

Curriculum Vitae

Name: **Mark Bela Santos Moldwin**
 Present Positions: Professor of Climate and Space Sciences and Engineering
 Arthur F. Thurnau Professor
 Associate Chair for Academic Affairs
 Faculty Director of M-STEM Academies M-Engin Program
 Climate and Space Sciences and Engineering
 College of Engineering
 University of Michigan
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Education

DATES	INSTITUTION	DEGREES AWARDED & DATE
1983-1987	University of Alaska-Fairbanks	B.A. Physics with Honors, 1987
1987-1990	Boston University	M.A. Astronomy, 1990
1987-1992	Boston University	Ph.D. Astronomy, 1993 (W. Jeffrey Hughes, thesis advisor)

Research and Teaching Experiences

1985-1987	Research Assistant, Geophysical Institute, University of Alaska - Fairbanks (S.-I. Akasofu, advisor)
1987	Teaching Fellow, Astronomy Department, Boston University
1988-1992	Research Assistant, Center for Space Physics, Boston University
1992-1994	Postdoctoral Research Fellow, Los Alamos National Laboratory (M.F. Thomsen, advisor)
1994-1997	Assistant Professor of Physics and Space Sciences, Florida Tech
1995-1999	Research Consultant, Space and Atmospheric Sciences, LANL
1996 (summer)	NASA/ASEE Faculty Fellowship-Kennedy Space Center
1996 (summer)	Associated Western Universities Summer Faculty Fellow, LANL
1996, 1997, 2001	Harris Corp. Brevard County Science Teachers Workshop Leader
1997	Faculty Consultant to the Advanced Placement Physics Program
1997	Faculty Consultant to the Brevard County School Board
1997	Faculty Consultant to the Boeing Corporation
1998 (summer)	USRA-NASA Goddard SFC Visiting Scientist
1998-2000	Associate Professor of Physics and Space Sciences, Florida Tech
2001-2005	Adjunct Professor of Physics and Space Sciences, Florida Tech
2000-2006	Associate Professor of Space Physics (tenured), UCLA
2006-2012	Full Professor of Space Physics, UCLA
2001-2002	Science Advisor to PBS DragonflyTV program
2003-2009	UCLA ESS Undergraduate Program Chair
2003	Consultant to Paramount Home Entertainment's "The Core" DVD
2003-2005	Consultant to K12 inc.
2003-2005	Consultant to Holt, Rhinehart, & Winston Publishers
2004	UCLA Office of Residence Life Faculty Fellow
2007-2009	California Science Center Science Educator
2007-2013	NASA THEMIS EPO Scientist
2016	Consultant to Houghton Mifflin Harcourt

2013 - present	UM CRLT-Engineering Faculty Associate
2015- present	Co-Founder of A2 Motus LLC
1994-present	Courses Taught: (FIT) Physics 1, Physics 2, Thermodynamics, Atmospheric Physics, Space Physics, Plasma Physics, Observational Techniques in Space Physics, Planetary Atmospheres, Whole Earth Course, Satellite Design, Critical Thinking; (UCLA) ESS 200C Space Plasmas, Fiat Lux Seminar: Space Weather, Honor Collegium: The Perils of Space: Intro to Space Weather, Fiat Lux Seminar: ESS 19 The past, present and future of human space exploration, ESS 265 Instrumentation, Data Processing, and Data Analysis in Space Physics, ESS 240 Space Plasma Physics, ESS 219 Planetary and Orbital Dynamics, ESS 7 The Perils of Space: An Introduction to Space Weather, General Education 70: The Origin and Evolution of the Cosmos, Earth and Life, ESS 19 The Physics of Toys, ESS 19 The End of Modern Civilization: Problems and Solutions, ESS 261 Ionospheric Physics; (UM) AOSS 477 Space Weather Modeling, AOSS 605 Planetary Electrodynamics, AOSS 101 Introduction to Rocket Science and Engineering, AOSS 574 The Physics of the Space Environment, AOSS 370 Solar-Terrestrial Physics, AOSS 103 Introduction to Space Weather, CLIMATE 110 The Collapse of Western Civilization Seminar

Faculty Affiliations

UM Center for Research on Learning and Teaching in Engineering, Faculty Associate
<http://crlte.engin.umich.edu/>
 UM Applied Physics, <http://lsa.umich.edu/appliedphysics>
 UM College of Engineering Space Physics Research Laboratory, <http://www.sprl.umich.edu/>
 UM College of Engineering Robotics Institute, <http://robotics.umich.edu/>
 UM African Studies Center, <https://www.ii.umich.edu/asc>
 UM CoE Engineering Education Research Program, Faculty Affiliate, <http://eer.engin.umich.edu/>

PhD Supervised

2007	David Berube, UCLA, Using Ultra Low Frequency Field Line Resonances to Study the Inner Magnetosphere
2009	Megan Cartwright, UCLA, The Origin, Evolution, and Geomagnetic Impact of Small-Scale Solar Wind Flux Ropes
2009	David Galvan, UCLA, Using Extreme Ultraviolet Images and Total Electron Content to Study the Earth's Plasmasphere
2012	Michael Hartinger, UCLA, ULF Wave Energy Transfer (Co-Advised with Vassilis Angelopoulos)
2015	Xiangyun Zhang, UM, Source, evolution, and properties of non-Parker-spiral IMF and its role on geomagnetic activity
2016	Sidney Ellington, UM, Applied Physics, Ultra-Low Frequency Standing Alfvén Waves: Global Magnetospheric Modeling of Resonant Wave-Wave Interactions
2016	Tom Heine, UM, On the Storm Time Character of Earth's Mid-Latitude Ionospheric Irregularities

Post-Doctoral Fellows Supervised

UCLA	James Weygand, Endawoke Yizengaw
UM	Shasha Zou, Patrick Sibanda, Michael Hartinger, Arie Sheinker, Leonardo Regoli (co-supervised)

PhD Dissertation Committee Member

Florida Tech	(Physics and Space Sciences) Paul Martin
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UCLA	(Earth and Space Sciences) Sabrina Mayerberger, Jan-Oliver Kliemann, Robert Troy, Galen Fowler, Paul O'Brien, Tungshin Hsu, Hanying Wei, Tabitha Mulligan, Liz Jensen, Zhejiang (Andy) Yu, Yasong Ge, Darren Baird, Lan Jian, Misa Cowee, Scott Thompson, Ming-Chang Liu, Jared Leisner. Xianzhe Jia (Physics) Meixuan Shi, David Pace, Brian Brugman, Ann White, Travis Yates, Alon Attal, (Astronomy) James W. Colbert, Shelley Wright, Emily Rice, Alaina Henry, (Atmospheric Sciences) Amy Boonsiriseth, Shuxiang Liu, Yong Shi, Mike Hartinger
UM	(AOSS/CLaSP) Jie Zhu, Lois Smith, Charles Bussy-Virat (Electrical Engineering) Laura Fick; (Applied Physics) Willow Wan
University of Alberta	David Miles (External Evaluator)

Master Students Supervised

Florida Tech	Matthew Fillingim, Shelley Ford, Bret Sheeley, Paul Martin, Mark Fernandez, Jennifer Bocchicchio, Nick O'Dosey
UM	Rachel Trabert, Julie Feldt, Audelia Wittbrodt, Theresa Carranza-Fulmer

Undergraduate Research Students and K12 Teachers

During my career I have supervised directly (as independent study, paid research assistants, REU students, or University-supported research program students) well over 100 undergrads for at least a semester or summer in my group. One innovative project sponsors two students from the Penny W. Stamps School of Art & Design, the Taubman School of Architecture and Urban Planning or the School of Music, Theatre and Dance in my lab as Moldwin Arts Prize fellowships (<http://artsengine.umich.edu/moldwinprize.php>). In addition, through Research Corporation for Scientific Advancement and NSF Research Experience for Teachers (RET) support have supervised over a dozen elementary, middle and high school teachers in summer research.

