

Bruce Tadashi Tsurutani

EDUCATION: Ph.D., Physics: University of California, Berkeley, 1972
Bachelor of Arts, Physics: University of California, Berkeley, 1963
High School: Santa Monica, California

BIRTHDATE: January 29, 1941, Los Angeles, California

CURRENT TITLE: Senior Research Scientist at the Jet Propulsion Lab (equivalent to Full Professor at a University comparable to Caltech), 1986 to present
Principal Scientist, JPL, 2001 to present

PAST POSITIONS: Research Scientist, Jet Propulsion Laboratory 1972 to 1985
Senior Research Scientist, 1986 to present
Manager of Space Physics and Astrophysics Section (1985-1987), Division of Earth and Space Sciences. At the time, the Section was involved with: KOBE, IRAS, SETI, SIRTf, CRAF, Cassini, EOS, GGS, Galileo, Ulysses, Solar Probe, Cluster, Voyager, Giotto, ICE, Pioneers 10 & 11, and assorted balloon and rocket campaigns.
Leader of Space Plasma Group, 1999 to 2006

AREAS OF SCIENTIFIC INTEREST:

Space weather: magnetic storms, substorms, HILDCAAs, geomagnetic quiet (solar max, declining phase, solar min), CMEs, high speed streams, solar flares, coronal holes.
Nonlinear plasma waves (evolution, strong turbulence, stochastic particle acceleration, cross-field diffusion of particles)
Plasma physics (instabilities and wave-particle interactions)
Ionospheric physics/aeronomy (the dayside superfountain effect, neutral, particle uplift, solar flare effects)
Auroral and magnetospheric physics (energetic particle precipitation, substorms, chorus, relativistic electron acceleration)
Solar wind interaction with magnetospheres (upstream waves and particles, viscous interaction)
Planetary plasma physics
Solar Corona Physics (flares, heating mechanisms)
Astrophysics (x-ray bursters)

HONORS:

JGR Space Physics, (Excellence in Refereeing, 2015; top 1%)
Solar Physics, “for particular meritorious service in refereeing”, 2015
JASTP excellence in refereeing, 2014
AGU John Adam Fleming Medal, 2009

AGU Fellow, 2009
The Federal University of Santa Maria (UFSM), Rio Grande do Sul, Brazil
University Medal, 2009
NASA Ulysses Group Achievement Award, 2009
JGR Citation for Excellence in Refereeing, 2007
NASA Cluster Science Team Group Achievement Award, 2004
GRL Citation for Excellence in Refereeing, 2003
ALAGE (Latin America Geophysical Society) inaugural Gold Medal, 2001
NASA Exceptional Service Medal, 2001
NASA Solar Electric Prop. (NSTAR) Group Ach. Awd., 1999
Von Humboldt (Germany) Research Fellow, 1993-1994
Brazilian National Space (W. Von Braun) Medal, 1992
NASA Ulysses Magnetometer Team Achievement, 1992
Ulysses Magnetometer Team achievement, 1991
ESA Ulysses achievement, 1990
NASA Exceptional Service Medal, 1985
GRL Citation for Excellence in Refereeing, 1984
NASA ISEE Magnetometer Team Achievement, 1979
NASA Pioneer 10, 11 Magnetometer Team Achievement, 1972, 1973

UNIVERSITY AFFILIATIONS:

