

Radio and Space Plasma Physics Group Publications

Group authors are shown in **bold** type

Calendar Year 2014

Refereed research papers

- 14-1 Arridge, C.S., N. Achilleos, J. Agarwal, C.B. Agnor, R. Ambrosi, N. Andr, S.V. Badman, K. Baines, D. Banfield, M. Barthlmy, M.M. Bisi, J. Blum, T. Bocanegra- Bahamon, B. Bonfond, C. Bracken, P. Brandt, C. Briand, C. Briois, S. Brooks, J. Castillo-Rogez, T. Cavali, B. Christophe, A.J. Coates, G. Collinson, J.F. Cooper, M. Costa-Sitja, R. Courtin, I.A. Daglis, I. de Pater, M. Desai, D. Dirkx, M.K. Dougherty, R. Ebert, G. Filacchione, L.N. Fletcher, J. Fortney, I. Gerth, D. Grassi, D. Grodent, E. Grün, J. Gustin, M. Hedman, R. Helled, P. Henri, S. Hess, J.K. Hillier, M.H. Hofstadter, R. Holme, M. Horanyi, G. Hospodarsky, S. Hsu, P. Irwin, C.M. Jackman, O. Karatekin, S. Kempf, E. Khalisi, K. Konstantinidis, H. Krger, W.S. Kurth, C. Labrianidis, V. Lainey, L. Lamy, M. Laneuville, D. Lucchesi, A. Luntzer, J. MacArthur, A. Maier, A. Masters, S. McKenna-Lawlor, **H. Melin**, A. Milillo, G. Moragas-Klostermeyer, A. Morschhauser, J. I. Moses, O. Mousis, N. Nettelmann, F.M. Neubauer, T. Nordheim, B. Noyelles, G.S. Orton, M. Owens, R. Peron, C. Plainaki, F. Postberg, N. Rambaux, K. Retherford, S. Reynaud, E. Roussos, C.T. Russell, A.M. Rymer, R. Sallantin, A. Sanchez-Lavega, O. Santolik, J. Saur, K.M. Sayanagi, P. Schenk, J. Schubert, N. Sergis, E.C. Sittler, A. Smith, F. Spahn, R. Srama, **T. Stallard**, V. Sterken, N. Z. Sternovsky, M. Tiscareno, G. Tobie, F. Tosi, M. Trieloff, D. Turrini, E.P. Turtle, S. Vinatier, R. Wilson, P. Zarka, The science case for an orbital mission to Uranus: Exploring the origins and evolution of ice giant planets, *Planet. Space Sci.*, **104**, 122-140, doi: 10.1016/j.pss.2014.08.009, 2014.
- 14-2 Badman, S.V., **G. Provan**, E.J. Bunce, D.G. Mitchell, **H. Melin**, **S.W.H. Cowley**, A. Radioti, W.S. Kurth, W.R. Pryor, **J.D. Nichols**, S.L. Jinks, **T.S. Stallard**, R.H. Brown, K.H. Baines, and M.K. Dougherty, Saturn's auroral morphology and field-aligned currents during a solar wind compression, *Icarus*, **231**, doi: 10.1016/j.icarus.2014.11.014, 2014.
- 14-3 Badman, S.V., C.M. Jackman, **J.D. Nichols**, J.T. Clarke, and J.-C. Gérard, Open flux in Saturn's magnetosphere, *Icarus*, **231**, 137–145, doi:10.1016/j.icarus.2013.12.004, 2014.
- 14-4 Badman, S.V., G. Branduardi-Raymont, M. Galand, S.L.G. Hess, N. Krupp, L. Lamy, **H. Melin**, and C. Tao, Auroral processes at the giant planets: Energy deposition, emission mechanisms, morphology and spectra, *Space Sci. Rev.*, **185**, doi:10.1007/s11214-014-0042-x, 2014.
- 14-5 Bagenal, F., A. Adriani, F. Allegrini, S.J. Bolton, B. Bonfond, E.J. Bunce, J.E.P. Connerney, **S.W.H. Cowley**, R.W. Ebert, G.R. Gladstone, C.J. Hansen, W.S. Kurth, S.M. Levin, B.H. Mauk, D.J. McComas, C.P. Paranicas, D. Santos-Costa, R.M. Thorne, P. Valek, J.H. Waite, and P. Zarka, Magnetospheric science objectives of the Juno mission, *Space Sci. Rev.*, **185**, doi: 10.1007/s11214-014-0036-8, 2014.
- 14-6 Belenkaya, E.S., **S.W.H. Cowley**, and V.V. Kalegaev, The response of the high-latitude ionosphere to the solar wind pressure jump with a southward IMF on January 10, 1997 (in Russian), *Geomagn. Aeron.*, **54**, 217-220, 2014. (English version *Geomagn. Aeron.*, **54**, 203-206, 2014.)
- 14-7 Belenkaya, E.S., **S.W.H. Cowley**, **C.J. Meredith**, **J.D. Nichols**, V.V. Kalegaev, I.I. Alexeev, O.G. Barinov, W.O. Barinova, and M.S. Blokhina, Magnetospheric magnetic field modelling