Scholarships, Honors and Awards

1983-1987	Chancellor Honors Scholarship - University of Alaska
1987	Teaching Fellowship, Boston University
1988-1992	Research Fellowship, Boston University
1990	Outstanding Student Paper Award (Fall AGU meeting)
1995, 1996	Florida Tech Faculty Senate Teaching Excellence-Mini-Grant Award
1996, 1997	Dean's Letter of Recognition for Outstanding Faculty Member
1996	National Science Foundation CAREER Grant Recipient
1997	Research Corporation Cottrell Scholar
1998	Florida Tech Faculty Excellence Award for Teaching
2006	El Marino Language School (CCUSD California) PTA VSP Award
2006-2007-2008	Associated Students of UCLA Top Ten Professor
2007	CCUSD District PTA Honorary Service Award
2007	Culver City Education Foundation Superintendent's Award
2007	UCLA Motor Board Senior Honor Society "Tip of the Hat" Award
2009	UCLA Academic Senate Distinguished Teaching Award
2009	UCLA Fiat Lux Seminar Faculty Recognition Award
2013	UM CoE Raymond J. and Monica E. Schultz Outreach and Diversity Award
2014	UM Harold R. Johnson Diversity Service Award
2014	UM Provost's Teaching Innovation Prize
2016	AGU Waldo E. Smith Union Award
2017	UM CoE John F. Ullrich Education Excellence Award
2017	UM Arthur F. Thurnau Professorship

Professional Societies

Member: American Geophysical Union (since 1987)
 National Science Teachers Association
 Sigma Xi COSPAR Sigma Pi Sigma
 American Society for Engineering Education

Professional Community Service

Editor: Geophysical Research Letters (2004-2006)
 Editor-in-Chief: Reviews of Geophysics (2009-2013; 2014-2017)
 Referee: Journal of Geophysical Research Planetary and Space Science
 Geophysical Research Letters Journal of Geomagnetism and Geoelectricity
 Advances in Space Research Annales Geophysicae Nature Science
 Space Weather Astrophysical Journal
 Journal Atmospheric and Solar Terrestrial Physics

Chair: Plasma Sheet and Magnetotail Session, Spring '93 AGU
 Physics and Space Science Section - Florida Academy of Sciences, 1995-2000
 Particle Acceleration in Space Plasmas, 1996 COSPAR
 Education Session, 34th Space Congress, 1997
 NASA-Space Research and Technology Program Review Sub-Panel ('99)
 NASA-Living With a Star Geoscience Program Review Sub-Panel ('03)
 AGU SPA/EPO Committee (Vice Chair 2006-2008, Chair 2009-2011)
 NASA MMS EPO External Review Committee, 2007-present
 AGU GRL EiC Search Committee (2014)

Co-Chair: NSF GEM Working Group on Substorms, 1998-2000
 NASA ISTP Workshop, Substorm Session, Spring 1998
 Substorms Session, Spring '99 AGU
 Auroral and Plasmaspheric Processes, Spring '99 AGU
 Magnetic Structure of the Heliosphere, Fall '99 AGU
 Solar Wind-Magnetosphere Coupling II, Fall '99 AGU
 Tail Magnetopause and Boundary Layer, Fall '00 AGU
 Solar Wind - Magnetosphere - Ionosphere Coupling, Fall '00 AGU
 Magnetotail Structure and Dynamics, Spring '01 AGU
 SH Magnetic Structure and Topology, Spring '01 AGU
 Techniques of Detecting Magnetospheric Density, GEM '02
 TS: Special Session on ground-based Magnetometry, GEM '02
 NSF GEM Working Group on ULF Waves (IM/S Campaign), 04-06
 NAS/NRC SSB Decadal Survey Education and Workforce WG 10-11
 AGU Education Affiliation Planning Committee (2017-2018)

Co-Convener: Substorm Onset Timing Special Session, Fall '98 AGU
 Connection between mid-tail and near-Earth Substorm Processes, Fall '99 AGU
 The Role of the Plasmasphere in Ionospheric and Magnetospheric Dynamics,
 Fall '03 AGU
 The Interaction and Relationship of the Plasmasphere and Plasmasheet with the
 Radiation Belts, Spring '05 AGU
 ED09: Space Physics in the Undergraduate Curriculum, Fall '06 AGU
 SM07: The Role of the Plasmasphere and Plasmapause in Ionospheric and
 Magnetospheric Dynamics, Spring '07 AGU

Ambassador: NASA JPL Solar System Outreach Program (1996-2000)
 Champion: AGU Sharing Science Program (2017- present)
 Meeting Organizer: US-Finnish Auroral Dynamics Workshop, Melbourne FL Feb. 1997
 SPS Zone 6 Spring Meeting, Melbourne FL Mar 1999

Treasurer: Florida Tech Chapter of Sigma Xi (1999-2000)

Member: NASA-Magnetospheric Management Operations Working Group (94-96)
 International Space Physics Educational Consortium
 Brevard County Public School's Science Advisory Council (1996-2000)
 NSF GEM Steering Committee (2000-2003; 2006-2011)

NRC-CSSP Decadal Study: Panel on Solar Wind - Magnetosphere Interactions
 NRC-CSSP Distributed Arrays of Small Instruments (DASI) Panel (04-05)
 AGU SPA Executive Committee (2004-present)
 AGU Voluntary Contribution Campaign Committee (2008-present)
 NASA LWS TR&T Steering Committee (2009-2010)
 AGU Publications Committee (2013-2015; 2015-2016)
 NASA Heliophysics Senior Review (2012)
 AGU Ethics Task Force (2016-2017)
 AGU Sharing Science Advisory Group (2016-2017)
 AGU SPA Fellows Committee (2017)
 AGU Audit Committee (2018-2019)

Proposal Reviewer: Institute of Geophysics and Planetary Physics-Los Alamos National Laboratory
 NSF-Magnetospheric Physics/ATM program
 NASA-Space Research and Technology Program Review Panel
 NASA Living With A Star Review Panel
 West Virginia University Senate Grants for Research and Scholarship
 Research Corporation Cottrell Scholar Program
 NASA-Guest Investigator Review Panel
 NASA-Solar Physics Mail-in Review
 Florida Space Grant Consortium/Florida Space Research Institute
 Cooperative Grants Program of the U.S. Civilian Research and Development
 Foundation (CRDF)
 Research Corporation Cottrell College Science Awards Program
 NASA Sun Earth Connections Instrument Development Program
 NASA Education and Public Outreach Panel ('04)
 NASA OSS Education Product Review Panel ('02, '04, '05, '06, '07, '08, '09,
 '10, '11, '12, '13, '14, '15, '16, '17)
 NASA Postdoctoral Program ('07, '10, '11, '12, '13, '14, '15, '16)
 NSF Geoscience OEDG Panels
 NSF Geosciences REU Panels
 NASA LWS Proposal Review Panels
 NASA HSR Mag Proposal Review Panels
 NASA Geospace SR& T Reviewer
 NSF AGS Magnetospheric Base Program Proposal Panels
 NASA HTIDES Proposal Panel
 NASA NESSF Reviewer

University Service:
 Florida Tech

Member – Physics and Space Sciences Lambda Committee
 Member – Graduate Admissions Committee
 Member – Curriculum Committee
 Chair – Department Endowment Committee
 Member – Faculty Scholarship Committee
 Member - College Faculty Advisory Committee
 Member – University Faculty Senator
 Editor – Department *Resonance* Newsletter

UCLA:

Faculty Advisor – Students for the Exploration of Space (SEDS) Chapter
 Chair-IGPP Merit Increase Committee (2002-2004; 08-09, member 07-08)
 Chair-ESS Curriculum Committee (2004-2009)
 Chair-Academic Senate Committee on Honors, Awards and Prizes (2006-2009,
 Member, 2002-2005)
 Chair-Eight Year Review Committee- Department of Economics (2007-2008)
 Chair-Academic Senate Internal Review of the Department of Bioengineering
 (2008-2009)
 Member-Academic Senate Internal Review of the School of Nursing (2009)
 Faculty Advisor-UCLA Alumni Association Scholarship Steering Committee
 Member-The UCLA College Honors Collegium Faculty Advisory Committee