Visiting Associate, Rheinisches Institut fur Umweltforschung, University of Cologne, Germany, April-May, 2013
Visiting Associate, Plasma Group, Calif. Inst. Tech. Nov. 2012-March 2013
Visiting Professor, Brazilian National Space Research Institute (INPE), Sept.-Oct., 2010
Visiting Professor, Technical University of Braunschweig, May-Aug, 2010
International External Evaluator for RISH, Kyoto Univ., Feb.-Mar. 2007
Visiting Professor, RISH, Kyoto University, Oct 2006 to April 2007
Visiting Professor, Kyoto University, July-Nov, 2005
Adjunct Professor, University of Southern California, 2003 -2007
Member of British Antarctic Survey Scientific Review Committee, 2001-2005
Visiting Associate, Solar Physics Group, Calif. Inst. Tech., 1996-2001
Visiting Professor, Technical Univ. Braunschweig, Germany, 1993-1994
Visiting Professor, Univ. Cologne, Germany, 1993-1994
Visiting Scientist, NOAA Space Environ. Lab, Boulder, CO, July 1993
Visiting Professor, University of Alaska Geophysical Institute, Fairbanks, Alaska, July 1992
Kyoto University International Scholarship, October 1989
Visiting Professor, Kyoto University, March-July 1988

Ph.D. THESIS ADVISOR:

D. Remya (with V. Reddy and G. Lakhina), IIGM, 2013-2014
C. Yamashita (joint with E. Echer and C. Brum), INPE, 2010-
E. da Costa Jr. (joint with V. Alves and E. Echer), INPE, 2007-2010
F.L. Guarneri (joint with W. Gonzalez of INPE), 2003-2005
D. Wendel (joint with S. Ride, U. Calif. San Diego), 1993-1994
N. LaBelle-Hamer (joint with L. Lee, University of Alaska),
1989-1994
M. Okada (joint with H. Matsumoto, Kyoto University), 1991-1994

SCIENCE EDUCATION:

Participated in National Geographic TV movie on Extreme Weather, 2011.
Taught second year electricity and magnetism, Univ. So. Calif., 2004
Discovery Channel Program on “Storms in the Solar System”
(partook in Solar and Magnetic Storms portion), 2000
Invitee (only 35 educators from the U.S.) at the Working Conference
on Pre-College Science Education for Scientists and Engineers,
California Institute of Technology, 7-13, March 1992.

SERVICES:

Member of the AGU “Nonlinear Waves and Processes” selection committee
(2015)
Member of the AGU Honors and Recognition Committee (2015-2017)
Member AGU Development Board (2015-2017)
Chair of the AGU Fleming Committee 2013-2014
Member of the AGU SPA “Space Weather Prize” selection committee (2013)
Member of NASA-SOLE “The Logistics of Extreme Space Weather: Preparing for
the Inevitable” Workshop, 2010-2011.
Member of the AGU Fleming Committee 2010-2012
Member of the AGU SPA Fellows Nomination Committee 2010-2011
Member of NASA LWS TR&T Steering Committee, 2011
Member of the RISH, Kyoto Univ. Science Rev. Board, 2007
Served on the British Antarctic Survey (BAS, Cambridge) Science Review Board,
2001-2006
Member AIP Subcommittee on Classification and Information
Retrieval (1997-2000)
Chairman, AGU Indices Revision Task Force (1993-1995)
Chairman, EOS Editor Search Committee (1992)
Chairman, JGR Editor Search Committee (1992)
Led the Revamping of the AGU Indices (1981-1984)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:

American Geophysical Union
European Geophysical Union

Union Radio Scientifique Internationale (URSI)
Latin American Geophysical Society (ALAGE)
American Association for Advancement of Science
Japanese Geosciences Union (JpGU), previously called Society of Geophysics,
Earth and Planetary Space Sciences (Japan)

OFFICER/OFFICIAL OF SCIENTIFIC ORGANIZATIONS:

President, Space Physics and Aeronomy Section AGU, 1990-1992
President –Elect, SPR Section AGU, 1988-1990
Secretary for Solar Interplanetary Physics of the AGU, 1982-1986
Member, AGU Board of Journal Editors, 1985-1986
Member, AGU Journals Board, 1981-1984

EDITOR OF BOOKS:

Recurrent Magnetic Storms: Corotating Solar Wind Streams, AGU Monograph 167 (with R.L. McPherron, W.D. Gonzalez, G. Lu, J.H.A. Sobral, and N. Gopalswamy), 2006.

From the Sun: Auroras, Magnetic Storms, Solar-Flares and Cosmic Rays, AGU Monograph (with S. Suess), 1998.

