Laboratory for **A**tmospheric and **S**pace **P**hysics

Activity Report
2010
University of Colorado at Boulder

TABLE OF CONTENTS

LASP: A Brief History

In 1946-47, a handful of American universities joined with the military and with industry to initiate the era of space exploration. The University of Colorado was one of those pioneering universities. The first experiments to be performed in space were lofted by sub-orbital rockets. A key obstacle to these first rocket flights was providing a stabilized platform for cameras and other experiments. With support from the Naval Research Center and the Air Force Cambridge Research Laboratory (now the Phillips Laboratory), the University of Colorado formed a research group called the Upper Air Laboratory (UAL) to solve this problem. Their solution — called the biaxial pointing platform — cleared the way for some of the first major scientific discoveries made in space. Researchers and engineers from the UAL flew experiments into space on over 50 rocket flights before Sputnik. By 1965, the UAL had grown substantially. Along with this growth came a new building on campus and a new name: the Laboratory for Atmospheric and Space Physics. The public is invited to tour our facility and to observe the work that LASP does today.

A Message from the Director

During the past year, LASP has continued its long and successful partnership with NASA. Also, we have been greatly extending our relationship with the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA), and other agencies. In diversifying our scientific, technical, and programmatic relationships, we are finding many exciting ways to apply our expertise to solve problems of crucial national, and international, importance. LASP's staff is continuously seeking – and meeting – new challenges.

A key aspect today is to know what can be modified in an organization without tampering with the fundamentals that have made LASP the outstanding institute that it is. As noted previously in these reports, LASP derives its strength from looking forward and seeking ways to improve products and processes. I greatly admire the organization's adaptability in the face of changing external conditions and changing requirements. Insofar as space programs are concerned, I believe that we have maintained a culture that is nimble, flexible, and robust. Thus, LASP is an ideal institute to respond to current challenges and present national needs.

LASP also succeeds in large measure by having the trust and support of the CU administration. I sincerely thank the people in contracts administration, procurement, facilities management, and other support areas who help us do our very special job. I also want to thank the Vice Chancellor for Research, the Provost, and the Chancellor for their tireless and unflagging support of LASP, its mission, and its ambitious goals.

It is clear that LASP is in a remarkable region of the country and in a nearly unique locale for scientific cooperation. I express my deep appreciation to the other institutes, national laboratories, dedicated centers, and special business partners with whom we work on a daily basis. This broad community makes our job enjoyable and, indeed, much more successful. We look forward to working with the space research community in many novel endeavors during this next year.

There continues to be recognition by the U.S. government that science (and engineering) can be at the core of an economic revival: This is the kind of contention that many science leaders and policy makers have espoused for decades. LASP has continued in 2010 to see growth and development of its research portfolio. We have maintained many areas of expertise, we have developed new areas of strength and we have added several new staff members. We are particularly proud of winning several new research programs and missions. We truly hope to bring our strengths and talents to bear on the new challenges that will face the space and Earth sciences in the months and years ahead.

Thank you to the students, staff, and faculty of LASP for all their hard work. Special thanks go to Ann Alfaro for her thorough and careful efforts in preparing this report for 2010.

Daniel N. Baker

Please visit LASP's Website for the latest developments: **http://lasp.colorado.edu.**

LASP Organization Chart

Dan Baker
Director

B. Jakosky
AD Science

C. Himes
EAD

T. Woods
AD Technical

Science Division
- Planetary
- Earth Atmosphere
- Solar Influences
- Space Plasma Physics
- Communication & Outreach

MO & DS (W. Possel)
- Mission Operations
- Data Systems
- Planning & Scheduling
- Software Engineering

Engineering (M. McGrath)
- Program Mgmt
- Systems Engineering
- RA / QA
- Electrical Engin.
- Mechanical Engin.
- Production
- Flight Software
- Calib & Test

Lab-wide Support (C. Himes)
Accounting, HR, IT, Procurement, Contracts, Office Support, Facilities

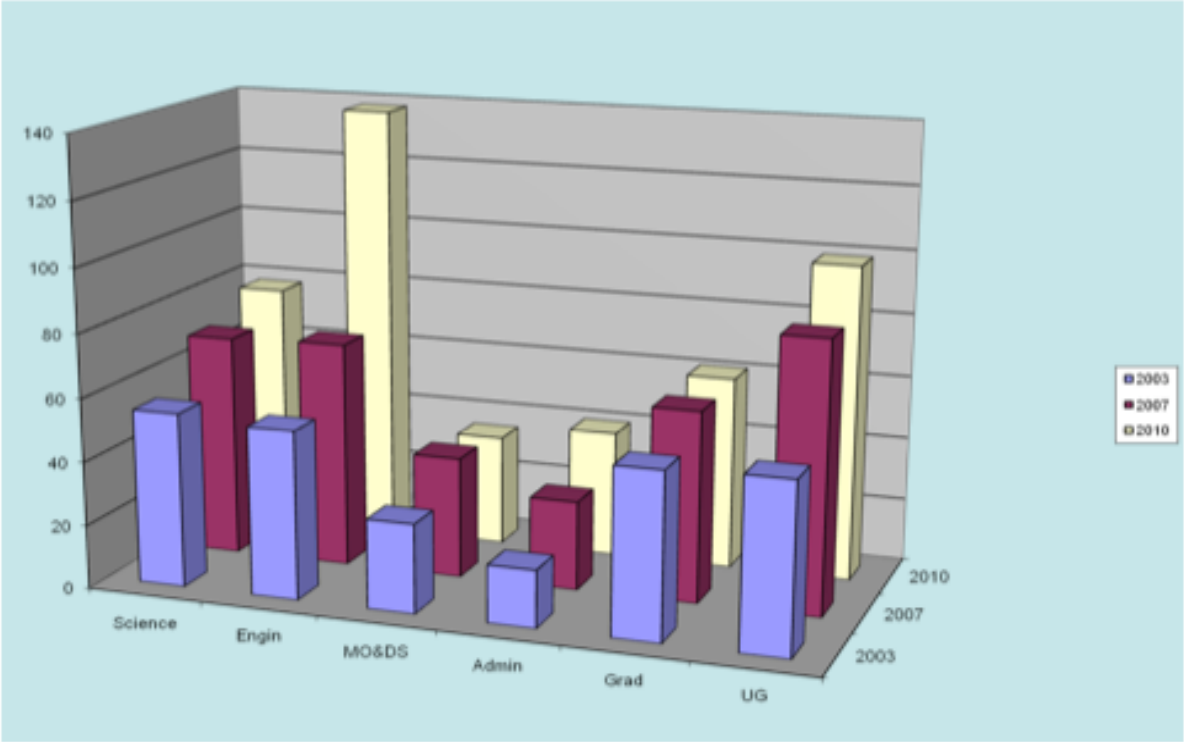
LASP Appropriated Funding

During the period 1/1/2010 to 12/31/2010 LASP appropriated funding totaled $58,523,391 for support of 122 grants and contracts.