Member-Fiat Lux Seminar Faculty Advisory Committee (2002-2009)
 Member-Undergraduate Council (2006-2009)
 Member-Executive Committee Undergraduate Council (2006-2009)
 Faculty Advisory Committee – PEERS (2006-2009)
 Faculty Advisor – UCLA NSTA Student Chapter
 Member-WASC Workgroup on the Capstone Experience (2006-2009)
 Faculty Host for UCLA Alumni Associate Travel (2006, 2008, 2009)

University of Michigan: UM Road Scholar (2010)
 Member-UM CoE Ethics and Sustainability Faculty Implementation Group
 Member-UM CoE CRLT North Faculty Advisory Committee (2010-2014)
 Faculty Advisor – UM SEDS Student Chapter
 Faculty Advisor AOSS/CLaSP GUSStO (Student Organization)
 Member-UM Presidential Advisory Commission on Women’s Issues (2010-2012)
 Chair-UM AOSS Graduate Qualification Committee (2010-2011)
 Member – UM AOSS/CLaSP Executive Committee
 Associate Chair for Academic Affairs (AOSS/CLaSP) (2011-2016)
 Member, UM CoE Curriculum Committee (2011-2017)
 Member - UM CRLT Advisory Board (2012-2014)
 Chair – CoE-AOSS Internal Review Committee
 Chair – CoE-Center for Engineering Diversity and Outreach Review (2014-2015)
 Faculty Advisor – CoE Postdoctoral Advisory Committee (2015-)
 Convener/Member, UM Launch Mentoring Committee (2013, 2014, 2015 2016)
 Member – UM CoE Civil and Environmental Engineering Chair Search Committee (2016-2017)
 CLASP Faculty Representative to CoE NextProf Program (2017-2018)
 Faculty Host for UM Alumni Association Travel (2012, 14, 15, 16, 17)
 Faculty Director, UM M-STEM Academies M-Engin Program (2017-)

Columnist
 Monthly “Adventures in Science”, Culver City News (2007-2010)
 Encyclopedia Britannica “From the Field” Blog (2012)

Recent Professional Development Workshops Led or Co-Convended

UM-CRLT-in-Engineering Large Lecture Faculty Teaching Circle (2014, 2015, 2016)
 UM-College of Engineering Responsible Conduct in Research and Scholarship (2015, 2016)
 AGU Publications Author Workshops (Bahir Dar University, Ethiopia, October 2015; Chinese Academy of Sciences, Institute of Earth and the Environment, and Chang-An University, Xi’an China; Chinese Academy of Sciences, Institute of Atmospheric Physics, Tsinghua University, Chinese Geophysical Society, Beijing China, October 2016; South African National Space Agency, Hermanus, July 2017)
 UM-CLASP Faculty Community for Inclusive Teaching (2017)

Funded Research Support (over \$18M total)

- 1) Principal-Investigator, NSF/Upper Atmospheric Research Collaboratory “RAD-RESEARCH: Radar studies of Auroral Dynamics-Real time Educational Science Experiment and Research Campaign”, 1994-1997
- 2) Co-Investigator, Universities Space Research Association-Earth System Science Education Program \$25K, 1995-1997
- 3) Principal-Investigator, NSF Careers Program, "MEASURE-Magnetometers along the Eastern Atlantic Seaboard for Undergraduate Research and Education," \$325K, 1996-2001
- 4) Principal-Investigator, NASA SR&T program, "CRRES and Geosynchronous Observations of Plasmaspheric Structure and Dynamics" \$120K, 1996-2000
- 5) Principal-Investigator, NASA SPEO program, "Bringing Space Into the Classroom", \$15K, 1996-2000

- 6) Principal-Investigator, Florida Higher Education Consortium ACEE Area III, "Bringing Space Into the Classroom Teacher Workshop," \$7K, 1997
- 7) Principal-Investigator, NASA FSGC/FSI Get-Away Special Canister program, "ROGUE-Radio, Optical, Gamma Ray Undergraduate Experiment" \$20K, 1997-1998
- 8) Principal-Investigator, Research Corporation Cottrell Scholar program, "Observing Lightning and Sprites from Space: Integrating Research into the Classroom with the ROGUE Program," \$50K, 1997
- 9) Principal-Investigator, Florida Higher Education Consortium ACEE Area III, "Bringing Space Into the Classroom Teacher Workshop," \$7K, 1998
- 10) Principal-Investigator, Research Corporation's Partners in Science program, working with Mr. David Schifert of Cocoa High School, \$14K, 1998-1999
- 11) Principal-Investigator, NOAA Space Environment Center, "Developing a low-cost, low-noise induction magnetometer", \$3K, 1998-1999.
- 12) Principal-Investigator, NASA IDEAS Program, Solar Observing: A Model Curriculum for Middle School Teachers of Science, \$28K, 1999.
- 13) Principal-Investigator, NASA SR&T program, Developing an Empirical Plasmaspheric Density Model, \$210K, 1999
- 14) Principal-Investigator, NSF Geosciences Education program, "Accessible Space Physics: Developing a High School Magnetometer Network", \$80K, 2000
- 15) Principal-Investigator, Florida Solar Energy Center, "Solar UV Monitoring from Florida Tech for Global Change Research & Education", \$23K, 1999-2000.
- 16) Co-Investigator (Strangeway PI), NASA Space Technology-5 magnetometer experiment, \$600K, 2001.
- 17) Co-Investigator (Zesta, PI), NSF South American Meridional B-Array, \$500K, 2001-2004
- 18) Principle-Investigator, NSF Geosciences Education program, "High School Magnetometer Network", \$20K, 2002.
- 19) Principal-Investigator, Los Alamos National Lab-IGPP University Collaborative Research Program, "Quantifying IMAGE EUV Plasmaspheric Images Using In Situ LANL Geosynchronous Orbit Plasma Measurements" \$57K, 2002-2004.
- 20) Principal-Investigator, NASA SR&T Solar Heliospheric program, "On understanding the Origin and Properties of Solar Wind Magnetic Structures, \$280K, 2002-2005.
- 21) Co-Investigator, NSF, Mid-Continent Magnetoseismic Chain (McMac), \$466K, 2003-2007
- 22) Principal-Investigator, UCLA Office of Instructional Development Mini-grant, Development of ESS 7 "The Perils of Space: An Introduction to Space Weather", \$330, 2003.
- 23) Principal-Investigator, MEASURE II, \$700K, 2004-2009.
- 24) Principal-Investigator, NASA Guest Investigator Program, "Modeling the inner magnetosphere's mass composition." \$200K, 2004-2007
- 25) Principal-Investigator, NASA JPL-UCLA Partnership Research Program, UCLA-JPL Complementary Space Physics Measurements Workshop, \$12K, 2004
- 26) Principal-Investigator, NASA E/PO, Developing a District-wide Elementary-University Space Science Education Partnership, \$20K, 2004-2005
- 27) Principal-Investigator, Air Force Research Lab, DSX MEO-satellite magnetometer, \$2.4M, 2004-2009
- 28) Principal-Investigator, Los Alamos National Lab-IGPP University Collaborative Research Program, "Quantifying the Low Energy Geosynchronous Plasma Environment" \$33.7K, 2004-2005
- 29) Principal-Investigator, UCLA Office of Instructional Development Mini-grant, Development of ESS 7 "The Perils of Space: An Introduction to Space Weather Dorm Room Experiments", \$440, 2004.
- 30) Principal-Investigator: UCLA Faculty Grants Program, Development of wireless fluxgate magnetometer system for research and pre-college education, \$3K, 2005-2006
- 31) Principal-Investigator: UCLA Office of Instructional Development, Developing Lecture-Tutorials for ESS 7 – Introduction to Space Weather, \$3970, 2005-2006
- 32) Principal-Investigator, NASA IDEAS, Using Sunshine for Elementary Space Science Education, \$20K, 2005-2007.
- 32) Principal-Investigator: NSF Research Experience for Teachers Supplement, \$21K, 2006-2007
- 33) Principal-Investigator: UCLA Office of Instructional Development, Development of Hands-on Demonstration for the Geosciences (Jon Aurnou Co-PI), \$6500, 2006-2007