Magnetic Storms, AGU monograph 98 (B.T. Tsurutani, W.D. Gonzalez, Y. Kamide, J.K. Arballo), 1997

Proceedings of the First U.S.-Russian Workshop on FIRE Environment, IKI - Moscow, (O. Vaisberg and B. Tsurutani), Dec. 1995

Small Instruments for Space Physics, NASA, Washington D.C. (B. T. Tsurutani), November 1993

Space Plasma Waves and Instabilities at Comets and in Magnetospheres, AGU Monograph 61 (B. T. Tsurutani and H. Oya), 1989

Collisionless Shocks in the Heliosphere: A Tutorial Review, AGU Monograph 34 (R. G. Stone and B. T. Tsurutani), 1985

Collisionless Shocks in the Heliosphere: Review of Current Research AGU Monograph 35 (B. T. Tsurutani and R. G. Stone), 1985

EDITOR OF JOURNAL

Nonlinear Processes in Geophysics, 2010-2017. NPG is a joint AGU and EGU journal.

EDITOR OF SPECIAL JOURNAL ISSUES:

Nonlinear Processes in Geophysics “Nonlinear Waves and Chaos in Space Plasmas” (G.S. Lakhina, B.T. Tsurutani, A. Chian, T. Hada, and G. Morales), 2013-4.

Journal of Atmospheric and Solar-Terr. Physics, “Sun-Earth System Exploration: Moderate and Extreme Disturbances” (P. Newell and B.T. Tsurutani), 2013-4.

Nonlinear Processes in Geophysics “Nonlinear Plasma Waves in Space and Laboratories” (B.T. Tsurutani and G. Morales), 2011.

Journal of Atmospheric Sol.-Terr. Physics, “Ionospheric Response to High Speed Solar Wind Streams during the Declining Phase of the Solar Cycle” (A.J. Mannucci and B.T. Tsurutani), 2011.

Nonlinear Processes in Geophysics “Coupling between Large and Small Scale Turbulence in Space and Laboratory Plasmas” (T. Passot, R. Pottelette, B.T. Tsurutani, T. Hada and P.-L. Sulem), 2009

Earth, Planets and Space (EPS), “Flare-Substorm Relationships: Space Weather” (B.T. Tsurutani, K. Shibata, S.-I. Akasofu, M. Oka), May 2009

Journal of Atmospheric Sol.-Terr. Physics, “Space Weather in the Declining Phase of the Solar Cycle” (J.I. Moen and B.T. Tsurutani) January, 2003

Nonlinear Processes in Geophysics “4th International Workshop on Nonlinear Waves and Chaos in Space Plasmas” (E. Mjølhus, B. Tsurutani and J. Buchner), 2003

Journal of Atmosph. Sol.-Terr. Physics “Magnetic Storms” (B. Tsurutani, V. Papitashvili, Y. Feldstein, S. Lastovicka), 2000

Nonlinear Processes in Geophysics “Nonlinear Waves and Chaos”, (E. Marsch, B. Tsurutani, P. Diamond), 1999

ORGANIZER OF SPECIAL JOURNAL ISSUES:

Nonlinear Processes in Geophysics, 2014 (with G. Lakhina, A. Chian, T. Hada, G. Morales and R. Grimshaw)

Journal of Solar and Terrestrial Phys. 2014 (with P. Newell)

Journal of Geophysical Research, “Chorus” (B. Tsurutani, R. Horne, D. Schriver, O. Verkhoglyadova, J. Pickett and O. Santolik) 2010

Journal of Geophysical Research, “Corotating Solar Wind Streams and Recurrent Geomagnetic Activity”, July 2006.

