

References

- Acuna, M. H., K. W. Ogilvie, D. N. Baker, S. A. Curtis, D. H. Fairfield, and W. H. Mish, The global geospace science program and its investigations, *Space Sci. Rev.*, **71**, 5-21, 1995.
- Aikio, A. T., and K. U. Kaila, A substorm observed by EISCAT and other ground-based instruments - evidence for near-Earth substorm initiation, *J. Atmosph. Terr. Phys.*, **58**, 5-21, 1996.
- Akasofu, S.-I., The development of the auroral substorm, *Planet. Space Sci.*, **12**, 273-282, 1964.
- Akasofu, S.-I., S. Chapman, and C.-I. Meng, The polar electrojet, *J. Atmosph. Terr. Phys.*, **27**, 1275-1305, 1965.
- Akasofu, S.-I., and A. L. Snyder, Comments on the growth phase of magnetospheric substorms, *J. Geophys. Res.*, **77**, 6275-6277, 1972.
- Akasofu, S.-I., A study of auroral displays photographed from the DMSP-2 satellite and from the Alaska meridian chain of stations, *Space Sci. Rev.*, **16**, 617-725, 1974.
- Angelopoulos, V., W. Baumjohann, C. F. Kennel, F. V. Coroniti, M. G. Kivelson, R. Pellat, R. J. Walker, H. Lühr, and G. Paschmann, Bursty Bulk Flows in the inner central plasma sheet, *J. Geophys. Res.*, **97**, 4027-4039, 1992.
- Angelopoulos, V., C. F. Kennel, F. V. Coroniti, R. Pellat, M. G. Kivelson, R. J. Walker, C. T. Russell, W. Baumjohann, W. C. Feldman, and J. T. Gosling, Statistical characteristics of bursty bulk flow events, *J. Geophys. Res.*, **99**, 21257-21280, 1994.
- Angelopoulos, V., T. D. Phan, D. E. Larson, F. S. Mozer, R. P. Lin, K. Tsuruda, H. Hayakawa, T. Mukai, S. Kokubun, T. Yamamoto, D. J. Williams, R. W. McEntire, R. P. Lepping, G. K. Parks, M. Brittnacher, G. Germany, J. Spann, H. J. Singer, and K. Yumoto, Magnetotail flow bursts: association to global magnetospheric circulation, relationship to ionospheric activity and direct evidence for localization, *Geophys. Res. Lett.*, **24**, 2271-2274, 1997.
- Anger, C. D., T. Fancott, J. McNally, and H. S. Kerr, ISIS-2 scanning auroral photometer, *Applied Optics*, **12**, 1753-1766, 1973.
- Anger, C. D., S. K. Babey, A. Lyle Broadfoot, R. G. Brown, L. L. Cogger, R. Gattinger, J. W. Haslett, R. A. King, D. J. McEwen, J. S. Murphree, E. H. Richardson, B. R. Sandel, K. Smith, and A. Vallance Jones, An ultraviolet auroral imager for the Viking spacecraft, *Geophys. Res. Letters*, **14**, 387-390, 1987.
- Arnoldy, R. L., and T. E. Moore, Longitudinal structure of substorm injections at synchronous orbit, *J. Geophys. Res.*, **88**, 6213-6220, 1983.
- Asano, Y., T. Mukai, T. Yamamoto, Y. Saito, T. Nagai, and S. Kokubun, Relation between fast flows and dipolarization region in substorms, SUBSTORMS-4, edited by S. Kokubun and Y. Kamide, 211-214, 1998.
- Baker, D. N., P. R. Higbie, E. W. Hones, Jr., and R. D. Belian, High-resolution energetic particle measurements at 6.6 RE 3. Low-energy electron anisotropies and short-term substorm predictions, *J. Geophys. Res.*, **83**, 4863-4868, 1978.
- Baker, D. N., T. A. Fritz, R. L. McPherron, D. H. Fairfield, Y. Kamide, and W. Baumjohann, Magnetotail energy storage and release during the CDAW 6 substorm analysis intervals, *J. Geophys. Res.*, **90**, 1205-1216, 1985.
- Baker, D. N., and R. L. McPherron, Extreme energetic particle decreases near geostationary orbit: A manifestation of current diversion within the inner plasma sheet, *J. Geophys. Res.*, **95**, 6591-6599, 1990.
- Baker, D. N., T. I. Pulkkinen, R. L. McPherron, J. D. Craven, L. A. Frank, R. D. Elphinstone, J. S. Murphree, J. F. Fennell, R. E. Lopez, and T. Nagai, CDAW 9 analysis of magnetospheric events on May 3, 1986: Event C, *J. Geophys. Res.*, **98**, 3815-3834, 1993.
- Baker, D. N., T. I. Pulkkinen, V. Angelopoulos, W. Baumjohann, and R. L. McPherron, Neutral line model of substorms: Past results and present view, *J. Geophys. Res.*, **101**, 12975-13010, 1996.
- Baker, D. N., T. I. Pulkkinen, J. Buchner, and A. J. Klimas, Substorms: A global instability of the magnetosphere-ionosphere system, *J. Geophys. Res.*, **104**, 14601-14611, 1999.
- Baumjohann, W., and Y. Kamide, Hemispherical Joule heating and the AE indices, *J. Geophys. Res.*, **89**, 383-388, 1984.
- Baumjohann, W., Some recent progress in substorm studies, *J. Geomag. Geoelectr.*, **38**, 633-651, 1986.
- Baumjohann, W., G. Paschmann, and C. A. Cattell, Average plasma properties in the central plasma sheet, *J. Geophys. Res.*, **94**, 6597-6606, 1989.
- Baumjohann, W., G. Paschmann, T. Naga, and H. Luhr, Superposed epoch analysis of the substorm plasma sheet, *J. Geophys. Res.*, **96**, 11605-11608, 1991.
- Baumjohann, W., Y. Kamide, and R. Nakamura, Substorms, storms, and the near-earth tail, *J. Geomag. Geoelectr.*, **48**, 177-185, 1996.
- Baumjohann, W., M. Hesse, S. Kokubun, T. Mukai, T. Nagai, and A. A. Petrukovich, Substorm dipolarization and recovery, *J. Geophys. Res.*, **104**, 24995-25000, 1999.
- Birn, J., and M. Hesse, Details of current disruption and diversion in simulations of magnetotail dynamics, *J. Geophys. Res.*, **101**, 15345-15358, 1996.
- Birn, J., M. F. Thomsen, J. E. Borovsky, G. D. Reeves, D. J. McComas, and R. D. Belian, Characteristic plasma properties during dispersionless substorm injections at geosynchronous orbit, *J. Geophys. Res.*, **102**, 2309-2324, 1997a.
- Birn, J., M. F. Thomsen, J. E. Borovsky, G. D. Reeves, D. J. McComas, R. D. Belian, and M. Hesse, Substorm ion injections: Geosynchronous observations and test particle orbits in three-dimensional dynamic MHD fields, *J. Geophys. Res.*, **102**, 2325-2341, 1997b.
- Birn, J., M. Hesse, and K. Schindler, Formation of thin current sheets in space plasmas, *J. Geophys. Res.*, **103**, 6843-6852, 1998a.
- Birn, J., M. F. Thomsen, J. E. Borovsky, G. D. Reeves, D. J. McComas, R. D. Belian, and M. Hesse, Substorm electron injections: Geosynchronous observations and test particle simulations, *J. Geophys. Res.*, **103**, 9235-9248, 1998b.
- Birn, J., M. Hesse, G. Haerendel, W. Baumjohann, and K. Shiokawa, Flow braking and the substorm current wedge, *J. Geophys. Res.*, **104**, 19895-19903, 1999.
- Blanchard, G. T., L. R. Lyons, J. C. Samson, and F. J. Rich, Locating the polar cap boundary from observations of 6300 Å auroral emission, *J. Geophys. Res.*, **100**, 7855-7862, 1995.
- Blanchard, G. T., L. R. Lyons, and J. C. Samson, Accuracy of using 6300 Å auroral emission to identify the magnetic separatrix on the nightside of Earth, *J. Geophys. Res.*, **102**, 9697-9703, 1997.
- Borovsky, J. E., M. F. Thomsen, R. C. Elphic, T. E. Cayton, and D. J. McComas, The transport of plasma sheet material from the

- distant tail to geosynchronous orbit, *J. Geophys. Res.*, **103**, 20297-20331, 1998.
- Bösinger, T., and U. Wedeken, Pi1B type magnetic pulsations simultaneously observed at mid and high latitudes, *J. Atmos. Terr. Phys.*, **49**, 573-598, 1987.
- Brittnacher, M., M. Fillingim, G. Parks, G. Germany, and J. Spann, Polar cap area and boundary motion during substorms, *J. Geophys. Res.*, **104**, 12251-12262, 1999.
- Büchner, J., and L. M. Zelenyi, Chaotization of the electron motion as the cause of an internal magnetotail instability and substorm onset, *J. Geophys. Res.*, **92**, 13456-13466, 1987.
- Büchner, J., and L. M. Zelenyi, Regular and chaotic charged particle motion in magnetotail-like field reversals 1. Basic theory of trapped motion, *J. Geophys. Res.*, **94**, 11821-11842, 1989.
- Burch, J. L., Rate of erosion of dayside magnetic flux based on a quantitative study of the dependence of polar cusp latitude on the interplanetary magnetic field, *Radio Sci.*, **8**, 955-961, 1973.
- Burch, J. L., IMAGE mission overview, *Space Sci. Rev.*, **91**, 1-14, 2000.
- Burke, W. J., J. S. Machuzak, N. C. Maynard, E. M. Basinska, G. M. Erickson, R. A. Hoffman, J. A. Slavin, and W. B. Hanson, Auroral ionospheric signatures of the plasma sheet boundary layer in the evening sector, *J. Geophys. Res.*, **99**, 2489-2499, 1994.
- Caan, M. N., R. L. McPherron, and C. T. Russell, Substorm and interplanetary magnetic field effects on the geomagnetic tail lobes, *J. Geophys. Res.*, **80**, 191-194, 1975.
- Cai, H. J., L. C. Lee, and L. Zhang, Tailward stretching of geomagnetic field lines in the presence of an enhanced ionospheric convection electric field, *Geophys. Res. Letters*, **22**, 3449-3452, 1995.
- Chang, C.-W., J. D. Scudder, J. B. Sigwarth, L. A. Frank, N. C. Maynard, W. J. Burke, W. K. Peterson, E. G. Shelley, R. Friedel, J. B. Blake, R. A. Greenwald, R. P. Lepping, G. J. Sofko, J.-P. Villain, and M. Lester, A comparison of a model for the theta aurora with observations from Polar, Wind, and SuperDARN, *J. Geophys. Res.*, **103**, 17367-17390, 1998.
- Chen, C. X., and R. A. Wolf, Interpretation of high-speed flows in the plasma sheet, *J. Geophys. Res.*, **98**, 21409-21419, 1993.
- Chen, Z. X., A. Korth, Z. Y. Pu, and C. Mouikis, The pitch angle distribution transition of energetic particles at substorm onset observed by GEOS-2, *Geophys. Res. Letters*, **27**, 645-648, 2000.
- Clauer, C. R., and R. L. McPherron, Mapping the local time-universal time development of magnetospheric substorms using mid-latitude magnetic observations, *J. Geophys. Res.*, **79**, 2811-2820, 1974.
