Curriculum Vitae

Tamas I. Gombosi

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PERSONAL

- Born in Budapest, Hungary.
- United States citizen.

EDUCATION

- Ph.D. (Physics), Loránd Eötvös University, Budapest, Hungary, 1974.
- M.S. (Physics), Loránd Eötvös University, Budapest, Hungary, 1970.
- *Post-PhD Degrees*
  - Candidate of Science (Physics), Hungarian Academy of Sciences, 1979.
  - Doctor of Science (Physics), Hungarian Academy of Sciences, 1983.

EMPLOYMENT

- *Konstantin I. Gringauz Distinguished University Professor of Space Science*, U. Michigan, 2014–Present.
- *Rollin M. Gerstacker Endowed Professor of Engineering*, U. Michigan, 2007–Present.
- *Chair*, Department of Atmospheric, Oceanic and Space Sciences, U. Michigan, 2003–2011.
- *Director*, Space Physics Research Laboratory, U. Michigan, 2003–2006.
- *Founding Director*, Center for Space Environment Modeling, U. Michigan, 2002–2024.
- *Associate Professor and Professor*, U. Michigan, 1987–Present.
- *Associate Research Scientist*, U. Michigan, 1985–1987.
- *Associate Research Scientist, Research Scientist, Senior Research Scientist, Scientific Advisor*, Central Research Institute for Physics, Hungarian Academy of Sciences, 1970–85.

AWARDS & RECOGNITIONS

- John Adam Fleming Medal (AGU's highest recognition in space science), 2020.
- Ted Kennedy Family Faculty Team Excellence Award (CSEM), College of Engineering, U. Michigan, 2019.
- Kristian Birkeland Medal for "outstanding scientific results in the field of space weather," 2018.
- NASA Group Achievement Award (Cassini Interdisciplinary Scientists Team), 2018.
- Van Allen Lecturer (Space Physics and Aeronomy Section of the AGU honor), 2017.
- NASA Group Achievement Award (University of Michigan Rosetta Modeling Team), 2017.
- External Member, Hungarian Academy of Sciences, (eminent Hungarian scholars who live in foreign countries may be elected as External Members), 2016.
- NASA Group Achievement Award (MMS Instrument Suite Team), 2016.
- Konstantin I. Gringauz Distinguished University Professor of Space Science, U. Michigan, 2014.
- Recipient of the American Geophysical Union's (AGU) inaugural Space Weather Prize, 2013.
- NASA Group Achievement Award (Cassini Interdisciplinary Scientists Team), 2009.
- Rollin M. Gerstacker Endowed Professor of Engineering, U. Michigan, 2007.
- NASA Public Service Group Achievement Award (Rosetta), 2007.
- Stephen S. Attwood Award (the highest faculty achievement award in the College of Engineering), College of Engineering, U. Michigan, 2002.
- Team Excellence Award, College of Engineering, University of Michigan, 1999.
- NASA Group Achievement Award (Cassini Orbiter Team), 1998.

- Member, International Academy of Astronautics (Corresponding Member 1993, Full Member 1997)
- Fellow of the American Geophysical Union (elected in 1996)
- Research Excellence Award, College of Engineering, University of Michigan, 1992.
- Lajos Jánossy Award (the highest science award of the research center), Central Research Institute for Physics, Hungary, 1987.
- László Detre Award (young scientist award), Lóránd Eötvös Physical Society, Hungary, 1982.
- KFKI Award, Central Research Institute for Physics, Hungary, 1978.
- KFKI Award, Central Research Institute for Physics, Hungary, 1976.
- Albert Fonó Award (young scientist award), Hungarian Astronautical Society, 1976.
- Student Fellowship of the Republic of Hungary (highest student fellowship in Hungary), 1969.

SCIENTIFIC BIOGRAPHY

A native of Hungary, Professor Gombosi was educated in theoretical physics. In the mid-1970s he was the first foreign national to do postdoctoral research at the Space Research Institute (IKI) in Moscow, where he participated in theoretical studies of the solar wind interaction with Venus and in data interpretation of the first Venus orbiters, Venera-9 and Venera-10. At IKI he worked under the direction of Konstantin Gringauz, Roald Sagdeev, Albert Galeev, and Vitalii Shapiro. A few years later, he came to the U.S. to participate in theoretical work related to NASA's Venus exploration.

In the early 1980s, he played a leading role in the planning and implementation of the international VEGA mission to Venus and Halley's comet. As project scientist for Hungary, he actively participated in the design of several *in situ* and remote sensing instruments (such as the imaging system, the energetic particle detector, and the plasma spectrometer). In addition to his involvement in cometary missions, he also carried out pioneering theoretical work in the emerging field of cometary plasma physics.

In the mid 1980s he permanently moved to the US, and in 1987 he joined the faculty of the University of Michigan, where presently he is the Konstantin Gringauz Distinguished University Professor of Space Science, the Rollin M. Gerstacker Professor of Engineering, Professor of Space Science and Professor of Aerospace Engineering. In addition, he is the founding director of the Center for Space Environment Modeling.

At Michigan he established close interdisciplinary collaborations with computational fluid dynamics and computational science faculty and formed a tightly integrated group of faculty and students that pioneered high performance simulation technology of space plasmas extending from the solar surface to cometary and planetary magnetospheres and ionospheres, to the outer edges of the solar system.

His research interests include

- Development of first-principles-based predictive global space weather simulation codes,
- Physics of planetary space environments (including Earth, planetary satellites and comets),
- Theoretical investigations of plasma transport in various regions of the heliosphere,
- Fundamental kinetic theory of gases and plasmas,
- Multi-scale MHD simulations of solar system plasmas on solution adaptive unstructured grids,
- Physics-based, end-to-end modeling of space weather phenomena (from Sun to ground), and
- Integrating cutting-edge interpretable machine learning methods with first-principles based space weather simulations to increase the time-horizon of space weather forecasting.

He participated in the exploration of the space environment and the solar system. He was an interdisciplinary scientist for the international Cassini/Huygens mission to Saturn and its moon, Titan. He was Chair of Working Group X (providing modeling support for the mission) and Coinvestigator of the ROSINA ion-neutral mass spectrometer on the international Rosetta mission that explored comet 67P/Churyumov-Gerasimenko. Professor Gombosi is Co-Investigator of the IMPACT plasma instrument on NASA's STEREO mission to explore solar storms and a member of the science team of the Magnetospheric Multiscale (MMS) mission. In addition, he has been the Principal Investigator of several large interdisciplinary research efforts.

MAIN SCIENTIFIC ACCOMPLISHMENTS

His scientific contributions span across many areas of space and planetary physics. Here is an incomplete list of his most important scientific contributions:

- He was the first author of the paper published in *Nature* that first established the directional anisotropy of $\sim 10^{14}$ eV galactic cosmic rays. In order to prove the existence of a 0.1% directional anisotropy, the arrival directions of more than 100 million extensive air shower events were analyzed.
- Using theoretical calculations and plasma observations by the Venera-9 and -10 Venus orbiters, he and his Russian colleagues established that during solar minimum conditions energetic electrons originating from the solar wind are responsible for the maintenance of the nighttime ionosphere of Venus.
- He played a pioneering role in the development of modern cometary plasma physics. He made major contributions to the theoretical description of the cometary-ion pick-up process, which essentially controls the cometary plasma environment. In addition, he was among the first scientists to explain the acceleration of pick-up ions by self-generated low-frequency MHD waves.
- He was a pioneer of modeling the complicated physical processes controlling the interface region between the comet nucleus and the continuously escaping cometary coma. His "friable sponge" model of the cometary surface layers and his "icy-glue" model of cometary nuclei were essentially confirmed by spacecraft and remote optical observations. He was a leader in the development of the first detailed numerical model describing the strongly coupled dusty gas flow near cometary nuclei.
- He developed the first time-dependent model of the terrestrial polar wind, which accounted for the dynamics and energetics of the transonic ion outflows from the high-latitude ionosphere. His model calculations were the first to predict the solar-cycle dependence of the H^+ outflow, the origin of O^+ in transients of the polar wind, and the effects of low-altitude frictional heating on the polar wind.
- He derived new transport equations from higher-order velocity moments of the Boltzmann equation using a non-isotropic Gaussian base function. These equations are stable, hyperbolic, and ensure positivity of the velocity distribution function. These features make the new moment closures both tractable and well-suited for today's sophisticated numerical algorithms.
- In the 21st century, he has been leading a group of faculty and students pioneering the development of a new generation of high-performance 3D MHD numerical simulation models using solution adaptive grids. This group has also developed the Space Weather Modeling Framework that couples state-of-the-art models describing the complex Sun-Earth system.