Journal of Geophysical Research, “Magnetic Storms”, July, 1997

Journal of Geophysical Research, "Plasma Waves and Instabilities at Comet and in Magnetospheres", January 1989

Geophysical Research Letters, "L. Biermann Memorial Issue: Comet Giacobini-Zinner", March, 1986

Journal of Geophysical Research, "Collisionless Shocks in the Heliosphere II", June, 1985

Journal of Geophysical Research, "Collisionless Shocks in the Heliosphere", January, 1985

Geophysical Research Letters, "ISEE-3 Distant GEOTAIL Results", October, 1984

Journal of Geophysical Research, "Upstream Waves and Particles", April 1981

ORGANIZER OF NASA WORKSHOPS:

Dust Near the Sun Virtual Workshop (I. Mann et al., NASA White Paper), 2002

:

Coronal Hole Virtual Workshop, (K. Harvey et al., NASA White Paper), 2000

Particles Near the Sun Workshop, Atlanta, GA, (Tsurutani et al. NASA White Paper) 12-14 March 2000

Solar Environment Workshop, Moscow, Russia, 5-7 June, 1995

Small Instrument Workshop, 29-31 March 1993,
Pasadena, California

ORGANIZATION OF SCIENTIFIC MEETINGS/ WORKSHOPS/SESSIONS:

Convened the 9th Nonlinear Waves and Chaos Workshop, 3-8 March 2013, San Diego, CA (Tsurutani, Morales, Camassas, Hada, Chian, and Lakhina).

Coconvened (with P. Newell) the 5th Earth-Sun System Exploration Conference, Kailua-Kona, Hawaii, 12-18 January, 2013.

Convened AGU “Extreme Space Conditions:the Impact of Nonlinear Processes”, San Francisco, 5-9 Dec., 2011. Tsurutani, Schrijver, Guhathakurta, Mannucci, Basri, Brain, Vasilidis, and Vadim.

Science Organizing Committee member of ILWS Workshop “Towards the Next Solar Maximum, 29 Aug. to 2 Sept, 2011, Beijing China.

Coconvened the Boulder High Speed Stream and Solar Minimum Workshop, 1-3 Sept. 2010 (A.J. Mannucci, B.T. Tsurutani, O. P. Verkhoglyadova, S.C. Solomon, J.P. Thayer, and J.M. Forbes).

Convened The 8th International Nonlinear Wave Workshop, La Jolla Calif 1-5 March, 2010 (B.T. Tsurutani, G. Morales, T. Passot, V. Shevchenko). Sponsors Were URSI, APS Plasma Div., and UCSD.

Co-Convened EGU Session ST2.4 “Nonlinear Waves and Transport Processes in Solar Terrestrial Plasmas”, Vienna Austria (C. Mazelle, B.T. Tsurutani and O.P. Verkhoglyadova) 3-7 May 2010

Co-Convened IAGA Session II-06 “Equatorial Atmosphere-Ionosphere Interactive Processes: Vertical and Latitudinal Coupling and Magnetospheric Forcing”, Sopron, Hungary, 23-30 August 2009 (M. Abdu, T. Nakamura and B.T. Tsurutani)

Member of the Scientific Organizing Committee of the 2009 International Living With A Star (ILWS), Ubatuba, SP, Brazil, 4-10 October 2009.

Co-Convened EGU session ST7 Waves as a Diagnostic Tool for Basic Plasma Processes, Vienna, Austria (R. Pottelette, J. Pickett, B.T. Tsurutani), 19-24 April 2009.

Co-Convened IAGA Session II-06 Equatorial Atmosphere-Ionosphere Interactive Processes: Vertical and Latitudinal Coupling and Magnetospheric Forcing, Sopron Hungary (M. Abdu, T. Nakamura, B.T. Tsurutani), 23-30 August 2009.

Convened The First International Electromagnetic Chorus Wave Workshop, San Diego, Ca (with R.Horne, J.S. Pickett, D. Schriver, O. Santolik and O.P. Verkhoglyadova), 10-12 February 2009.

Co-Convened AGU Session SA10 Solar and Solar Wind Control of Planetary Ionospheres During the Declining Phase of the Solar Cycle, San Francisco, Ca (A.J. Mannucci and B.T. Tsurutani), December, 2008.

