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| **Scientific Publications (Refereed)** |
| **M.-T. Walach** and A. Grocott **[in prep]**, *Modelling the time-variability of the ionospheric electric field (TIVIE)*, **Journal of Space Weather and Climate.** |
| **M.-T. Walach**, A. Grocott, F. Staples, and E. Thomas [**corrections pending**], *SuperDARN map comparability: Statistical comparisons of radar network expansions*, **J. Geophys. Res.: Space Physics**, Submitted version doi:10.1002/essoar.10507097.1 |
| J. H. Lane, A. Grocott, N. A. Case, and **M.-T. Walach**(**2021**), *Dynamics of variable dusk-dawn flow associated with magnetotail current sheet flapping*, **Ann. Geophys.**, 39, doi: 10.5194/angeo-39-1037-2021 |
| S. D. Walton, C. Forsyth, I. J. Rae, C. E. J. Watt, R. L. Thompson, R. B. Horne, N. P. Meredith, C. J. Rodger, **M.-T. Walach**, M. A. Cliver and S. A. Glauert (**2021**), *Cross-L\* coherence of the outer radiation belt during storms and the role of the plasmapause*, **J. Geophys. Res.: Space Physics**, 126, e2021JA029308. doi: 10.1029/2021JA029308 |
| J. K. Sandhu, I. J. Rae, F. A.  Staples, D. P. Hartley, **M.-T. Walach**, T. Elsden, and K. R. Murphy, (**2021**), *The roles of the magnetopause and plasmapause in storm-time ULF wave power enhancements*, **Journal of Geophysical Research: Space Physics**, 126, e2021JA029337. [doi:10.1029/2021JA029337](https://doi.org/10.1029/2021JA029337) |
| J. K. Sandhu, I. J. Rae, J. R. Wygant, A. W. Breneman, S. Tian, C. E. J. Watt, R. B. Horne, L. G. Ozeke, M. Georgiou, and **M.-T. Walach** (**2021**)**,** *ULF Wave Driven Radial Diffusion During Geomagnetic Storms: A statistical analysis of Van Allen Probes observations*, **Journal of Geophysical Research: Space Physics**, 126, e2020JA029024. [doi:10.1029/2020JA029024](https://doi.org/10.1029/2020JA029024) |
| **M.-T. Walach**, A. Grocott, and S. E. Milan (**2021**), *Average Ionospheric Electric Field Morphologies during Geomagnetic Storm Phases*, **Journal of Geophysical Research: Space Physics**, 126, e2020JA028512. [doi:10.1029/2020JA028512](https://doi.org/10.1029/2020JA028512) |
| J. K. Sandhu, I. J. Rae, and **M.-T. Walach** (**2021**), *Challenging the use of ring current indices during geomagnetic storms*, **Journal of Geophysical Research: Space Physics**, 126, e2020JA028423. [doi:10.1029/2020JA028423](https://doi.org/10.1029/2020JA028423). |
| S. J. Wharton, I. J. Rae, J. K. Sandhu, **M.-T. Walach**, D. M. Wright, and T. K. Yeoman, (**2020**) *The changing eigenfrequency continuum during geomagnetic storms: Implications for plasma mass dynamics and ULF wave coupling*, **Journal of Geophysical Research: Space Physics**, 125, e2019JA027648, doi: [10.1029/2019JA027648](https://doi.org/10.1029/2019JA027648). |
| **M.-T. Walach**, and A. Grocott (**2019**), *SuperDARN scatter during geomagnetic storms and geomagnetically active times,* **J. Geophys. Res.: Space Physics**, 124, 5828-5847, doi: [10.1029/2019JA026816](https://doi.org/10.1029/2019JA026816). |
| D.R. Jackson, T. J. Fuller‐Rowell, D. J. Griffin, M. J. Griffith, C. W.  Kelly, D. R. Marsh, and **M.-T. Walach** (**2019**).  *Future directions for whole atmosphere modeling: Developments in the context of space weather*. **Space Weather**, 17, doi: [10.1029/2019SW002267](https://doi.org/10.1029/2019SW002267). |