MANAGEMENT EXPERIENCE

Department Chair. From 2003 to 2011 Professor Gombosi was Chair of the Department of Atmospheric, Oceanic and Space Sciences (AOSS), College of Engineering, University of Michigan (today the department is called Department of Climate and Space Sciences and Engineering, CLaSP). Under his leadership, AOSS grew significantly (from 15 tenure-track faculty to 24), while maintaining a balanced budget. He created a world-class climate program, hiring seven new tenure track faculty in this area, while he also rejuvenated the space & planetary science side of the department. At the same time, departmental administration remained nearly constant and professional engineering support staff slightly increased. Today, AOSS is one of the top departments in the world in space and planetary science, and it is among the best in climate science.

Center Director. In 2002 Professor Gombosi founded the Center for Space Environment Modeling (CSEM) and served as its director until 2024. This multidisciplinary center integrates the activities of space and planetary scientists, applied mathematicians, and computer scientists. The collaboration resulted in the development and application of modern numerical algorithms and software practices to challenging space science problems. Under Professor Gombosi's leadership, CSEM became the leading center of first-principles-based space weather modeling. When he stepped down as Director, CSEM included about ten tenure-track and an equal number of research faculty, several postdocs, and approximately fifteen Ph.D. students.

Project Management Experience: He led the development of the high-performance, multiphysics, grid-adaptive BATS-R-US code and the Space Weather Modeling Framework (SWMF). The development of

BATS-R-US started in the early 1990s, while SWMF was developed a decade later. During the last quarter century about $50 million (200 person-years) were invested in the development of BATS-R-US and SWMF (including Ph.D. students and postdocs). The average annual investment was two million dollars (about eight people). It took a combination of $100K type research grants and large agency initiatives (NASA HPCC, DoD MURI, NSF KDI, NSF ITR, NSF CDI, NASA/NSF Space Weather Partnership, NASA Heliophysics Grand Challenges, NSF INSPIRE, NASA DRIVE Science Centers, NSF/ANSWERS) to continuously maintain this effort.

Project Scientist. During the first part of the 1980s, Professor Gombosi was Project Scientist for Hungary in the international VEGA (Venus-Halley) mission led by the Soviet Union. In this capacity, he played a critical role in establishing East-West collaborations. In effect, he was the mission's "ambassador" to ESA and NASA and provided behind-the-scenes communication channels between the Soviet space program and NASA and ESA during the height of the cold war (these were the "Evil Empire" years). At the same time, he played a critical role in the instrument and mission design of theVEGA mission. He worked on optical tracking strategies, nucleus and coma models, and was a leader of the plasma and energetic particle instruments.

BOOKS, PUBLICATIONS & PRESENTATIONS

Gaskinetic Theory. Professor Gombosi's first graduate-level textbook was published by Cambridge University Press in 1994. *Gaskinetic Theory* was written based on the course he taught at the University of Michigan to aerospace engineers and space scientists. This is an introductory text on the molecular theory of gases and modern transport theory suitable for upper-division undergraduates in physics and first-year graduate students in aerospace engineering, upper atmospheric science, and space research. The first part introduces basic concepts, including the distribution function, the classical theory of specific heats, binary collisions, the mean free path, and reaction rates. Transport theory is used to express coefficients such as viscosity and heat conductivity in terms of molecular properties. The second part of the book covers advanced transport theory. Generalized transport equations are derived from the Boltzmann equation. The Chapman-Enskog and Grad methods are discussed to obtain higher-order transport equations for low-density gases. The aerodynamics of solid bodies is explored, and the book concludes with the kinetic description of shock waves. The book is widely used by aerospace departments around the world.

Physics of the Space Environment. Professor Gombosi's second graduate-level textbook was published in 1998 by Cambridge University Press. *Physics of the Space Environment* provides a comprehensive introduction to the physical phenomena that result from the interaction of the Sun and the planets, often termed space weather. It explores the basic processes in the Sun, in the interplanetary medium, in the near-Earth space, and down into the atmosphere. The first part of the book summarizes the fundamental elements of transport theory relevant to the atmosphere, ionosphere, and magnetosphere. This theory is then applied to physical phenomena in the space environment. Fundamental physical processes are emphasized throughout, and basic concepts and methods are derived from first principles. This book is unique in its balanced treatment of space plasma and aeronomical phenomena. It is used by several universities with graduate programs in space science.

Publications. At this time, Professor Gombosi has written two textbooks, edited four scientific monographs, and authored or coauthored over 470 peer reviewed publications. Of these, 10 were published in *Science* and 8 in *Nature*, the most prestigious periodicals in planetary and space science. Most of the other papers were published in the *Journal of Geophysical Research*, the *Astrophysical Journal*, *Icarus* or *Geophysical Research Letters*. According to the *Google Scholar* data base (Researcher ID is G-4238-2011) Professor Gombosi's work has been cited more than 30,000 times and his Hirsch index (h-index) is 91.

Presentations. Professor Gombosi gave or contributed significantly to more than 150 invited presentations and more than 700 contributed presentations at major national and international conferences. Presentations were given at meetings of the American Geophysical Union (AGU), the Committee on Space Resaerch (COSPAR), the International Association of Geomagnetism and Aeronomy, part of the International Union

of Geodesy and Geophysics (IAGA/IUGG), the European Geophysical Union (EGU), and the Division of Planetary Sciences of the American Astronomical Society (DPS/AAS). In addition, he gave over a hundred colloquia at major universities and research centers around the world. Professor Gombosi also gave a number of public lectures on space exploration at all levels, from elementary schools to high schools to large national public events.

PROFESSIONAL ACTIVITIES

- **Space Missions:**
  - Worked on the interpretation of particles and fields data obtained by the first Venus orbiters, Venera–9 and –10.
  - Participated in the scientific analysis of particles and field data returned by NASA's Pioneer–Venus Orbiter.
  - Played a leading role in the VEGA mission to comet Halley and in international activities related to the 1986 apparition of Halley's comet. In 1982–83, he served as Project Scientist for Hungary in the International Venus–Halley (VEGA) Mission.
  - Interdisciplinary Scientist (Magnetosphere and Plasma) of the Cassini mission to Saturn.
  - Co-investigator, Rosetta Ion Neutral Analyzer (ROSINA), and the Plasma Investigation on the Rosetta Comet Rendezvous Mission.
  - Co-Investigator, IMPACT instrument, STEREO mission.
  - Co-Investigator, MMS/SMART mission.
- **Editorial Experience.** He was Senior Editor of the *Journal of Geophysical Research – Space Physics* (1992-1997). This journal publishes about 600 papers annually and is the word's leading publication in the area of aeronomy, magnetospheric physics, and solar system astrophysics. Additional editorial experience includes
  - Member, Publishing Policy Committee, American Institute of Physics (AIP), 1998–2000.
  - Editor of four scientific monographs.
  - Associate Editor, *Icarus*, 1991–1997.
  - Member, Translation Journals Board, American Institute of Physics (AIP), 1993–1997.
  - Member, Publications Committee, American Geophysical Union, 1990–1992.
  - Associate Editor, *Geophysical Research Letters*, 1986–1988.