- 34) Principal-Investigator: UCLA Plasma Science Technology Institute (PSTI), summer student internship grant, \$3K, 2006
- 35) Principal-Investigator, UCLA Office of Instructional Development Mini-grant, Development of ESS 7 “The Perils of Space: An Introduction to Space Weather Dorm Room Experiments”, \$400, 2006.
- 36) Principal-Investigator, UCLA Community Partnership Grants, The California Science Center/UCLA Community Youth Science Education Initiative, \$38K, 2007-2008
- 37) Co-Principal-Investigator, NASA IHY, African Meridional B-field Education Research (AMBER) Array (PI: Endawoke Yizengaw), \$200K, 2007 – 2010.
- 38) Co-Principal-Investigator, NASA Lunar Surface Sortie Mission Concepts, (PI: Bruce Banerdt, JPL), \$100K, 2007.
- 39) Co-Investigator (Zesta, PI), NSF South American Meridional B-Array, renewal, \$500K, 2006-2010
- 40) Principal-Investigator, NASA Geoscience Guest Investigator, Response of the Plasmasphere to Geomagnetic Storms, \$430K, 2008-2011
- 41) Principal-Investigator, NSF GK-12, Science and Engineering of the Environment of Los Angeles (SEE-LA), \$3M, 2008-2013.
- 42) Principal-Investigator, UCLA Office of Instructional Development Mini-grant, Development of ESS 7 “The Perils of Space: An Introduction to Space Weather Dorm Room Experiments”, \$569, 2008.
- 43) Principal-Investigator, NSF Geosciences Education grant, UCLA-California Science Center Earth and Space Sciences Elementary Science Partnership, \$140K, 2008-2010.
- 44) Principal-Investigator, NASA Geospace SR&T, ULF Waves at the plasmopause, \$411K, 2009-2012
- 45) Principal-Investigator, NASA LWS TR&T, A 3D climate and weather global topside ionosphere and plasmasphere model, \$450K, 2010-2014.
- 46) Co-Investigator, NSF CDI-Type II: New Cyber Technologies to Enable Space Weather Forecasting (as Co-I, T. Gombosi as PI), \$2M, 2010-2013.
- 47) Principal-Investigator, NASA LWS TR&T EPO Supplement, UM-Detroit Public Schools Space Science Professional Development, \$45K, 2011-2014
- 48) Principal-Investigator, NASA JPL SURP, UM-JPL GPS Flight Development, \$100K, 2011-2012 (J. Cutler UM Co-PI)
- 49) Principal-Investigator, NASA MSGC, UM-LSNC Physics of Flight Outreach, \$5K, 2011
- 50) Co-Investigator, NSF Geosciences, The Advanced Modular Incoherent Scatter Radar in Ethiopia Workshop to Identify Science Rationale; Chestnut Hill, MA; (Endawoke Yizengaw PI), September 2011, \$40K, 2011-2013
- 51) Co-Investigator, NASA Heliophysics Theory Program, Composition and Feedback in Geospace (PI, M.Liemohn as PI), \$1,223,371, 04/01/11 – 3/31/14
- 52) Co-Investigator, NSF Magnetospheric Physics Program, (PI, Shasha Zou), Multi-Instrument Observation of Dynamics of the Ionospheric Trough During Substorms, \$313K, 8/15/11-8/14/14
- 53) Co-Investigator, NSF GEM Program, (PI, Shasha Zou), GEM: Comprehensive Assessment of the Space Weather Modeling Framework for Magnetic Field Mapping, \$320K, 4/15/12-4/14/16
- 54) Principal-Investigator, UM GCTC Team Building Grant, m-Science for Education and Research: Development of an integrated, sustainable science education and research mobile device initiative. \$7K, 2013-2014
- 55) Co-Investigator, NSF CEDAR Program (PI, Shasha Zou), CEDAR: Dynamics of SAPS during Geomagnetic Disturbances and Their Effects on the Coupled Ionosphere-Thermosphere System, \$347K, 5/1/14-4/30/17
- 56) Principal-Investigator, NASA Michigan Space Grant Consortium, UM-Ypsilanti Community High School Science Education Partnership, \$10K, 5/01/2015-4/30/2016
- 57) Principal-Investigator, NSF Studies of Magnetosphere-Ionosphere Coupling and Space Weather Using the Magnetometer Array for Cusp and Cleft Studies (MACCS), \$55K, 5/1/13-4/30/16
- 58) Co-Investigator, NASA (PI, Shasha Zou), Modeling and Observational Study of the Formations and Dynamics of Storm-Enhanced Density (SED) and Tongue-of-Ionization (TOI), \$366,391, 1/1/2014-12/31/2016
- 59) Principal-Investigator, LANL-DOE, The Effect of ULF Wave Azimuthal Structurer on the Outer Radiation Belt, \$159,727, 2/01/2015-1/31/2018
- 60) Principal-Investigator, NSF, IRES: The University of Michigan and South African National Space Agency (SANS) Space Weather International Research Experiences for Students Program, \$250,000, 03/01/2015-02/28/2018

- 61) Principal-Investigator, NSF, Collaborative Research: Inner-Magnetosphere Array for Geospace Science, \$875K 10/01/2015-01/11/2018
- 62) Principal-Investigator, UM Engineering Translational Research (Regional Energy and Transportation I-Corp), \$20K, 5/1/15-11/1/15
- 63) Principal-Investigator, NASA CYGNSS Education and Public Outreach, Indoor Localization for Kinesthetic Activities, \$24K, 6/1/15-10/15/15
- 64) Principal-Investigator, NSF, I-Corp: Indoor Magnetic Beacon Localization, \$50K, 8/1/15-1/31/16
- 65) Principal-Investigator, NASA, H-TIDES, Development and Space Environmental Testing of a new Low-Cost Induction Magnetometer for Small Satellites. \$298K, 4/16-4/18
- 66) Principal-Investigator, NASA Small Spacecraft Technology Program SmallSat Technology Partnerships: DEVELOPMENT OF NEW LOW-RESOURCE MAGNETOMETERS FOR SMALL SATELLITES (NASA GSFC Zesta), \$225K, 9/20/2016 - 9/19/2018
- 67) Principal-Investigator, UM Center for Research Learning and Teaching, Faculty Community for Inclusive Teaching grant, \$1K, 2017
- 68) Co-Principal-Investigator (Perry Samson, PI), UM Office of Academic Innovation AIF Program: Wireless Indoor Location Device (WILD) Learning System, \$75K, 2017

Invention Disclosures and Patents

- 1) UM Invention Disclosure #6517 Magnetic Beacon Self-Localization Using Smartphone Magnetometers, December 2014
- 2) UM Invention Disclosure #6545 A System for Vehicle Localization in Urban Settings Using Active Magnetic Beacons, January 2015
- 3) U.S. Provisional Patent Serial No. 62/320,697; UM Invention Disclosure #6757 Beacon and Inertial Sensor Localization Technology, July 2015
- 4) U.S. Patent App. No. 15/050,554; Title: Magnetic Beacon Self-Localization Using Mobile Device Magnetometers, University of Michigan, filed February 2016 (follow on from U.S. Provisional Patent No. 62/119,298)

Publications

(ISI-WoS h-index = 30/Google Scholar h-index = 36; Orcid ID orcid.org/0000-0003-0954-1770)