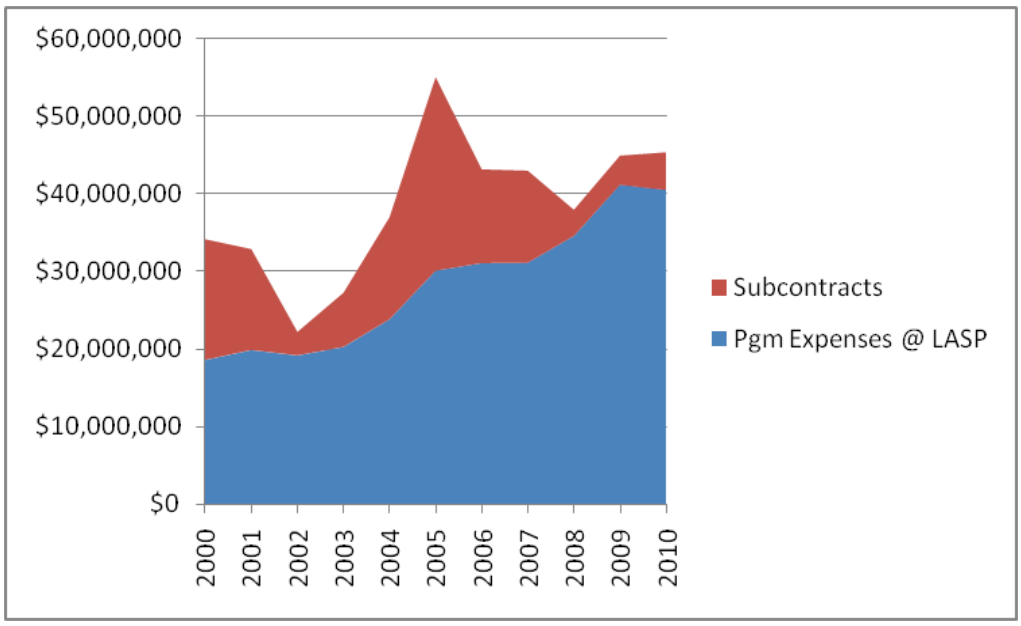
Research Support: 2010 Calendar Year

Source of Funding	Total Grant Dollars
Federal Agencies:	
Department of Commerce – NOAA	418,054
Department of Defense – AF AFOSR	100,176
Department of Defense – Navy NRL	1
Jet Propulsion Laboratory	1,523,126
National Aeronautics and Space Administration	185,082
NASA – Ames Research Center	825,021
NASA – Goddard Space Flight Center	43,913,405
NASA Headquarters	214,344
NASA – Marshall Space Flight Center	237,990
National Science Foundation	961,215
Federal Funds	$48,407,620
Non-Federal Agencies:	
Arizona State University	
Ball Aerospace Systems Division	-2,209,695
Boston University	320,000
Broad Reach Engineering	15,696
Carnegie Institution of Washington	344,602
GeoOptics, LLC	50,826
Hampton University	1,664,844
Johns Hopkins University	58,776
Rice University	62,351
Southwest Research Institute	747,329
Space Environment Technologies	101,470
Teledyne Brown Engineering	53,694
University Corporation for Atmospheric Research	145,671
University of Alaska - Fairbanks	29,119
University of Arizona	211,500
University of California – Berkeley	299,629
University of California – Los Angeles	58,686
University of Central Florida	-40,000
University of Minnesota	400,000
University of New Hampshire	7,796,273
University of Washington	5,000
Non-Federal Agencies	$10,115,771
TOTAL FUNDING	**$58,523,391**

Continued Growth of Personnel



Program Expenses by Year



Daniel N. Baker, Director
LASP Scientists

Tenure Track:
Linnea M. Avallone
Frances Bagenal
Charles A. Barth (Ret.)
Robert Ergun
Larry W. Esposito
Mihály Horányi
Brian Hynek
Bruce M. Jakosky
Xinlin Li
Peter Pilewskie
Cora E. Randall
Mark P. Rast
Nicholas M. Schneider
Zoltan Sternovsky
Owen B. Toon

Research Associates:
Nicole Albers
Laila Anderssen
Odele Coddington
Andrew Collette
Gaetano DiAchille
Peter Delamere
Scot Elkington
Francis G. Eparvier
Stefan Eriksson
Xiaohua Fang
Juan (John) Fontenla
John Gosling
Eberhard Grün
Margit Haberreiter
Jerald W. Harder
Lynn Harvey
Sebastian Hess
Robert Hodges
Greg Holsclaw
James E. Howard
Hsiang-Wen Hsu
Andrew Jones
Lars Kalnajs
Shri Kanekal
Bodil Karlsson
Michael King
Freider Klein
Greg Kopp
George M. Lawrence (Ret.)
Wenlong Liu
William E. McClintock
Tom McCollom
Kevin McGouldrick
David Malaspina
Michael Mellon
Aimee Merkel
Michael Mills
Ryuji Morishima
William Peterson
Licia Ray
Erik C. Richard
Gary J. Rottman (Ret.)
David W. Rusch
Theodore Sarris
Sebastian Schmidt
Mindy Searls
Jamison Smith
Martin Snow
Miodrag Sremcevic
A. Ian F. Stewart
Glen R. Stewart
Wai-Leong The
Gary E. Thomas (Ret.)
Feng Tian
Xu Wang
Robert J. Wilson
Thomas N. Woods

Visiting Scholars

Joseph Ajello, Jet Propulsion Laboratory, Pasadena, CA
Antal Juhasz, KFKI Research Institute for Particle and Nuclear Physics, Budapest, Hungary
Robert McPherron, UCLA, IGPP, Los Angeles, CA
Moragas-Klostermeyer, Georg, Max-Planck-Institut für Kernphysik, Heidelberg, Germany
Wayne Pryor, Central Arizona Coolidge, Coolidge, AZ
Dick White, Mancos, CO

Engineering/Missions Ops/Program Support/Science

Engineering

Gregg Allison
Christine Andrews
Michael D. Anfinson
Judy Antman
Richard Arnold
Rory St. John Barrett
Susan Batiste
Douglas Bausch
Helmut P. Bay (Ret.)
Ryan Behner
Christopher Belting
Jeffrey Blunck
Bryce Bolton
Mary Bolton
Brian D. Boyle
Shelley Bramer
Catherine Brant
David Braun
Vanessa Briggs
Jeff Brown
Patrick Brown
Chelsey Bryant
Heather Buck
Linda Buckhannon
Zachary G. Castleman
Elizabeth Cervelli
Jose Chavez
Wesley Cole
David Crotser
Jacob Costner
David Dewoina
Thomas Dixon
Sharon Dooley
Virginia Drake
Mark Drobilek
Charles Dumont
Gary Eldridge
Jenni Elke
Darren Erickson
Donald Farneth
Tim Flaherty
Nicolas Ferrington
James Frawley
Bryan French
David Gathright
Alan Goodrich
Roger Gunderson
Scott Gurst
David Hall
Ward Handley
Douglas Hansen
David Harber
Cindy Hendrickson
James Herring
Karl Heuerman
Carl Himpsel
Patricia Soto Hoffman
Alan Hoskins
Vaughn Hoxie
Marston R. Jacobson
David James
James Johnson (Ret.)
Magnus Karlsson
Joshua Kern
Mark Kien
Matthew King
Camden Kittredge
Michael Klapetzky
Scott Knappmiller
Edith Knehans
Richard Kohnert
Kraig Koski
Bret Lamprecht
Mark R. Lankton
Ryan Lewis
Michael McGrath
James Mack
Karen Mackison
Jack Marshall
Jennifer Methlie
David Meyer
Edward Mores
Brenton Motz
Aref Nammari
Gregory Newcomb
David Norman
Glen Otzinger
Heather Passe
Norman C. Perish
Dan Prichard
Brian Pyke
Thomas Reese
Dwight Reinhardt
Mary Rider
Carol Jean Rigelsky
Timothy Ruske
Joel Rutkowski
Durbin Seidel
William Sharp
Patti Sicken
Alan Sims
Paul Smith
Thomas Sparn
Stephen Steg
David Street
Trenton Taylor
Jon Theide
Edward M. Thiemann
William Thompson
Wayne Tighe
Katherine Trimble
Matt Triplett
Kathy Troxel
Scott A. Tucker
Gregory Ucker
Robert Valentine
William Vermeer
Douglas Vincent
Tracy Vincent
Stacy Wade
Pamela J. Wagner
James Wallace
James Westfall
Neil White
Derrick Williams
Heather Reed Withnell
Peter Withnell
Ray Wrigley
Ed Wullschleger
Alan Yehle
Kenny J.S. Yoo
Jason Young
Jennifer Young
Stephen Ziegler

