musko, K. Arnett, V. Papitashvili, **A. Ridley**, Autonomous Low-Power Instrument Platform to enable Remote High Latitude Array Deployment, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
14. De Zeeuw, D., T. Gombosi, G. Toth, **A. Ridley**, A Graphical User Interface to the Michigan Space Weather Modeling Framework, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
15. Gombosi, T.; Toth, G.; Sokolov, I.; **Ridley, A.**; de Zeeuw, D.; Manchester, W.; Clauer, R., Space weather simulations with the Space Weather Modeling Framework, 36th COSPAR Scientific Assembly. Held 16 - 23 July 2006, in Beijing, China., p.1541.
16. Y. Deng and **A.J. Ridley**, The role of vertical ion convection in the high-latitude ionospheric plasma distribution, 36th COSPAR Scientific Assembly. Held 16 - 23 July 2006, in Beijing, China., p.3097.
17. J.-C. Zhang; Liemohn, M. W.; de Zeeuw, D. L.; Borovsky, J. E.; **Ridley, A. J.**; Toth, G.; Sazykin, S.; Thomsen, M. F.; Kozyra, J. U.; Gombosi, T. I., nderstanding Ring Current Sources of Moderate and Intense Storms at Solar Maximum: Global Modeling Using Superposed Epoch Upstream Conditions, 36th COSPAR Scientific Assembly. Held 16 - 23 July 2006, in Beijing, China., p.3321.
18. Fairfield, D.H., M.M. Kuznetsova, T. Mukai, T. Nagai, T.I. Gombosi, **A.J. Ridley**, Kelvin-Helmholtz Waves on the Dusk Flank Boundary Layer During Very Northward IMF Conditions: Observations and Simulations, *2006 AGU Joint Assembly Meeting*, Baltimore, MA, May 23-26, 2006.
19. Bell, J.M., S.W. Bougher, V. De LaHaye, J.H. Waite, **A. Ridley**, Updated Results from the Michigan Titan Thermospheric General Circulation Model (TTGCM), *2006 AGU Joint Assembly Meeting*, Baltimore, MA, May 23-26, 2006.
20. Zhang, J., M.W. Liemohn, D.L. De Zeeuw, J.E. Borovsky, **A.J. Ridley**, G. Toth, S. Sazykin, M.F Thomsen, J.U. Kozyra, T.I. Gombosi, Understanding Ring Current Sources of Moderate and Intense Storms at Solar Maximum: Global Modeling Using Superposed Epoch Upstream Conditions, *2006 AGU Joint Assembly Meeting*, Baltimore, MA, May 23-26, 2006.

21. T. Gombosi, G. Toth, **A. Ridley**, D. De Zeeuw, I. Sokolov, Validating Global Magnetosphere Simulations with Multipoint Measurements , *2006 EGU Meeting*, Vienna, Austria, April 2-7, 2006.
22. M.W. Liemohn, **A. Ridley**, P.C. Brandt, The ring current during sawtooth oscillations: Data-model comparisons for 2 events, *2005 EGU Meeting*, Vienna, Austria, April 2-7, 2006.
23. **A.J. Ridley**, K.C. Hansen, Alfven Wing Formation at the Magnetosphere and the Saturation of the Ionospheric Potential, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
24. D.L. De Zeeuw, S. Sazykin, **A.J. Ridley**, T.I Gombosi, R. Wolf, Oxygen effects in the Rice Convection Model when coupled to the Space Weather Modeling Framework (SWMF), *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
25. G. Toth, D.L. De Zeeuw, T.I Gombosi, W.B. Manchester, **A.J. Ridley**, I.I. Roussev, I.V. Sokolov, Sun-to-Thermosphere Simulation of the October 28, 2003 Event With the Space Weather Modeling Framework, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
26. Y. Deng, **A.J. Ridley**, Ionospheric positive and negative storm phases: Dependence on the vertical ion transport, tongue of ionization and neutral advection, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
27. E.A. Kihn, R. Redmon, **A.J. Ridley**, Long term changes in the cross polar cap potential observed using an array of ground magnetometers, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
28. X. Fang, M.W. Liemohn, J.U. Kozyra, **A.J. Ridley**, D.S. Evans, Global Energetic Proton Precipitation During April 2002 and Its Impact on the Ionosphere-Thermosphere System, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
29. J. Zhang, M.W. Liemohn, D.L. De Zeeuw, J.E. Borovsky, **A.J. Ridley**, G. Toth, S. Sazykin, M.F. Thomsen, J.U. Kozyra, T.I Gombosi, R. Wolf, Understanding Storm-time Ring Current Sources through Data-Model Comparisons of a Moderate Storm, an Intense Storm and a Super-storm, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
30. M.W. Liemohn, **A.J. Ridley**, J.U. Kozyra, D.L. Gallagher, P.C. Brandt, J. Goldstein, M.G. Henderson, M.H. Denton, Analyzing Electric Field Morphology Through Data-Model Comparisons of the GEM IM/S Assessment Challenge Events, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
31. D. Schriver, M. Ashour-Abdalla, L. Zelenyi, T. Gombosi, **A. Ridley**, G. Toth, P. Travnicek, Transport and Acceleration of Electrons from the Outer to the Inner Magnetosphere, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
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