- 1) Choa, J.K., **M.B. Moldwin**, S.-I. Akasofu, Simulation of January 1-7, 1978, Events, *J. Geophys. Res.*, **92**, 11183, 1987
- 2) **Moldwin, M.B.**, W.J. Hughes, A 2 1/2-Dimensional magnetic field model of plasmoids, in *The Physics of Magnetic Flux Ropes, Geophys. Monogr. Ser.*, Vol 58, edited by C.T. Russell, AGU, Washington D.C., pgs. 663-668, 1990.
- 3) **Moldwin, M.B.**, W.J. Hughes, Plasmoids as magnetic flux ropes, *J. Geophys. Res.*, **96**, 14051, 1991.
- 4) Doe, R., **M.B. Moldwin**, M. Mendillo, Plasmopause morphology determined from empirical ionospheric convection models, *J. Geophys. Res.*, **97**, 1151, 1992.
- 5) **Moldwin, M.B.**, W.J. Hughes, Multi-satellite observations of plasmoids: IMP8 and ISEE 3, *Geophys. Res. Lett.*, **19**, 1081, 1992.
- 6) **Moldwin, M.B.**, W.J. Hughes, Plasmoid observations in the distant plasma sheet boundary layer, *Geophys. Res. Lett.*, **19**, 1911, 1992.
- 7) **Moldwin, M.B.**, W.J. Hughes, On the formation and evolution of plasmoids: a survey of ISEE 3 geotail data, *J. Geophys. Res.*, **97**, 19259, 1992.
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- 0) Moldwin, M.B., Historic, mythological and scientific perspectives on Aurora, presented to the Boston University Astronomical Society, October 4, 1988.
- 1) Moldwin, M.B., The evolution and stability of plasmoids: multi-satellite observations with IMP8 and ISEE-3, NASA Goddard Space Flight Center, Lab for Extraterrestrial Physics Seminar Series, Fall, 1991.
- 2) Moldwin, M.B., The evolution of Plasmoids: IMP8 and ISEE 3, Los Alamos National Laboratory, Space Plasma Physics Seminar, January 14, 1992.
- 3) Moldwin, M.B., The evolution of Plasmoids: IMP8 and ISEE 3, Applied Physics Lab of Johns Hopkins University, Space Physics Seminar, March, 1992.
- 4) Moldwin, M.B., Observations of earthward propagating magnetic flux ropes, Los Alamos National Laboratory, Space Plasma Physics Seminar, June 30, 1992.
- 5) Moldwin, M.B., D. McComas, R. Nemzek, M. Thomsen, R. Elphic, and S. Bame, The determination of magnetopause shape using multiple geosynchronous satellites, presented at the 1993 Magnetopause Workshop, Geophysical Institute, University of Alaska-Fairbanks, September, 1993.

- 6) Moldwin, M.B., Plasma structure and dynamics in the inner-magnetosphere, presented at the workshop on the Physics and Modeling of the Global Magnetosphere, NASA Goddard Space Flight Center, Greenbelt MD, June, 1994.
- 7) Moldwin, M.B., Space Weather: The Plasma Environment at Synchronous Orbit, Florida Institute of Technology, Physics and Space Sciences Colloquium, June, 1994.
- 8) Moldwin, M. B., Behavior of Energetic Electron and Ion Fluxes within the Plasmasphere at Synchronous Orbit, presented at NIS-1 Space and Atmospheric Sciences Seminar, LANL, July, 1994.
- 9) Moldwin, M.B., Low-energy plasma ion observations from geosynchronous orbit, presented at Taos X, Workshop on the Earth's Trapped Particle Environment, Taos, NM, August, 1994.
- 10) Moldwin, M.B., Space Weather, presented at Florida Institute of Technology POeM Seminar, February 1995.
- 11) Moldwin, M.B., Substorms and Plasmaspheric Dynamics, presented at NASA Goddard Space Flight Center, Lab for Extraterrestrial Physics Seminar Series, Fall, 1995.
- 12) Moldwin, M.B., Substorms and Plasmaspheric Dynamics, presented at Boston University's Center for Space Physics Seminar Series, Fall, 1995.
- 13) Moldwin, M.B., Plasmaspheric Dynamics, presented to the Inner Magnetospheric Symposium at COSPAR, Birmingham England, July, 1996.
- 14) Moldwin, M.B., Ground-based observations of VHF pulse pairs: Implications to TIPP's, LANL Space and Atmospheric Sciences Group Seminar, July 1996.
- 15) Moldwin, M.B., A Shifting Paradigm in Plasmaspheric Physics: Using Geosynchronous Satellites to Probe the Inner-Magnetosphere, LANL Radiation Measurements and Astrophysics group seminar, August 1996.
- 16) Moldwin, M.B., Multi-satellite Observations of the Dynamic Plasmasphere, presented at the Huntsville 96 Workshop, Guntersville AL, Sept. 1996.
- 17) Moldwin, M.B., Plasma Populations in the Plasmapause Region: What We Know from Satellite Data, presented at the Sources and Loss Mechanisms Workshop of ISSI, Bern Switzerland, Oct. 1996.
- 18) Moldwin, M.B., Bringing Space into the Classroom, presented at the 17th Harris Corporation's Brevard County Science Teacher Workshop, Melbourne FL, Jan. 1997.
- 19) Moldwin, M.B., VHF Lightning Observations from Florida: Signatures of TIPP's?, presented at the Earth and Space Sciences Department Seminar, UCLA Feb, 1997.
- 20) Moldwin, M.B., New Understanding of an Old Topic: The Structure and Dynamics of the Plasmasphere, presented at the Department of Physics and Space Sciences Laboratory Seminar, UC-Berkeley, Feb., 1997.
- 21) Moldwin, M.B., What's New in Atmospheric Electricity:Sprites, Jets, TIPP's, and Elves, presented to the Air Force's 45th Space Weather Squadron's Chapter of the American Meteorological Society, March 1997.
- 22) Moldwin, M.B., CRRES and Geosynchronous Observations of Plasmaspheric Structure and Dynamics, presented at the 8th Scientific Assembly of IAGA, Uppsala Sweden, Aug., 1997.
- 23) Moldwin, M.B., High Tech Space Science Education, presented at the AGU's Earth and Space Sciences Heads and Chairs Mtg, Washington DC, Nov., 1997.
- 24) Moldwin, M.B., Substorm Observations: The Data Behind the Models and Cartoons, presented as a plenary review talk at the 1998 GEM Workshop, Snowmass Co., Jun., 1998.
- 25) Moldwin, M.B., New Observations of the Dawnside Plasmasphere, presented at the 1998 GEM Workshop - Inner Magnetosphere Session, Snowmass Co., Jun, 1998.
- 26) Moldwin, M.B., The Challenge of Placing In Situ Magnetospheric Observations into a Global Context, presented at the 6th Huntsville Workshop on Space Plasma Physics, Guntersville AL, Oct. 1998.
- 27) Moldwin, M.B., H.K. Rassoul, B. Poppe, S.E. Fry, C.D. Fry, S. Murphree, D. Hill R. Fronk, G. Davis, D. Schiffert, Remote Sensing of Space from the Classroom: Developing a National High School Magnetometer Network, presented at the Fall AGU mtg, San Francisco CA, *Eos*, v79, F735, 1998.
- 28) Moldwin, M.B., Magneto-seismology: Remote sensing near-Earth Space from Jacksonville University, presented as part of the Jacksonville University's Science and Engineering Lecture Series, Feb., 1999.
- 29) Moldwin, M.B., Small-scale Magnetic Flux Ropes in the Solar Wind and Their Geomagnetic Effect, presented to the Department of Earth and Space Sciences, UCLA, Los Angeles CA, March 1999.