Mission Ops/Data Systems

Michelle Bourgeois
Karen Beth Bryant
Michael Bryant
Jason M. Dahl
Alexandra DeWolfe
Michael Dorey
Donald Elsborg
Jack Faber
Sasha Forsyth
Ken Griest
Jason Gurgel

Amanda Heaton
Christian Jeppeson
Alain J. Jouchoux
David E. Judd
Michelle Kelley
Barry Knapp
Jay Kominek
Douglas M. Lindholm
Debra McCabe
Jerel Moffatt
Steve P. Monk
Steven Mueller
Michael Packard
Chris Pankratz
Russell Panneton
Randy Popescu
Bill Possel
Nicole Ramos
Jennifer Reiter
Randy Reukauf
Pat Ringrose
Stephen Roughton
Sean Ryan
Crystal Salcido
Karen Simmons
Patrick Smith
Gail Tate
Brian Templeman
Blake Vanier
Anne Wilson
Robert John Wilson
Donald Woodraska

Administration

Cristina Barcilon
Robert P. Biro
Barbara DiPasquale
Nina Davis
Michael Dillon
Zachary Eaton
Steve Ericksen
Brian Evans
Jason Feickert
Darcy Gallagher
Christin Gearhart
Judith (Dede) Gleason
Alex Green
Don Gritzmacher
Matthew Groeninger
Carol Guy
Barbara Hahn
Caroline Himes
Rose A. Hoag
Bonnie W. Hotard (Ret.)
Erick Jasiak
Gayle Jones
Mazn Kuldinow
Jason LaClair
Beth McGilvray
Andrew May
Greg Mecca
Debra Nastaj
John M. Padgett
Katherine Pilewskie
Lonnie Riesberg
Susan Sand
Gary Schut
Dona Smith
Doug Smith
John D. Smith
Lisa Sparhawk
Karen Springfield
Peter Wise

Science

Ann Alfaro (Ret.)
Laura Bloom
Ransom Christofferson
Kathleen Cirbo
Stephanie Renfrow Collins
Vincent Dols
Keith Drake
Nicole Duncan
Vanessa George
Cheryl Haugen
Neil Marks
Thomas Mason
George Millward
Emilia Reed
Mark Robbins
Marissa Rusinek
Erin Wood

2010 Retirees

Richard Arnold
Michael Callan
Jack Marshall

2010 Ph.D. Graduates

Coddington, Odele Malina: Atmospheric and Oceanic Sciences
May 7, 2010
"The Application of Airborne Shortwave Spectral Irradiance Measurements to Atmosphere and Surface Remote Sensing"
Thesis Advisor: Peter Pilewskie

Dasgupta, Samik: Physics
May 7, 2010
"Three-dimensional radiative transfer toward non-LE applications"
Thesis Advisor: Mihály Horányi

Farr, Nathan Lee: Physics
May 7, 2010
"Using a global magnetohydrodynamic model to understand the start of the substorm recovery phase in the magnetotail"
Thesis Advisor: Daniel N. Baker

Kindel, Bruce Carter, Atmospheric and Oceanic Sciences
December 17, 2010
"Cloud shortwave spectral radiative properties: Airborne hyperspectral measurements and modeling of irradiance"
Thesis Advisor: Peter Pilewskie

Knappmiller, Scott Robert: Physics
May 7, 2010
"Analysis of charged aerosols in the mesosphere during the Mass/Ecoma rocket campaign"
Thesis Advisor: Scott Robertson

McCollough, James Parker: Physics
May 7, 2010
"The Role of Geomagnetic Field Configuration in EMIC Wave Generation"
Thesis Advisor: Daniel N. Baker

Malaspina, David Martin: Physics
May 7, 2010
"Microphysics of the solar wind"
Thesis Advisor: Robert Ergun

Nair, Amal Ramachandran: Aerospace Engineering Sciences
Gravity wave effects on the occurrence and brightness of polar mesospheric clouds
Thesis Advisor: David Rusch

Presicci, Manny R.: Physics
December 17, 2010
"Relativistic electron flux prediction in the Earth's radiation belt via the Kalman Filter"
Thesis Advisor: Daniel N. Baker

Tierney, Lindsey Link, Geology
December 17, 2010
"Assessing Habitability of aqueous environments on Mars"
Thesis Advisor: Bruce Jakosky

Turner, Drew Lawson, Aerospace Engineering Sciences
December 17, 2010
"Earth's outer radiation belt electrons: Identifying sources, improving forecasts, and a new particle detector design"
Thesis Advisor: Xinlin Li

Graduate Students

Ian Aber
Trinity Allen
Swaminathan Ananthanarayan
Suzanne Benze
Andrew Berg
James Binney
Lauren Weber Blum
Mariel Desroche
Nichole Dudley
Justin Anthony Edrington
Weston Evans Edwards
Jason English
Tina (Tianyi) Fan
Jason Farmer
Nathan Farr
Jeffrey France
Sean Ethan Gale
Mark Gerber
Erin Griggs
Max Hampson
Dong Han
Porter Haskins
Rachel Hock
Monica R.T. Hoke
Rachel Humphrey
Timothy A. Ikenouye
William Ralph Irelan
Bruce Kindel
Andrew C. Kren
Eric Larson
Spencer LeBlanc
Christopher A. Leibs
Matthew Lenda
Jesse Lord
Jessica Lovering
Anna Luebke
Patrick McBride
Joseph McCabe
Jeremy O. McCaslin
James McCollough
Prasanna Madhusudhanan
Abhishek S. Mahendra-kumar
Emma Marcucci
John Martin
James Paul Mason
Colin A. Miller
Amal Ramachandran Nair
Muralikrishna Nallamothu
Vu Nguyen
Ethan D. Peck
Laura Bush Potter
Scott Potter
Manny Presicci
Anthony P. Rasca
Stuart Robbins
Yolanda Roberts
Miranda Rohlfing
Quintin Schiller
Donald Schmit
Nathan T. Sheiko
Anthony Shu
David Stokowski
Lin Su
Jamey Robert Szalay
Lindsey Link Tierney
Andrew Tomchek
Thien-Kim Trenbath
Weichao Tu
Drew Lawson Turner
Richard Urata
Corinne Vannatta
Christopher Van Poolen
Donald A. Warbritton
Lindsay R. Waters
Brandon Werdel
Donovan Wheeler
Eric Wolf
Yunqian Zhu
Jianfeng Xie