- Cogger, L. L., and R. D. Elphinstone, The VIKING auroral substorm, International Conference on Substorms - 1, Kiruna, Sweden, Eur. Space Agency Spec. Publ., SP-335, 23-27, 1992.
- Collis, P. N., S. Kirkwood, and C. M. Hall, D-region signatures of substorm growth phase and onset observed by EISCAT, *J. Atmos. Terr. Phys.*, **48**, 807-816, 1986.
- Coroniti, F. V., and C. F. Kennel, Changes in magnetospheric configuration during the substorm growth phase, *J. Geophys. Res.*, **77**, 3361-3370, 1972.
- Craven, J. D., and L. A. Frank, Latitudinal motions of the aurora during substorms, *J. Geophys. Res.*, **92**, 4565-4573, 1987.
- Creutzberg, F., R. L. Gattinger, F. R. Harris, S. Wozniak, and A. Vallance Jones, Auroral studies with a chain of meridian scanning photometers 2. Mean distributions of proton and electron aurora as a function of magnetic activity, *J. Geophys. Res.*, **93**, 14591-14601, 1988.
- Cummer, S. A., R. R. Vondrak, N. Ostgaard, J. Stadsnes, J. Bjordal, D. L. Chenette, M. J. Brittnacher, G. K. Parks, J. B. Sigwarth, and L. A. Frank, Global multispectral auroral imaging of an isolated substorm, *Geophys. Res. Letters*, **27**, 637-640, 2000.
- Cummings, W. D., J. N. Barfield, and P. J. Coleman, Jr., Magnetospheric substorms observed at the synchronous orbit, *J. Geophys. Res.*, **73**, 6687-6698, 1968.
- Davidson, G. T., Expected spatial distribution of low-energy protons precipitated in the auroral zones, *J. Geophys. Res.*, **70**, 1061-1068, 1965.
- Davidson, G. T., Self-modulated VLF wave-electron interactions in the magnetosphere: A cause of auroral pulsations, *J. Geophys. Res.*, **84**, 6517-6523, 1979.
- Deehr, C. S., Ground-based optical observations of hydrogen emissions in the auroral substorm, in Proc. Second International Conference on Substorms (ICS-2), edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Institute, University of Alaska Fairbanks, 229-236, 1994.
- Deehr, C., and D. Lummerzheim, Ground-based optical observations of hydrogen emission in the auroral substorm, *J. Geophys. Res.*, **106**, 33-44, 2001.
- Delcourt, D. C., J. A. Sauvaud, and A. Pedersen, Dynamics of single-particle orbits during substorm expansion phase, *J. Geophys. Res.*, **95**, 20853-20865, 1990.
- Dudeney, J. R., A. S. Rodger, A. J. Smith, M. J. Jarvis, and K. Morrison, Satellite experiments simultaneous with Antarctic measurements (SESAME), *Space Sci. Rev.*, **71**, 705-742, 1995.
- Eather, R. H., Spectral intensity ratios in proton-induced auroras, *J. Geophys. Res.*, **73**, 119-125, 1968.
- Elphinstone, R. D., D. Hearn, J. S. Murphree, and L. L. Cogger, Mapping using the Tsytanenko long magnetospheric model and its relationship to Viking auroral images, *J. Geophys. Res.*, **96**, 1467-1480, 1991.
- Elphinstone, R. D., and D. J. Hearn, Mapping of the auroral distribution during quiet times and substorm recovery, International Conference on Substorms - 1, Kiruna, Sweden, Eur. Space Agency Spec. Publ., SP-335, 13-18, 1992.
- Elphinstone, R. D., D. J. Hearn, L. L. Cogger, J. S. Murphree, H. Singer, V. Sergeev, K. Mursula, D. M. Klumpar, G. D. Reeves, M. Johnson, S. Ohtani, T. A. Potemra, I. Sandahl, E. Nielsen, M. Persson, H. Opgenoorth, P. T. Newell, and Y. I. Feldstein, Observations in the vicinity of substorm onset: Implications for the substorm process, *J. Geophys. Res.*, **100**, 7937-7969, 1995a.
- Elphinstone, R. D., J. S. Murphree, D. J. Hearn, L. L. Cogger, I. Sandahl, P. T. Newell, D. M. Klumpar, S. Ohtani, J. A. Sauvaud, T. A. Potemra, K. Mursula, A. Wright, and M. Shapshak, The double oval UV auroral distribution 1. Implications for the mapping of auroral arcs, *J. Geophys. Res.*, **100**, 12075-12092, 1995b.
- Elphinstone, R. D., D. J. Hearn, L. L. Cogger, J. S. Murphree, A. Wright, I. Sandahl, S. Ohtani, P. T. Newell, D. M. Klumpar, M. Shapshak, T. A. Potemra, K. Mursula, and J. A. Sauvaud, The double oval UV auroral distribution 2. The most poleward arc system and the dynamics of the magnetotail, *J. Geophys. Res.*, **100**, 12093-12102, 1995c.
- Elphinstone, R. D., J. S. Murphree, and L. L. Cogger, What is a global auroral substorm?, *Rev. Geophys.*, **34**, 169-232, 1996.

- Erickson, G. M., and R. A. Wolf, Is steady convection possible in the earth's magnetotail?, *Geophys. Res. Letters*, 7, 897-900, 1980.
- Erickson, G. M., A quasi-static magnetospheric convection model in two dimensions, *J. Geophys. Res.*, 97, 6505-6522, 1992.
- Erickson, G. M., N. C. Maynard, W. J. Burke, G. R. Wilson, and M. A. Heinemann, Electromagnetics of substorm onsets in the near-geosynchronous plasma sheet, *J. Geophys. Res.*, 105, 25265-25290, 2000.
- Fairfield, D. H., R. P. Lepping, E. W. Hones, Jr., S. J. Bame, and J. R. Asbridge, Simultaneous measurements of magnetotail dynamics by IMP spacecraft, *J. Geophys. Res.*, 86, 1396-1414, 1981.
- Fairfield, D. H., Solar wind control of magnetospheric pressure (CDAW 6), *J. Geophys. Res.*, 90, 1201-1204, 1985.
- Fairfield, D. H., T. Mukai, M. Brittnacher, G. D. Reeves, S. Kokubun, G. K. Parks, T. Nagai, H. Matsumoto, K. Hashimoto, D. A. Gurnett, and T. Yamamoto, Earthward flow bursts in the inner magnetotail and their relation to auroral brightenings, AKR intensifications, geosynchronous particle injections and magnetic activity, *J. Geophys. Res.*, 104, 355-370, 1999.
- Fedder, J. A., S. P. Slinker, J. G. Lyon, and R. D. Elphinstone, Global numerical simulation of the growth phase and the expansion onset for a substorm observed by Viking, *J. Geophys. Res.*, 100, 19,083-19,093, 1995.
- Feldstein, Y. I., Some problems concerning the morphology of auroras and magnetic disturbances at high latitudes, *Geomagn. Aeron.*, 3, 183-192, 1963.
- Feldstein, Y. I., and G. V. Starkov, Dynamics of auroral belt and polar geomagnetic disturbances, *Planet. Space Sci.*, 15, 209-229, 1967.
- Feldstein, Y. I., Auroras and associated phenomena, in Solar Terrestrial Physics, vol. 3, 152-191, 1972.
- Feldstein, Y. I., and Y. I. Galperin, An alternative interpretation of auroral precipitation and luminosity observations from the DE, DMSP, AUREOL, and Viking satellites in terms of their mapping to the nightside magnetosphere, *J. Atmos. Terr. Phys.*, 55, 105-121, 1993.
- Frank, L. A., and K. L. Ackerson, Local-time survey of plasma at low altitudes over the auroral zones, *J. Geophys. Res.*, 77, 4116-4127, 1972.
- Frank, L. A., J. D. Craven, K. L. Ackerson, M. R. English, R. H. Eather, and R. L. Carovillano, Global auroral imaging instrumentation for the Dynamics Explorer mission, *Space Sci. Instr.*, 5, 369-393, 1981.
- Frank, L. A., and J. D. Craven, Imaging results from Dynamics Explorer 1, *Rev. of Geophys.*, 26, 249-283, 1988.
- Frank, L. A., J. D. Craven, J. L. Burch, and J. D. Winningham, Polar views of the earth's aurora with Dynamics Explorer, *Geophys. Res. Letters*, 9, 1001-1004, 1982.
- Frank, L. A., J. B. Sigwarth, J. D. Craven, J. P. Cravens, J. S. Dolan, M. R. Dvorsky, P. K. Hardebeck, J. D. Harvey, and D. W. Muller, The visible imaging system (VIS) for the POLAR spacecraft, *Space Sci. Rev.*, 71, 297-328, 1995.
- Frank, L. A., and J. B. Sigwarth, Findings concerning the positions of substorm onsets with auroral images from the Polar spacecraft, *J. Geophys. Res.*, 105, 12747-12761, 2000.
- Freeman, M. P., J. M. Ruohoniemi, and R. A. Greenwald, The determination of time-stationary two-dimensional convection patterns with single-station radars, *J. Geophys. Res.*, 96, 15735-15749, 1991.
- Friedrich, M., and K. M. Torkar, High-latitude plasma densities and their relation to riometer absorption, *J. Atmos. Terr. Phys.*, 45, 127-135, 1983.
- Friedrich, E., J. C. Samson, I. Voronkov, and G. Rostoker, Dynamics of the substorm expansive phase, *J. Geophys. Res.*, 106, 13,145-13,163, 2001.
- Fujii, R., R. A. Hoffman, P. C. Anderson, J. D. Craven, M. Sugiura, L. A. Frank, and N. C. Maynard, Electrodynamic parameters in the nighttime sector during auroral substorms, *J. Geophys. Res.*, 99, 6093-6112, 1994.
- Fujita, S., M. Itonaga, and H. Nakata, Relationship between the Pi2 pulsations and the localized impulsive current associated with the current disruption in the magnetosphere, *Earth Planets Space*, 52, 267-281, 2000.
- Fukunishi, H., Polarization changes of geomagnetic Pi 2 pulsations associated with the plasmapause, *J. Geophys. Res.*, 80, 98-110, 1975a.
- Fukunishi, H., Dynamic relationship between proton and electron auroral substorms, *J. Geophys. Res.*, 80, 553-574, 1975b.
- Fukunishi, H., R. Fujii, S. Kokubun, K. Hayashi, T. Tohyama, Y. Tonegawa, S. Okano, M. Sugiura, K. Yumoto, I. Aoyama, T. Sakurai, T. Saito, T. Iijima, A. Nishida, and M. Natori, Magnetic field observations on the Akebono (EXOS-D) satellite, *J. Geomag. Geoelectr.*, 42, 385-409, 1990.
- Fukunishi, H., Y. Takahashi, T. Nagatsuma, T. Mukai, and S. Machida, Latitudinal structures of nightside field-aligned currents and their relationships to the plasma sheet regions, *J. Geophys. Res.*, 98, 11235-11255, 1993.
- Fukushima, N., Equivalence in ground geomagnetic effect of Chapman-Vestine's and Birkeland-Alfven's electric current-systems for polar magnetic storms, *Rep. Ionos. Space Res. Jap.*, 23, 219-227, 1969.
- Fukushima, N., Electric current systems for polar substorms and their magnetic effect below and above the ionosphere, *Radio Sci.*, 6, 269-275, 1971.
- Fukushima, N., Generalized theorem for no ground magnetic effect of vertical currents connected with Pedersen currents in the uniform-conductivity ionosphere, *Rep. Ionos. Space Res. Jap.*, 30, 35-40, 1976.