- 30) Moldwin, M.B., Space Weather During Solar Maximum: The Other Y2K Problem, presented at the College of Science and Liberal Arts Lecture Series, Florida Tech, April, 1999.
- 31) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented to the Dept of Physics, Wayne State University, January, 2000.
- 32) Moldwin, M. B., Space Weather Connections to Tropospheric Weather, presented to the Florida Tech AMS Chapter, March 2000.
- 33) Moldwin, M.B., On the Origin of SN TCRs, presented at the ESS Space Physics Seminar, UCLA, Oct. 2000.
- 34) Moldwin, M.B., Understanding the Role of the Magnetotail, Seventh Annual Huntsville 2000 Workshop, October, 2000.
- 35) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented to the Dept of Physics, West Virginia University, November, 2000.
- 36) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented to the Dept of Natural Sciences, University of South Carolina - Aiken, January, 2001.
- 37) Moldwin, M.B., The Dynamic Plasmasphere: A new look at an old Topic, presented to the Earth and Space Sciences Department Seminar, February, 2001.
- 38) M Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented to the Institute of Geophysics and Planetary Physics, UCLA, February, 2001.
- 39) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented at NASA JPL, March, 2001.
- 40) Moldwin, M.B., IMP Bz Polarity influence of small-scale solar wind dynamic pressure pulses, presented at the NASA ISTP workshop, April, 2001.
- 41) Moldwin, M.B., The Origins of Life in Space: A Space Physicists' Perspective, presented at the Florida Association of Science Teachers 2001 Conference, Cocoa Beach, October, 2001.
- 42) Moldwin, M.B. Heliospheric Constellation: On Understanding the Structure and Evolution of the Solar Wind, presented to Florida Institute of Technology's Physics and Space Sciences Colloquium, October 2001.
- 43) Moldwin, M.B. Heliospheric Constellation: On Understanding the Structure and Evolution of the Solar Wind, presented to UCLA's Atmospheric Sciences Colloquium, October 2001.
- 44) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented to the Space Science Lab Seminar at UC-Berkeley, Nov., 2001.
- 45) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented to the Cal State Sacramento's Physics Dept, Nov., 2001.
- 46) Moldwin, M.B., B. Sandel, M. Thomsen, R. Elphic. Placing multiple in situ observations of the inner magnetosphere in global context with the IMAGE EUV Imager, presented at the Yosemite 2002 Magnetospheric Imaging Workshop, February, 2002.
- 47) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented to the Geology and Geologic Engineering Department Seminar, March., 2002.
- 48) Moldwin, M.B., B. Sandel, J. Goldstein, Plasmaspheric Interactions During Substorms, presented to the Sixth International Conference on Substorms, March 2002.
- 49) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented at the Universidad Austral de Chile, April., 2002.
- 50) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented at the Universidad de Los Lagos, Chile, April., 2002.
- 51) Moldwin, M. B., In Situ Observations of the Plasmasphere: A Review, presented at the NSF GEM Workshop, Inner Magnetospheric Working Group, Telluride CO, June, 2002.
- 52) Moldwin, M.B., The Role and Responsibility of Scientists in Pre-College Science Teacher Professional Development, presented at the Cottrell Scholars Conference, Tucson AZ, July, 2002.
- 53) Moldwin, M.B., Music of the Spheres: Using Field-line Resonances to Remotely Sense Space Weather, presented at the LANL NIS-1 Group Seminar, Los Alamos NM, July., 2002.
- 54) Moldwin, M.B., LD Zhang, G. Hajj, Ian Harris, T. Mannucci, GPS derived TEC Measurements for Plasmaspheric Studies: A Tutorial and Recent Results, presented to the UCLA Friday Space Physics Seminar, Oct. 2002.
- 55) Moldwin, M.B., Music of the Spheres: Using field-line Resonance and LEO-GPS TEC to Remotely Sense Space Weather, presented at the Boston University Center for Space Physics Seminar, November, 2002.

- 56) Moldwin, M.B., Music of the Spheres: Using field-line Resonance and LEO-GPS TEC to Remotely Sense Space Weather, presented at the Loyola Marymount University Sixma Xi Science Seminar, January, 2003.
- 57) Moldwin, M.B., Music of the Spheres: Using field-line Resonance and LEO-GPS TEC to Remotely Sense Space Weather, presented at the Florida Institute of Technology's Physics and Space Sciences Seminar, February, 2003.
- 58) Moldwin, M.B., Music of the Spheres: Using field-line Resonance and LEO-GPS TEC to Remotely Sense Space Weather, presented at Embry-Riddle Aeronautical Universities Engineering Physics Seminar, February, 2003.
- 59) Moldwin, M.B., Dynamics of the Inner Magnetosphere's Magnetic and Plasma Environment: Reporter Review, presented at IUGG, Sapporo Japan, July 2003.
- 60) Moldwin, M.B., D. Berube, M. Thomsen, and B. Sandel, Outer Plasmaspheric Circulation, presented at IUGG, Sapporo Japan, July 2003.
- 61) Moldwin, M. B., D. Berube, and J. Weygand, ULF Resonance, EUV Remote Sensing, and In Situ Plasmaspheric Observations, presented at IUGG, Sapporo Japan, July 2003.
- 62) Moldwin, M.B., Formation and Structure of Plasmaspheric Plumes and their Role in Magnetosphere-Ionosphere Coupling, presented to the UCLA Friday Space Physics Seminar, Oct. 24, 2003.
- 63) Moldwin, M.B., Everything but the kitchen sink: Physical models, ULF resonance, GPS TEC, multi-diagnostic-multi-satellite in situ, and EUV imaging data combined to create a 3D inner magnetospheric density model, presented at the Center for Space Science and Exploration Seminar, LANL, March 2004.
- 64) Moldwin, M.B., Everything but the kitchen sink: Physical models, ULF resonance, GPS TEC, multi-diagnostic-multi-satellite in situ, and EUV imaging data combined to create a 3D inner magnetospheric density model, presented at the UC-Berkeley Physics Department Seminar, August 31, 2004.
- 65) Moldwin, M.B., The Perils of Space: An Introduction to Space Weather, presented at California State University – Northridge's Bianchi Planetarium, January 2005.
- 66) The Emerging Science of Space Weather, presented at the UCLA ESS Dept Colloquium, February 2005.
- 67) Moldwin, M.B., Everything but the kitchen sink: Physical models, ULF resonance, GPS TEC, multi-diagnostic-multi-satellite in situ, and EUV imaging data combined to create a 3D inner magnetospheric density model, presented to the Johns Hopkins Applied Physics Lab Space Physics Seminar, February, 2005.
- 68) Moldwin, M.B., The Perils of Space: An Introduction to Space Weather, presented at Pierce College's Astronomical Society (public lecture), March 2005.
- 69) Moldwin, M.B., The Perils of Space: An Introduction to Space Weather, presented at Palmer Station Antarctica Science Night Lecture Series, April 2005.
- 70) Moldwin, M.B., The Perils of Space: An Introduction to Space Weather course for non-science majors at UCLA, presented at Spring AGU, New Orleans, May 2005.
- 71) Moldwin, M. B., The role and importance of the plasmasphere to space weather, invited tutorial at the NCAR Summer Colloquium on Space Weather, Boulder CO, June 2006.
- 72) Moldwin, M.B., Yizengaw, E., Wei, H, Plasmasphere dynamics during storms and its role in modulating the ring current and radiation belts, Solicited talk at IAGA 2005 Conference (GAI07), Toulouse France, July 2006.
- 73) Moldwin, M.B. and J. Weygand, Space Science in Antarctica, presented to the UCLA ESS/AOES Friday Space Physics Seminar, Feb. 2006.
- 74) Moldwin, M. B., and E. Zesta, Space Science in Antarctica, presented to the Pierce College (Woodland Hills CA) Astronomy Society, Feb. 2006.
- 75) Moldwin, M.B., The Emerging Science of Space Weather, presented to the Physics and Astronomy Dept Colloquia of CSU-Northridge, Mar. 2006.
- 76) Moldwin, M.B., Space Physics applications of techniques using wave propagation through inhomogeneous media: Tomography, magnetoseismology and coherent structure analysis, presented at the UCLA Seismological Seminar, April, 2006.
- 77) Moldwin, M.B., Living in the Atmosphere of the Sun: An Introduction to Space Weather, presented at the Spring 2006 AGU GIFT Workshop, Baltimore MD, May, 2006.