Undergraduate Students

Nicholas Aberle
Kyle Allaire
Christopher Anaya
Srikar Appana
Robyn Barber
Tierney Bamrick
Nicholas R. Beaty
Robin Beck
Jacob Beckner
Megan R. Benjamin
Gabriel Bershenyi
Michael F. Bonnici
David Matthew Borncamp
Joseph Christopher Burns
Spenser James Burrows
Rachel Bushinsky
Bryan Callahan
Dain Cilke
Max Clark-Rabinowitz
Dinesh Das Costlow
Martin Crespo
Kristina Davis
Samuel N. Denny
Elizabeth A. DeVito
Daniel Dexter
Melanie Dubin
David Dyer
David Eason
Justin Edrington
Mark Ehler
Colin Fitzgerald
Erin Griggs
Joshua Hecht
Aaron Michael Henry
Margaret Higginson
James Hogg
Rachel Hoover
Emily A. Howard
Rachel Humphrey
Noah Husek
Valentin Vadimovich Ivanitski
Brian Jacobsmeyer
Robert Jones
Erik Kahn
Joshua Tree Karpel
Brock Kowalchuk
Christopher J. LaPanse
Dane T. Larsen
Alexander Lieber
Huy Le
Samuel LeBlanc
Amber Lehr
Jenae Lestishen
Jeramy D. Lewis
Hey Joo (Diane) Lim
Michael V. LoNigro
Jonathan Loptien

Katelynn McCalmont
Sarah McNamara
William T. McNeill
Walter Mahfuz
Jonathan Steven Mandel
Lance Markovchick
Louise Martinez
Stephen Matey
Matthew Mirfakhra
David Morris
Quinn Mueller
Bryan Nagel
Kareem Nammari
James Neeley
Shawn Noland
Paige Northway
Dan Olsen
John R. O'Neal
Sean Ray Ortiz
Amin Pahlavaninejad
Bryce A. Peters
Cortland Pierpont
Marcus Ryan Piquette
Gang Kai Poh
Andrew Poppe
Kareesha Potter
Zachary Y. Pranger
Adam Prulhiere
Austin Harley Puckett
Marcus Reason
Matthes Reichenbach
Matthew Reisman
Katie Rice
Aadil Rizvi
Danielle Russell
Wayne Russell
Matthew Sassu
Christopher Sawyer
Michael Schmidt
Adam Shinn
Cody Smith
Terry Smith
Landon Spear
Eric Stevens
Colin Stewart
Robert Stimpfling
Jason Strong
Andrew Taggart
Jeffrey Taggart
Corey Teffetalor
Cassandra Thao
Alexander W. Thom
Evan Thomas
Shelbe Timothy
Barton Tofany
Allison Toltz
Levey Trac Tran
Wiechao Tu
Audrey M. Vertovec
Michael Wagner
Mariah Walton
Isaac R. Wanamaker
Weston Welge
Tyler Wingfield
Adam Wolf
Kevin William Wray

Faculty Research Interests

Laila Andersson

Kinetic processes in space plasmas such as double layers, electron phase space holes and Alfven waves (anywhere where measurement has or will be made). Atmospheric loss through ion outflow for objects such as Earth and Mars. Instrumentation for space plasma missions, for the moment to develop new techniques for future missions.
laila.andersson@lasp.colorado.edu (303) 492-1689

Linnea Avallone

Experimental and theoretical studies of tropospheric and stratospheric chemistry, particularly of halogens and related species. Analyzing measurements of chemical species to understand dynamical processes in the stratosphere and troposphere. Development of instrumentation for autonomous in situ measurements of trace species related to understanding the lifetimes of anthropogenic pollutants.
avallone@miranda.colorado.edu (303) 492-5913

Frances Bagenal

Magnetic fields and plasma environments of solar system objects–mainly Jupiter and the Sun, but more recently, other planets, comets and asteroids.
bagenal@colorado.edu (303) 492-2598

Daniel N. Baker

Research in space instrument design and calibration, space physics data analysis, and magnetospheric modeling. Study of plasma physical and energetic particle phenomena in the magnetospheres of Jupiter and Mercury, along with the plasma sheet and magnetopause boundary regions of the Earth's magnetosphere. Analysis of large data sets from spacecraft; involvement in missions to Earth's deep magnetotail and comets; the study of solar wind-magnetospheric energy coupling; theoretical modeling of magnetotail instabilities. Study of magnetosphere-atmosphere coupling; applying space plasma physics to study of astrophysical systems. Research to understand space weather and effects on human technology. Teaching of space physics and public policy, as well as public outreach to space technology community and general public.
daniel.baker@lasp.colorado.edu (303) 492-4509

Scot Elkington

Space physics theory and modeling, primarily understanding energetic particle dynamics in the inner magnetosphere in the context of radial diffu-

sion and adiabatic transport processes within the radiation belts. Also working on models of plasma sheet access of energetic particles to the inner magnetosphere through convection/substorm injection, development of physical space weather radiation belt models, and magnetohydrodynamic/particle simulations.
elkingto@lasp.colorado.edu (303) 735-0810

Francis G. Eparvier

Research interests include the aeronomy of the upper atmosphere, the effects of solar irradiance and particle flux variability on the upper atmosphere, and the sources of that solar variability. Approaches include rocket and satellite measurements of the solar outputs and of the atmosphere, and data analysis and theoretical modeling. Currently Co-Investigator on the Thermosphere- Ionosphere-Mesosphere Energetics and Dynamics (TIMED) satellite Solar EUV Experiment (SEE).
eparvier@colorado.edu, (303) 492-4546, http://stripe.colorado.edu/~eparvier

Larry W. Esposito

Observational and theoretical studies of planetary atmospheres and rings; chemistry and dynamics of the Venus clouds; waves in Saturn's rings; numerical methods for radiation transfer.
espo@lasp.colorado.edu (303) 492-7325

Robert E. Ergun

Robert Ergun specializes in space and astrophysical plasmas with applications to Earth's and Jupiter's magnetosphere, Mars' ionosphere, and the solar wind. He has developed or is currently developing space-flight electric field instruments for several NASA missions. Theoretical programs focus on small-scale plasma phenomena at Earth, Jupiter, Mars, and the solar wind, and include simulation and analytical modeling of magnetic reconnection, electron phase-space holes, parallel electric fields carried by double layers, and solar wind turbulence.
Bob.ergun@lasp.colorado.edu (303-492-1560)

Jerald Harder

Measurement and interpretation of solar spectral irradiance; Development of space-borne prism spectrometers.
jerry.harder@lasp.colorado.edu (303) 492-1891