| J. K. Sandhu, I. J. Rae, M. P. Freeman, M. Gkioulidou, C. Forsyth, G. D. Reeves, K. R. Murphy, and **M.-T. Walach**, (**2019**). *Substorm-Ring Current Coupling: A comparison of isolated and compound substorms*, **J. Geophys. Res.: Space Physics**, 124, 6776– 6791, doi:10.1029/2019JA026766. |
| D. D. Billett, A. Grocott, J. A. Wild, A. Aruliah, A. Ronksley, **M.-T. Walach**, and M. Lester, (**2019**). *Spatially resolved neutral wind responses during high geomagnetically active times above Svalbard*, **J. Geophys. Res.: Space Physics**, 124, 6950-6960. [doi: 10.1029/2019JA026627](https://doi.org/10.1029/2019JA026627). |
| S. E. Milan, **M.-T. Walach**, J. A. Carter, H. Sangha, B. J. Anderson (**2019**).  *Substorm onset latitude and the steadiness of magnetospheric convection*, **J. Geophys. Res.: Space Physics**, 124, 1738-1752, doi: [10.1029/2018JA025969](https://doi.org/10.1029/2018JA025969). |
| D. D. Billett, A. Grocott, J. A. Wild, **M.-T. Walach**, and M. J. Kosch (**2018**). *Diurnal variations in global Joule heating morphology and magnitude due to neutral winds*., **J. Geophys. Res.: Space Physics**, 123, 2398-2411, [doi: 10.1002/2017JA025141](https://doi.org/10.1002/2017JA025141). |
| **M.-T. Walach**, S. E. Milan, K. R. Murphy, J. A. Carter, B. A. Hubert, and A. Grocott (**2017**), *Comparative study of large‐scale auroral signatures of substorms, steady magnetospheric convection events, and sawtooth events*, **J. Geophys. Res.: Space Physics**, 122, 6357–6373, doi: [10.1002/2017JA023991](https://doi.org/10.1002/2017JA023991). |
| **M.-T. Walach**, (**2017**), [*Ionospheric Convection and Auroral Responses to Solar Wind Driving*](http://www.research.lancs.ac.uk/portal/en/publications/ionospheric-convection-and-auroral-responses-to-solar-wind-driving(9521fce2-ba84-4c5f-b8a2-3a162d8d7e12).html), **PhD Thesis**, University of Leicester, <http://hdl.handle.net/2381/39717>. |
| **M.-T. Walach**, S. E. Milan, T. K. Yeoman, B. A. Hubert, and M. R. Hairston (**2017**), *Testing nowcasts of the ionospheric convection from the expanding and contracting polar cap model*, **Space Weather**, 15, 623–636, doi:[10.1002/2017SW001615](https://doi.org/10.1002/2017SW001615). |
| J. A. Carter, S. E. Milan, R. C. Fear, **M.‐T. Walach**, Z. A. Harrison, L. J. Paxton, and B. Hubert (**2017**), *Transpolar arcs observed simultaneously in both hemispheres.*, **J. Geophys. Res. Space Physics**, 122, 6107–6120, doi: [10.1002/2016JA023830](https://doi.org/10.1002/2016JA023830). |
| S. E. Milan, L. B. N. Clausen, J. C. Coxon, J. A. Carter, **M.-T. Walach**, K. Laundal, N. Østgaard, P. Tenfjord, J. Reistad, K. Snekvik, H. Korth, and B. J. Anderson (**2017**), *Overview of Solar Wind–Magnetosphere–Ionosphere–Atmosphere Coupling and the Generation of Magnetospheric Currents.,* **Space Sci. Rev.**, 206: 547, doi: [10.1007/s11214-017-0333-0](https://link.springer.com/article/10.1007/s11214-017-0333-0). |
| J. A. Carter, S. E. Milan, J. C. Coxon, **M.-T. Walach**, and B. J. Anderson (**2016**), *Average field-aligned current configuration parameterized by solar wind conditions*, **J. Geophys. Res.: Space Physics**, 121, 1294–1307, doi: [10.1002/2015JA021567](http://dx.doi.org/10.1002/2015JA021567). |