Co-Convened the Seventh International Workshop on Nonlinear Waves and Turbulence in Space Plasmas (NLW-7), Beaulieu-sur-Mer, France (R. Pottelette, T. Passot, B.T. Tsurutani, T. Hada), 21-25 April, 2008.

Convened EGU session ST6 Waves, Wave-Particle and Wave-Wave Interactions, Vienna, Austria (with J.S. Pickett and R. Pottelette), 13-18 April, 2008.

Co-Convened First S. Korean Winter School for Space Physics, Geongju, South Korea (D.-Y. Lee, B.-H. Ahn, B.T. Tsurutani), 21-22 Feb. 2008.

Convened *Eighth Storm-Substorm Workshop*, Geongju, South Korea, (B.T. Tsurutani, B.-H. Ahn), 18-19 Feb. 2008.

Co-Convened IAGA session JAS009 Equatorial Atmosphere-Ionosphere Coupling Processes: Responses to Forcing from Lower Atmosphere and Magnetosphere, Perugia, Italy (M. Abdu, T. Nakamura, B.T. Tsurutani), 2-13 July, 2007.

Co-Convened AOGS session ST16-24, Equatorial to Mid-latitude Atmospheric/Ionospheric Effects of Solar Transients and Superstorms, Bangkok, Thailand, (A. Bhattacharyya, B.T. Tsurutani, M. Abdu, A.J. Mannucci, K. Yumoto), 30 July to 4 August, 2007.

Co-Convened EGU special session ST9 Linear and Nonlinear Wave- Particle Interactions in Space Plasmas, Vienna, Austria, (J. Pickett, R. Pottelette, B.T. Tsurutani), 16-17 April, 2007

Co-Convened “Flare-Substorm CAWSES Space Weather Workshop” Fairbanks, Alaska, (K. Shibata, S.-I. Akasofu, B.T. Tsurutani) 18-21 March, 2007

Co-Convened Nonlinear Wave Workshop (NWW-6), (T. Hada A. Chian and B.T.Tsurutani), Fukuoka, Japan, 9-13 October, 2006.

Convened AOGS (Asia Oceania Geosciences Society) ST-04 Corotating Streams and Geomagnetic Activity, Singapore, 10 -14 July, 2006.

Co-Convened *CAWSES International Workshop on Space Weather Modeling* (led Virtual Workshop), Yokohama, Japan, 14-17 Nov. 2006.

Co-Convened EGU session ST7.7 Filamentation Processes, Boundaries and Nonlinear Structures in Heliospheric Plasmas Vienna, Austria, (R. Pottelette, J. Pickett, B.T. Tsurutani, S. Savin), 3-7, April, 2006.

Co-Convened IAGA Symposium IDII01, Low Latitude Atmosphere-Ionosphere-Magnetosphere Coupling, Dynamics and Energetics (Divs. II and III), Toulouse, France (M.A. Abdu, T. Nakamura, B.T. Tsurutani), , 4 to 8 April, 2005.

Organizer Chapman Conference Corotating Solar Wind Streams and Recurrent Geomagnetic Activity, Manaus, Brazil, (with R. McPherron, W. Gonzalez and G. Lu, J.H.A. Sobral, and N. Gopalswamy), 6-12 February, 2005

Convened EGU session (ST7) Waves, Particles and Non-linear Processes, Vienna Austria (with J. Pickett, R. Pottelette, and G. Lakhina), 24-29 April 2005

Program Committee Member of IAU Symposium 226- Coronal and Stellar Mass Ejections, Beijing, China, 13-17 September, 2004.

Convened an EGU session Nonlinear Waves and Chaos (with J. Pickett and G. Lakhina), Nice, France, April 2004

Co-Convened the Fifth International Workshop on Nonlinear Waves and Chaos, Mumbai, India, (G. Lakhina, S. Sharma and B.T. Tsurutani), 3-9 March, 2003.