- 78) Moldwin, M.B., Living in the Atmosphere of the Sun: An Introduction to Space Weather, presented at the Kiwanis Club of Warner Center, Woodland Hills CA, July, 2006.
- 79) Moldwin, M.B., and Endawoke Yizengaw, Everything but the kitchen sink: Physical models, ULF resonance, GPS TEC, multi-diagnostic-multi-satellite in situ, and EUV imaging data combined to create a 3D inner magnetospheric density model, presented to the UC-Riverside IGPP Seminar, September, 2006.
- 80) Moldwin, M.B., The Vulnerability of our Technological Society to Natural and Man-Made Catastrophes”, Professor in the Union, UCLA Associated Students/Student Union, October, 2006.
- 81) Moldwin, M.B., The Challenges of Human Space Exploration, presented to the Pierce College (Woodland Hills CA) Astronomy Society, Feb. 2007.
- 82) Moldwin, M.B., Astrobiology: the search for extra-terrestrial life, presented at the UCLA PEERS Seminar, March. 2007.
- 83) Moldwin, M.B., Tour of the Solar System, presented to the Japanese-American Optimists Club, Culver City, CA, April 2007.
- 84) Moldwin, M.B., Space Weather, presented to the Science Summer Program, Ojai CA, July 2007.
- 85) Moldwin, M.B., Magnetic Flux Ropes in Space and Astrophysical Plasmas, presented to the LWS-IHY Heliophysics Summer School, UCAR Boulder CO, August, 2007.
- 86) Moldwin, M.B., The Perils of Space: An Introduction to Space Weather, presented at the Sloan Colloquium Series, UCLA Television, Film and Theater Department, October, 2007.
- 87) Moldwin, M.B., The Perils of Space: An Introduction to Space Weather, presented to the Alumni Scholars Club Executive Board, UCLA, October, 2007
- 88) Moldwin, M.B. Space Weather Impacts on Human Space Exploration, presented at Vista Community College, Berkeley CA, December 2007.
- 89) Moldwin, M.B., and Endawoke Yizengaw, Everything but the kitchen sink: Physical models, ULF resonance, GPS TEC, multi-diagnostic-multi-satellite in situ, and EUV imaging data combined to create a 3D inner magnetospheric density model, presented to the UM AOSS Department Seminar, January, 2008.
- 90) Moldwin, M. B., An Introduction to Space Weather, presented on Crystal Cruise Symphony, February, 2008.
- 91) Moldwin, M.B., An The Emerging Science of Space Weather, presented at Wayne State University (Detroit, MI) Physics Department Colloquium, March, 2008.
- 92) Moldwin, M.B., Predicting the Future: The end of Earth, UCLA EAOP Seminar, April, 2008.
- 93) Moldwin, M.B., The Role and Responsibility of Scientists to Education, presented to the Friday Space Physics Seminar, UCLA, May 2008.
- 94) Moldwin, M.B., Inner Magnetosphere-Ionosphere Coupling Review, presented at the Inner Magnetosphere Coupling Workshop, Helsinki Finland, August, 2008.
- 95) Moldwin, M.B., Space Weather Impacts on Human Space Exploration, presented at the South Bay Astronomical Society, El Camino Community College, Torrance, CA, October 2008.
- 96) Moldwin, M.B., The Failure of the Space Science Community in Education, presented at the UM SPRL@60 Symposium, Ann Arbor, MI, October, 2008.
- 97) Moldwin, M.B., The End of Modern Civilization, presented at Bruin Academic Success, UCLA, November, 2008.
- 98) Moldwin, M.B., What’s the Worst that can Happen? Space Weather during the next solar maximum in 2012, presented at the IGPP Seminar, UCLA, January, 2009.
- 99) Moldwin, M.B., How science predicts the future - understanding the science of global change and population, Culver City Rotary Club, February 11, 2009.
- 100) Moldwin, M.B., Magnetic Fields from Antarctica to the Sun and Beyond, presented to Pierce College, April, 17, 2009.
- 101) Moldwin, M.B., What’s the Worst that can Happen? Space Weather during the next solar maximum in 2012, presented at the Sloan Film and TV Screenwriter Workshop, UCLA, October, 2009.
- 102) Moldwin, M.B., Space Weather from Africa, presented at CRAAG, Algiers, Algeria, Nov., 2009
- 103) Moldwin, M.B., Space Weather from Africa, presented at the University of Yaounde, Cameroon, Nov., 2009
- 104) Moldwin, M.B., Universal Magnetic Structures, presented at the MIPSE/AOSS Seminar, Nov. 2009
- 105) Moldwin, M. B., and Megan Cartwright, Evidence of Magnetic Reconnection across the HCS, Isrealdynamics2010, Dead Sea, Israel, April 2010.

- 106) Moldwin, M.B., MI Coupling Tutorial: Role of plasmasphere, presented at the Japanese Geophysics Union meeting, Chiba, Japan, May, 2010
- 107) Moldwin, M.B., Plasmasphere Dynamics during Storms and its Role in Modulating the Ring Current and Radiation Belts: A Review, presented at the 38th COSPAR Scientific Assembly, Bremen Germany, July, 2010.
- 108) Moldwin, M.B., The Physics of Equatorial Electrodynamics, presented at the ISWI Summer School, Bahir Dar, Ethiopia, Nov., 2010
- 109) Moldwin, M.B., A Review of Ionospheric and Plasmaspheric Models, presented at the ISWI Summer School, Bahir Dar, Ethiopia, Nov., 2010
- 110) Moldwin, M.B., Solar Wind-Magnetosphere-Ionosphere Coupling Tutorial, presented at the ISWI Summer School, Bahir Dar, Ethiopia, Nov., 2010
- 111) Moldwin, M.B., Ionospheric Space Weather Impacts, presented at the ISWI Summer School, Bahir Dar, Ethiopia, Nov., 2010
- 112) Moldwin, M.B., The End of Earth, presented at the UM Applied Physics Seminar, Nov., 2010
- 113) Moldwin, M.B., Astrobiology & The End of Earth, two public lectures presented at the UM Exhibit Museum's Cosmic Discovery Day, December 4, 2010.
- 114) Moldwin, M.B., Introduction to Space Weather: Impacts on Society and Space Exploration, Malaysian National Planetarium, Kuala Lumpur, Malaysia, July 2011
- 115) Moldwin, M.B., Introduction to Space Weather: How it impacts Malaysian Technology and Society, ICONSPACE2011, Penang Malaysia, July 2011
- 115) Moldwin, M.B., Introduction to Space Weather, Department of Physics Seminar, University of Zambia, Lusaka, Zambia, August 2011
- 116) Moldwin, M.B., Introduction to Space Weather, Dow Corning Technical Exchange Society, Midland Michigan, November, 2011
- 117) Moldwin, M.B., Introduction to Space Weather, South African National Space Agency Space Science Center Public Lecture, Hermanus, South Africa, June, 2012
- 118) Moldwin, M.B., Introduction to Space Weather, South African National Space Agency Earth Observations Center Public Lecture, Hartebeeshoek, South Africa, July, 2012
- 119) Moldwin, M.B., Introduction to Space Weather, South African Institute of Physics Conference Invited Plenary Talk, University of Pretoria, South Africa, July, 2012
- 120) Moldwin, M. B., The Impact of the Sun on our Fragile Tech Infrastructure: An Introduction to Space Weather, UM Applied Physics Seminar, September, 2012
- 121) Moldwin, M.B. (for E. Zesta), Hemispherical dependence of magnetospheric energy injection, invited presentation at the Longitude and Hemispheric Dependence of Space Weather AGU Chapman Conference, Addis Ababa Ethiopia, 12 November, 2012
- 122) Moldwin, M.B., Equatorial electrojet ground induced currents: Are there power grid space weather impacts at equatorial latitudes? presented at the Longitude and Hemispheric Dependence of Space Weather AGU Chapman Conference, Addis Ababa Ethiopia, 13 November, 2012
- 123) Moldwin, M.B., E. Yizengaw, A. Coster, D. Hysell, AMISR in Africa: Scientific and Societal Importance, presented at the 2012 AGU Western Pacific/AOGS Joint Meeting, Singapore, 2012
- 124) Damtie, B., M.B. Moldwin (presenter), E. Yizengaw, A. Coster, D. Hysell, AMISR in Africa: Scientific and Societal Importance, (invited) at the Fall 2012 AGU meeting, San Francisco, CA, Dec. 2012.
- 125) Moldwin, M.B., The origin of large longitudinal ionospheric and plasmaspheric density gradients: Understanding MI coupling using new combined global imaging techniques, LANL, ISR-1 Magnetospheric Seminar, July 2013.
- 126) Moldwin, M.B., Introduction to heliophysics system physics: processes and environments, similarities and differences, two-part lecture at the NASA LWS Heliospheric Summer School, Boulder CO, July 2013.
- 127) Moldwin, M.B., What Fraction of Solar and Space Physics PhDs Find Research Careers?" UM AOSS Space Physics Group Seminar, September, 2013.
- 128) Moldwin, M.B., The Search for the Holy Grail of Space Weather Forecasting, Magnetospheres Workshop, Patagonia Chile, October, 2013
- 129) Moldwin, M.B., Active Learning using Dorm Room Labs, presented at the Cottrell Scholars Workshop, Tucson AZ, July 2014.