- Gallagher, D. L., and D. A. Gurnett, Auroral kilometric radiation: time-averaged source location, *J. Geophys. Res.*, 84, 6501-6509, 1979.
- Galperin, Y. I., A. V. Volosevich, and M. Zelenyi, Pressure gradient structures in the tail neutral sheet as "roots of the arcs" with some effects of stochasticity, *Geophys. Res. Letters*, 19, 2163-2166, 1992.
- Galperin, Y. I., and Y. I. Feldstein, Mapping of the precipitation regions to the plasma sheet, *J. Geomag. Geoelectr.*, 48, 857-875, 1996.
- Galperin, Y. I., and J. M. Bosqued, Stationary magnetospheric convection on November 24, 1981. 1. A case study of "pressure gradient/minimum-B" auroral arc generation, *Ann. Geophysicae*, 17, 358-374, 1999.
- Goertz, C. K., and R. A. Smith, The thermal catastrophe model of substorms, *J. Geophys. Res.*, 94, 6581-6596, 1989.
- Gonzalez, W. D., J. A. Joselyn, Y. Kamide, H. W. Kroehl, G. Rostoker, B. T. Tsurutani, and V. M. Vasyliunas, What is a geomagnetic storm?, *J. Geophys. Res.*, 99, 5771-5792, 1994.
- Greenwald, R. A., K. B. Baker, J. R. Dudeney, M. Pinnock, T. B. Jones, E. C. Thomas, J.-P. Villain, J.-C. Cerisier, C. Senior, C. Hanuise, R. D. Hunsucker, G. Sofko, J. Koehler, E. Nielsen, R. Pellinen, A. D. M. Walker, N. Sato, and H. Yamagishi, DARN/SuperDARN: A global view of the dynamics of high-latitude convection, *Space Sci. Rev.*, 71, 761-796, 1995.
- Hardy, D. A., M. S. Gussenhoven, and A. Huber, The precipitating electron detectors (SSJ/3) for the block 5D/flights 2-5 DMSP

- satellites: Calibration and data presentation, Rep. AFGL-TR-79-0210, Air Force Geophys. Lab., Hanscom AFB, Mass., 1979.
- Hardy, D. A., L. K. Schmitt, M. S. Gussenoven, F. J. Marshall, H. C. Yeh, T. L. Schumaker, A. Huber, and J. Pantazis, Precipitating electron and ion detectors (SSJ/4) for the block 5D/flights 6-10 DMSP satellites: Calibration and data presentation, Rep. AFGL-TR-84-0317, Air Force Geophys. Lab., Hanscom Air Force Base, Mass., 1984.
- Harel, M., R. A. Wolf, R. W. Spiro, P. H. Reiff, C.-K. Chen, W. J. Burke, F. J. Rich, and M. Smidley, Quantitative simulation of a magnetospheric substorm 2. Comparison with observations, *J. Geophys. Res.*, 86, 2242-2260, 1981.
- Hargreaves, J. K., H. J. A. Chivers, and W. I. Axford, The development of the substorm in auroral radio absorption, *Planet. Space Sci.*, 23, 905-911, 1975.
- Hau, L.-N., R. A. Wolf, G.-H. Voigt, and C. C. Wu, Steady state magnetic field configurations for the earth's magnetotail, *J. Geophys. Res.*, 94, 1303-1316, 1989.
- Hayakawa, H., T. Okada, M. Ejiri, A. Kadokura, Y.-I. Kohno, K. Maezawa, S. Machida, A. Matsuoka, T. Mukai, M. Nakamura, A. Nishida, T. Obara, Y. Tanaka, F. S. Mozer, G. Haerendel, and K. Tsuruda, Electric field measurement on the Akebono (EXOS-D) satellite, *J. Geomag. Geoelectr.*, 42, 371-384, 1990.
- Heacock, R. R., Two subtypes of type Pi micropulsations, *J. Geophys. Res.*, 72, 3905-3917, 1967.
- Henderson, M. G., J. S. Murphree, and G. D. Reeves, The activation of the dusk-side and the formation of north-south aligned structures during substorms, in Proc. Second International Conference on Substorms (ICS-2), edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Institute, University of Alaska Fairbanks, 37-42, 1994.
- Henderson, M. G., G. D. Reeves, and J. S. Murphree, Are north-south aligned auroral structures an ionospheric manifestation of bursty bulk flows?, *Geophys. Res. Letters*, 25, 3737-3740, 1998.
- Heppner, J. P., and N. C. Maynard, Empirical high-latitude electric field models, *J. Geophys. Res.*, 92, 4467-4489, 1987.
- Hesse, M., J. Birn, and R. A. Hoffman, On the mapping of ionospheric convection into the magnetosphere, *J. Geophys. Res.*, 102, 9543-9551, 1997.
- Hill, V. J., D. S. Evans, and H. H. Sauer, TIROS/NOAA satellites space environment monitor archive tape documentation, NOAA technical memorandum ERL SEL-71, 1985.
- Holter, O., C. Altman, A. Roux, S. Perraut, A. Pedersen, H. Peceli, B. Lybekk, J. Trulsen, A. Korth, and G. Kremser, Characterization of low frequency oscillations at substorm breakup, *J. Geophys. Res.*, 100, 19109-19119, 1995.
- Holzer, R. E., and J. A. Slavin, Magnetic flux transfer associated with expansions and contractions of the dayside magnetosphere, *J. Geophys. Res.*, 83, 3831-3839, 1978.
- Hones, E. W. Jr., S.-I. Akasofu, P. Perreault, S. J. Bame, and S. Singer, Poleward expansion of the auroral oval and associated phenomena in the magnetotail during auroral substorms, 1, *J. Geophys. Res.*, 75, 7060-7074, 1970.
- Hones, E. W. Jr., Substorm processes in the magnetotail: Comments on 'On hot tenuous plasmas, fireballs, and boundary layers in the earth's magnetotail' by L. A. Frank, K. L. Ackerson, and R. P. Lepping, *J. Geophys. Res.*, 82, 5633-5643, 1977.
- Hones, E. W. Jr., Transient phenomena in the magnetotail and their relation to substorms, *Space Sci. Rev.*, 23, 393-410, 1979.
- Hones, E. W. Jr., Plasma sheet behavior during substorms, in Magnetic reconnection in space and laboratory plasmas, edited by E. W. Hones, Jr., AGU geophysical monograph 30, 178-184, 1984.
- Hones, E. W. Jr., T. Pytte, and H. I. West, Jr., Associations of geomagnetic activity with plasma sheet thinning and expansion: A statistical study, *J. Geophys. Res.*, 89, 5471-5478, 1984.
- Hones, E. W. Jr., The poleward leap of the auroral electrojet as seen in auroral images, *J. Geophys. Res.*, 90, 5333-5337, 1985.
- Hones, E. W. Jr., C. D. Anger, J. Birn, J. S. Murphree, and L. L. Cogger, A study of a magnetospheric substorm recorded by the VIKING auroral imager, *Geophys. Res. Letters*, 14, 411-414, 1987.
- Hori, T., K. Maezawa, Y. Saito, and T. Mukai, Average profile of ion flow and convection electric field in the near-earth plasma sheet, *Geophys. Res. Letters*, 27, 1623-1626, 2000.
- Horwitz, J. L., and S.-I. Akasofu, The response of the dayside aurora to sharp northward and southward transitions of the interplanetary magnetic field and to magnetospheric substorms, *J. Geophys. Res.*, 82, 2723-2734, 1977.
- Hoshino, M., and A. Nishida, Numerical simulation of the dayside reconnection, *J. Geophys. Res.*, 88, 6926-6936, 1983.
- Hultqvist, B., The Viking project, *Geophys. Res. Letters*, 14, 379-382, 1987.
- Ieda, A., S. Machida, T. Mukai, Y. Saito, T. Yamamoto, A. Nishida, T. Terasawa, and S. Kokubun, Statistical analysis of the plasmoid evolution with Geotail observations, *J. Geophys. Res.*, 103, 4453-4465, 1998.
- Iijima, T., and T. Nagata, Constitution of polar magnetic disturbances, *Rep. Ionosph. Space Res. Japan*, 22, 1-24, 1968.
- Iijima, T., and T. Nagata, Signatures for substorm development of the growth phase and expansion phase, *Planet. Space Sci.*, 20, 1095-1112, 1972.
- Iijima, T., and T. A. Potemra, Large-scale characteristics of field-aligned currents associated with substorms, *J. Geophys. Res.*, 83, 599-615, 1978.
- Iijima, T., T. A. Potemra, and L. J. Zanetti, Contribution of pressure gradients to the generation of dawnside region 1 and region 2 currents, *J. Geophys. Res.*, 102, 27069-27081, 1997.
- Ivanov, V. N., O. A. Pokhotelov, F. Z. Feygin, A. Roux, S. Perraut, and D. Leko, The ballooning instability in the terrestrial magnetosphere with irregular pressure and finite b, *Geomagn. Aeron.*, 32, 211-216, 1992.
- Jacquey, C., J. A. Sauvaud, and J. Dandouras, Location and propagation of the magnetotail current disruption during substorm expansion: Analysis and simulation of an ISEE multi-onset event, *Geophys. Res. Letters*, 18, 389-392, 1991.
- Jacquey, C., J. A. Sauvaud, J. Dandouras, and A. Korth, Tailward propagating cross-tail current disruption and dynamics of near-earth tail: A multi-point measurement analysis, *Geophys. Res. Letters*, 20, 983-986, 1993.
- Johnstone, A. D., The mechanism of pulsating aurora, *Ann. Geophysicae*, 1, 397-410, 1983.
- Kamide, Y., J. L. Burch, J. D. Winningham, and S.-I. Akasofu, Dependence of the latitude of the cleft on the interplanetary magnetic field and substorm activity, *J. Geophys. Res.*, 81, 698-704, 1976.
- Kamide, Y., and S. Matsushita, A unified view of substorm sequences, *J. Geophys. Res.*, 83, 2103-2108, 1978.
- Kamide, Y., and W. Baumjohann, Estimation of electric fields and currents from international magnetospheric study magnetometer data for the CDAW 6 intervals: Implications for substorm dynamics, *J. Geophys. Res.*, 90, 1305-1317, 1985.
- Kamide, Y., and W. Baumjohann, Magnetosphere-Ionosphere Coupling, Springer-Verlag, New York, 1993.
- Kan, J. R., A global magnetosphere-ionosphere coupling model of substorm, *J. Geophys. Res.*, 98, 17263-17275, 1993.

- Kan, J. R., A globally integrated substorm model: Tail reconnection and magnetosphere-ionosphere coupling, *J. Geophys. Res.*, **103**, 11787-11795, 1998.
- Kan, J. R., and W. Sun, Simulation of the westward traveling surge and Pi 2 pulsations during substorms, *J. Geophys. Res.*, **90**, 10911-10922, 1985.
- Kan, J. R., and W. Sun, Substorm expansion phase caused by an intense localized convection imposed on the ionosphere, *J. Geophys. Res.*, **101**, 27271-27281, 1996.
- Kan, J. R., L. Zhu, and S.-I. Akasofu, A theory of substorms: Onset and subsidence, *J. Geophys. Res.*, **93**, 5624-5640, 1988.
- Kaneda, E., Auroral TV observation by KYOKKO, *Proc. Japanese IMS Symp.*, **146**, 1979.