- for the 2011 and 2012 HST Saturn aurora campaigns – implications for auroral source regions, *Ann. Geophys.*, **32**, 689-704, doi: 10.5914/angeo-32-689-2014, 2014.
- 14-8 Borisova, T.D., N.F. Blagoveshchenskaya, A.S. Kalishin, M. Kosch, A. Senior, M.T. Rietveld, **T.K. Yeoman**, and I. Hagstrom, Phenomena in the high-latitude ionospheric F region induced by a HF heater wave at frequencies near the fourth electron gyroharmonic, *Radiophys. Quantum Electron.*, **57**, 1-19, doi: 10.1007/s11141-014-9489-6, 2014.
- 14-9 Bunce, E.J., D.C. Grodent, S.L. Jinks, D.J. Andrews, S.V. Badman, A.J. Coates, **S.W.H. Cowley**, M.K. Dougherty, W.S. Kurth, D.G. Mitchell, and **G. Provan**, Cassini nightside observations of the oscillatory motion of Saturn's northern auroral oval, *J. Geophys. Res. Space Phys.*, **119**, 3528-3543, doi: 10.1002/2013JA019527, 2014.
- 14-10 Clausen, L.B., N., **S.E. Milan**, and A. Grocott, Thermospheric density perturbations in response to substorms, *J. Geophys. Res. Space Phys.*, **119**, doi:10.1002/2014JA019837, 2014.
- 14-11 Collier, M.R., S.L. Snowden, M. Sarantos, M. Benna, **J.A. Carter**, T.E. Cravens, W.M. Farrell, S. Fatemi, H.K. Hills, R.R. Hodges, M. Holmström, K.D. Kuntz, F.S. Porter, A. Read, I.P. Robertson, S.F. Sembay, D.G. Sibeck, T.J. Stubbs, P. Travnicek, and B.M. Walsh, On lunar exospheric column densities and solar wind access beyond the terminator from ROSAT soft X-ray observations of solar wind charge exchange, *J. Geophys. Res. Planets*, **119**, 1459-1478, doi: 10.1002/2014JE004628, 2014.
- 14-12 **Conlon, T.M., S.E. Milan**, and J.A. Davies, Assessing the effect of spacecraft motion on single-spacecraft solar wind tracking techniques, *Solar Phys.*, **289**, 3935-3947, doi: 10.1007/s11207-014-0549-z, 2014.
- 14-13 **Coxon, J.C., S.E. Milan**, L.B.N. Clausen, B.J. Anderson, and H. Korth, A superposed epoch analysis of the Region 1 and Region 2 Birkeland currents observed by AMPERE during substorms, *J. Geophys. Res. Space Phys.*, **119**, doi: 10.1002/2014JA020500, 2014.
- 14-14 **Coxon, J.C., S.E. Milan**, L.B.N. Clausen, B.J. Anderson, and H. Korth, The magnitudes of the Birkeland currents observed by AMPERE and their role in solar wind-magnetosphere-ionosphere coupling, *J. Geophys. Res. Space Phys.*, **119**, doi: 10.1002/2014JA020138, 2014.
- 14-15 **Fear, R.C., S.E. Milan**, and R. Maggiolo, Direct observation of closed magnetic flux trapped in the high latitude magnetosphere, *Science*, **346**, 1506-1510, doi: 10.1126/science.1257377, 2014.
- 14-16 Fraser, G.W., A.M. Read, S. Sembay, **J.A. Carter**, and E. Schyns, Potential solar axion signatures in X-ray observations with the XMM-Newton observatory, *Mon. Not. Roy. Astron. Soc.*, **445**, 2146-2168, 2014.
- 14-17 Gomez de Castro, A.I., T. Appourchaux, M. Barstow, M. Barthelemy, F. Baudin, F.S. Benetti, P. Blay, N. Brosch, E. Bunce, D. de Martino, J.-M. Deharveng, K. France, R. Ferlet, M. García, B. Gaensicke, C. Gry, L. Hillenbrand, E. Josselin, C. Kehrig, L. Lamy, J. Lapington, A. Lecavelier des Etangs, F. LePetit, J. Lopez Santiago, B. Milliard, R. Monier, G. Naletto, Y. Nazé, C. Neiner, **J. Nichols**, M. Orio, I. Pagano, C. Peroux, G. Rauw, S. Shore, M. Spaans, G. Tovmassian, A. ud-Doula, and J. Vilchez, Building galaxies, stars, planets and the ingredients for life between the stars: The science behind the European Ultraviolet-Visible Observatory, *Astrophys. Space Sci.*, doi: 10.1007/s10509-014-1942-7, 2014.