Co-Organizer Magnetic Storm-Substorm Workshop, Henningsvaer, Norway (with J. Moen), 17-22 June 2002

Co-Convened the *Nonlinear Wave and Chaos Workshop*, Tromso, Norway (with E. Molhus), 18-22 June 2001

Organizer of Interplanetary Disturbances session of SRAMP Conference, Sapporo Japan (with R. Schwenn), 2-6 Oct., 2000.

Organizer of Magnetospheric session of *COSPAR Colloquium on Space Weather Study Using Multi-Point Technique*, Taipei, Taiwan, 27-29 September 2000.

Co-Organizer of Alfvénic Structures: From the Sun to the Magnetosphere” Symposium portion of COSPAR, Warsaw, Poland, (with K. Stasiewicz), 16-23, July 2000

Organizer of a two-day symposium on Interplanetary Medium and Geophysical Phenomena during Magnetic Storms (with Div II, III and IV), IAGA, Birmingham, England ,28-29 July 1999,

Convened Nonlinear Wave and Chaos Workshop, Carlsbad, California (B.T. Tsurutani and P. Diamond), 1-5 March 1999

Co-Convened of “Nonlinear Waves and Turbulence in Space Plasmas Workshop”, Cologne, Germany (F. Neubauer, B.T. Tsurutani), 12-15 February 1997

Organizer of AGU Coronal Heating and Solar Wind Acceleration, Baltimore, MD special 1-1/2 day session, 27-30 May, 1997.

Organizer and Host of Magnetic Storm Workshop (Brazil IV),
Lake Arrowhead, CA., 19-21 February, 1996

Organizer and Host of Chapman Conference on Magnetic Storms,
Pasadena, CA., (with Y. Kamide. and W. Gonzalez), 12-16 February, 1996.

Co-Convenor of International Workshop on Nonlinear Waves and Chaos in Space
Plasmas, Kyoto, Japan (H. Matsumoto, T. Hada, B.T. Tsurutani and B. Buti), 13-
16 June, 1994.

Member of the Organizing Committee of the Western Pacific Geophysics
Meeting (WPGM), Kanazawa, Japan, 21-25 August 1990

Member of Organizing Committee of Eighth Topical Conference on High
Temperature Plasma Diagnostics, Hyannis, Mass., May 6-10, 1990

Organizer, Chapman Conference Plasma Waves and Instabilities in
Magnetospheres and at Comets (with H. Oya), Sendai, Japan, 12-16 Oct., 1987.

Member of Organizing Committee of International Workshop on
Active Experiments in Space, Kyoto, Japan, 19-20 October, 1987

As Secretary of AGU SPA Section for 4 years (1982-1986), Organizer of 8
semiannual meetings, including creation and organization of ~ 40 special sessions

Member of Organizing Committee of Second Neil Brice Memorial Symposium,
Iowa City, Iowa, 1-6, September, 1986

Member of Organizing Committee of Chapman Conference on Magnetotail
Physics, Laurel, Maryland, 28-31 October, 1985

Co-Organizer and Host of Chapman Conference on Collisionless Shocks
in the Heliosphere, Napa, California, (with R. Stone), 20-24 February, 1984

Organizer and Host of Upstream Waves and Particles Meeting, Jet
Propulsion Laboratory, Pasadena, Ca (with P. Rodriguez), 15-16 April, 1980

SERVED ON NASA MISSION STUDY PANELS:

NASA LWS TR&T Steering Committee, 2011

NASA Solar Probe Plasma Wave Design Group, 2006-7

NASA Solar and Heliospheric Physics review, 2003

Project Scientist of NASA Solar Probe Mission, 1998-2001

New Millennium Science Working Group, 1994-2000

Study Scientist of NASA Solar Probe Mission, 1988-1998

NASA Space Physics Data Systems, 1994-1998

Cosmic and Heliospheric Working Group, 1993-1995

Cosmic and Heliospheric Management Operations Working Group, NASA,
1992-1995

Data System Users Group, 1980-1981

International Solar Polar, 1977

SPACECRAFT EXPERIMENTS (OPERATIONAL):