PHD THESIS SUPERVISION

1. Austin Brenner (Ph.D. 2023, presently postdoc at NASA GSFC)
2. John Haiducek (Ph.D. 2018, presently scientist at NRL)
3. Judit Szente (Ph.D. 2018, presently Assistant Research Scientist in CLaSP)
4. Dimitriy Borovikov (Ph.D. 2017, presently working at Google)
5. Yuxi Chen (Ph.D. 2017, presently Assistant Research Scientist in CLaSP)
6. Zhenguang Huang (Ph.D. 2014, presently Associate Research Scientist in CLaSP)
7. Meng Jin (Ph.D. 2014, presently scientist at Solar & Astrophysics Laboratory, Lockheed-Martin)
8. Rona Oran (Ph.D. 2014, presently researcher at MIT)
9. Xing Meng (Ph.D. 2013, presently Assistant Professor USTC, China)
10. Fang Fang (Ph.D. 2012, presently Research Assistant Professor at University of West Virginia)
11. Alex Glocer (Ph.D. 2008, presently Staff Scientist at NASA GSFC)
12. Daniel Welling (Ph.D. 2008, presently Assistant Professor at University of Michigan)
13. Ofer Cohen (Ph.D. 2008, presently Professor at University of Massachusetts at Lowell)
14. Noé Lugaz (Ph.D. 2006, presently Research Scientist at University of New Hampshire)
15. Kenneth C. Hansen (Ph.D. 2001, presently works at NASA HQ)
16. Konstantin Kabin (Ph.D. 2000, presently Professor at Royal Military College, Canada)
17. Timur Linde (Ph.D. 1998, presently financial analyst on Wall Street)
18. Madai Frey (Ph.D. 1997, presently spacecraft designer at Northrop-Grumman)

19. Michael Liemohn (Ph.D. 1996, presently Professor in CLaSP)
20. Nathan A. Schwadron (Ph.D. 1996, presently Professor at the University of New Hampshire)
21. Claudia J. Alexander (Ph.D. 1993, deceased)
22. Kenneth M. Chick (Ph.D. 1993, presently scientist at the Carnegie Institution for Science)
23. Steven M. Guiter (Ph.D. 1992, presently scientist in Canada)
24. Richard W. Cannata (Ph.D. 1990, deceased)
25. Ákos Kőrösmezey (Ph.D. 1984, presently software engineer at Ericsson, Hungary)
26. Mihály Horányi (Ph.D. 1982, presently Professor at the University of Colorado)
27. Erzsébet Merényi (Ph.D. 1980, presently Professor at Rice University)

POSTDOC SUPERVISION

1. Lulu Zhao (2020–21), Presently Assistant Professor, University of Michigan
2. Dmitry Borovikov (2017–18), Presently software engineer, Google
3. Zhenguang Huang (2014–2017), Presently Assistant Research Scientist, University of Michigan
4. André Bieler (2013–16), Presently software engineer, Switzerland
5. Lars Daldorff (2010–14), Presently staff scientist, NASA GFSC
6. Xienzhe Jia (2009–10), Presently Professor, CLaSP, University of Michigan
7. Martin Rubin (2006–08), Presently Professor of Physics, University of Bern, Switzerland
8. Merav Opher (2001–04), Presently Professor of Astronomy, Boston University
9. Ilia Roussev (2001–02), Presently Program Director, National Science Foundation
10. Ward Manchester (2000–01), Presently Research Professor, CLaSP, University of Michigan
11. Roman Häberli (1996–97), Presently works in Swiss industry
12. Clinton Groth (1995–96), Presently Professor of Aerospace Engineering, University of Toronto
13. Darren De Zeeuw (1992–93), Presently Scientist, CCMC, NASA GSFC

COURSES During his four decades at the University of Michigan, Professor Gombosi taught many courses. A list of courses which were developed or significantly modified by Professor Gombosi includes:

- AOSS-464 (Space Environment). This course describes simple mathematical models of the upper atmosphere, ionosphere, magnetosphere, interplanetary medium, and Sun. This material formed the basis for Professor Gombosi's second textbook, Physics of the Space Environment, published by Cambridge University Press in 1998.
- Space 477 (Space Weather Modeling). In this capstone course, students develop an understanding of numerical modeling for space physics applications, learning the different mathematical and numerical approaches, the implicit and explicit assumptions, and the different types and purposes of models. Students develop familiarity in building and running models including large-scale community models, and they become familiar with the models available online, especially those at NASA's Community Coordinated Modeling Center. The opportunity to synthesize their understanding in written and oral reports and the ability to give and receive feedback will be part of the class.
- AERO-532 (Gaskinetic Theory). This course was originally developed in the 1960s as an introduction to the kinetic theory of gases. Prof. Gombosi fundamentally revised the course, expanded its mathematical rigor, and included modern subjects, such as generalized transport equations and free-molecular interactions. This revised course formed the basis for his first textbook (Gaskinetic Theory), which was published by Cambridge University Press in 1994.
- AOSS-574 (Advanced Space Environment). This is a higher level version of AOSS-464 primarily serving advanced Ph.D. students in the AOSS and later the CLaSP department.
- AOSS-596 (Kinetic Theory). This course focuses on the kinetic theory of rarified gases and plasmas. Special attention is focused on the waves and instabilities that develop in magnetized plasmas.
- AOSS-597 (Space Plasma Physics). This course explores the plasma transport and wave modes that describe plasma behavior in our solar system. Special attention is paid to waves in cold, hot and warm plasmas and the ways these waves interact with the radiation belts, transport of energetic particles and

the energization of the solar wind.

SERVICE

- **National/International Organizations and Committees.** Served on a large number of NASA and NSF selection committees. An incomplete list of other committee service is:
  - Member, Space Weather Advisory Group (SWAG), a Federal Advisory Committee for the Space Weather Operations, Research, and Mitigation (SWORM) Interagency Working Group (IWG), National Science and Technology Council (NSTC) of the President, 2021–2024.
  - Member, NASA Living with a Star (LWS) Targeted Research and Technology Steering Committee, 2012–2013.
  - Member, NRC Decadal Survey of Heliophysics, R2O/O2R Subcommittee, 2010–2011.
  - Chair, NSF Advisory Subcommittee for Atmospheric and Geospace Sciences, 2009–2010.
  - Member, NSF Advisory Committee for Geosciences, 2008–2010.
  - Chair, Committee of Visitors, NSF Upper Atmosphere Section, 2008.
  - Chair, NASA LWS Targeted Research and Technology Steering Committee, 2005–2007.
  - Member, NASA LWS Targeted Research and Technology Steering Committee, 2004–2005.
  - Chair, Committee on Space Research (COSPAR) Commission D (Space Plasmas including Planetary Magnetospheres), 1996–2000.
  - Member, Committee on Solar and Space Physics (CSSP), Space Studies Board, US National Research Council, 1996–1999.
  - Member, NASA Planetary Atmospheres Management Operations Group, 1991–93.
  - Executive Committee Member, COSPAR Commission B1, 1984–88.
  - Executive Committee Member, COSPAR Commission D, 1982–86.
  - Member, Plasma Science and Halley Environment Working Groups, Inter-Agency Consultative Group (IACG), 1982–86.
  - Chair (1987–91) and Co-Chair, International Association of Geomagnetism and Aeronomy (IAGA) Division IV (Solar Wind and Interplanetary Magnetic Field).
- **University of Michigan Committees** An incomplete list of his committee service is:
  - Member, CoE's Endowed/Collegiate Professorship Advisory Committee, 2017
  - Member, CLaSP Awards Committee, 2016–2021
  - Member, Russel Awards Faculty Advisory Committee, 2006–2008.
  - Program Advisor, Interdepartmental Graduate Program in Space and Planetary Physics, 1996–2006.
  - Program Advisor, Master of Engineering in Space Systems, 1995–2003.
  - Executive Committee Member, AOSS, 1986–89 and 1993–95.
  - Chair, Honors and Awards Committee, College of Engineering, 1993–94.
  - Seminar Chair, AOSS, 1991–92.
  - Co-Chair, Space Physics Research Laboratory (SPRL) Director Search Committee, 1989–90.
  - Executive Committee Member, SPRL, 1986–87.

MEMBERSHIPS IN SCIENTIFIC SOCIETIES

- American Association for the Advancement of Science.
- American Geophysical Union.
- American Physical Society.
- Division for Planetary Sciences, American Astronomical Society.
- European Geophysical Union.