- 14-18 Grocott, A., and **S.E. Milan**, The influence of IMF clock angle timescales on the morphology of ionospheric convection, *J. Geophys. Res. Space Phys.*, **119**, 5861-5876, doi: 10.1002/2014JA020136, 2014.
- 14-19 **Hunt, G.J., S.W.H. Cowley, G. Provan**, E.J. Bunce, I.I. Alexeev, E.S. Belenkaya, V.V. Kalegaev, M.K. Dougherty, and A.J. Coates, Field-aligned currents in Saturn's southern nightside magnetosphere: Sub-corotation and planetary period oscillation components, *J. Geophys. Res. Space Phys.*, **119**, 9847-9899, doi: 10.1002/2014JA020506, 2014.
- 14-20 **Imber, S.M.**, J.A. Slavin, S.A. Boardsen, B.J. Anderson, H. Korth, R.L. McNutt, Jr., and S.C. Solomon, MESSENGER observations of large dayside flux transfer events: Do they drive Mercury's substorm cycle?, *J. Geophys. Res. Space Phys.*, **119**, 5613-5623, doi: 10.1002/2014JA019884, 2014.
- 14-21 Jackman, C.M., C.S. Arridge, N. André, F. Bagenal, J. Birn, M.P. Freeman, X. Jia, A. Kidder, **S.E. Milan**, A. Radioti, J.A. Slavin, M.F. Vogt, M. Volwerk, and A.P. Walsh, Large-scale structure and dynamics of the magnetotails of Mercury, Earth, Jupiter and Saturn, *Space Sci. Rev.*, **182**, 85-154, doi: 10.1007/s11214-014-0060-8, 2014.
- 14-22 Jinks, S.L., E.J. Bunce, **S.W.H. Cowley, G. Provan, T.K. Yeoman**, C.S. Arridge, M.K. Dougherty, D.A. Gurnett, N. Krupp, W.S. Kurth, D.G. Mitchell, M. Morooka, and J.E. Wahlund, Cassini multi-instrument assessment of Saturn's polar cap boundary, *J. Geophys. Res. Space Phys.*, **119**, 8161-8177, doi: 10.1002/2014JA020367, 2014.
- 14-23 Juusola, L., **S.E. Milan, M. Lester**, A. Grocott, and **S.M. Imber**, Interplanetary magnetic field control of the ionospheric field-aligned current and convection distributions, *J. Geophys. Res. Space Phys.*, **119**, 3130-3149, doi: 10.1002/2013JA019455, 2014.
- 14-24 Juusola, L., G. Facskó, I. Honkonen, P. Jahunen, H. Vanhamäka, K. Kauristie, T.V. Laitinen, **S.E. Milan**, M. Palmroth, E.I. Tanskanen, and A. Viljanen, Statistical comparison of seasonal variations in the GUMICS-4 global MHD model ionosphere and measurements, *Space Weather*, **12**, 582-600, doi: 10.1002/2014SW001082, 2014.
- 14-25 Kepko, L., R.L. McPherron, O. Amm, S. Apatenko, W. Baumjohann, J. Birn, **M. Lester**, R. Nakamura, T.I. Pulkkinen and V. Sergeev, Substorm current wedge revisited, *Space Sci. Rev.*, **185**, doi: 10.1007/s11214-014-0124-9, 2014.
- 14-26 Kosch, M.J., C. Bryers, M.T. Rietveld., **T.K. Yeoman**, and Y. Ogawa, Aspect angle sensitivity of pump-induced optical emissions at EISCAT, *Earth Planets Space*, **66**:159, <http://dx.doi.org/10.1186/s40623-014-0159-x>, 2014.
- 14-27 Kozlovsky, A., S. Shalimov, R. Lukianova, and **M. Lester**, Ionospheric effects of the missile destruction on December 9, 2009, *J. Geophys. Res. Space Phys.*, **119**, 3873-3882, doi: 10.1002/2013JA019531, 2014.
- 14-28 **Melin, H., T.S. Stallard, J. O'Donoghue**, S.V. Badman, S. Miller, and **J.S.D. Blake**, On the anti-correlation between H3+ temperature and density in giant planet ionospheres, *Mon. Not. Roy. Astron. Soc.*, **438**, 1611-1617, doi: 10.1093/mnras/stt2299, 2014.
- 14-29 **Meredith, C.J.**, I.I. Alexeev, S.V. Badman, E.S. Belenkaya, **S.W.H. Cowley**, M.K. Dougherty, V.V. Kalegaev, G.R. Lewis, and **J.D. Nichols**, Saturn's dayside UV auroras: Evidence for morphological dependence on the direction of the upstream interplanetary magnetic field, *J. Geophys. Res. Space Phys.*, **119**, 1994-2008, doi: 10.1002/2013JA019598, 2014.