| S. E. Milan, S. M. Imber, J. A. Carter, **M.-T. Walach**, and B. Hubert (**2016**), *What controls the local time extent of flux transfer events?*, J. Geophys. Res.: Space Physics, 121, 1391–1401, doi: [10.1002/2015JA022012](http://dx.doi.org/10.1002/2015JA022012). |
| **M.-T. Walach**, and S. E. Milan (**2015**), *Are Steady Magnetospheric Convection Events Prolonged Substorms?*. **J. Geophys. Res.: Space Physics**, 120, 1751–1758, doi: [10.1002/2014JA020631](http://dx.doi.org/10.1002/2014JA020631). |
| **Software (Refereed)** |
| **SuperDARN Radar Software Toolkit (RST) 4.5.**: SuperDARN Data Analysis Working Group**;**  M.T. Schmidt**,** E.C. Bland, E.G. Thomas,A.G. Burrell,I. Coco, P. V. Ponomarenko,A.S. Reimer,K.T. Sterne, **M.-T. Walach**, **2021**, doi: 10.5281/zenodo.5156752. |
| **SuperDARN Radar Software Toolkit (RST) 4.5.**: SuperDARN Data Analysis Working Group**;** E.G. Thomas,M.T. Schmidt**,** E.C. Bland,A.G. Burrell,P. V. Ponomarenko,A.S. Reimer,K.T. Sterne, **M.-T. Walach**, **2021**, doi: 10.5281/zenodo.4435297. |
| **SuperDARN Radar Software Toolkit (RST) 4.4.1.**: D.D. Billett, E.C. Bland, A.G. Burrell, K. Kotyk, P. V Ponomarenko, …, **M.-T. Walach**, **2020**, doi: 10.5281/zenodo.3994968. |
| **SuperDARN Radar Software Toolkit (RST) 4.4.**: D.D. Billett, E.C. Bland, A.G. Burrell, K. Kotyk, P. V Ponomarenko, …, **M.-T. Walach**, **2020**, doi: 10.5281/zenodo.3934368. |
| [**SuperDARN Radar Software Toolkit (RST) 4.3.2**](http://www.research.lancs.ac.uk/portal/en/publications/superdarn-radar-software-toolkit-rst-432(99465c70-4ebf-4951-907c-36f08abc2967).html)**.**: E.G. Thomas, K. T. Sterne, S. Shepherd, K. Kotyk, M. Schmidt, P. V. Ponomarenko, E. C. Bland, [**M.-T. Walach**, A. S.](http://www.research.lancs.ac.uk/portal/en/people/maria-walach(58a7183d-d16b-4f9f-857a-874c189a91d6).html) Reimer, and A. G. Burrell, **2020**. doi: [10.5281/zenodo.3775981](https://doi.org/10.5281/zenodo.3775981). |
| **SuperDARN Radar Software Toolkit (RST) 4.3.1**.: E.G. Thomas, K.T. Sterne, S. Shepherd, K. Kotyk, M. Schmidt, P.V. Ponomarenko, A. J. Ribeiro, E.C. Bland, **M.-T. Walach**, A.S. Reimer, A.G. Burrell, D. Billett, W.A. Bristow, B. Tim, S. Marple, M. Rafiq, M. Krysztofowicz. **2019**. doi: 10.5281/zenodo.3634732. |
| [**SuperDARN Radar Software Toolkit (RST) 4.3**](http://www.research.lancs.ac.uk/portal/en/publications/superdarn-radar-software-toolkit-rst-43(6ce0b5a0-69b3-4abe-a3f1-f781c94c0aef).html).: E.G. Thomas, K.T. Sterne, S. Shepherd, K. Kotyk, M. Schmidt, P.V. Ponomarenko, A. J. Ribeiro, E.C. Bland, **M.-T. Walach**, A.S. Reimer, A.G. Burrell, D. Billett, W.A. Bristow, B. Tim, S. Marple, M. Rafiq, M. Krysztofowicz. **2019**. doi: [10.5281/zenodo.3401622](https://doi.org/10.5281/zenodo.3401622). |
| **SuperDARN Radar Software Toolkit (RST) 4.2.**: E.G. Thomas, P.V. Ponomarenko, [D.D. Billett, E.C.](http://www.research.lancs.ac.uk/portal/en/people/daniel-billett(9a159689-38a4-446b-912f-c7a561b487a2).html) Bland, A. G. Burrell, K. Kotyk, A. S. Reimer, M. Schmidt, S.G. Shepherd, K. T. Sterne, **M.-T. Walach**. **2018**. doi: [10.5281/zenodo.1403226](https://doi.org/10.5281/zenodo.1403226). |
| **SuperDARN Radar Software Toolkit (RST) 4.1.**: E.G. Thomas, P.V. Ponomarenko,  [E.C.](http://www.research.lancs.ac.uk/portal/en/people/daniel-billett(9a159689-38a4-446b-912f-c7a561b487a2).html) Bland, A. G. Burrell, K. Kotyk, K. T. Sterne, **M.-T. Walach**. **2018**. doi:[10.5281/zenodo.1143675](https://doi.org/10.5281/zenodo.1143675). |