PUBLICATIONS
Tamas I. Gombosi

Books and Edited Books

1. T. I. Gombosi, **Physics of the Space Environment**, Cambridge University Press, Cambridge, UK, doi: 10.1017/CBO9780511529474, 1998.
2. T. I. Gombosi, **Gaskinetic Theory**, Cambridge University Press, Cambridge, UK, doi: 10.1017/CBO9780511524943, 1994.
3. T. I. Gombosi (ed.), **Plasma Environments of Non-Magnetic Planets**, Pergamon Press, Oxford, United Kingdom, 1993.
4. T. I. Gombosi, S. K. Atreya, E. Grün and M. S. Hanner (eds.), **Cometary Environments**, Pergamon Press, Oxford, United Kingdom, 1989.
5. T. I. Gombosi (ed.), **Cometary Exploration**, KFKI Press, Budapest, Hungary, 1983.
6. M. Beöthy and T. Gombosi (eds.), **A Magyar Űrkutatás 10 Éve**, KFKI Press, Budapest, Hungary, 1981.

Peer-Reviewed Articles

2025

1. Igor V. Sokolov and Tamas I. Gombosi, Physics-Based Forecasting of Tomorrow's Solar Wind at 1 AU, **Astrophys. J.**, **submitted**, arXiv, doi: 10.48550/arXiv.2501.07222, 2025. [PDF]

2024

2. Weihao Liu, Igor V Sokolov, Lulu Zhao, Tamas I Gombosi, Xiaohang Chen, Nishtha Sachdeva, Gábor Tóth, Ward B Manchester IV, David Lario, Kathryn Whitman, Alessandro Bruno, Christina Cohen, M Leila Mays, Hazel M Bain, Physics-Based Simulation of the 2013 April 11 SEP Event, **Astrophys. J.**, **submitted**, arXiv, doi: 10.48550/arXiv.2412.07581, 2024. [PDF]
3. Zhao, L., Sokolov, I., Gombosi, T., Lario, D., Whitman, K., Huang, Z., Toth, G., Manchester, W.B., van der Holst, B., Sachdeva, N., and Liu, W., Solar wind with field lines and energetic particles (SOFIE) model: Application to historical solar energetic particle events, **Space Weather**, **22**, e2023SW003729, doi: 10.1029/2023SW003729, 2024. [PDF]
4. Ruoyu Wang, David F. Fouhey, Richard E. L. Higgins, Spiro K. Antiochos, Graham Barnes, J. Todd Hoeksema, K. D. Leka, Yang Liu, Peter W. Schuck, and Tamas I. Gombosi, SuperSynthIA: Physics-ready Full-disk Vector Magnetograms from HMI, Hinode, and Machine Learning, **Astrophys. J.**, **970**, 168, doi: 10.3847/1538-4357/ad41e3, 2024. [PDF]
5. Huang, Z., Toth, G., Gombosi, T. I., Combi, Mi.R., Jia, X., Shou, Yi., Tenishev, V., Altwegg, K., Rubin, M., Interaction between a Coronal Mass Ejection and Comet 67P/Churyumov–Gerasimenko, **Astrophys. J.**, **967**, 43, doi: 10.3847/1538-4357/ad3c42, 2024. [PDF]

2023

6. Kathryn Whitman, Ricky Egeland, Ian G. Richardson, Clayton Allison, Philip Quinn, Janet Barzilla, Irina Kitiashvili, Viacheslav Sadykov, Hazel M. Bain, Mark Dierckxsens, M. Leila Mays, Tilaye Tadesse, Kerry T. Lee, Edward Semones, Janet G. Luhmann, Marlon Núñez, Stephen M. White, Stephen W. Kahler, Alan G. Ling, Don F. Smart, Margaret A. Shea, Valeriy Tenishev, Soukaina F. Boubrahimi, Berkay Aydin, Petrus Martens, Rafal Angryk, Michael S. Marsh, Silvia Dalla, Norma Crosby, Nathan A. Schwadron, Kamen Kozarev, Matthew Gorby, Matthew A. Young, Monica Laurenza, Edward W. Cliver, Tommaso Alberti, Mirko Stumpo, Simone Benella, Athanasios Papaioannou, Anastasios Anastasiadis, Ingmar Sandberg, Manolis K. Georgoulis, Anli Ji, Dustin Kempton, Chetraj Pandey, Gang Li, Junxiang Hu, Gary P. Zank, Eleni Lavasa, Giorgos Giannopoulos, David Falconer, Yash Kadadi, Ian Fernandes, Maher A. Dayeh, Andrés Muñoz-Jaramillo, Subhamoy Chatterjee, Kimberly D. Moreland, Igor V. Sokolov, Ilia I. Roussev, Aleksandre Taktakishvili, Frederic Effenberger, Tamas Gombosi, Zhenguang Huang, Lulu Zhao, Nicolas Wijsen, Angels Aran, Stefaan Poedts, Athanasios Kouloumvakos, Miikka

Paassilita, Rami Vainio, Anatoly Belov, Eugenia A. Eroshenko, Maria A. Abunina, Artem A. Abunin, Christopher C. Balch, Olga Malandraki, Michalis Karavolos, Bernd Heber, Johannes Labrenz, Patrick Kühl, Alexander G. Kosovichev, Vincent Oria, Gelu M. Nita, Egor Illarionov, Patrick M. O'Keefe, Yucheng Jiang, Sheldon H. Fereira, Aatiya Ali, Evangelos Paouris, Sigiava Aminalragia-Giamini, Piers Jiggens, Meng Jin, Christina O. Lee, Erika Palmerio, Alessandro Bruno, Spiridon Kasapis, Xiantong Wang, Yang Chen, Blai Sanahuja, David Lario, Carla Jacobs, Du Toit Strauss, Ruhann Steyn, Jabus den Berg, Bill Swalwell, Charlotte Waterfall, Mohamed Nedal, Rositsa Miteva, Momchil Dechev, Pietro Zucca, Alec Engell, Brianna Maze, Harold Farmer, Thuha Kerber, Ben Barnett, Jeremy Loomis, Nathan Grey, Barbara J. Thompson, Jon A. Linker, Ronald M. Caplan, Cooper Downs, Tibor Török, Roberto Lionello, Viacheslav Titov, Ming Zhang, Pouya Hosseinzadeh, Review of Solar Energetic Particle Models, **Adv. Space Res.**, **72**, 5161–5242, doi: 10.1016/j.asr.2022.08.006, 2023. [PDF]

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PRESENTATIONS
Tamas I. Gombosi

Invited Talks

2025

1. Thomas E Berger, Tuija Pulkkinen, Daniel Baker, Tamas I Gombosi, Enrico Camporeale, Phillip Chamberlin, Fazlul Laskar, Greg Lucas, Naomi Maruyama, Mark Miesch, Eric Sutton, Yang Chen, Aaron Ridley, Gabor Toth, Daniel T Welling, Shasha Zou, Allison Jaynes, Martin Mylnczak, Dogacan Su Ozturk, Nick Pedatella, Liying Qian, The Space Weather Operational Readiness Development (SWORD) Center of Excellence: and update on progress and plans, 105th AMS Annual Meeting, New Orleans, Louisiana, 12-16 January 2025.
2. Lulu Zhao, Tamas I Gombosi, Charles Arge, Igor Sokolov, Kathryn Whitman, Yang Chen, Ward B Manchester, Bart van der Holst, CMS Cohen, Alessandro Bruno, Ian Richardson, David Lario, Yuri Omelchenko, Meng Jin, Nishtha Sachdeva, Zhenguang Huang, Timothy Keebler, Arik Posner, Hazel M Bain, Leila Mays, Joe Giacalone, CLEAR Space Weather Center of Excellence: All-Clear Solar Energetic Particle Forecast, 105th AMS Annual Meeting, New Orleans, Louisiana, 12-16 January 2025.