Co-I, Cluster Magnetometer investigation, 2000-present

Co-I, Cassini Magnetometer Investigation, 1990-present

Co-I, Polar UV Investigation, 1996 - present

Co-I, Polar Plasma Wave investigation, 1996 - present

Co-I, Rosetta Radio Science, 1997-present

Co-I, Rosetta Plasma Package, 1997-present

PAST MISSIONS:

Co-I, Ulysses Magnetometer, 1990 - 2011

P.-I., DS1 magnetometer plus plasma wave NSTAR diagnostic package, 1996-2002

P.-I., STRV-2 auroral imaging experiment, 2000-2001

P.-I., CRAF magnetometer

Co-I, ISEE-3/ICE Magnetometer, launched 1978-1987

Co-I, ISEE-1, -2 Plasma wave investigation, 1978-1987

Co-I, Japanese Sakigake Plasma Wave, 1984-1986

HOBBIES: Freelance Science Writer (had a weekly newspaper column

"Science and the Citizen", Rafu Shimpo, Los Angeles, 1980-1981).

Have written articles for: Scientific American, EOS, and Earth and Space

Mineral/Fossil Collecting

PUBLICATIONS:

~680 articles in refereed journals (JGR, GRL, Plan. Spa. Sci, Scientific American, Science, Nature, JASTP, Annal. Geophys., Earth Planets and Space, AA, Nonlinear Processes in Geophysics, Rev. Geophysics, Space Weather and Space Climate, Space Weather and others).

HIGHLY CITED AUTHOR:

h-index 69, !10-index 328, number of citations 22,252.

NASA TEC BRIEFS:

Tsurutani, B.T., B.J. Falkowski, O.P. Verkhoglyadova, G.S. Lakhina, Electromagnetic waves transformed from a coherent to a quasi-coherent nature, *NASA Tech Briefs*, NPO-48268, Jan. 2015.

Tsurutani, B.T., E. Echer and W.D. Gonzalez, Physical causes of extremely low geomagnetic activity, NPO-48230, 2014.

Verkhoglyadova, O., B.T. Tsurutani, and G.S. Lakhina, Magnetic and electric field polarizations of oblique magnetospheric chorus waves, NPO47770, *Nasa Tech Briefs*, 7 Feb, 2011.

Tsurutani, B.T., O.P. Verkhoglyadova and A. J. Mannucci, NPO-47209 Dayside Ionospheric Superfountain, NASA Tech Brief., Jan 21, 2010.

Tsurutani, B.T., D.E. Brinza, M.D. Henry, L.D. Zhang, and D.R. Clay, Plasma-based detector of outer-space dust particles, NPO-30848, NASA Tech Briefs, 30, 77, March 2006.

Kuhnke, F., G. Musmann, K.H. Glassmeier, and B.T. Tsurutani, Small Magnetometer, NPO-19283, NASA Tech Briefs, 46, June 1995.

Tsurutani, B.T. and A.L. Brinca, Influence of Multiple Ion Species on Low Frequency Electromagnetic Wave Instabilities, NPO-17771, NASA Tech Briefs, 15, 50, 1991.

Publications:

1. **Tsurutani, B. T.**, *Energetic Electron Precipitation and Substorms*, Ph.D. Thesis, University of California, Berkeley, 1972.
2. **Tsurutani, B. T.**, and F. Bogott, Onset of Magnetospheric Substorms, *J. Geophys. Res.*, 77, 4677, 1972.
3. **Tsurutani, B. T.**, and C.-I. Meng, Interplanetary Magnetic Field Variations and Substorm Activity, *J. Geophys. Res.*, 77, 2964, 1972.
4. Clay, D., C. Elachi, C. E. Griffin, W. Huntress, L. D. Jaffe, R. L. Newburn, R. H. Parker, P. W. Schaper, F. W. Taylor, T. E. Thorpe, **B. T. Tsurutani**, *Science Rationale and Instrument Package for a Slow Flyby of Comet Encke*, Ed. R. L. Newburn, JPL, Pasadena, CA 760-90, 1973.
5. Meng, C.-I., **B. T. Tsurutani**, K. Kawasaki, and S. -I. Akasofu, Cross-Correlation Analysis of the AE Index and the Interplanetary Magnetic Field B_z Component, *J. Geophys. Res.*, 78, 617, 1973.
6. Mozer, F. S., F. H. Bogott and **B. T. Tsurutani**, Relations Between Ionospheric Electric Fields and Energetic Trapped and Precipitating Electrons, *J. Geophys. Res.*, 78, 630, 1973.