- Kaneda, E., T. Mukai, and K. Hirao, Synoptic features of auroral system and corresponding electron precipitation observed by KYOKKO, in Physics of auroral arc formation, edited by S.-I. Akasofu and J. R. Kan, *AGU geophysical monograph* **25**, 24-30, 1981.
- Kaneda, E., and T. Yamamoto, Auroral substorms observed by UV-imager on AKEBONO, in Magnetospheric Substorms, *AGU geophysical monograph* **64**, 235-240, 1991.
- Kaufmann, R. L., Substorm currents: Growth phase and onset, *J. Geophys. Res.*, **92**, 7471-7486, 1987.
- Kauristie, K., T. I. Pulkkinen, R. J. Pellinen, P. Janhunen, A. Huuskonen, A. Viljanen, H. J. Opgenoorth, W. J. Heikkila, and D. N. Baker, Analysis of the substorm trigger phase using multiple ground-based instrumentation, *Geophys. Res. Letters*, **22**, 2065-2068, 1995.
- Kauristie, K., T. I. Pulkkinen, A. Huuskonen, R. J. Pellinen, H. J. Opgenoorth, D. N. Baker, A. Korth, and M. Syrjasuo, Auroral precipitation fading before and at substorm onset: ionospheric and geostationary signatures, *Ann. Geophysicae*, **15**, 967-983, 1997.
- Kauristie, K., J. Weygand, T. I. Pulkkinen, J. S. Murphree, and P. T. Newell, Size of the auroral oval: UV ovals and precipitation boundaries compared, *J. Geophys. Res.*, **104**, 2321-2331, 1999.
- Kawasaki, K., and G. Rostoker, Auroral motions and magnetic variations associated with the onset of auroral substorms, *J. Geophys. Res.*, **84**, 7113-7122, 1979.
- Kepko, L., and M. Kivelson, Generation of Pi2 pulsations by bursty bulk flows, *J. Geophys. Res.*, **104**, 25021-25034, 1999.
- Kepko, L., M. G. Kivelson, and K. Yumoto, Flow bursts, braking, and Pi2 pulsations, *J. Geophys. Res.*, **106**, 1903-1915, 2001.
- Kikuchi, T., H. Luhr, T. Kitamura, O. Saka, and K. Schlegel, Direct penetration of the polar electric field to the equator during a DP 2 event as detected by the auroral and equatorial magnetometer chains and the EISCAT radar, *J. Geophys. Res.*, **101**, 17161-17173, 1996.
- Kirkwood, S., and L. Eliasson, Energetic particle precipitation in the substorm growth phase measured by EISCAT and Viking, *J. Geophys. Res.*, **95**, 6025-6037, 1990.
- Kisabeth, J. L., and G. Rostoker, Development of the polar electrojet during polar magnetic substorms, *J. Geophys. Res.*, **76**, 6815-6828, 1971.
- Kisabeth, J., and G. Rostoker, Current flow in auroral loops and surges inferred from ground-based magnetic observations, *J. Geophys. Res.*, **78**, 5573-5584, 1973.
- Kistler, L. M., E. Mobius, W. Baumjohann, G. Paschmann, and D. C. Hamilton, Pressure changes in the plasma sheet during substorm injections, *J. Geophys. Res.*, **97**, 2973-2983, 1992.
- Kistler, L. M., W. Baumjohann, T. Naga, and E. Mobius, Superposed epoch analysis of pressure and magnetic field configuration changes in the plasma sheet, *J. Geophys. Res.*, **98**, 9249-9258, 1993.
- Knight, S., Parallel electric fields, *Planet. Space Sci.*, **21**, 741-750, 1973.
- Kofman, W., and E. Nielsen, STARE and EISCAT measurements: Evidence for the limitation of STARE doppler velocity observations by the ion acoustic velocity, *J. Geophys. Res.*, **95**, 19131-19135, 1990.
- Kokubun, S., and T. Iijima, Time-sequence of polar magnetic substorms, *Planet. Space Sci.*, **23**, 1483-1494, 1975.
- Kokubun, S., and R. L. McPherron, Substorm signatures at synchronous altitude, *J. Geophys. Res.*, **86**, 11265-11277, 1981.
- Korth, A., Z. Y. Pu, G. Kremser, and A. Roux, A statistical study of substorm onset conditions at geostationary orbit, in Magnetospheric Substorms, *AGU geophysical monograph* **64**, 343-351, 1991.
- Kuwashima, M., and T. Saito, Spectral characteristics of magnetic Pi 2 pulsations in the auroral region and lower latitudes, *J. Geophys. Res.*, **86**, 4686-4696, 1981.
- Lester, M., and D. Orr, Correlations between ground observations of Pi 2 geomagnetic pulsations and satellite plasma density observations, *Planet. Space Sci.*, **31**, 143-160, 1983.
- Lewis, R. V., M. P. Freeman, A. S. Rodger, G. D. Reeves, and D. K. Milling, The electric field response to the growth phase and expansion phase onset of a small isolated substorm, *Ann. Geophysicae*, **15**, 289-299, 1997.
- Lewis, R. V., M. P. Freeman, and G. D. Reeves, The relationship of HF radar backscatter to the accumulation of open magnetic flux prior to substorm onset, *J. Geophys. Res.*, **103**, 26613-26619, 1998.
- Lezniak, T. W., and J. R. Winckler, Experimental study of magnetospheric motions and the acceleration of energetic electrons during substorms, *J. Geophys. Res.*, **75**, 7075-7098, 1970.
- Liou, K., C.-I. Meng, T. Y. Lui, P. T. Newell, M. Brittnacher, G. Parks, G. D. Reeves, R. R. Anderson, and K. Yumoto, On relative timing in substorm onset signatures, *J. Geophys. Res.*, **104**, 22807-22817, 1999.
- Liou, K., C.-I. Meng, P. T. Newell, K. Takahashi, S.-I. Ohtani, and A. T. Y. Lui, Evaluation of low-latitude Pi2 pulsations as indicators of substorm onset using Polar ultraviolet imagery, *J. Geophys. Res.*, **105**, 2495-2505, 2000a.
- Liou, K., C.-I. Meng, A. T. Y. Lui, P. T. Newell, and R. R. Anderson, Auroral kilometric radiation at substorm onset, *J. Geophys. Res.*, **105**, 25325-25331, 2000b.
- Liou, K., P. T. Newell, D. G. Sibeck, and C.-I. Meng, Observation of IMF and seasonal effects in the location of auroral substorm onset, *J. Geophys. Res.*, **106**, 5799-5810, 2001.
- Liu, W. W., and G. Rostoker, On the origin of auroral fingers, *J. Geophys. Res.*, **98**, 17401-17407, 1993.
- Lockwood, M., and S.W.H. Cowley, Comment on "A statistical study of the ionospheric convection response to changing interplanetary magnetic field conditions using the assimilative mapping of ionospheric electrodynamics technique" by A. J. Ridley et al., *J. Geophys. Res.*, **104**, 4387-4391, 1999.
- Lopez, R. E., and A. T. Y. Lui, A multisatellite case study of the expansion of a substorm current wedge in the near-Earth magnetotail, *J. Geophys. Res.*, **95**, 8009-8017, 1990.

- Lopez, R. E., A. T. Y. Lui, D. G. Sibeck, K. Takahashi, R. W. McEntire, L. J. Zanetti, and S. M. Krimigis, On the relationship between the energetic particle flux morphology and the change in the magnetic field magnitude during substorms, *J. Geophys. Res.*, 94, 17105-17119, 1989.
- Lopez, R. E., D. G. Sibeck, R. W. McEntire, and S. M. Krimigis, The energetic ion substorm injection boundary, *J. Geophys. Res.*, 95, 109-117, 1990.
- Lorentzen, D. A., Latitudinal and longitudinal dispersion of energetic auroral protons, *Ann. Geophysicae*, 18, 81-89, 2000.
- Lu, G., A. D. Richmond, Y. Kamide, D. Lummerzheim, M. Brittnacher, and G. Parks, Global ionospheric convection during substorm expansion, SUBSTORMS-4, edited by S. Kokubun and Y. Kamide, 617-622, 1998.
- 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, 12327-12337, 1999.
- 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, 18483-18493, 2000.
- Lui, A. T. Y., and C. D. Anger, A uniform belt of diffuse auroral emission seen by the ISIS-2 scanning photometer, *Planet. Space Sci.*, 21, 799-809, 1973a.
- Lui, A. T. Y., P. Perreault, S.-I. Akasofu, and C. D. Anger, The diffuse aurora, *Planet. Space Sci.*, 21, 857-861, 1973b.
- Lui, A. T. Y., D. Venkatesan, C. D. Anger, S.-I. Akasofu, W. J. Heikkila, J. D. Winningham, and J. R. Burrows, Simultaneous observations of particle precipitations and auroral emissions by the ISIS 2 satellite in the 19-24 MLT sector, *J. Geophys. Res.*, 82, 2210-2226, 1977.
- Lui, A. T. Y., and J. R. Burrows, On the location of auroral arcs near substorm onsets, *J. Geophys. Res.*, 83, 3342-3348, 1978.
- Lui, A. T. Y., A synthesis of magnetospheric substorm models, *J. Geophys. Res.*, 96, 1849-1856, 1991a.
- Lui, A. T. Y., Extended consideration of a synthesis model for magnetospheric substorms, in Magnetospheric Substorms, *AGU geophysical monograph 64*, 43-60, 1991b.
- Lui, A. T. Y., C.-L. Chang, A. Mankofsky, H.-K. Wong, and D. Winske, A cross-field current instability for substorm expansions, *J. Geophys. Res.*, 96, 11389-11401, 1991.
- Lui, A. T. Y., and D. C. Hamilton, Radial profiles of quiet time magnetospheric parameters, *J. Geophys. Res.*, 97, 19325-19332, 1992.
- Lui, A. T. Y., R. E. Lopez, B. J. Anderson, K. Takahashi, L. J. Zanetti, R. W. McEntire, T. A. Potemra, D. M. Klumpar, E. M. Greene, and R. Strangeway, Current disruptions in the near-earth neutral sheet region, *J. Geophys. Res.*, 97, 1461-1480, 1992.
- Lui, A. T. Y., Current disruption in the Earth's magnetosphere: Observations and models, *J. Geophys. Res.*, 101, 13067-13088, 1996.
- Lui, A. T. Y., Synthesis (current disruption) model for substorms, SUBSTORMS-4, edited by S. Kokubun and Y. Kamide, 361-366, 1998.
- Lui, A. T. Y., K. Liou, P. T. Newell, C.-I. Meng, S.-I. Ohtani, T. Ogino, S. Kokubun, M. J. Brittnacher, and G. K. Parks, Plasma and magnetic flux transport associated with auroral breakups, *Geophys. Res. Lett.*, 25, 4059-4062, 1998.
- Lui, A. T. Y., and J. S. Murphree, A substorm model with onset location tied to an auroral arc, *Geophys. Res. Letters*, 25, 1269-1272, 1998.
- Lui, A. T. Y., Current controversies in magnetospheric physics, *Rev. Geophys.*, 39, 535-563, 2001.
- Lyons, L. R., and J. C. Samson, Formation of the stable auroral arc that intensifies at substorm onset, *Geophys. Res. Letters*, 19, 2171-2174, 1992.
- Lyons, L. R., A new theory for magnetospheric substorms, *J. Geophys. Res.*, 100, 19069-19081, 1995.