2024

3. Lulu Zhao, Tamas Gombosi, Charles Arge, Igor Sokolov, Kathryn Whitman, Yang Chen, Valeriy Tenishev, Ward Manchester, Bart van der Holst, Christina Cohen, Alessandro Bruno, Ian Richardson, David Lario, Yuri Omelchenko, Meng Jin, Zhenguang Huang, Nishtha Sachdeva, Xiaohang Chen, Weihao Liu, Xianyu Liu, M. Mays, Hazel Bain, Joe Giacalone, CLEAR Space Weather Center of Excellence: All-Clear Solar Energetic Particle Forecast, Invited Paper SH24B-03 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13, December 2024.
4. Thomas Berger, Daniel Baker, Tamas Gombosi, Tuija Pulkkinen, The Space Weather Operational Readiness Development (SWORD) Center of Excellence - first year progress and plans, Invited Paper SH24B-04 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13, December 2024.
5. Gombosi, T.I., S. Antiochos, X. Chen, B. van der Holst, Z. Huang, W. Manchester, T. Pulkkinen, N. Sachdeva, I. Sokolov, J. Szente, G. Toth, D. Welling, L. Zhao, W. Liu, X. Liu, and E. Wraback, Going Beyond MHD: Advances in Space Environment Modeling, Keynote Lecture, *15th International School/Symposium for Space Simulations*, Garching bei München, Germany, August 1-9, 2024.
6. Lulu Zhao, Tamas Gombosi, I. Sokolov, C. N. Arge, Y. Chen, W. Manchester, B. van der Holst, C.M.S. Cohen, G. Li, A. Bruno, I. G Richardson, D. Lario, Y. Omelchenko, M. Jin, N. Sachdeva, Z. Huang, K. D. Leka, H. M. Bain, M. Leila, K. Whitman, J. Giacalone, Forecast of Solar Energetic Particles in the CLEAR Space Weather Center of Excellence, Invited Paper D1.6-0006-24 presented at the 45th Scientific Assembly of COSPAR, BEXCO, Busan, Korea, July 13-21, 2024.
7. Lulu Zhao, Tamas I Gombosi, Igor Sokolov, C Nick Arge, Gabor Toth, Yang Chen, Valeriy Tenishev, Ward B Manchester, Bart van der Holst, CMS Cohen, Gang Li, Alessandro Bruno, Ian Richardson, David Lario, Yuri Omelchenko, Meng Jin, Nishtha Sachdeva, Zhenguang Huang, Arik Posner, KD Leka, Hazel M Bain, Leila Mays, Kathryn Whitman, Joe Giacalone, Space Weather Center of Excellence-CLEAR: All-Clear SEP Forecast, 104th AMS Annual Meeting, Baltimore, MD, January 28 – February 1, 2024.

2023

8. Lulu Zhao, Tamas I Gombosi, Igor Sokolov, Charles Nickolos Arge, Yang Chen, Valeriy Tenishev, Ward Manchester, Bart van der Holst, Christina Cohen, Gang Li, Alessandro Bruno, Ian G Richardson, David Lario, Yuri Omelchenko, Meng Jin, Nishtha Sachdeva, Zhenguang Huang, KD Leka, Hazel M Bain, M Leila Mays, Kathryn Whitman, Joe Giacalone, CLEAR: Space Weather Center of Excellence for All-Clear SEP Forecast, Invited Paper SH03-06 presented at the 2023 Fall AGU Meeting, San Francisco, CA, 11-15 December 2023.

2022

9. Gombosi, T., Manchester, W., Sokolov, I., van der Holst, B., Toth, G., Huang, Z., Zhao, L.,Sachdeva, N., Wang, X.: Can Physics-Based SWx Models Predict Space Weather Variations?, 44th COSPAR Scientific Assembly, Athens, Greece, 16-24 July 2022.

2021

10. Gombosi, T.I., Space Weather: Impact of the Space Environment on Human Technologies, Keynote Lecture, Michigan Engineering Research Symposium, November 19, 2021.
11. T. I. Gombosi, The Solar Storms and Terrestrial Impacts Center: Where Machine Learning Meets Space Weather Modeling, *Space Weather Workshop*, Zoom, April 20–22, 2021.

2020

12. Tamas I. Gombosi, Natalia Y. Ganushkina, Spiro K. Antiochos, Yang Chen, Alfred O. Hero, David Fouhey, Enrico Landi, K. D. Leka, Yang Liu, Ward Manchester, Gabor Toth, Shasha Zou and the SOLSTICE Team, SOLSTICE: Space Weather Modeling Meets Machine Learning, *Paper NG004-0034 presented at the 2020 Fall AGU Meeting*, Zoom, December 1–17, 2020.
13. T. I. Gombosi and N. Ganushkina, Space weather meets machine learning, *2020 V-GEM Meeting*, July 22, 2020.
14. T. I. Gombosi, Y. Chen, D. Fouhey, N. Ganushkina, A. O. Hero, W. B. Manchester, T. Pulkkinen, I. Sokolov, G. Toth, S. Zou, Physics-based SWx Modeling with Machine Learning, *Space Weather Operations and Research Infrastructure Workshop*, Zoom, September 9-11, 2020.

2018

15. T. I. Gombosi, Space Weather Modeling, *International Symposium and School on Space Simulations (ISSS-13)*, Los Angeles, CA, September 6–14, 2018.
16. T. I. Gombosi, Simulating Space Weather, *Gringauz 100: Plasmas in the Solar System*, Moscow, Russia, June 13 – 15, 2018.
17. T. I. Gombosi, Simulations of the 67P/CG plasma environment, *Rosetta Science Workshop*, Rhodes, Greece, May 28 – June 1, 2018.

2017

18. T. I. Gombosi, Magnetosphere Modeling: From Cartoons to Simulations, Van Allen Lecture, *2017 Fall AGU Meeting*, New Orleans, LA, December 11–15, 2017.

2016

19. K. Altwegg, H. Balsiger, A. Bar-Nun, J.-J. Berthelier, A. Bieler, P. Bochsler, C. Briois, U. Calmonte, M. Combi, J. De Keyser, F. Dhooghe, B. Fiethe, S. A. Fuselier, S. Gasc, T. I. Gombosi, K. C. Hansen, M. Hässig, E. Kopp, A. Korth, L. Le Roy, U. Mall, B. Marty, O. Mousis, T. Owen, H. Rème, M. Rubin, T. Sémon, C.-Y. Tzou, J. H. Waite, P. Wurz, Highlights of the Rosetta mission from the Rosetta orbiter spectrometer for Ion and Neutral Analysis (ROSINA), *Comets: A New Vision after Rosetta and Philae*, Toulouse, France, November 14–18, 2016.
20. Michael R. Combi, Kathrin Altwegg, Andre Bieler, Fabrizio Capaccioni, Dominique Bockelée-Morvan, Nicolas Fougere, Tamas I. Gombosi, Kenneth C. Hansen, Alessandra Migliorini, Martin Rubin, Valeriy Tenishev, Modeling Comet Activity: Connecting In Situ and Remote Sensing Measurements, *Comets: A New Vision after Rosetta and Philae*, Toulouse, France, November 14–18, 2016.
21. Tamas I. Gombosi, Andre Bieler, Michael R. Combi, Nicolas Fougere, K.C. Hansen, Zhenguang Huang, Yinsi Shou, Valeriy Tenishev, Gabor Toth Kathrin Altwegg and Martin Rubin, Modeling Cometary Activity, *"From Giotto to Rosetta" 50th ESLAB Symposium*, Leiden, The Netherlands, March 14–18, 2016.

2015

22. T. I. Gombosi, Fully two-way coupled 3D PIC-MHD simulation, *12th International School/Symposium for Space Simulations (ISSS-12)*, Prague, Czech Republic, July 3–10, 2015.
23. T. I. Gombosi, Cassini's Grand Finale and Going Back to Jupiter, *Magnetospheres of Outer Planets 2015*, Atlanta, Georgia, June 1–5, 2015.