- 14-30 **Meredith, C.J., S.W.H. Cowley, and J.D. Nichols**, Survey of Saturn auroral storms observed by the Hubble Space Telescope: Implications for storm time scales, *J. Geophys. Res. Space Phys.*, **119**, 9624-9642, doi: 10.1002/2014JA0020601, 2014.
- 14-31 **Nichols, J.D.**, S.V. Badman, K.H. Baines, R.H. Brown, E.J. Bunce, J.T. Clarke, **S.W.H. Cowley**, F.J. Crary, M.K. Dougherty, J.-C. Gérard, A. Grocott, D. Grodent, W.S. Kurth, **H. Melin**, D.G. Mitchell, W.R. Pryor, and **T.S. Stallard**, Dynamic auroral storms on Saturn as observed by the Hubble Space Telescope, *Geophys. Res. Lett.*, **41**, 3323-3330, doi: 10.1002/2014GL060186, 2014.
- 14-32 Nishimura, Y., L.R. Lyons, Y. Zou, K. Oksavik, J.I. Moen, L.B.B. Clausen, E.F. Donovan, V. Angelopoulos, K. Shiokawa, J.M. Ruohoniemi, N. Nishitani, K.A. McWilliams and **M. Lester**, Day-night coupling by a localized flow channel visualized by polar cap patch propagation, *Geophys. Res. Lett.*, **41**, 3701-3709, doi: 10.1002/2014GL060301, 2014.
- 14-33 **O'Donoghue, J., T.S. Stallard, H. Melin, S.W.H. Cowley**, S.V. Badman, L. Moore, S. Miller, C. Tao, K.H. Baines, and **J.S.D. Blake**, Conjugate observations of Saturn's northern and southern H3+ aurora, *Icarus*, **229**, 214-220, doi: 10.1016/j.icarus.2013.11.009, 2014.
- 14-34 **Provan, G.**, L. Lamy, **S.W.H. Cowley**, and M.K. Dougherty, Planetary period oscillations in Saturn's magnetosphere: Comparison of magnetic oscillations and SKR modulations in the post-equinox interval, *J. Geophys. Res. Space Phys.*, **119**, doi: 10.1002/2014JA020011, 2014.
- 14-35 Radioti, A., D. Grodent, J.-C. Gérard, **S.E. Milan, R.C. Fear**, C M. Jackman, B. Bonfond, and W. Pryor, Saturn's elusive nightside polar arc, *Geophys. Res. Lett.*, **41**, 6321-6328, doi:10.1002/2014GL061081, 2014.
- 14-36 Reistad, J.P., N. Østgaard, K.M. Laundal, S. Haaland, P. Tenfjord, K. Snekvik, K. Oksavik, and **S.E. Milan**, Hemispheric asymmetries in solar wind dynamo efficiency due to IMF Bx, *J. Geophys. Res. Space Phys.*, **119**, doi: 10.1002/2014JA020216, 2014.
- 14-37 Sergeev, V.A., A.V. Nikolaev, M.V. Kubyshkina, N.A. Tsyganenko, H. Singer, J. Rodriguez, V. Angelopoulos, R. Nakamura, **S.E. Milan, J.C. Coxon**, B. Anderson, and H. Korth, Event study combining magnetospheric and ionospheric perspectives of the substorm current wedge modeling and dynamics, *J. Geophys. Res. Space Phys.*, **119**, doi: 10.1002/2014JA020522, 2014.
- 14-38 Slavin, J.A., G.A. DiBraccio, D.J. Gershman, **S.M. Imber**, G.K. Poh, J.M. Raines, T.H. Zurbuchen, X. Jia, D.N. Baker, K.-H. Glassmeier, S.A. Livi, S.A. Boardsen, T. A. Cassidy, M. Sarantos, T. Sundberg, A. Masters, C.L. Johnson, R.M. Winslow, B.J. Anderson, H. Korth, R.L. McNutt, Jr., and S. C. Solomon, MESSENGER observations of Mercury's dayside magnetosphere under extreme solar wind conditions, *J. Geophys. Res. Space Phys.*, **119**, 8087-8116, doi: 10.1002/2014JA020319, 2014.
- 14-39 Southwood, D.J., and **S.W.H. Cowley**, The origin of Saturn magnetic periodicities: Northern and southern current systems, *J. Geophys. Res. Space Phys.*, **119**, 1563-1571, doi: 10.1002/2013JA019632, 2014.
- 14-40 Vogt, M.F., C.M. Jackman, J.A. Slavin, E.J. Bunce, **S.W.H. Cowley**, M.G. Kivelson, and K.K. Khurana, Structure and statistical properties of plasmoids in Jupiter's magnetotail, *J. Geophys. Res. Space Phys.*, **119**, 821-843, doi: 10.1002/2013JA019393, 2014.