Mihály Horányi

Dusty space and laboratory plasmas. Electrodynamic processes and their role in the origin and evolution of the solar system. Comets, planetary rings, plasma surface interactions at moons and asteroids. Aerosol charging, in situ and remote observations of dust.
mihaly.horanyi@lasp.colorado.edu (303) 492-6903

Brian M. Hynek

Geological processes that have affected terrestrial planets. Studies of water on Mars; geochemical history of Mars; planetary geologic mapping; studying impact craters to better address the history of planets.
brian.hynek@lasp.colorado.edu 303-735-4312

Bruce M. Jakosky

Teaching and research activities focus on understanding the nature of planetary surfaces and atmospheres and the possibility for the existence of life in the universe. Specific activities include teaching undergraduate and graduate courses, training graduate students, research and grant activity pertaining to planetary science and exobiology, leading the campus effort in astrobiology, exploring the nature of the interactions between science and society, and outreach to the public.
bruce.jakosky@lasp.colorado.edu (303) 492-8004

Greg Kopp

Development and characterization of the SORCE, Glory, and NPOESS Total Irradiance Monitors for solar irradiance measurements. Solar physics. Electro-optical instrumentation and electrical substitution radiometry.
Greg.Kopp@lasp.colorado.edu, 303-735-0934

Xinlin Li

Space physics, data analysis and modeling. Especially interested in understanding the dynamics of relativistic electrons in the magnetosphere: the source, loss, and transportation of these MeV electrons; also interested in charged particle injections into inner magnetosphere during magnetic storms and substorms, and magnetosphere-atmosphere coupling due to energetic particle precipitations.
lix@kotron.colorado.edu (303) 492-3514

William E. McClintock

Observational Astrophysics - Ultraviolet observations of the outer atmospheres of cool stars

and the very local (d<20pc) interstellar medium. Ultraviolet Observations of Planetary Atmospheres. Development of state-of-the-art instrumentation for high resolution spectroscopy for the 900-2500/ wavelength range.
bill.mcclintock@lasp.colorado.edu (303) 492-8407

Michael Mellon

The history of water on Mars, the martian permafrost, surface-atmosphere interactions and the martian climate. Periglacial geology and geophysics on Earth and Mars. Use of ice-related geomorphic features as an indicating of the distribution of subsurface ice. Antarctic analogs to martian geomorphology. Laboratory research in transport processes in frozen soils, including gas diffusion and solute migration and the effects of water vapor, ice, and adsorbate on transport physics. Remote sensing and thermophysical properties of planetary regoliths, with specific emphasis on martian surface material. Planetary surface temperature behavior and geothermal heat flow.
michael.mellon@lasp.colorado.edu (303) 492-1711

Michael Mills

Research has focused on stratospheric sulfate aerosol. The current research tool is a 2D microphysical model of the troposphere, stratosphere, and mesosphere. A primary goal has been to assess the sources of the nonvolcanic stratospheric sulfate layer, and understand anthropogenic contributions. Because of the role of aerosol in stratospheric chemistry and radiative balance, this knowledge of its sources is critical to understanding global change. Recent efforts have attempted to understand discrepancies between observed and calculated aerosol mass at the top of the layer. Other work has examined the causes of observed particle nucleation in polar winter, the implications for aerosol of recently measured photolysis rates for H2SO4 and SO3, and volcanic aerosol as a potential source for polar mesospheric clouds.
mills@colorado.edu (303) 492-7767

Cora E. Randall

Primary interests include atmospheric chemistry and dynamics, mainly of the stratosphere, and secondarily of the mesosphere and troposphere. Work is experimental in nature, relying on data from remote sensing satellites. The emphasis is on ozone, NO2, and aerosol data from the Polar Ozone and Aerosol Measurement (POAM) instrument as well as from the Stratosphere Aerosol and Gas Experiment (SAGE). Measurements from instruments on the Upper Atmosphere Research Satellite (UARS) and the Solar Mesosphere Explorer (SME) are also used. Other interests include the spectroscopy of comets and laboratory polarization measurements.
cora.randall@lasp.colorado.edu (303) 492-8208

Mark Rast

Astrophysical fluid dynamics with emphasis on convective dynamics and scale selection, turbulence, the excitation of the solar p-modes, and the origin of solar/stellar irradiance variations. In addition to theoretical and computational work, efforts include operation of the Precision Solar Photometric Telescope (PSPT) at Mauna Loa Solar Observatory (MLSO) that obtains full disk images of the Sun at five wavelengths with 0.1% photometric precision.
mark.rast@lasp.colorado.edu 303-492-5348

David W. Rusch

The general fields of spectroscopy and aeronomy, emphasizing the measurements of minor constituents and aerosols in planetary atmospheres such as nitric oxide and ozone and the physical and chemical phenomena which determine their densities and temporal variations. Research in the atmospheric sciences including stratospheric, mesospheric, and thermospheric data analysis and modeling. Application of the principles of molecular and atomic spectroscopy in the measurement of ultraviolet, visible, and near-infrared emission and absorption features to obtain understanding of atmospheric phenomena. Current research involves the determination of atmospheric processes affecting ozone and the reevaluation of ozone trends from long-term satellite measurements.
david.rusch@lasp.colorado.edu (303) 492-8627

Nicholas M. Schneider

The physics of planetary magnetospheres, particularly the interactions between planetary plasmas and the satellites of the outer planets. Extensive groundbased observations of the Jupiter/Io system, especially imaging and spectroscopy of the Io atmosphere and plasma torus. Program has been expanded to include Hubble Space Telescope observations. Designing and building of a spacecraft to study the Jupiter/Io system.
nick.schneider@lasp.colorado.edu (303) 492-7672

http://ganesh.colorado.edu/nick

Martin Snow

Primary research interests include ultraviolet spectroscopy of stars and the sun and the interaction of comets with the solar wind. The SOLSTICE instruments on UARS and SORCE provide a wealth of information about solar activity in the 115-300 nm range on a variety of timescales, ranging from minutes (solar flares) to decades (solar cycle). Understanding the variation in the solar output will lead to understanding its influence on the Earth. The interaction of comets with the solar wind is best studied using wide-field photography. Both amateur and professional astronomers contribute to this effort, and one research activity has been to help coordinate the interaction of the two groups.
marty.snow@lasp.colorado.edu 303-735-2143

Zoltan Sternovsky

Instrument scientist and physicist; research is focused on detection and characterization of cosmic dust. Development of flight instruments for space missions and sounding rocket campaigns.
Zoltan.sternovsky@lasp.colorado.edu 303-735-6272

A. Ian F. Stewart

The investigation by ultraviolet emissions of the aeronomy of planetary and satellite atmospheres, cometary comae, and Io's plasma torus.
stewart@viralf.colorado.edu (303) 492-4630

Glen R. Stewart

Origin and evolution of the solar system, with an emphasis on modeling the solid-body accretion of the terrestrial planets and the solid cores of the giant planets. Accretion of the Moon after a giant impact on the Earth. Modeling of satellite wakes and spiral density waves in planetary rings. Nonlinear dynamics of the three-body problem as applied to problems in solar system dynamics.
glen.stewart@lasp.colorado.edu (303) 492-3737