2014

24. T. I. Gombosi, Cassini at Saturn: Science Today and in the Final Three Years, *2014 Fall AGU Meeting*, San Francisco, CA, December 15–19, 2014.
25. T. I. Gombosi, MHD modeling of the solar wind interaction with planets, *40th COSPAR Scientific Assembly*, Moscow, Russia, August 2–10, 2014.
26. T. I. Gombosi, Model developer's view: Role of CCMC in R2O, *2014 CCMC Workshop*, Annapolis, Maryland, March 31–April 4, 2014.
27. T. I. Gombosi, G. Toth, I. V. Sokolov, B. van der Holst, D. Welling, AWSOM and MARCIE: Transitioning space weather simulation tools to operations, *6th Isradynamics Conference*, Ein Bokek, Israel, March 16–22, 2014.

2013

28. Bart van der Holst, Ward Manchester, Igor Sokolov, Gabor Toth, Tamas I. Gombosi, The scientific challenges to forecasting the propagation of space weather through the heliosphere, *2013 Fall AGU Meeting*, San Francisco, CA, December 9–13, 2013.
29. Spiro K. Antiochos, Judith T. Karpen, C Richard DeVore, Tamas I. Gombosi, Bart van der Holst, Ward Manchester, Igor Sokolov, Modeling Flares/CMEs from their Solar Origins to their Interplanetary Impacts, textit2013 Fall AGU Meeting, San Francisco, CA, December 9–13, 2013.
30. T.I. Gombosi, X. Jia, J.A. Slavin, L.K.S. Daldorff, Simulations of Mercury's Magnetosphere, *Fundamental Properties and Processes of Magnetotails*, AGU Chapman Conference, Reykjavik, Iceland, March 10-15, 2013.
31. T.I. Gombosi, B. van der Holst, I. Sokolov, W.B. Manchester, R. Oran, and M. Jin, A new two-temperature model of the solar wind and CMEs, *5th Earth-Sun System Exploration Conference*, Kona, Hawaii, January 14–18, 2013.

2012

32. T.I. Gombosi, G. Toth, B. van der Holst, I. Sokolov, W.B. Manchester, L.K.S. Daldorff, D. DeZeeuw, D.T. Welling, A.J. Ridley, M.W. Liemohn, R. Oran, X. Meng, M. Jin, New Adventures with the Space Weather Modeling Framework, *2012 Fall AGU Meeting*, San Francisco, CA, December 3–7, 2012.
33. T.I. Gombosi, Multiscale Simulations of Space and High Energy Density Plasmas, *Computational Challenges in Magnetized Plasma*, IPAM Workshop, UCLA, Los Angeles, CA, April 16-20, 2012.

2011

34. T.I. Gombosi, The Physical Origins of Space Weather Impacts: Modeling Challenges, *2011 Fall AGU Meeting*, San Francisco, CA, December 5–9, 2011.
35. R.A. Frazin, A.M. Vasquez, B. van der Holst, W.B. Manchester, R. Oran, Z. Huang, M. Jin, T.I. Gombosi, Integrating Tomography and Global Simulation, *2011 Fall AGU Meeting*, San Francisco, CA, December 5–9, 2011.
36. T.I. Gombosi, K.C. Hansen, X. Jia, and M.G. Kivelson, The Magnetosphere of Saturn, *Joint EPSC-DPS meeting*, Nantes, France, October 3-7, 2011.
37. T.I. Gombosi, Computational MHD in Space Physics, *The 2011 Solar/Space MHD International Summer School*, University of Science and Technology of China, School of Earth and Space Sciences, Hefei, Anhui, China, 15–21 July, 2011.
38. T.I. Gombosi, MHD simulations of solar system plasmas, *Advanced Magnetohydrodynamics*, Leiden, The Netherlands, April 11-15, 2011.

2010

39. Y. Jia, C.T. Russell, K.K. Khurana, T.I. Gombosi, Modeling Enceladus and its torus in Saturn's magnetosphere, *2010 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2010.
40. X. Jia, K.C. Hansen, T.I. Gombosi, M.G. Kivelson, G. Tóth, D. De Zeeuw, A.J. Ridley, Global MHD simulations of the interaction between Saturn's magnetosphere and the solar wind, *2010 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2010.
41. W.B. Manchester, B. van der Holst, R.A. Frazin, A.M. Vasquez, G. Tóth, T.I. Gombosi, Numerical Simulation of Earth Directed CMEs with an Advanced Two-Temperature Coronal Model, *2010 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2010.
42. A. Glocer, G. Tóth, M.H. Fok, T.I. Gombosi, D.T. Welling, Modeling Ionospheric Outflows In Global Models, *2010 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2010.
43. B. van der Holst, M. Jin, W.B. Manchester, R.A. Frazin, A.M. Vasquez, P.L. Lamy, A. Llebaria, T.I. Gombosi, Multispacecraft Validation of a Global Two-Temperature Corona and Inner Heliosphere Model, *2010 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2010.
44. B. van der Holst, M. Jin, W.B. Manchester, R.A. Frazin, A.M. Vasquez, P.L. Lamy, A. Llebaria, T.I. Gombosi, Partition of Proton and Electron Heating in the Solar Wind, *2010 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2010.
45. T.I. Gombosi, G. Tóth, I.V. Sokolov, D.L. De Zeeuw, B. van der Holst, A.J. Ridley, W.B. Manchester, The Space Weather Modeling Framework (SWMF): Models and validation, *38th COSPAR Scientific Assembly*, Bremen, Germany, July 18-25, 2010.
46. T. I. Gombosi, D. L. De Zeeuw, W. B. Manchester, A. J. Ridley, I. V. Sokolov, G. Tóth, B. van der Holst, Is SWMF ready for R2O?, *Space Weather Workshop*, Boulder, CO, April 29, 2010.
47. T.I. Gombosi, Toward forecasting space weather, *Isradynamics 2010*, Ein Bokek, Dead Sea, Israel, April 11-16, 2010.

2009

48. T. I. Gombosi, D. L. De Zeeuw, W. B. Manchester, A. J. Ridley, I. V. Sokolov, G. Tóth, B. van der Holst, The Space Weather Modeling Framework: Progress and Challenges, *11th IAGA Scientific Assembly*, Sopron, Hungary, Aug 23-30, 2009.

2008

49. Gombosi, T.I., T.P. Armstrong, C.S. Arridge, K.K. Khurana, S.M. Krimigis, N. Krupp, A.M. Persoon and M.F. Thomsen, Saturn's Magnetospheric Configuration, *Saturn Book Symposium*, London, United Kingdom, July 28 - August 1, 2008.
50. Gombosi, T.I., G. Tóth, I.V. Sokolov, D.L. De Zeeuw, B. van der Holst, O. Cohen, A. Glocer, W.B. Manchester, A.J. Ridley, Multi-physics simulations of space weather, *37th COSPAR Scientific Assembly*, Montreal, Canada, July 13-26, 2008.
51. Opher, M., E. Stone, J. Richardson, G. Tóth, D. Alexashov, V. Izmodenov, T.I. Gombosi, When magnetized winds collide: Role of the interstellar magnetic field shaping the heliosphere, *37th COSPAR Scientific Assembly*, Montreal, Canada, July 13-26, 2008.
52. T. I. Gombosi, A. Glocer, G. Tóth, A. J. Ridley, I. V. Sokolov, D. L. De Zeeuw, Multi-Fluid Simulations of a Coupled Ionosphere-Magnetosphere System, *2008 Spring AGU Meeting*, Fort Lauderdale, FL, May 27-30, 2008.
53. T.I. Gombosi, G. Tóth, I. Sokolov, D.L. De Zeeuw, W.B. Manchester, A.J. Ridley, R.A. Frazin, B. van der Holst, O. Cohen, A. Glocer, D. Welling, Validation Studies with the Space Weather Modeling Framework, *Space Weather Workshop*, Boulder, CO, April 29-May 2, 2008.
54. T.I. Gombosi, Simulating everything under the Sun: Coupled model of solar and heliospheric disturbances, Earth-Sun System Exploration Conference, Kona, Hawaii, January 14-18, 2008.

2007

55. T.I. Gombosi, G. Tóth, I. Sokolov, D.L. De Zeeuw, O. Cohen, A. Glocer, Y. Ma, K.C. Hansen, W.B. Manchester, A.J. Ridley, K.G. Powell and Q.F. Stout, Adventures with the Space Weather Modeling Framework, *Space Weather Workshop*, Boulder, CO, April 24-27, 2007.