- Lyons, L. R., G. T. Blanchard, J. C. Samson, R. P. Lepping, T. Yamamoto, and T. Moretto, Coordinated observations demonstrating external substorm triggering, *J. Geophys. Res.*, 102, 27039-27051, 1997.
- Lyons, L. R., T. Nagai, G. T. Blanchard, J. C. Samson, T. Yamamoto, T. Mukai, A. Nishida, and S. Kokubun, Association between Geotail plasma flows and auroral poleward boundary intensifications observed by CANOPUS photometers, *J. Geophys. Res.*, 104, 4485-4500, 1999.
- Lyons, L. R., R. L. McPherron, E. Zesta, G. D. Reeves, J. B. Sigwarth, and L. A. Frank, Timing of substorm signatures during the November 24, 1996, Geospace Environment Modeling event, *J. Geophys. Res.*, 106, 349-359, 2001.
- Machida, S., Y. Miyashita, A. Ieda, A. Nishida, T. Mukai, Y. Saito, and S. Kokubun, GEOTAIL observations of flow velocity and north-south magnetic field variations in the near and mid-distant tail associated with substorm onsets, *Geophys. Res. Letters*, 26, 635-638, 1999.
- Machida, S., A. Ieda, T. Mukai, Y. Saito, and A. Nishida, Statistical visualization of Earth's magnetotail during substorms by means of multidimensional superposed epoch analysis with Geotail data, *J. Geophys. Res.*, 105, 25291-25303, 2000.
- Maezawa, K., Planet. Space Sci., Dependence of the magnetopause position on the southward interplanetary magnetic field, 22, 1443-1453, 1974.
- Maezawa, K., Magnetotail boundary motion associated with geomagnetic substorms, *J. Geophys. Res.*, 80, 3543-3548, 1975.
- Maezawa, K., Magnetospheric convection induced by the positive and negative Z components of the interplanetary magnetic field: Quantitative analysis using polar cap magnetic records, *J. Geophys. Res.*, 81, 2289-2303, 1976.
- Maynard, N. C., Electric field measurements across the Harang discontinuity, *J. Geophys. Res.*, 79, 4620-4631, 1974.
- McPherron, R. L., Growth phase of magnetospheric substorms, *J. Geophys. Res.*, 75, 5592-5599, 1970.
- McPherron, R. L., C. T. Russell, and M. P. Aubry, Satellite studies of magnetospheric substorms on August 15, 1968, *J. Geophys. Res.*, 78, 3131-3149, 1973.
- McPherron, R. L., Magnetospheric substorms, *Rev. Geophys. Space Phys.*, 17, 657-681, 1979.
- McPherron, R. L., and R. H. Manka, Dynamics of the 1054 UT March 22, 1979, substorm event: CDAW 6, *J. Geophys. Res.*, 90, 1175-1190, 1985.
- McPherron, R. L., A. Nishida, and C. T. Russell, Is near-earth current sheet thinning the cause of auroral substorm onset?, in Quantitative Modeling of the Magnetosphere-Ionosphere Coupling Processes, edited by Y. Kamide and R. A. Wolf, 252-257, Kyoto Sangyo University, Kyoto, Japan, 1987.
- McPherron, R. L., Physical processes producing magnetospheric substorms and magnetic storms, in *Geomagnetism*, Vol. 4, 593-739, 1991.
- McPherron, R. L., The growth phase of magnetospheric substorms, in Proc. Second International Conference on Substorms (ICS-2),

- edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Institute, University of Alaska Fairbanks, 213-220, 1994.
- Mende, S. B., H. U. Frey, M. Lampton, J.-C. Gerard, B. Hubert, S. Fuselier, J. Spann, R. Gladstone, and J. L. Burch, *Geophys. Res. Lett.*, 28, 1139-1142, 2001.
- Meng, C.-I., and R. E. Huffman, Ultraviolet imaging from space of the aurora under full sunlight, *Geophys. Res. Letters*, 11, 315-318, 1984.
- Meng, C.-I., R. E. Huffman, F. Del Greco, and R. Eastes, UV images of the dayside auroral oval (abstract), *Eos Trans. AGU*, 68(16), 396, 1987.
- Mitchell, D. G., D. J. Williams, C. Y. Huang, L. A. Frank, and C. T. Russell, Current carriers in the near-earth cross-tail current sheet during substorm growth phase, *Geophys. Res. Letters*, 17, 583-586, 1990.
- Miyashita, Y., S. Machida, A. Nishida, T. Mukai, Y. Saito, and S. Kokubun, GEOTAIL observations of total pressure and electric field variations in the near and mid-distant tail associated with substorm onsets, *Geophys. Res. Letters*, 26, 639-642, 1999.
- Miyashita, Y., S. Machida, T. Mukai, Y. Saito, K. Tsuruda, H. Hayakawa, and P. R. Sutcliffe, A statistical study of variations in the near and middistant magnetotail associated with substorm onsets: GEOTAIL observations, *J. Geophys. Res.*, 105, 15913-15930, 2000.
- Montbriand, L. E., The proton aurora and auroral substorm, in *The Radiating Atmosphere*, edited by G. M. McCormac, pp. 366-373, D. Reidel, Pub. Co., 1971.
- Montbriand, L. E., Proton auroras during substorms, Proc. International Conference on Substorms (ICS-1), Kiruna, Sweden, 445-455, 1992.
- Moore, T. E., D. L. Gallagher, J. L. Horwitz, and R. H. Comfort, MHD wave breaking in the outer plasmasphere, *Geophys. Res. Letters*, 14, 1007-1010, 1987.
- Morse, T. H., and G. J. Romick, The fluctuation and fading of auroral arcs preceding auroral substorm onsets, *Geophys. Res. Letters*, 9, 1065-1068, 1982.
- Mukai, T., N. Kaya, E. Sagawa, M. Hirahara, W. Miyake, T. Obara, H. Miyaoka, S. Machida, H. Yamagishi, M. Ejiri, H. Matsumoto, and T. Itoh, Low energy charged particle observations in the "auroral" magnetosphere: First results from the Akebono (EXOS-D) satellite, *J. Geomag. Geoelectr.*, 42, 479-496, 1990.
- Mukai, T., M. Hoshino, Y. Saito, I. Shinohara, T. Yamamoto, T. Nagai, and S. Kokubun, Pre-onset and onset signatures for substorms in the near-tail plasma sheet: GEOTAIL observations, SUBSTORMS-4, edited by S. Kokubun and Y. Kamide, 131-136, 1998.
- Murphree, J. S., R. D. Elphinstone, L. L. Cogger, and D. Hearn, Viking optical substorm signatures, in *Magnetospheric Substorms*, *AGU geophysical monograph* 64, 241-255, 1991.
- Murphree, J. S., R. A. King, T. Payne, K. Smith, D. Reid, J. Adema, B. Gordon, and R. Wlochowitz, The Freja ultraviolet imager, *Space Sci. Rev.*, 70, 421-446, 1994.
- Nagai, T., Local time dependence of electron flux changes during substorms derived from multi-satellite observation at synchronous orbit, *J. Geophys. Res.*, 87, 3456-3468, 1982a.
- Nagai, T., Observed magnetic substorm signatures at synchronous altitude, *J. Geophys. Res.*, 87, 4405-4417, 1982b.
- Nagai, T., An empirical model of substorm-related magnetic field variations, in *Magnetospheric Substorms*, *AGU geophysical monograph* 64, 91-95, 1991.
- Nagai, T., K. Takahashi, H. Kawano, T. Yamamoto, S. Kokubun, and A. Nishida, Initial GEOTAIL survey of magnetic substorm signatures in the magnetotail, *Geophys. Res. Letters*, 21, 2991-2994, 1994.
- Nagai, T., T. Mukai, T. Yamamoto, A. Nishida, S. Kokubun, and R. P. Lepping, Plasma sheet pressure changes during the substorm growth phase, *Geophys. Res. Letters*, 24, 963-966, 1997.
- Nagai, T., M. Fujimoto, Y. Saito, S. Machida, T. Teresawa, R. Nakamura, T. Yamamoto, T. Mukai, A. Nishida, and S. Kokubun, Structure and dynamics of magnetic reconnection for substorm onsets with Geotail observations, *J. Geophys. Res.*, 103, 4419-4440, 1998.
- Nagai, T., and S. Machida, Magnetic reconnection in the near-earth magnetotail, New Perspectives on the Earth's Magnetotail, *AGU Geophysical Monograph* 105, 211-224, 1998.
- Nakai, H., and Y. Kamide, Magnetic field changes at the neutral sheet associated with substorm expansion onset: A model prediction and observations, *J. Geophys. Res.*, 100, 3521-3530, 1995.
- Nakamura, R., T. Oguti, Drifts of auroral structures and magnetospheric electric fields, *J. Geophys. Res.*, 92, 11241-11247, 1987.
- Nakamura, R., T. Oguti, T. Yamamoto, S. Kokubun, D. N. Baker, and R. D. Belian, Aurora and energetic particle signatures during a substorm with multiple expansions, in *Magnetospheric Substorms*, *AGU geophysical monograph* 64, 285-294, 1991.
- Nakamura, R., T. Oguti, T. Yamamoto, and S. Kokubun, Equatorward and poleward expansion of the auroras during auroral substorms, *J. Geophys. Res.*, 98, 5743-5759, 1993.
- Nakamura, M., K. Seki, H. Kawano, T. Obara, and T. Mukai, Reconnection event at the dayside magnetopause on January 10, 1997, *Geophys. Res. Letters*, 25, 2529-2532, 1998.
- Nakamura, M. S., M. Fujimoto, and K. Maezawa, Ion dynamics and resultant velocity space distributions in the course of magnetotail reconnection, *J. Geophys. Res.*, 103, 4531-4546, 1998.
- Newell, P. T., Y. I. Feldstein, Y. I. Galperin, and C.-I. Meng, Morphology of nightside precipitation, *J. Geophys. Res.*, 101, 10737-10748, 1996.
- Newell, P. T., V. A. Sergeev, G. R. Bikkuzina, and S. Wing, Characterizing the state of the magnetosphere: Testing the ion precipitation maxima latitude (b2i) and the ion isotropy boundary, *J. Geophys. Res.*, 103, 4739-4745, 1998.
- Nishida, A., Geomagnetic Dp 2 fluctuations and associated magnetospheric phenomena, *J. Geophys. Res.*, 73, 1795-1803, 1968.
- Nishida, A., DP 2 and polar substorm, *Planet. Space Sci.*, 19, 205-221, 1971.
- Nishida, A., and N. Nagayama, Magnetotail response to sudden changes in the interplanetary magnetic field, *Astrophys. Space Sci.*, 20, 459-472, 1973a.
- Nishida, A., and N. Nagayama, Synoptic survey for the neutral line in the magnetotail during the substorm expansion phase, *J. Geophys. Res.*, 78, 3782-3798, 1973b.
- Nishida, A., and K. Fujii, Thinning of the near-earth (10~15 RE) plasma sheet preceding the substorm expansion phase, *Planet.*

- Nishida, A., Geomagnetic diagnosis of the magnetosphere, Springer-Verlag, New York, 1978.
- Nishida, A., The magnetotail in substorm process: A tutorial, SUBSTORMS-4, edited by S. Kokubun and Y. Kamide, 15-20, 1998.
- Ogino, T., and R. J. Walker, Response of the magnetosphere to a southward turning of the IMF: Energy flow and near earth tail dynamics, SUBSTORMS-4, edited by S. Kokubun and Y. Kamide, 635-640, 1998.