| **Scientific Publications (Non-Refereed)** |
| **M.-T. Walach**, G. Hunt, A. R. Fogg, A. Bader (**2020**), *Autumn MIST 2019*, **Astronomy & Geophysics**, 61 (4), 4.26–4.28, editor: S. Bowler, publisher: Oxford University Press on behalf of the Royal Astronomical Society, doi: 10.1093/astrogeo/ataa056. |
| J. K. Sandhu, **M.-T. Walach**, H. Allison, C. Watt **(2019)**, *A global view of storms and substorms*,**Astronomy & Geophysics**, Vol. 60 (3), 3.13–3.19, editor: S. Bowler, publisher: Oxford University Press on behalf of the Royal Astronomical Society, [doi: 10.1093/astrogeo/atz144](https://doi.org/10.1093/astrogeo/atz144). |
| **M.-T. Walach** (**2018**)**,** [*Changing the Perspective: Looking at the Aurora from Space*](http://www.research.lancs.ac.uk/portal/en/activities/changing-the-perspective-looking-at-the-aurora-from-space(e4fb11ff-d55f-4f6f-a7d8-0e37b5dceffc).html), AuroraWatch UK Blog post, http://wp.lancs.ac.uk/aurorawatchuk/2018/02/09/changing-the-perspective-looking-at-the-aurora-from-space/. |
| **M.-T. Walach**, S. E. Milan (**2016**),*The Irregular Pulse of the Magnetosphere*, **Astronomy & Geophysics**, vol. 57 (1): 1.34-1.36, editor: S. Bowler, publisher: Oxford University Press on behalf of the Royal Astronomical Society, doi: 10.1093/astrogeo/atw041. |
| **Invited Talks** |
| **Virtual Seminar:** *High-latitude ionospheric convection during geomagnetic storms,* 02/03/2021**, Dartmouth College**, US. |
| **Virtual Seminar:** *Average Ionospheric Electric Field Morphologies during Geomagnetic Storm Phases*, 05/05/2020, Modelling GICs in the US project group, **Fairbanks**, Alaska, US. |
| **Invited Conference Talk**: *Large scale analysis of sawtooth events, and isolated substorms*, **14th International Conference on Substorms**, 03/10/2019, Tromsø, Norway. |
| **Seminar**: *Time variability in high-latitude ionospheric convection at Earth*, **University of Southampton**, 30/04/2019, Southampton, UK. |
| **Seminar**: *Time variability in high-latitude ionospheric convection at Earth*, **Mullard Space Science Laboratory** (UCL), 19/03/2019, Surrey, UK. |
| **Seminar**: *Ionospheric Convection and Auroral Responses to Solar Wind Driving*, **University of Leicester**, 16/01/2019, Leicester, UK. |
| **Seminar**: *Tracking Irregular Pulses of Earth’s Magnetosphere: Auroral Dynamics, Convection and Magnetospheric Modes*, **Lancaster University**, 18/03/2017, Lancaster, UK. |
| **Seminar**: *Magnetic Flux Transport and Plasma Flow in the Earth’s Magnetosphere,* **IRF Uppsala**, 03/02/2016, Uppsala, Sweden. |
| **Oral Conference Presentations** |
| **M.-T. Walach**, A. Grocott, W. Feng, D. Marsh, A. Aruliah, *Ionosphere and Thermosphere Observations in the Context of Whole Atmosphere Modelling*, **National Astronomy Meeting**, 19/07/2021, Virtual. |
| **M.-T. Walach**, A. Grocott, *SuperDARN observations of the September 2017 storm*, **Royal Astronomical Society Discussion Meeting** on Space Weather Energy Pathways and Implications for Impacts, 08/01/2021, Virtual. |
| **M.-T. Walach**, A. Grocott, *Modelling the Time-Variability of the Ionospheric Electric Field: Introducing the TiVIE model*, **European Space Weather Symposium**, 5/11/2020, Virtual. |