56. Gombosi, T.I., Glocer, A., Tóth, G., Hansen, K.C., Ridley, A.J., Modeling ionospheric outflows with the Space Weather Modeling Framework, *2007 EGU General Assembly*, Vienna, Austria, April 16-20, 2007.
57. Ridley, A., Wang, H., Yu, Y., Tóth, G., De Zeeuw, D., Gombosi, T., Modeling Results From the Space Weather Modeling Framework During a Variety of Storms, *2007 EGU General Assembly*, Vienna, Austria, April 16-20, 2007.
58. Manchester, W.B., Gombosi, T.I., Sokolov, I.V., Cohen, O., Simulated CMEs and predictions for STEREO, *2007 EGU General Assembly*, Vienna, Austria, April 16-20, 2007.
59. T.I. Gombosi, G. Tóth, I.V. Sokolov, D.L. De Zeeuw, Y. Ma, A.J. Ridley, K.C. Hansen and W.B. Manchester, New Adventures with the Space Weather Modeling Framework, *8th International School/Symposium for Space Simulations*, Kauai, HI, February 25 - March 3, 2007.

2006

60. Ridley, A.J., Tóth, G., Sokolov, I.V., De Zeeuw, D.L., Liemohn, M.W., Gombosi, T.I., Computational Considerations in Modeling the Space Environment, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
61. Desai, M.I., Cohen, C.M., Smith, C.W., Lee, M.A., Litvinenko, Y., Reames, D.V., Ng, C.K., Tylka, A.J., Kota, J., Giacalone, J., Jokipii, J.R., Sokolov, I., Gombosi, T.I., Roussev, I.I., Li, G., Zank, G.P., Tessein, J., Recent Results of the 2005 LWS TR&T Focus Team for Solar Energetic Particles, *2006 Fall AGU Meeting*, San Francisco, CA, December 11-15, 2006.
62. T.I. Gombosi, G. Tóth, I.V. Sokolov, D.L. De Zeeuw, A.J. Ridley, Coupled Modeling with the Space Weather Modeling Framework, *Challenges to Modeling the Sun-Earth System (Huntsville 2006 Workshop)*, Nashville, Tennessee, October 2-6, 2006.
63. T.I. Gombosi, G. Tóth, I.V. Sokolov, D.L. De Zeeuw, A.J. Ridley, W.B. Manchester, Sun-to-Earth Simulations with the Space Weather Modeling Framework, *International Symposium on Recent Observations and Simulations of the Sun-Earth System (ISROSES)*, Varna, Bulgaria, September 17-22, 2006.
64. T.I. Gombosi, End-to-end space weather simulations, *Isradynamics*, Dead Sea, Israel, May 8-15, 2006.
65. T.I. Gombosi, End-to-end space weather simulations with SWMF, *Space Weather Week*, Boulder, CO, April 25-28, 2006.
66. Tóth, G., Ridley, A., Gombosi, T., De Zeeuw, D., Manchester, W., and Sokolov, I., Sun-to-Earth Simulations with the Space Weather Modeling Framework, *2006 EGU General Assembly*, Vienna, Austria, April 3-7, 2006.
67. Ridley, A.J. and Gombosi, T.I., Interhemispheric differences in the ionospheric potential, *2006 EGU General Assembly*, Vienna, Austria, April 3-7, 2006.
68. Gombosi, T., Tóth, G., Ridley, A., De Zeeuw, D., Sokolov, I., Validating Global Magnetosphere Simulations with Multipoint Measurements, *2006 EGU General Assembly*, Vienna, Austria, April 3-7, 2006.
69. G. Toth, A. J. Ridley, T. I. Gombosi, I.V. Sokolov, W.B. Manchester, D.L. De Zeeuw and C. R. Clauer, Integrated simulations of the Sun-Earth system: The Halloween storms, *ILWS 2006 Workshop on the Solar Influence on the Heliosphere and Earth's Environment*, Goa, India, February 20-24, 2006
70. T. Gombosi, D.L. De Zeeuw, W.B. Manchester, I.I. Roussev, I.V. Sokolov, and G. Tóth, Integrated model of solar-heliospheric disturbances, *Earth-Sun System Exploration: Energy Transfer*, Kona, Hawaii, January 16-20, 2006.
71. T. I. Gombosi, G. Tóth, I. V. Sokolov, W. B. Manchester, A. J. Ridley, I. I. Roussev, D. L. De Zeeuw, K. C. Hansen, K. G. Powell, and Q. F. Stout, Halloween Storm Simulations with the Space Weather Modeling Framework, *44th AIAA Aerospace Sciences Meeting*, Reno, Nevada, January 9-12, 2006.

2005

72. K. C. Hansen, T. I. Gombosi, C. S. Arridge, A. J. Coates, L. W. Esposito, W. S. Kurth, J. S. Leisner, D. G. Mitchell, J. D. Richardson, C. T. Russell, A. M. Rymer, E. Sittler, M. F. Thomsen, J. H. Waite, Ion Mass-loading and Time Variability in the Saturn's Magnetosphere, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
73. T. I. Gombosi, A. J. Ridley, D. L. De Zeeuw, I. V. Sokolov, G. Tóth, Multiple Scales in the Solar Wind Interaction with the Magnetosphere, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
74. T. I. Gombosi, K. C. Hansen, Y. Ma, A. Nagy, Plasma Interactions with Titan, *2005 Fall AGU Meeting*, San Francisco, CA, December 5-9, 2005.
75. M. Hesse, J. Birn, R. Denton, J. Drake, T. Gombosi, M. Hoshino, B. Matthaeus, D. Sibeck, The SMART Theory and Modeling Team: an Integrated Element of Mission Development and Science Analysis, *2005 Fall AGU*

Meeting, San Francisco, CA, December 5-9, 2005.

76. Gombosi, T. I., D. L. De Zeeuw, C. R. Clauer, K. C. Hansen, W. B. Manchester, K. G. Powell, A. J. Ridley, I. I. Roussev, I. V. Sokolov, Q. F. Stout, G. Toth, End-to-end simulations of CMEs and SEPs, *2005 SHINE Workshop*, Kona, Hawaii, July 11-15, 2005.
77. Gombosi, T. I., Severe weather in space, *NASA ESTO Technology Conference*, Adelphi, MD, June 28-30, 2005.
78. Gombosi, T. I., Tóth, G., Sokolov, I. V., Stout, Q. F., Clauer, C. R., De Zeeuw, D. L., Hansen, K. C., Manchester, W. B., Powell, K. G
., Ridley, A. J., Roussev, I. I., Cross-Disciplinary Modeling of Heliospheric Phenomena with the Space Weather Modeling Framework, *2005 Spring AGU Meeting*, New Orleans, LA, May 23-27, 2005.
79. Hansen, K.C., and Gombosi, T.I., Global simulations of Saturn's magnetosphere, *EGU General Assembly*, Vienna, Austria, April 24-29, 2005.
80. Gombosi, T.I., Global Models of Solar Terrestrial Interactions, *RF Ionospheric Interactions Workshop*, Santa Fe, NM, April 17-20, 2005.
81. Tóth, G., I. V. Sokolov, T. I. Gombosi, D. L. De Zeeuw, K. C. Hansen, W. B. Manchester, K. G. Powell, A. J. Ridley, I. Roussev, Q. F. Stout The Space Weather Modeling Framework: A New Community Tool, *Space Weather Week*, Broomfield, CO, April 5-8, 2005.
82. Tóth, G., I. V. Sokolov, T. I. Gombosi, D. L. De Zeeuw, K. C. Hansen, W. B. Manchester, K. G. Powell, A. J. Ridley, I. Roussev, Q. F. Stout The Space Weather Modeling Framework, *ISSS-7: 7th International School/Symposium on Space Simualations*, Kyoto, Japan, March 26-31, 2005.
83. T.I. Gombosi, D.L. De Zeeuw, I.V. Sokolov, G. Toth, A.J. Ridley, K.C. Hansen, W.B. Manchester, I.I. Roussev, C.R. Clauer, K.G. Powell, Q.F. Stout, B. van Leer, P.L. Roe, Parallel, Adaptive, Coupled Plasma Simulations, *Multiscale Processes in Fusion Plasmas*, IPAM UCLA, Los Angeles, CA, January, 2005.