Gary E. Thomas

Research concerning the middle atmosphere of Earth, in particular the mesosphere (50-100 km). Of interest are noctilucent clouds which occur in the high-latitude summertime mesopause region, around 83 km. These clouds were observed for five years by a CU LASP ultraviolet experiment onboard the LASP SME satellite, and more recently by instruments onboard the POAM II and UARS (Upper Atmosphere Research Satellite) spacecraft. In the last decade, interest involves global change in this region, possibly caused by anthropogenic emissions and by climate changes in the troposphere. Critical parameters studied are solar UV flux, water vapor, temperature and ozone which are being monitored by instruments onboard the UARS.
gary.thomas@lasp.colorado.edu (303) 492-7022
http://lasp.colorado.edu/noctilucent_clouds

Owen B. Toon

Theoretical studies of stratospheric aerosols; investigations of volcanic aerosols and studies of polar stratospheric clouds; theoretical studies of tropospheric clouds, aerosols and radiative transfer; experimental investigations of stratospheric and tropospheric phenomena; theoretical investigations of planetary atmospheres.
btoon@lasp.colorado.edu (303) 492-1534

Thomas N. Woods

Observational studies of the solar ultraviolet (UV) radiation, its variability, and its interaction with Earth's atmosphere. Principal investigator of NASA suborbital program to study the solar irradiance and thermospheric airglow. Principal investigator of the Solar EUV Experiment (SEE) on the TIMED mission. Co-investigator of the Solar Stellar Irradiance Comparison (SOLSTICE) experiment currently making solar UV irradiance measurements on the Upper Atmosphere Research Satellite (UARS) and planned for the Earth Observing System (EOS) missions.
tom.woods@lasp.colorado.edu (303) 492-4224

FACULTY ACTIVITIES

Advanced Computational Capabilities for Exploration in Heliophysical Science (ACCEHS)
Randall, Cora (Member, local organizing committee)

Air Force Technical Applications Center (AFTAC)
Baker, Daniel (Chair, Satellite Review Panel)

American Association for the Advancement of Science (AAAS)
Baker, Daniel (Member (Fellow))

American Geophysical Union (AGU)
Bagenal, Frances (Macelwane Medal Committee)
Bagenal, Frances (Planetary Section Fellows Committee)
Bagenal, Frances (Scientific Organizing Committee for AGU Chapman Conference on Auroral Processes)
Baker, Daniel (Convenor, Special Sessions at AGU Annual meeting)
Baker, Daniel (Member, Space Station Advisory Panel)
Baker, Daniel (Member (Fellow))
Esposito, Larry (Session Organizer, 2010 Fall AGU meeting: Planetary Rings)
Gosling, John (Member)
Horanyi, Mihaly (Member)
Hynek, Brian (Member)
Jakosky, Bruce (President, Planetary Sciences Section)
Kopp, Greg (Chaired 2 sessions at 2010 Fall AGU meeting)
Peterson, William K. (Member)
Randall, Cora (Session chair and convenor: Heliosphere atmosphere coupling and climate, Fall 2010 AGU meeting)
Richard, Erik (Co-Convenor of Special Session on Solar Spectral Irradiance Measurement, Fall 2010 AGU meeting)
Snow, Marty (Convenor of Solar Spectral Irradiance session)
Snow, Marty (Chair, AGU poster session on SSI)
Tien, Feng (Convenor Special session "Evolution of planetary atmospheres", Fall AGU meeting)
Toon, Owen B. (Member, AGU Fellows Selection Committee)
Woods, Thomas N. (Member)

American Meteorological Society (AMS)
Avallone, Linnea (Member)
King, M.D. (Member, Atmospheric Research Awards Committee)

Astronomical Society of the Pacific (ASP)
Schneider, Nicholas (Member)

Boulder Solar Alliance
Daniel Baker (Member and Co-Founder)
Kopp, Greg (Member and Secretary)

Canadian Network for Space Research
Baker, Daniel (Member, External Review Committee)

Cassini Public Relations Working Group
Esposito, L.W. (Chair)

Center for Limb Atmospheric Sounding (CLAS)
Baker, Daniel (Director)

Colorado Space Coalition
Himes, Caroline
Possel, William

Committee on Space Research (COSPAR)
Baker, Daniel (Member, Commission D)
Esposito, Larry (Main Scientific Organizer, Planetary Atmospheres)
Randall, Cora (Member, Organizing Committee, COSPAR meeting Bremen, Germany, July 2010)

Editor or Editorial Board Member
Baker, Daniel (Journal of Atmospheric and Solar Terrestrial Physics, Space Weather)
Esposito, L.W. (Editor, Icarus: "Cassini at Saturn")
Horanyi, Mihaly (Guest editor, IEEE transactions for Plasma Science issue "Physics of Dusty Plasmas")
Hynek, Brian (Editor, "Encyclopedia of Planetary Landforms", Spring Press)
Jakosky, Bruce (Editorial Board, Astrobiology and Planetary Exploration Newsletter)
Li, Xinlin (Associate Editor for J. Geophys. Phys, J. Geophys. Res., and Space Physics)
Li, Xinlin (Editorial Committee of Journal of Chinese Space Sciences (2008-2010)).
Peterson, W.K. (Editor, Geophysical Research Letters)
Sternovsky, Zoltan (Guest Editor, Special Issue on Dusty Plasmas for IEEE Transactions)

Electronic Geophysical Year (EGY)
Baker, Daniel (Chair, eGY Steering Committee)

European Space Agency (ESA)
Baker, Daniel (Member, CLUSTER Science Working Team)

European Fleet for Airborne Research (EUFAR)
Pilewskie, Peter (Member)

Geological Society of America (Planetary Geology Division)
Hynek, Brian (Member)

High Altitude Observatory (HAO)
Rast, Mark (Member, Instrumentation Advisory Committee)
Rast, Mark (Participant, Strategic planning retreat)

International Academy of Astronautics (IAA)
Baker, Daniel (Member)
Baker, Daniel (Chair, Commission 1)

International Association of Geomagnetism and Aeronomy (IAGA)
Baker, Daniel (Member)
Baker, Daniel (Member, Executive Committee)
Baker, Daniel (Chair, IGY+50 Task Force)

International Association of Meteorology and Atmospheric Sciences (IAMAS)
Pilewskie, Peter (Member)

International Space Science Institute (ISSI)
Baker, Daniel (Member, Working Group)
Snow, Marty (Member, Working Group)

International Union of Geodesy and Geophysics (IUGG)
Baker, Daniel (Member)
Randall, Cora (Co-convenor IUGG 2011 symposium on the middle atmosphere; to be held July 2011)

International Workshop on Solar-Terrestrial Physics
Baker, Daniel (Co-Convenor)

Laboratory for Atmospheric and Space Physics (LASP)
Baker, Daniel (Director)

Associate Director for Science
Jakosky, Bruce

Associate Director for Technical Divisions
Woods, Thomas

Business Committee
Baker, Dan (Chair)
Himes, Caroline
Jakosky, Bruce
McGrath, Mike
Possel, Bill
Woods, Tom