- 130) Mark Moldwin, Cherilynn Morrow, Susan White, Rachel Ivie, ED43A-3457 Highlights from the First Ever Demographic Study of Solar Physics, Space Physics, and Upper Atmospheric Physics, AGU Fall 2014
- 131) Mark Moldwin, Universal Magnetic Structures, presented at ISWI Winter School, Bahir Dar Ethiopia, February 2015.
- 132) Mark Moldwin, Tutorial: MI Coupling and Magnetic Mapping in the Inner Magnetosphere – How Tightly Coupled are M and I?, presented at the Inner Magnetosphere Conference III, UCLA, March, 2015.
- 133) Mark Moldwin, The story of the plume, presented at the 14th International Symposium on Equatorial Aeronomy, Bahir Dar Ethiopia, Oct. 2015.
- 134) Mark Moldwin, The Science and Politics of Climate Change, Sanilac County Michigan Democratic Party, UAW Hall Marlette MI, January 2016.
- 135) Mark Moldwin and Dan Welling, The Collapse of the Electric Grid by Solar Storm Induced Electromagnetic Pulses, presented at the UM Applied Physics Seminar, Feb., 2016.
- 136) Mark Moldwin, The Future of Human Space Exploration, presented at the UM Astronomy on Tap Yuri's Night Public Outreach Event, April 12, 2016
- 137) Mark Moldwin, Introduction to the Structure of the Magnetosphere, presented at the 2016 Space Weather Camp, SANSA, Hermanus, South Africa, June 2016
- 138) Mark Moldwin, Introduction to the Dynamics of the Magnetosphere, presented at the 2016 Space Weather Camp, SANSA, Hermanus, South Africa, June 2016
- 139) Mark Moldwin, How Space Weather Impacts Future Human Space Exploration, presented at the Space Talk @ SANSA, Hermanus South Africa, June 23, 2016.
- 140) Mark Moldwin, How Space Weather Impacts Future Human Space Exploration, presented at the Western Michigan University Geosciences Seminar, October 3, 2016.
- 141) Mark Moldwin, Building on the Buonsanto Legacy: A new understanding of the storm time mid-latitude ionosphere and its inner magnetosphere connections, Michael Buonsanto Memorial Lecture, MIT Haystack Observatory, October 26, 2016.
- 142) Moldwin, Mark, Perry J. Samson, Lauro Ojeda, Theo Miller and Judy Yu, ED23E-01: Active Learning and Engagement with the Wireless Indoor Location Device (WILD) Learning System, presented at the 2016 AGU Fall Meeting, San Francisco CA Dec. 2016
- 143) Moldwin, Mark, Lauro Ojeda, Steve Rogacki, Matt Pelloni, Leonardo Regoli, SM53C-03: A Reduced SWAP+C DC Magnetometer for Geomagnetic and Space Physics Research, presented at the 2016 AGU Fall Meeting, San Francisco CA Dec. 2016
- 144) Mark Moldwin, Space Weather Impacts on Human Space Exploration of Mars, presented at St. Clair County Community College, March 5, 2017.
- 145) Mark Moldwin, The Story of Plumes: presented at the University of Alberta, Edmonton, March, 10, 2017.
- 146) Mark Moldwin, Space Weather and Trump Administration Impacts on Human Space Exploration of Mars, presented at the Wayne State University Emeritus Academy, April, 2017.
- 147) Mark Moldwin, The story of plumes: the development of a new conceptual framework for understanding magnetosphere and ionosphere coupling, presented at "Advancing Plasma Physics from the Sun to the Earth" in honor of Joachim Birn for his 75th year, Breckenridge CO, May, 2017.
- 148) Mark B. Moldwin, The collapse of the power grid by solar storm induced electromagnetic pulses, presented at SANSA Space Sciences Public Lecture, Hermanus South Africa, July, 2017.
- 149) Mark B. Moldwin, Introduction to Plasma Physics I and II, presented at the International Space Weather Camp, SANSA, Hermanus South Africa, July 2017.
- 150) Mark B. Moldwin, Volcanoes, Ice and Aurora: The Earth and Space Sciences from Iceland, presented onboard the Soleal UM Alumni Travel, Iceland, August 2017.

Published Abstracts and Contributed Conference Presentations

- 1) Moldwin, M.B., W.J. Hughes, A study of plasmoid properties: survey of ISEE 3 geotail data, presented at the Fall AGU meeting, San Francisco, CA., *Abstract: EOS*, 71, 1548, 1990.

- 2) Doe, R.A., M.B. Moldwin, and M. Mendillo, Plasmopause Morphology determined from empirical ionospheric convection models, presented at the Fall AGU meeting, San Francisco, CA., *Abstract: EOS, 71, 1523, 1990.*
- 3) Moldwin, M.B., W.J. Hughes, The evolution of plasmoids: survey of ISEE 3 geotail data, presented at the Spring AGU meeting, Baltimore, Md., *Abstract: EOS, 72, 242, 1991.*
- 4) Moldwin, M.B., W.J. Hughes, Multi-satellite observations of plasmoids: IMP8 and ISEE 3, presented at the Fall AGU meeting, San Francisco, CA., *Abstract: EOS, 72, 396, 1991.*
- 5) Moldwin, M.B., Substorm associated bipolar events in the distant plasma sheet boundary layer and magnetosheath, presented at the Spring AGU meeting, Montreal, Canada, *Abstract: Eos, 73, 269, 1992.*
- 6) Moldwin, M.B., W.J. Hughes, Earthward propagating flux rope plasmoids, presented at the Fall AGU meeting, San Francisco, CA., *Abstract: Eos, 73, 471, 1992.*
- 7) Moore, K.R., D.J. McComas, M.B. Moldwin, and M.F. Thomsen, Plasmasphere morphology determined by multi-satellite observations at geosynchronous orbit, presented at the Fall AGU meeting, San Francisco, CA., *Abstract: Eos, 73, 479, 1992.*
- 8) Moldwin, M.B., M.F. Thomsen, S.J. Bame, D.J. McComas, G.D. Reeves, The magnetospheric lobe at geosynchronous orbit: Observations and interpretations, presented at the Spring AGU meeting, Baltimore, MD., *Abstract: Eos, 74, 276, 1993.*
- 9) Moldwin, M.B., M.F. Thomsen, S.J. Bame, D.J. McComas, and G.D. Reeves, The fine-scale structure of the outer plasmasphere, presented at the Fall AGU meeting, San Francisco, CA., *Abstract: Eos, 74, 510, 1993.*
- 10) McComas, D.J., R.C. Elphic, M.B. Moldwin and M.F. Thomsen, Magnetopause crossings at geosynchronous orbit, presented at the Fall AGU meeting, San Francisco, CA., *Abstract: Eos, 74, 542, 1993.*
- 11) Moldwin, M.B., J.L. Phillips, J. Gosling, E.E. Scime, D. McComas, S. Bame, A. Balogh, and R. Forsyth, Ulysses observation of a non-CME magnetic flux rope: Evidence of interplanetary magnetic reconnection at the heliospheric current sheet? presented at the Spring AGU meeting, Baltimore MD, *Abstract: Eos, 75, 280, 1994.*
- 12) Moldwin, M.B., M.F. Thomsen, G.D. Reeves, S.J. Bame, D.J. McComas, Geomagnetic Substorms: The Source Mechanism of Detached Plasma Regions in the Outer Magnetosphere?, presented at the Fall AGU meeting, San Francisco, CA., *Abstract: Eos, 75, 547, 1994.*
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