- Oguti, T., Hydrogen emission and electron aurora at the onset of the auroral breakup, *J. Geophys. Res.*, 78, 7543-7547, 1973.
- Oguti, T., TV observations of auroral arcs, in Physics of auroral arc formation, *Geophys. Monogr. Ser.* 25, edited by S.-I. Akasofu and J. R. Kan, 31-41, AGU, Washington, D. C., 1981.
- Oguti, T., J. H. Meek, and K. Hayashi, Multiple correlation between auroral and magnetic pulsations, *J. Geophys. Res.*, 89, 2295-2303, 1984.
- Oguti, T., E. Kaneda, M. Ejiri, S. Sasaki, A. Kadokura, T. Yamamoto, K. Hayashi, R. Fujii, and K. Makita, Studies of aurora dynamics by Aurora-TV on the Akebono (EXOS-D) satellite, *J. Geomag. Geoelectr.*, 42, 555-564, 1990.
- Ohtani, S., K. Takahashi, L. J. Zanetti, T. A. Potemra, R. W. McEntire, and T. Iijima, Tail current disruption in the geosynchronous region, in Magnetospheric Substorms, *AGU geophysical monograph* 64, 131-137, 1991.
- Ohtani, S., S. Kokubun, and C. T. Russell, Radial expansion of the tail current disruption during substorms: A new approach to the substorm onset region, *J. Geophys. Res.*, 97, 3129-3136, 1992a.
- Ohtani, S., K. Takahashi, L. J. Zanetti, T. A. Potemra, and R. W. McEntire, Initial signatures of magnetic field and energetic particle fluxes at tail reconfiguration: Explosive growth phase, *J. Geophys. Res.*, 97, 19311-19324, 1992b.
- Ohtani, S., and T. Tamao, Does the ballooning instability trigger substorms in the near-earth magnetotail?, *J. Geophys. Res.*, 98, 19369-19379, 1993.
- Ohtani, S., F. Creutzberg, T. Mukai, H. Singer, A. T. Y. Lui, M. Nakamura, P. Prikryl, K. Yumoto, and G. Rostoker, Substorm onset timing: The December 31, 1995, event, *J. Geophys. Res.*, 104, 22713-22727, 1999.
- Ono, T., M. Ejiri, and T. Hirasawa, Monochromatic auroral images observed at Syowa Station, *J. Geomag. Geoelectr.*, 39, 65-95, 1987.
- Opgenoorth, H. J., R. J. Pellinen, H. Maurer, F. Kuppers, W. J. Heikkila, K. U. Kaila, and P. Tanskanen, Ground-based observations of an onset of localized field-aligned currents during auroral breakup around magnetic midnight, *J. Geophys.*, 48, 101-115, 1980.
- Opgenoorth, H. J., R. J. Pellinen, W. Baumjohann, E. Nielsen, G. Marklund, and L. Eliasson, Three-dimensional current flow and particle precipitation in a westward travelling surge (Observed during the Barium-GEOS rocket experiment), *J. Geophys. Res.*, 88, 3138-3152, 1983.
- Oya, H., and K. Tsuruda, Introduction to the Akebono (EXOS-D) satellite observations, *J. Geomag. Geoelectr.*, 42, 367-370, 1990.
- Pellinen, R. J., and W. J. Heikkila, Observations of auroral fading before breakup, *J. Geophys. Res.*, 83, 4207-4217, 1978.
- Pellinen, R. J., and W. J. Heikkila, Inductive electric fields in the magnetotail and their relation to auroral and substorm phenomena, *Space Sci. Rev.*, 37, 1-61, 1984.
- Perreault, P., and S.-I. Akasofu, A study of geomagnetic storms, *Geophys. J. R. Astr. Soc.*, 54, 547-573, 1978.
- Paterson, W. R., L. A. Frank, S. Kokubun, and T. Yamamoto, Geotail survey of ion flow in the plasma sheet: Observation between 10 and 50 Re, *J. Geophys. Res.*, 103, 11811-11825, 1998.
- Petrukovich, A. A., T. Mukai, S. Kokubun, S. A. Romanov, Y. Saito, T. Yamamoto, and L. M. Zelenyi, Substorm-associated pressure variations in the magntotail plasma sheet and lobe, *J. Geophys. Res.*, 104, 4501-4513, 1999.
- Persson, M. A. L., A. T. Aikio, and H. J. Opgenoorth, Satellite - ground-based coordination : Late growth and early expansion phase of a substorm, in Proc. Second International Conference on Substorms (ICS-2), edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Institute, University of Alaska Fairbanks, 157-164, 1994a.
- Persson, M. A. L., H. J. Opgenoorth, T. I. Pulkkinen, A. I. Eriksson, P. O. Dovner, G. D. Reeves, R. D. Belian, M. Andre, L. G. Blomberg, R. E. Erlandson, M. H. Boehm, A. T. Aikio, and I. Haggstrom, Near-earth substorm onset: A coordinated study, *Geophys. Res. Letters*, 21, 1875-1878, 1994b.
- Pritchett, P. L., and F. V. Coroniti, Formation of thin current sheets during plasma sheet convection, *J. Geophys. Res.*, 100, 23551-23565, 1995.
- Pritchett, P. L., and F. V. Coroniti, Interchange and kink modes in the near-Earth plasma sheet and their associated plasma flows, *Geophys. Res. Letters*, 24, 2925-2928, 1997.
- Pritchett, P. L., F. V. Coroniti, and R. Pellat, Convection-driven reconnection and the stability of the near-Earth plasma sheet, *Geophys. Res. Letters*, 24, 873-876, 1997.
- Pu, Z. Y., A. Korth, and G. Kremser, Plasma and magnetic field parameters at substorm onsets derived from GEOS 2 observations, *J. Geophys. Res.*, 97, 19341-19349, 1992.
- Pu, Z. Y., A. Korth, Z. X. Chen, R. H. W. Friedel, Q. G. Zong, X. M. Wang, M. H. Hong, S. Y. Fu, Z. X. Liu, and T. I. Pulkkinen, MHD drift ballooning instability near the inner edge of the near-earth plasma sheet and its application to substorm onset, *J. Geophys. Res.*, 102, 14397-14406, 1997.
- Pulkkinen, T. I., D. N. Baker, D. H. Fairfield, R. J. Pellinen, J. S. Murphree, R. D. Elphinstone, R. L. McPherron, J. F. Fennell, R. E. Lopez, and T. Nagai, Modeling the growth phase of a substorm using the Tsyganenko model and multi-spacecraft observations: CDAW-9, *Geophys. Res. Letters*, 18, 1963-1966, 1991.
- Pulkkinen, T. I., D. N. Baker, R. J. Pellinen, J. Buchner, H. E. J. Koskinen, R. E. Lopez, R. L. Dyson, and L. A. Frank, Particle scattering and current sheet stability in the geomagnetic tail during the substorm growth phase, *J. Geophys. Res.*, 97, 19283-19297, 1992.
- Pulkkinen, T. I., D. N. Baker, D. G. Mitchell, R. L. McPherron, C. Y. Huang, and L. A. Frank, Thin current sheets in the magnetotail during substorms: CDAW 6 revisited, *J. Geophys. Res.*, 99, 5793-5803, 1994a.
- Pulkkinen, T. I., V. A. Sergeev, P. K. Toivanen, and R. J. Pellinen, What can we learn about substorms by studying steady convection events?, in Proc. Second International Conference on Substorms (ICS-2), edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Institute, University of Alaska Fairbanks, 449-453, 1994b.
- Pulkkinen, T. I., D. N. Baker, R. J. Pellinen, J. S. Murphree, and L. A. Frank, Mapping of the auroral oval and individual arcs during substorms, *J. Geophys. Res.*, 100, 21987-21994, 1995.
- Pulkkinen, T. I., D. N. Baker, L. A. Frank, J. G. Sigwarth, H. J. Opgenoorth, R. Greenwald, E. Friis-Christensen, T. Mukai, R.

- Nakamura, H. Singer, G. D. Reeves, and M. Lester, Two substorm intensifications compared: Onset, expansion, and global consequences, *J. Geophys. Res.*, 103, 15-27, 1998.
- Pulkkinen, T. I., and M. Wilhelmer, Thin current sheet evolution as seen in observations, empirical models and MHD simulations, *Geophys. Res. Letters*, 27, 1363-1366, 2000.
- Pytte, T., R. L. McPherron, and M. G. Kivelson, Multiple-satellite studies of magnetospheric substorms: Radial dynamics of the plasma sheet, *J. Geophys. Res.*, 81, 5921-5933, 1976a.
- Pytte, T., R. L. McPherron, and S. Kokubun, The ground signatures of the expansion phase during multiple onset substorms, *Planet. Space Sci.*, 24, 1115-1132, 1976b.
- Pytte, T., H. Trefall, G. Kremser, L. Jalonen, and W. Riedler, On the morphology of energetic (~30 keV) electron precipitation during the growth phase of magnetospheric substorms, *J. Atmos. Terr. Phys.* 38, 739-755, 1976c.
- Pytte, T., R. L. McPherron, M. G. Kivelson, H. I. West, Jr., and E. W. Hones, Jr., Multiple-satellite studies of magnetospheric substorms: Plasma sheet recovery and the poleward leap of auroral zone activity, *J. Geophys. Res.*, 83, 5256-5268, 1978.
- Ranta, H., A. Ranta, P. N. Collis, and J. K. Hargreaves, Development of the auroral absorption substorm: Studies of pre-onset phase and sharp onset using an extensive riometer network, *Planet. Space Sci.*, 29, 1287-1313, 1981.
- Ranta, A., H. Ranta, T. Turunen, J. Silen, and P. Stauning, High resolution observation of D-region by EISCAT and their comparison to riometer measurements, *Planet. Space Sci.*, 33, 583-589, 1985.
- Rastatter, L., M. Hesse, and K. Shindler, Hall-MHD modeling of near-Earth magnetotail current sheet thinning and evolution, *J. Geophys. Res.*, 104, 12301-12311, 1999.
- Reeves, G. D., and M. G. Henderson, The storm-substorm relationship: Ion injections in geosynchronous measurements and composite energetic neutral atom images, *J. Geophys. Res.*, 106, 5833-5844, 2001.
- Richmond, A. D., and Y. Kamide, Mapping electrodynamic features of the high-latitude ionosphere from localized observations: technique, *J. Geophys. Res.*, 93, 5741-5759, 1988.
- Ridley, A. J., Gang 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.
- Robinson, R. M., R. R. Vondrak, K. Miller, T. Dabbs, and D. Hardy, On calculating ionospheric conductances from the flux and energy of precipitating electrons, *J. Geophys. Res.*, 92, 2565-2569, 1987.
- Rostoker, G., S.-I. Akasofu, J. Foster, R. A. Greenwald, Y. Kamide, K. Kawasaki, A. T. Y. Lui, R. L. McPherron, and C. T. Russell, Magnetospheric substorms - Definition and signatures, *J. Geophys. Res.*, 85, 1663-1668, 1980.
- Rostoker, G., Comment on "The poleward leap of the auroral electrojet as seen in auroral images" by Edward W. Hones, Jr., *J. Geophys. Res.*, 91, 5879-5880, 1986.
- Rostoker, G., and T. Eastman, A boundary layer model for magnetospheric substorms, *J. Geophys. Res.*, 92, 12187-12201, 1987.
- Rostoker, G., A. T. Y. Lui, C. D. Anger, and J. S. Murphree, North-south structures in the midnight sector auroras as viewed by the Viking imager, *Geophys. Res. Letters*, 14, 407-410, 1987a.