Computer Support Advisory Committee (CSAC)
Kopp, Greg, Chair (Solar, LSTB, Mac)
Bardeen, Charles (student representative, Duane, PC)
Batiste, Susan (Eng, LSTB, Mac)
Delamere, Peter (Planetary, Duane, Mac)
Elkington, Scot (Space Phys, LSTB, PC)
Eriksson, Stefan (Space Phys.)
Harvey, Lynn (Atmospheric, Duane)
Himes, Caroline (Admin. PC)
Jones, Andrew
Lewis, Ryan (Eng., LSTB, PC)
Pankratz, Chris (Ops & Data Proc, LSTB, Mac)
Rast, Mark (Solar, LSTB, clusters)
Schut, Gary (IT)

Education and Public Outreach Advisory Committee
Eparvier, Frank (Chair)
Avallone, Linnea
Bagenal, Fran
Himes, Caroline
Li, Xinlin
Randall, Cora
Reed, Heather
Stewart, Glen
Stewart, Ian

Executive Committee
Baker, Daniel (Chair)
Delamere, Peter
Gosling, John
Himes, Caroline
Jakosky, Bruce
Jones, Andrew
Kopp, Greg
McClintock, Bill
McGrath, Mike
Pilewskie, Peter
Possel, Bill
Randall, Cora
Stewart, Ian
Toon, Owen B.

Jim Westfall
Tom Woods
Haugen, Cheryl (ex-comm support)

Friends of Magnetospheres Seminar Series
Erikssen, Stefan (Seminar organizer)

LASP Seminar Series Committee
Collette, Andrew (Co-chair)
Sternovsky, Zoltan (Co-chair)

Library Committee
Snow, Marty (Chair)
Eparvier, Frank
George, Vanessa
Horanyi, Mihaly
Knapp, Barry
Simmons, Karen
Wullschleger, Ed

Planetary Journal Club
Albers, Nicole (Organizer)

Planetary Program Webmaster
Hynek, Brian

Primary Unit Evaluation Committee
Avallone, Linnea (Member)

Proposal Development Committee (PDC)
Woods, Tom (Chair)
Sparn, Tom (Co-chair)
Anfinson, Mike
Avallone, Linnea
Baker, Dan
Drake, Ginger
Ergun, Bob
George, Vanessa (PDC support0
Himes, Caroline
Jakosky, Bruce
Kopp, Greg
McClintock, Bill
McGilvray, Beth
McGrath, Mike
Pankratz, Chris
Possel, Bill
Reed, Heather
Richard, Erik
Ryan, Sean
Sparhawk, Lisa
Sternovsky, Zoltan
Tate, Gail
Westfall, Jim

Sponsored Visitor Committee
Harder, Jerry (Chair)
Elkington, Scot
McClintock, Bill
Rast, Mark
Rusch, Dave

Lunar Dust, Atmosphere, and Plasma (LDAP)
Horanyi, Mihaly (Organizer)

Magnetosphere of the Outer Planets
Bagenal, Frances (Scientific Organizing Committee)

Mercury Surface, Space Environment, Geochemistry, and Ranging Mission (MESSENGER)
Baker, Daniel (Member, Science Working Team)

National Academies
King, M.D. (Member, Climate Research Committee)

National Academy of Engineering (NAE)
Baker, Daniel (Member)

National Academy of Sciences (NAS)
Baker, Daniel (Member)
Baker, Daniel (Chair, NAS Space Studies Board Steering Committee Decadal Survey)
Baker, Daniel (Member, Space Studies Board Executive Committee)
Baker, Daniel (Chair, Organizing Committee (Space Weather Economic Impacts Workshop)
Baker, Daniel (Chair, NAS/NCR Committee on Solar and Space Physics (CSSP)
Esposito, Larry (Member, Committee on Cost Growth in Space and Earth Sciences)

National Aeronautics and Space Administration (NASA)
Albers, Nicole (Member, Science Review panel for ROSES2010 Planetary Geology and Geophysics Program)
Bagenal, Frances
Baker, Daniel (Advisor, Sun-Earth Connections Advisory Committee)
Baker, Daniel (Member, Magnetospheric Multiscale Mission, Science Team)
Jakosky, Bruce (Member, Mars Exploration Program Analysis Group (MEPAG))
Jakosky, Bruce (Member, Mars Architecture Review Team)
Kopp, Greg (Member, Science Definition Team for CLARREO (Climate Absolute Radiance and Refractivity Observatory) Decadal Survey mission)
Pilewskie, Peter (Member, Science Definition Team)
Pilewskie, Peter (Member, Decadal Survey Mission)
Randall, Cora (Member, Heliophysics Data and Computing Working Group)
Randall, Cora (Member, Living With a Star Targeted Research and Technology steering Committee)
Toon, Owen B. (Organizer, planning committee for NASA Field Program SEAC4RS on effect of Asian air pollution on global climate)

National Oceanic and Atmospheric Administration (NOAA)
Baker, Daniel (Member, External Strategic Planning Group)

National Science Foundation (NSF)
Baker, Daniel (Member, Geosciences Advisory Committee)
Baker, Daniel (Chair, Committee of Visitors – Geospace)

National Space Weather Program Assessment (NSWPA)
Baker, Daniel (Member, Joint Action Group (JAG))

Optical Society of America
Kopp, Greg (Director at Large for Rocky Mountain section)

Physics of Dusty Plasmas International Meeting
Horanyi, Mihaly (Program Committee Chair)

Planetary Society
Jakosky, Bruce (Member, Advisory Board)

Radiation Belt Storm Probe Science Team
Baker, Daniel (Member)

Reviewer of Manuscripts, Proposals, or Creative Work
Albers, Nicole (Reviewer of proposals for NASA)
Albers, Nicole (Reviewer of scientific paper submitted to Nonlinear processes in Geophysics)
Andersson, Laila (Reviewer of manuscripts for J. Geophys. Res., Geophys. Res. Lett., Physics of Plasmas, Earth, Planets and Space)
Avallone, Linnea (Reviewer of proposals for NASA, NSF, Rutherford Fellowship; reviewer of manuscript for Atmospheric Measurement Technologies)
Bagenal, Frances (Reviewer of proposals and manuscripts)
Baker, Daniel (Geophys. Res. Letters, J. Atmospheric and Terrestrial Physics, J. Geophys. Res., Planetary Space Science, NASA and NSF Proposals)
Coddington, Odelle (Reviewer of manuscripts for Atmospheric Measurement Techniques; J. of Marine Science, and J. Geophys. Res.)
Ergun, Robert (Reviewer of manuscripts for J. Geophys. Res., Geophys. Res. Lett., and Physics of Plasmas)
Erikssen, Stefan (Reviewer of manuscripts for J. Geophys. Res., Annales Geophysicae, and Astronomy and Astrophysics)
Esposito, Larry (Reviewer of manuscripts for Science, Icarus, Geophys. Res. Lett.)
Esposito, Larry (Reviewer of proposals for NASA and NSF)
Fontenla, John (Reviewer of proposals for NASA)
Fontenla, John (Reviewer of manuscripts for Astronomy and Astrophysics, Astrophysical J. Lett., and Solar Physics)
Gosling, John (Reviewer of proposals for NSF, reviewer of manuscripts for J. Geophys. Res., Astrophys., Space Science Rev., and Physics of Plasmas)
Harder, J.W. (Reviewer of manuscripts for Advances in Space Research, Geophys. Res. Lett., and J. Geophys. Res.)
Harder, J.W. (Reviewer of proposals for National Science Foundation, Living With a Star, and Innovations Small Grant Program (EISG, California Energy Commission)
Harvey, V.L. (Reviewer of manuscripts for Geophys. Res. Lett., Atmospheric Sciences, J. Atmos. Chem. and Physics, J. Atmos and Solar-Terrestrial Physics, Quarterly J. of Royal Meteor. Soc., and Climatic Change)
Holsclaw, G.M. (Reviewer of manuscript for Planetary and Space Science)
Horanyi, Mihaly (Reviewer of manuscripts for J. of Geophys. Res.-Space, Physics of Plasmas, Nature, Icarus)
Horanyi, Mihaly (Reviewer of proposals for NASA, NSF, and DOE)
Hynek, Brian (Reviewer of manuscripts for Nature, Nature Geoscience, Geophys. Res. Lett., Icarus, J. Geophys. Res., and Planetary and Space Science)
Hynek, Brian (Reviewer of proposals for NASA)