7. Parker, R. H., J. M. Ajello, A. Bratenahl, D. R. Clay, **B. T. Tsurutani**, A Study of the Compatibility of Science Instruments with the Solar Electric Propulsion Space Vehicle, *Tech. Mem. 33-641*, JPL Pasadena, CA, Oct., 1973.
8. Smith, E. J., A. M. A. Frandsen, **B. T. Tsurutani**, R. M. Thorne and K. W. Chan, Plasmaspheric Hiss Intensity Variations During Magnetic Storms, *J. Geophys. Res.*, *79*, 2507, 1974.
9. **Tsurutani, B. T.**, and E. J. Smith, Postmidnight Chorus: A Substorm Phenomenon, *J. Geophys. Res.*, *79*, 118, 1974.
10. Kelley, M. C., **B. T. Tsurutani** and F. S. Mozer, Properties of ELF Electromagnetic Waves and the Earth's Ionosphere Deduced from Plasma Wave Experiments on the OVI-17 and OGO-6 Satellites, *J. Geophys. Res.*, *80*, 4603, 1975.
11. **Tsurutani, B. T.**, E. J. Smith, and R. M. Thorne, Electromagnetic Hiss and Relativistic Electron Losses in the Inner Zone, *J. Geophys. Res.*, *80*, 600, 1975.
12. Smith, E. J., and **B. T. Tsurutani**, Magnetosheath Lion Roars, *J. Geophys. Res.*, *81*, 2261, 1976.
13. Smith, E. J., **B. T. Tsurutani**, D. L. Chenette, T. F. Conlon and J. A. Simpson, Jovian Electron Bursts: Correlation with the Interplanetary Field Direction and Hydromagnetic Waves, *J. Geophys. Res.*, *81*, 65, 1976.
14. **Tsurutani, B. T.**, B. E. Goldstein, and A. Bratenahl, Acceleration of Energetic Particles of the Outer Regions of Planetary Magnetospheres-Inferences from Laboratory and Space Experiments, *Planet. Spa. Sci.*, *24*, 995, 1976.
15. Thorne, R. M., S. R. Church, W. J. Malloy, and **B. T. Tsurutani**, The Local Time Variation of ELF Emissions during Periods of Substorm Activity, *J. Geophys. Res.*, *82*, 1585, 1977.
16. **Tsurutani, B. T.**, and E. J. Smith, Two Types of ELF Chorus in the Outer Magnetosphere and their Substorm Dependences, *J. Geophys. Res.*, *82*, 5112, 1977.
17. Neugebauer, M., and **B. T. Tsurutani**, Can X-Ray Bursts be Caused by Substorms at a Neutron Star?, *Astrophys. J.*, *226*, 494, 1978.
18. Smith, E. J., **B. T. Tsurutani**, and R. L. Rosenberg, Observations of the Interplanetary Sector Structure up to Heliographic Latitudes of 16°: Pioneer 11, *J. Geophys. Res.*, *83*, 717, 1978.
19. Gurnett, D. A., R. R. Anderson, **B. T. Tsurutani**, E. J. Smith, G. Paschmann, G. Haerendel, S. J. Bame, and C. T. Russell, Plasma Wave Turbulence at the Magnetopause: Observations from ISEE 1 and 2, *J. Geophys. Res.*, *84*, 7043, 1979.
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