Un-refereed publications

- 14-41 Boakes, P., R. Nakamura, M. Volwerk, and **S.E. Milan**, ECLAT Cluster spacecraft magnetotail plasma region identification (2001-2009), *Dataset Papers in Science*, 684305, doi: 10.1155/2014/684305, 2014.
- 14-42 **Cowley, S.W.H.**, Book review: “Numerical Modeling of Space Plasma Flows: ASTRONUM-2012 (ASP Conference Series Vol. 474)” edited by N.V. Pogorelov, E. Audit, and G.P. Zank, *The Observatory*, **134**, 87, 2014.
- 14-43 **Cowley, S.W.H.**, Book review: “Plasmas: The First State of Matter” by V. Krishan, *The Observatory*, **134**, 384-385, 2014.
- 14-44 Fraser, G., A. Read, S. Sembay, **J.A. Carter**, and E. Schyns, The X-ray signature of the solar axion flux observed by XMM Newton?, *The X-ray Universe 2014*, edited by J.-U. Ness, http://xmm.esac.esa.int/external/xmm_science/workshops/2014symposium/, id.74, 2014.

Ph.D. Theses

- 14-35 **O'Donoghue, J.**, The response of gas giant ionospheres to space environment forcing, Ph.D. thesis, University of Leicester, 2014.
- 14-36 **Hutchinson, J.A.**, Geomagnetic storms over the last solar cycle: A superposed epoch analysis, Ph.D. thesis, University of Leicester, 2014.