- Rostoker, G., A. Vallance Jones, R. L. Gattinger, C. D. Anger, and J. S. Murphree, The development of the substorm expansive phase: the "eye" of the substorm, *Geophys. Res. Lett.*, 14, 399-402, 1987b.
- Rostoker, G., Some observational constraints for substorm models, in *Magnetospheric Substorms*, AGU geophysical monograph 64, 61-72, 1991.
- Rostoker, G., A renovated boundary layer dynamics model for magnetospheric substorms, in Proc. Second International Conference on Substorms (ICS-2), edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Institute, University of Alaska Fairbanks, 189-194, 1994.
- Rostoker, G., J. C. Samson, F. Creutzberg, T. J. Hughes, D. R. McDiarmid, A. G. McNamara, A. Vallance Jones, D. D. Wallis, and L. L. Cogger, CANOPUS - A ground-based instrument array for remote sensing the high latitude ionosphere during the ISTP/GGS program, *Space Sci. Rev.*, 71, 743-760, 1995.
- Rostoker, G., Phenomenology and physics of magnetospheric substorms, *J. Geophys. Res.*, 101, 12955-12973, 1996.
- Roux, A., S. Perraut, A. Morane, P. Robert, A. Korth, G. Kremser, A. Pedersen, R. Pellinen, and Z. Y. Pu, Role of the near earth plasmashell at substorms, in *Magnetospheric Substorms*, AGU geophysical monograph 64, 201-214, 1991a.
- Roux, A., S. Perraut, P. Robert, A. Morane, A. Pedersen, A. Korth, G. Kremser, B. Aparicio, D. Rodgers, and R. Pellinen, Plasma sheet instability related to the westward traveling surge, *J. Geophys. Res.*, 96, 17697-17714, 1991b.
- Ruohoniemi, J. M., R. A. Greenwald, K. B. Baker, J.-P. Villain, C. Hanuise, and J. Kelly, Mapping high-latitude plasma convection with coherent HF radars, *J. Geophys. Res.*, 94, 13463-13477, 1989.
- Ruohoniemi, J. M., and R. A. Greenwald, The response of high-latitude convection to a sudden southward IMF turning, *Geophys. Res. Letters*, 25, 2913-2916, 1998.
- Saito, T., T. Sakurai, and Y. Koyama, Mechanism of association between Pi2 pulsation and magnetospheric substorm, *J. Atmosph. Terr. Phys.*, 38, 1265-1277, 1976.
- Saito, Y., T. Mukai, M. Hirahara, S. Machida, and N. Kaya, Distribution function of precipitating ion beams with velocity dispersion observed near the poleward edge of the nightside auroral oval, *Geophys. Res. Letters*, 19, 2155-2158, 1992.
- Saka, O., H. Akaki, O. Watanabe, and D. N. Baker, Ground-satellite correlation of low-latitude Pi 2 pulsations: A quasi-periodic field line oscillation in the magnetosphere, *J. Geophys. Res.*, 101, 15433-15440, 1996.
- Sakurai, T., and R. L. McPherron, Satellite observations of Pi 2 activity at synchronous orbit, *J. Geophys. Res.*, 88, 7015-7027, 1983.
- Samson, J. C., L. R. Lyons, P. T. Newell, F. Creutzberg, and B. Xu, Proton aurora and substorm intensifications, *Geophys. Res. Letters*, 19, 2167-2170, 1992a.
- Samson, J. C., D. D. Wallis, T. J. Hughes, F. Creutzberg, J. M. Ruohoniemi, and R. A. Greenwald, Substorm intensifications and field line resonances in the nightside magnetosphere, *J. Geophys. Res.*, 97, 8495-8518, 1992b.
- Samson, J. C., A. K. MacAulay, R. Rankin, P. Frycz, and I. Voronkov, Substorm intensifications and resistive shear flow-balloonning instabilities in the near-earth magnetotail, in Proceedings of the ICS-3 Conference, Versailles, France, May 12-17, 1996, Eur. Space Agency Spec. Publ., ESA SP-389, 399-404, 1996.
- Samson, J. C., Nonlinear, hybrid, magnetohydrodynamic instabilities associated with substorm intensifications near the earth, SUBSTORMS-4, edited by S. Kokubun and Y. Kamide, 505-509, 1998.
- Sandholt, P. E., C. J. Farrugia, J. Moen, and S. W. H. Cowley, Dayside auroral configurations: Responses to southward and

- northward rotations of the interplanetary magnetic field, *J. Geophys. Res.*, **103**, 20279-20295, 1998a.
- Sandholt, P. E., C. J. Farrugia, J. Moen, and B. Lybekk, The dayside aurora and its regulation by the interplanetary magnetic field, in *Polar Cap Boundary Phenomena*, edited by A. Egeland and M. Lockwood, NATO ASI Series, Kluwer Academic Pub., 189-208, 1998b.
- Sandholt, P. E., C. J. Farrugia, M. Oieroset, P. Stauning, and W. F. Denig, Auroral activity associated with unsteady magnetospheric erosion: Observations on December 18, 1990, *J. Geophys. Res.*, **103**, 2309-2317, 1998c.
- Sanny, J., R. L. McPherron, C. T. Russell, D. N. Baker, T. I. Pulkkinen, and A. Nishida, Growth-phase thinning of the near-Earth current sheet during the CDAW 6 substorm, *J. Geophys. Res.*, **99**, 5805-5816, 1994.
- Sato, T., *Auroral Physics*, in *Magnetospheric plasma physics*, edited by A. Nishida, *Developments in Earth and Planetary Sciences*, **4**, pp.197-243, 1982.
- Sauvaud, J. A., and J. R. Winckler, Dynamics of plasma, energetic particles, and fields near synchronous orbit in the nighttime sector during magnetospheric substorms, *J. Geophys. Res.*, **85**, 2043-2056, 1980.
- Sauvaud, J. A., T. Beutier, and D. Delcourt, On the origin of flux dropouts near geosynchronous orbit during the growth phase of substorms, *J. Geophys. Res.*, **101**, 19911-19919, 1996.
- Scholer, M., G. Gloeckler, D. Hovestadt, B. Klecker, and F. M. Ipavich, Characteristics of plasmoidlike structures in the distant magnetotail, *J. Geophys. Res.*, **89**, 8872-8876, 1984.
- Sergeev, V. A., P. Tanskanen, K. Mursula, A. Korth, and R. C. Elphic, Current sheet thickness in the near-earth plasma sheet during substorm growth phase, *J. Geophys. Res.*, **95**, 3819-3828, 1990.
- Sergeev, V. A., M. Malkov, and K. Mursula, Testing the isotropic boundary algorithm method to evaluate the magnetic field configuration in the tail, *J. Geophys. Res.*, **98**, 7609-7620, 1993a.
- Sergeev, V. A., D. G. Mitchell, C. T. Russell, and D. J. Williams, Structure of the tail plasma/current sheet at ~11 RE and its changes in the course of a substorm, *J. Geophys. Res.*, **98**, 17345-17365, 1993b.
- Sergeev, V. A., T. I. Pulkkinen, R. J. Pellinen, and N. A. Tsyganenko, Hybrid state of the tail magnetic configuration during steady convection events, *J. Geophys. Res.*, **99**, 23571-23582, 1994.
- Sergeev, V. A., and B. B. Gvozdevsky, MT-index - a possible new index to characterize the magneitec configuration of magnetotail, *Ann. Geophysicae*, **13**, 1093-1103, 1995.
- Sergeev, V. A., V. Angelopoulos, D. G. Mitchell, and C. T. Russell, In situ observations of magnetotail reconnection prior to the onset of a small substorm, *J. Geophys. Res.*, **100**, 19121-19133, 1995.
- Sergeev, V. A., R. J. Pellinen, and T. I. Pulkkinen, Steady magnetospheric convection: A review of recent results, *Space Sci. Rev.*, **75**, 551-604, 1996a.
- Sergeev, V. A., L. I. Vagina, R. D. Elphinstone, J. S. Murphree, D. J. Hearn, L. L. Cogger, and M. L. Johnson, Comparison of UV optical signatures with the substorm current wedge as predicted by an invergion algorithm, *J. Geophys. Res.*, **101**, 2615-2627, 1996b.
- Sergeev, V. A., T. I. Pulkkinen, and R. J. Pellinen, Coupled-mode scenario for the magnetospheric dynamics, *J. Geophys. Res.*, **101**, 13047-13065, 1996c.
- Sergeev, V. A., K. Liou, C.-I. Meng, P. T. Newell, M. Brittnacher, G. Parks, and G. D. Reeves, Development of auroral streamers in association with localized impulsive injections to the inner magnetotail, *Geophys. Res. Letters*, **26**, 417-420, 1999.
- Sergeev, V. A., J.-A. Sauvaud, D. Popescu, R. A. Kovrazhkin, K. Liou, P. T. Newell, M. Brittnacher, G. Parks, R. Nakamura, T. Mukai, and G. D. Reeves, Multiple-spacecraft observation of a narrow transient plasma jet in the Earth's plasma sheet, *Geophys. Res. Letters*, **27**, 851-854, 2000.
- Shelley, E. G., R. G. Johnson, and R. D. Sharp, Plasma sheet convection velocities inferred from electron flux measurements at synchronous altitude, *Radio Sci.*, **6**, 305-313, 1971.
- Shepherd, G. G., and J. S. Murphree, Diagnosis of auroral dynamics using global auroral imaging with emphasis on localized and transient features, *Auroral Physics*, edited by C.-I. Meng, M. J. Rycroft, and L. A. Frank, Cambridge UP, 289-297, 1991.
- Shiokawa, K., W. Baumjohann, and G. Haerendel, Braking of high-speed flows in the near-Earth tail, *Geophys. Res. Letters*, **24**, 1179-1182, 1997.
- Shiokawa, K., W. Baumjohann, G. Haerendel, G. Paschmann, J. F. Fennell, E. Friis-Christensen, H. Luhr, G. D. Reeves, C. T. Russell, P. R. Sutcliffe, and K. Takahashi, High-speed ion flow, substorm current wedge, and multiple Pi 2 pulsations, *J. Geophys. Res.*, **103**, 4491-4507, 1998a.
- Shiokawa, K., G. Haerendel, and W. Baumjohann, Azimuthal pressure gradient as driving force of substorm currents, *Geophys. Res. Letters*, **25**, 959-962, 1998b.
- Shue, J.-H., Y. Kamide, R. D. Elphinstone, and N. Nishitani, Intense growth phase events of substorms, *J. Geophys. Res.*, **105**, 5357-5371, 2000.
- Sibeck, D. G., R. E. Lopez, and E. C. Roelof, Solar wind control of the magnetopause shape, location, and motion, *J. Geophys. Res.*, **96**, 5489-5495, 1991.
- Slavin, J. A., E. J. Smith, B. T. Tsurutani, D. G. Sibeck, H. J. Singer, D. N. Baker, J. T. Gosling, E. W. Hones, and F. L. Scarf, Substorm associated traveling compression regions in the distant tail: ISEE-3 GEOTAIL observations, *Geophys. Res. Letters*, **11**, 657-660, 1984.
- Slavin, J. A., E. J. Smith, E. L. Mazur, D. N. Baker, E. W. Hones, Jr., T. Iyemori, and E. W. Greenstadt, ISEE 3 observations of traveling compression regions in the earth's magnetotail, *J. Geophys. Res.*, **98**, 15425-15446, 1993.