2004

84. Manchester, W B., Lugaz, N., Gombosi, T., De Zeeuw, D., Sokolov, I., Tóth, 3D Density Structure and LOS Observations of a Model CME, *2004 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2004.
85. Gombosi, T. I., Blanc, M., Saturn's Plasma Environment: First Surprises from Cassini, *2004 Fall AGU Meeting*, San Francisco, CA, December 13-17, 2004.
86. Gombosi, T. I., Perspectives of modeling space plasmas, *35th COSPAR Scientific Assembly*, Paris, France, July 18-25, 2004.
87. W. B. Manchester, A. J. Ridley, T. Gombosi, D. De Zeeuw, I. V. Sokolov, G Tóth, Modeling the Carrington Event: Sun-to-earth propagation of a very fast CME, *2004 Spring AGU Meeting*, Montreal, Canada, May 17-21, 2004.
88. A. J. Ridley, D. De Zeeuw, I. Sokolov, G. Tóth, C. R. Clauer, W. Manchester, T. Gombosi, K. Powell, The Possible Magnetospheric, Ionospheric, and Thermospheric Response to the 1859 Carrington CME. *2004 Spring AGU Meeting*, Montreal, Canada, May 17-21, 2004.
89. T.I. Gombosi, Simulating SEP acceleration in CMEs, *Space Weather Week*, Boulder, CO, April 13-16, 2004.
90. T.I. Gombosi, and A. J. Ridley, Comprehensive Solar-Terrestrial Environment Model for Space Weather Predictions: Progress of the Space Weather MURI Project, *Space Weather Week*, Boulder, CO, April 13-16, 2004.
91. Gombosi, T.I., MHD simulations of heliospheric dynamics: Shock formation and SEP acceleration, *COSPAR Colloquium: Isradynamics*, Dead See, Israel, March 4-9, 2004.

2003

92. Ridley, A. J., Gombosi, T. I., Clauer, R., Data Assimilation in Ionospheric and Magnetospheric Models, *2003 Fall AGU Meeting*, San Francisco, CA, December 8-12, 2003.
93. Ridley, A. J., Manchester, W., Roussev, I., Gombosi, T., Magnetospheric, Ionospheric, and Thermospheric Results for the May 1-4, 1998 CME Using a Coupled Sun to Earth Model, *2003 Fall AGU Meeting*, San Francisco, CA, December 8-12, 2003.
94. Manchester, W. B., Roussev, I., Sokolov, I., Ridley, A., Gombosi, T., De Zeeuw, D., Hansen, K., Tóth, G., Modeling the May 1, 1998 CME propagation from the Sun to the Earth, *2003 Fall AGU Meeting*, San Francisco, CA, December 8-12, 2003.
95. T.I. Gombosi, W.B. Manchester, A.J. Ridley, D.L. De Zeeuw, K.C. Hansen, I.V. Sokolov, G. Tóth, K.G. Powell, Modeling a space weather event from the Sun to the Earth, *2003 IUGG Meeting*, Sapporo, Japan, June 30 - July 11, 2003.
96. T.I. Gombosi, I.I. Roussev, I.V. Sokolov, D.L. De Zeeuw, P.C. Liewer, and J.G. Luhmann, Synoptic map driven

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1. Zhenguang Huang, Gabor Toth, Nishtha Sachdeva, Bart van der Holst, Ward B Manchester, Lulu Zhao, Igor Sokolov, Tamas I Gombosi, The Impact of Magnetograms on Real-time Solar Wind Prediction, 105th AMS Annual Meeting, New Orleans, Louisiana, 12-16 January 2025.

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2. Spiro Antiochos, Bart van der Holst, Joel Dahlin, Tamas Gombosi, Data-Driven Modeling of CME Onset Using SWMF, Paper SH13B-2922 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13 December 2024.
3. Jiaqi Huang, Yang Chen, Ke Hu, Tamas Gombosi, Lulu Zhao, Machine Learning Applications in Optimizing Solar Flare Predictions, Paper SH13D-2948 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13 December 2024.
4. Lulu Zhao, Tamas Gombosi, Charles Arge, Yang Chen, Igor Sokolov, Ward Manchester, Ke Hu, Weihao Liu, Chia-Yun Li, Kevin Jin, Alessandro Bruno, Ian Richardson, Victor Verma, Jiaxing Xu, Alexander Trintchouk, Machine Learning Prediction of Solar Energetic Particle Events in the CLEAR Space Weather Center of Excellence, Paper SH13D-2950 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13 December 2024.
5. Tamas Gombosi, Weihao Liu, Igor Sokolov, Lulu Zhao, David Lario, Kathryn Whitman, M. Mays, Hazel Bain, High-Resolution Poisson Bracket Scheme Applied to Simulate the 2013 April 11 Solar Energetic Particle Event, Paper SH43B-2882 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13 December 2024.
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8. Xiaohang Chen, Lulu Zhao, Joe Giacalone, Igor Sokolov, Gabor Toth, Nishtha Sachdeva, David Lario, Christina Cohen, Fan Guo, Tamas Gombosi, Ward Manchester, Zhenguang Huang, Bart van der Holst, PARMISAN: Particle ARizona & MIchigan Solver on Advected Nodes, Paper SH43D-2910 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13 December 2024.
9. Chia-Yun Li, Weihao Liu, Yang Chen, Ke Hu, Lulu Zhao, Tamas Gombosi, Predicting Solar Energetic Particle Events Using Machine Learning Algorithms with Flare Features, Paper SH43D-2911 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13 December 2024.
10. Weihao Liu, Ian Richardson, Alessandro Bruno, Kathryn Whitman, Amos Steve Johnson, Alexander Trintchouk, Christina Cohen, Hazel Bain, M. Mays, David Lario, Lulu Zhao, Yang Chen, Tamas Gombosi, Solar Energetic Particle Benchmark Dataset in the CLEAR Space Weather Center of Excellence, Paper SH43D-2912 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13 December 2024.
11. Xianyu Liu, Igor Sokolov, Tamas Gombosi, Lulu Zhao, Spiro Antiochos, Simulating the Coronal Mass Ejection with the Analytical Titov-Démoulin Model with Finite Plasma Density and Pressure and the Alfvén Wave Solar Model-Realtime, Paper SH53C-2986 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13 December 2024.
12. Xianyu Liu, Weihao Liu, Kathryn Wilbanks, Amy Rewoldt, Ward Manchester, Daniel Welling, Lulu Zhao, Gabor Toth, Marc DeRosa, Kevin Reardon, Luca Bertello, Alexander Pevtsov, Tamas Gombosi, Predicting the April 8, 2024 Solar Total Eclipse with Multiple Magnetograms, Paper SH53F-06 presented at the 2024 Fall AGU Meeting, Washington, DC, 9-13 December 2024.
13. Thomas Berger, Phillip Chamberlin, Tim Fuller-Rowell, Adam Kubaryk, Naomi Maruyama, Eric Sutton, Zhenguang Huang, Tuija Pulkkinen, Aaron Ridley, Gabor Toth, Daniel Welling, Shasha Zou, Tamas Gombosi, Daniel N. Baker, Fazlul Laskar, Mark Miesch, Improving thermospheric neutral density forecasting with the NOAA/WAM-IPE model, Paper C4.2-0011-24 presented at the 45th Scientific Assembly of COSPAR, BEXCO, Busan, Korea, July 13-21, 2024.
14. Ruoyu Wang, K D Leka, David Fouhey, Richard Higgins, Spiro Antiochos, Graham Barnes, J. Todd Hoeksema, Yang Liu, Pete Schuck, Tamas Gombosi, SuperSynthIA: Computer Vision for Enhanced Solar Full-Disk High-

Cadence Vector Magnetograms, Paper E2.4-0008-24 presented at the 45th Scientific Assembly of COSPAR, BEXCO, Busan, Korea, July 13-21, 2024.

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