| **M.-T. Walach**, A. Grocott, S. E. Milan, *Average Ionospheric Electric Field Morphologies during Geomagnetic Storm Phases***, Virtual SuperDARN Workshop 2020,** 01/06/2020 -05/06/2020, Virtual**.** |
| **M.-T. Walach**, A. Grocott, S. E. Milan, *Average Ionospheric Electric Field Morphologies during Geomagnetic Storms,* **AGU Fall Meeting**, 12/12/2019, San Francisco, USA. |
| **M.-T. Walach**, A. Grocott, S. E. Milan, *Average Ionospheric Electric Field Morphologies during Geomagnetic Storms,* **European Space Weather Week**, 22/11/2019, Liège, Belgium. |
| **M.-T. Walach**, [*Outreach via existing platforms: “I’m a Scientist, Get me out of here”*](http://www.research.lancs.ac.uk/portal/en/activities/outreach-via-existing-platforms-im-a-scientist-get-me-out-of-here(c4bfc725-0fb7-48bd-baee-e0fbea20b1d8).html)*,* **National Astronomy Meeting**, 02/07/2019, Lancaster, UK. |
| **M.-T. Walach**, A. Grocott, *SuperDARN observations during geomagnetic storms, geomagnetically active times and enhanced solar wind driving,* **National Astronomy Meeting**, 01/07/2019, Lancaster, UK. |
| **M.-T. Walach**, A. Grocott*, High latitude ionospheric convection during storm times: TiVIE & SuperDARN*, **Extended Unified Model Workshop**, 27/06/2019, MetOffice, Exeter, UK. |
| **M.-T. Walach**, A. Grocott, F. Staples, E. G. Thomas, *Influences of the equatorial expansion on data coverage and measured parameters*, **SuperDARN Workshop**, 07/06/2019, Fujiyoshida, Japan. |
| **M.-T. Walach**, A. Grocott, *SuperDARN observations during geomagnetic storms, geomagnetically active times and enhanced solar wind driving*, **SuperDARN Workshop**, 06/06/2019, Fujiyoshida, Japan. |
| **M.-T. Walach**, A. Grocott, and D. D. Billett, *Improving Joule Heating and Electric Field Models of the High-latitude Ionosphere,* **Extended Unified Model Workshop**, 02/07/2018, University College London, UK. |
| **M.-T. Walach**, A. Grocott, *Characterising and understanding temporal variability in ionospheric flows using SuperDARN data*, **Whole Atmospheric Modelling Workshop**, 14/06/2018, Deimos Space, Tres-Cantos, Spain. |
| **M.-T. Walach**, A. Grocott, S. E. Milan and D. D. Billett, *Characterising and understanding temporal variability in ionospheric flows using SuperDARN data,* **SuperDARN Workshop**, 07/06/2018, Banyuls-sur-Mer, France. |
| **M.-T. Walach**, A. Grocott, S. E. Milan and D. D. Billett, *Comparison of ionospheric convection signatures of sawtooth events and substorms,* **SuperDARN Workshop**, 04/06/2018, Banyuls-sur-Mer, France. |
| **M.-T. Walach**, A. Grocott, and D. D. Billett, *Characterising temporal variability in ionospheric flows using SuperDARN data*, **RAS Specialist Discussion Meeting on Joule Heating**, 07/06/2018, British Antarctic Survey, Cambridge, UK. |
| **M.-T. Walach**, A. Grocott, *Characterising temporal variability in ionospheric flows using SuperDARN data*, **MIST Meeting**, 26/03/2018, Southampton, UK. |
| **M.-T. Walach**, D. D. Billett, A. Grocott, A. Aruliah, A. Ronksley, *Time Variability in the Ionospheric Electric Field*, **Extended Unified Model Workshop**, 24/07/2017, Bath, UK. |
| A. Grocott, **M.-T. Walach**, *Timescales of convection pattern reconfiguration following IMF transitions*, **SuperDARN Workshop**, 08/06/2017, San Quirico D’Orcia, Italy. |