- Slavin, J. A., D. H. Fairfield, R. P. Lepping, A. Szabo, M. J. Reiner, M. Kaiser, C. J. Owen, T. Phan, R. Lin, S. Kokubun, T. Mukai, T. Yamamoto, H. J. Singer, S. A. Romanov, J. Buechner, T. Iyemori, and G. Rostoker, WIND, GEOTAIL, and GOES 9 observations of magnetic field dipolarization and bursty bulk flows in the near-tail, *Geophys. Res. Letters*, **24**, 971-974, 1997.
- Smith, R. A., C. K. Goertz, and W. Grossmann, Thermal catastrophe in the plasma sheet boundary layer, *Geophys. Res. Letters*, **13**, 1380-1383, 1986.
- Sonnerup, B. U. O., Magnetic field reconnection, in *Solar System Plasma Physics*, **3**, 46-108, ed. by L. J. Lanzerotti, C. F. Kenner, and E. N. Parker, North-Holland Pub., 1979.
- Spann, J. F., M. Brittnacher, R. Elsen, G. A. Germany, and G. K. Parks, Initial response and complex polar cap structures of the aurora in response to the January 10, 1997 magnetic cloud, *Geophys. Res. Lett.*, **25**, 2577-2580, 1998.

- Speiser, T. W., Particle trajectories in model current sheets 1. Analytical solutions, *J. Geophys. Res.*, **70**, 4219-4226, 1965.
- Spence, H. E., M. G. Kivelson, and R. J. Walker, Magnetospheric plasma pressures in the midnight meridian: Observations from 2.5 to 35 Re, *J. Geophys. Res.*, **94**, 5264-5272, 1989.
- Stiles, G. S., E. W. Hones, Jr., S. J. Bame, and J. R. Asbridge, Plasma sheet pressure anisotropies, *J. Geophys. Res.*, **83**, 3166-3172, 1978.
- Taguchi, S., J. A. Slavin, and R. P. Lepping, IMP 8 observations of traveling compression regions in the mid-tail near substorm expansion phase onset, *Geophys. Res. Letters*, **24**, 353-356, 1997.
- Taguchi, S., J. A. Slavin, and R. P. Lepping, Traveling compression regions in the midtail: Fifteen years of IMP 8 observations, *J. Geophys. Res.*, **103**, 17641-17650, 1998a.
- Taguchi, S., J. A. Slavin, M. Kiyohara, M. Nose, G. D. Reeves, and R. P. Lepping, Temporal relationship between midtail traveling compression regions and substorm onset: Evidence for near-Earth neutral line formation in the late growth phase, *J. Geophys. Res.*, **103**, 26607-26612, 1998b.
- Taguchi, S., M. Kiyohara, T. Mukai, T. Yamamoto, M. Nose, Y. Saito, and S. Kokubun, Geotail observations of north-south plasma velocity enhancements in the lobe near substorm expansion phase onset, *Geophys. Res. Letters*, **25**, 4125-4128, 1998c.
- Takahashi, K., L. J. Zanetti, R. E. Lopez, R. W. McEntire, T. A. Potemra, and K. Yumoto, Disruption of the magnetotail current sheet observed by AMPTE/CCE, *Geophys. Res. Letters*, **14**, 1019-1022, 1987.
- Takahashi, K., S. Ohtani, and K. Yumoto, AMPTE CCE observations of Pi 2 pulsations in the inner magnetosphere, *Geophys. Res. Letters*, **19**, 1447-1450, 1992.
- Takahashi, Y., and H. Fukunishi, The dynamics of the proton aurora in auroral breakup events, *J. Geophys. Res.*, **106**, 45-63, 2001.
- Tanaka, T., Generation mechanisms for magnetosphere-ionosphere current systems deduced from a three-dimensional MHD simulation of the solar wind-magnetosphere-ionosphere coupling processes, *J. Geophys. Res.*, **100**, 12057-12074, 1995.
- Terasawa, T., Hall current effect on tearing mode instability, *Geophys. Res. Letters*, **10**, 475-478, 1983.
- Tighe, W. G., and G. Rostoker, Characteristics of westward travelling surges during magnetospheric substorms, *J. Geophys.*, **50**, 51-67, 1981.
- Torr, M. R., D G. Torr, M. Zukic, R. B. Johnson, J. Ajello, P. Banks, K. Clark, K. Cole, C. Keffer, G. Parks, B. Tsurutani, and J. Spann, A far ultraviolet imager for the international solar-terrestrial physics mission, *Space Sci. Rev.*, **71**, 329-383, 1995.
- Tsunoda, R. T., High-latitude F region irregularities: A review and synthesis, *Rev. of Geophys.*, **26**, 719-760, 1988.
- Tsyganenko, N. A., Global quantitative models of the geomagnetic field in the cislunar magnetosphere for different disturbance levels, *Planet. Space Sci.*, **35**, 1347-1358, 1987.
- Tsyganenko, N. A., A magnetospheric magnetic field model with a warped tail current sheet, *Planet. Space Sci.*, **37**, 5-20, 1989a.
- Tsyganenko, N. A., On the re-distribution of the magnetic field and plasma in the near nightside magnetosphere during a substorm growth phase, *Planet. Space Sci.*, **37**, 183-192, 1989b.
- Tsyganenko, N. A., Effects of the solar wind conditions on the global magnetospheric configuration as deduced from data-based field models, in Proceedings of the ICS-3 Conference, Versailles, France, May 12-17, 1996, Eur. Space Agency Spec. Publ., ESA SP-389, 181-185, 1996.
- Uozumi, T., K. Yumoto, H. Kawano, A. Yoshikawa, J. V. Olson, S. I. Solov'yev, and E. F. Vershinin, Characteristics of energy transfer of Pi 2 magnetic pulsations: Latitudinal dependence, *Geophys. Res. Letters*, **27**, 1619-1622, 2000.
- Vallance Jones, A., Aurora, D. Reidel Publ. Co., Dordrecht, Holland, 1974.
- Vallance Jones, A., F. Creutzberg, R. L. Gattinger, and F. R. Harris, Auroral studies with a chain of meridian-scanning photometers 1. Observations of proton and electron aurora in magnetospheric substorms, *J. Geophys. Res.*, **87**, 4489-4503, 1982.
- Vasyliunas, V. M., Mathematical models of magnetospheric convection and its coupling to the ionosphere, in Particles and Fields in the Magnetosphere, edited by B. M. McCormac, pp. 60-71, D. Reidel, Norwell, Mass., 1970.
- Vasyliunas, V. M., Nonuniqueness of magnetic field line motion, *J. Geophys. Res.*, **77**, 6271-6274, 1972.
- Vorobjev, V. G., G. Gustafsson, G. V. Starkov, Y. I. Feldstein, and N. F. Shevnina, Dynamics of day and night aurora during substorms, *Planet. Space Sci.*, **23**, 269-278, 1975.
- Voronkov, I., E. Friedrich, and J. C. Samson, Dynamics of the substorm growth phase as observed using CANOPUS and SuperDARN instruments, *J. Geophys. Res.*, **104**, 28,491-28,505, 1999.
- Walker, R. J., T. Ogino, J. Raeder, and M. Ashour-Abdalla, A global magnetohydrodynamic simulation of the magnetosphere when the interplanetary magnetic field is southward: The onset of magnetotail reconnection, *J. Geophys. Res.*, **98**, 17235-17249, 1993.
- Watanabe, M., and T. Iijima, Substorm growth phase on the magnetotail, *J. Geophys. Res.*, **98**, 17299-17316, 1993.
- Wiens, R., and G. Rostoker, Characteristics of the development of the westward electrojet during the expansive phase of magnetospheric substorms, *J. Geophys. Res.*, **80**, 2109-2128, 1975.
- Wing, S., and P. T. Newell, Central plasma sheet ion properties as inferred from ionospheric observations, *J. Geophys. Res.*, **103**, 6785-6800, 1998.
- Winningham, J. D., F. Yasuhara, S.-I. Akasofu, and W. J. Heikkila, The latitudinal morphology of 10-eV to 10-keV electron fluxes during magnetically quiet and disturbed times in the 2100-0300 MLT sector, *J. Geophys. Res.*, **80**, 3148-3171, 1975.
- Wu, C.-C., P. L. Pritchett, and F. V. Coroniti, Hydromagnetic equilibrium and instabilities in the convectively driven near-Earth plasma sheet, *J. Geophys. Res.*, **103**, 11797-11810, 1998.
- Xiaogang Wang, Z. W. Ma, and A. Bhattacharjee, Growth, sudden enhancement, and relaxation of current sheets in the magnetotail: Two-dimensional substorm dynamics, *Geophys. Res. Letters*, **22**, 2985-2988, 1995.
- Yahnin, A., M. V. Malkov, V. A. Sergeev, R. J. Pellinen, O. Aulamo, S. Vennerstrom, E. Friis-Christensen, K. Lassen, C. Danielsen, J. D. Craven, C. Deehr, and L. A. Frank, *J. Geophys. Res.*, **99**, 4039-4051, 1994.
- Yahnin, A. G., V. A. Sergeev, B. B. Gvozdevsky, and S. Vennerstrom, Magnetospheric source region of discrete auroras inferred from their relationship with isotropy boundaries of energetic particles, *Ann. Geophysicae*, **15**, 943-958, 1997.
- Yamade, Y., M. Fujimoto, N. Yokokawa, and M. S. Nakamura, Field-aligned currents generated in magnetotail reconnection: 3D Hall-MHD simulations, *Geophys. Res. Letters*, **27**, 1091-1094, 2000.
- Yamamoto, T., E. Kaneda, H. Hayakawa, T. Mukai, A. Matsuoka, S. Machida, H. Fukunishi, N. Kaya, K. Tsuruda, and A. Nishida, Meridional structures of electric potentials relevant to premidnight discrete auroras: A case study from Akebono measurements, *J. Geophys. Res.*, **98**, 11135-11151, 1993.

- Yeoman, T. K., N. Mattin, J. M. Ruohoniemi, M. Lester, and M. Pinnock, An assessment of the L shell fitting beam-swinging technique for measuring ionospheric E region irregularity drift patterns, *J. Geophys. Res.*, 97, 14885-14896, 1992.
- Yumoto, K., K. Takahashi, T. Saito, F. W. Menk, B. J. Fraser, T. A. Potemra, and L. J. Zanetti, Some aspects of the relation between Pi 1-2 magnetic pulsations observed at $L = 1.3\text{--}2.1$ on the ground and substorm-associated magnetic field variations in the near-Earth magnetotail observed by AMPTE CCE, *J. Geophys. Res.*, 94, 3611-3618, 1989.
- Yumoto, K., Evidence of magnetospheric cavity Pi 2 waves, *J. Geomag. Geoelectr.*, 42, 1281-1290, 1990.
- Yumoto, K., H. Osaki, K. Fukao, K. Shiokawa, Y. Tanaka, S. I. Solovyev, G. Krymskij, E. F. Vershinin, V. F. Osinin, and 210Å-MM magnetic observation group, Correlation of high- and low-latitude Pi 2 magnetic pulsations observed at 210Å-magnetic meridian chain stations, *J. Geomag. Geoelectr.*, 46, 925-935, 1994.
- Zhou, Xiaoyan, and Bruce T. Tsurutani, Rapid intensification and propagation of the dayside aurora: Large scale interplanetary pressure pulses (fast shocks), *Geophys. Res. Lett.*, 26, 1,097-1,100, 1999.