| **M.-T. Walach**, S. E. Milan, K. R. Murphy, J. A. Carter, B. A. Hubert, Large-Scale Auroral Responses During Magnetospheric Modes, **RAS Specialist Discussion Meeting on Multi-Scale Auroral Dynamics**, 13/01/2017, London, UK. |
| **M.-T. Walach**, S. E. Milan, T. K. Yeoman, B. A. Hubert, M. R. Hairston,*Testing Predictions of the Ionospheric Convection from the Expanding/Contracting Polar Cap Paradigm*, **AGU Fall Meeting**, 13-18/12/2015, San Francisco, USA. |
| **M.-T. Walach**, S. E. Milan, T. K. Yeoman, *Testing Predictions of the Ionospheric Convection from the Expanding/Contracting Polar Cap Paradigm*, **National Astronomy Meeting**, 05-09/07/2015, Llandudno, Wales. **Rishbeth Prize Winner** |
| **M.-T. Walach**, S. E. Milan, T. K. Yeoman, *Testing Predictions of the Ionospheric Convection from the Expanding/Contracting Polar Cap Paradigm*, **SuperDARN Meeting**, 31/05 – 05/06/2015, Leicester, UK. |
| **M.-T. Walach**, S. E. Milan, *Are Steady Magnetospheric Convection Events Prolonged Substorms?*, **MIST Meeting**, 28/11/2015, London, UK. |
| **M.-T. Walach**, S. E. Milan, *Are Steady Magnetospheric Convection Events Prolonged Substorms?*, **International Conference on Substorms (ICS-12)**, 09-14/11/2015, Ise-Shima, Japan. |
| **M.-T. Walach**, S. E. Milan, *Are Steady Magnetospheric Convection Events just Prolonged Substorms?*, **MIST Meeting**, 23-25/04/2014, Bath, UK. |
| **Poster Presentations** |
| **M.-T. Walach**, A. Grocott, F. Staples, and E. Thomas, *SuperDARN map comparability: Statistical comparisons of radar network expansions*, **Autumn MIST Meeting**, 25-26/11/2021, Virtual. |
| **M.-T. Walach**, A. Grocott, F. Staples, E. G. Thomas, *Two decades of SuperDARN convection mapping: effects of an ever evolving network,* **AGU Fall Meeting 2020**, 01/12/2020-17/12/2020, Virtual. |
| **M.-T. Walach**, A. Grocott, S. E. Milan, *Average Ionospheric Electric Field Morphologies during Geomagnetic Storms,* **MIST Meeting**, 24/01/2020, Royal Astronomical Society, London, UK. |
| **M.-T. Walach**, A. Grocott, F. Staples, E. Thomas,[*Influences of the equatorward SuperDARN expansion on data coverage and measured parameters*](http://www.research.lancs.ac.uk/portal/en/publications/-(f0d96ebb-02aa-4391-8337-7c541cd011ab).html)*,* **National Astronomy Meeting**, 03/07/2019, Lancaster, UK. |
| **M.-T. Walach**, A. Grocott*, SuperDARN scatter during geomagnetic storms and geomagnetically active times*, **RAS Specialist Discussion Meeting: Global Response of the Terrestrial Magnetosphere during Storms and Substorms**, 08/02/2019, London, UK. |
| **M.-T. Walach**, A. Grocott*,* *Characterising temporal variability in ionospheric flows using SuperDARN data: How well do IMF conditions constrain the SuperDARN data?*, **MIST Meeting**, 24/11/2017, London, UK. |
| **M.-T. Walach**, S. E. Milan, T. K. Yeoman, B. A. Hubert, M. R. Hairston, *Testing Predictions of the Ionospheric Convection from the Expanding/Contracting Polar Cap Paradigm,* **MIST Meeting**, 27/11/2015, London, UK. |
| **M.-T. Walach**, S. E. Milan, *Are Steady Magnetospheric Convection Events Prolonged Substorms?*, **SuperDARN Meeting**, 31/05 – 05/06/2015, Leicester, UK. |
| I.C. Whittaker, S. Sembay, J. A. Carter, A. M. Read, **M.-T. Walach**, *Magnetospheric Solar Wind Charge Exchange – A Comparison Between the GUMICS-4 MHD Model and XMM-Newton*, **AGU Fall Meeting**, 13-18/12/2015, San Francisco, US. |