Jakosky, Bruce (Reviewer of proposals for NASA)
Kalnajs, Lars (Reviewer of proposal for Natural Environment Research Council (UK))
Kalnajs, Lars (Reviewer of manuscript for Atmospheric Chemistry and Physics)
King, Michael (Reviewer of manuscripts for Atmospheric Measurement Techniques and J. Geophys. Res.)
Kopp, Greg (Reviewer of evaluations for NASA and NRL)
Li, Xinlin (Reviewer of proposals for NASA and NSF)
Li, Xinlin (Reviewer of manuscripts for J. Geophys. Res., Geophys. Res. Lett., J. of Space Weather, J. Atmos. and Solar-Terrestrial Physics, Science of China, and Annales Geophysicae)
Malaspina, David (Reviewer of manuscripts for Geophys. Res. Lett., J. Geophys. Res., and Space Physics)
Rast, Mark (Reviewer of proposals for NSF)
Peterson, W.K. (Reviewer of proposals for NSF)
Pilewskie, Peter (Reviewer of proposals for NASA)
Pilewskie, Peter (Reviewer of manuscripts for Geophys. Res. Letters and J. of Geophysical Research
Rast, Mark (Reviewer of manuscripts for Solar Physics, Astrophysical Journal, Astronomy and Astrophysics, European Physical Journal B, and Cambridge University Press)
Schmidt, K.S. (Reviewer of manuscripts for Atmospheric Research, J. Geophys. Res., Atmospheric Chem. and Physics, Atmospheric Measurement Techniques, and Geophys. Res. Letters)
Schneider, Nicholas (Reviewer of proposals for NASA and NSF)
Snow, Marty (Reviewer of manuscripts for J. of Atmospheric and Terrestrial Physics and EOS Forum)
Sternovsky, Zoltan (Reviewer of manuscripts for J. Geophys. Res., and IEEE Trans. Plasma Sci)
Sternovsky, Zoltan (Reviewer of proposals for NASA and Grant Agency of the Czech Republic)
Stewart, Glen (Reviewer of proposals for NASA)
Tien, Feng (Reviewer of manuscripts for Icarus, Planetary and Space Sciences, Astronomy and Astrophysics)
Tien, Feng (Reviewer of proposals for NASA)
Wang, Xu (Reviewer of proposals for NASA)
Wang, Xu (Reviewer of manuscripts for Planetary and Space Science and J. Geophys. Res.)

Solar Anomalous magnetospheric Particle Explorer (SAMPEX)
Baker, Daniel (Member, SAMPEX Science Working Team

Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)
Baker, Daniel (Member, Steering Committee)

Solar Radiation and Climate Experiment (SORCE)
Pilewskie, Peter (Member, 2010 Meeting Organizing Committee)

Sigma Xi
Baker, Daniel (Member)

University of Colorado

Aerospace Engineering Department (ASEN)
Baker, Daniel (Member, External Advisory Board)
Li, Xinlin (Member, Undergraduate Teaching Curriculum Committee)
Sternovsky, Zoltan (Member, Undergraduate Committee)

Astrophysics and Planetary Sciences (APS)
Bagenal, Frances (Associate Chair, Spring 2010)
Bagenal, Frances (Chair of Departmental Course Assignments – Spring 2010)
Bagenal, Frances (Member, Program Review Committee)

Atmospheric and Oceanic Sciences Department (ATOC)
Harvey, V.L. (Organizer of seminar series)

Pilewskie, Peter (Chair, Laboratory and facilities Committee)
Pilewskie, Peter (Member, Course Fees Committee)
Pilewskie, Peter (Co-Chair, ATOC PRP Committee)

Boulder Faculty Assembly
Eparvier, Francis (Member at Large)
Harvey, Lynn (Member at Large)

Budget and Planning Committee
Himes, Caroline, (Member)

Chancellor's Federal Relations Advisory Committee (FRAC)
Baker, Daniel (Member)

Faculty Assembly Committee on Women
Avallone, Linnea (Member)

Graduate School
Baker, Daniel (Member, Institute Directors Group)

Joint Faculty (Aerospace)
Li, Xinlin
Sternovsky, Zoltan

Joint Faculty (Astrophysics and Planetary Sciences Department (APS)
Bagenal, Frances
Baker, Daniel
Ergun, Robert
Esposito, Larry
Rast, Mark
Schneider, Nicholas

Joint Faculty (Atmospheric and Oceanic Sciences Department (ATOC)
Toon, Owen B. (Chair)
Avallone, Linnea
Pilewskie, Peter
Randall, Cora E.

Joint Faculty (Geology Department)
Hynek, Brian (Member, Executive Committee)
Jakosky, Bruce (Member)

Joint Faculty (Physics Department)
Horanyi, Mihaly

Member of a Dissertation/Thesis Committee (Other than Principal Advisor)
Avallone, Linnea
Bagenal, Frances
Baker, Daniel
Gosling, John
Horanyi, Mihaly
Hynek, Brian
Jakosky, Bruce

Li, Xinlin
Newman, David L.
Pilewskie, Peter
Randall, Cora
Rast, Mark
Schneider, Nicholas
Sternovsky, Zoltan
Stewart, Glen
Toon, Owen B.

Member of a Masters or Ph.D. Qualifying Examination Committee
Avallone, Linnea
Bagenal, Frances
Hynek, Brian
Li, Xinlin
Pilewskie, Peter
Randall, Cora
Rast, Mark
Schneider, Nicholas
Sternovsky, Zoltan

New Course Development
Avallone, Linnea
Rast, Mark
Schneider, Nicholas
Toon, Owen B.

Physics Department
Horanyi, Mihaly (Undergraduate Advisor)
Horanyi, Mihaly (Evaluations Committee)
Horanyi, Mihaly (Chair, CCLDAS Faculty Search Committee)

Planetary Program Webmaster
Hynek, Brian

Principal Dissertation/Thesis Advisor
Avallone, Linnea
Bagenal, Frances
Baker, Daniel
Ergun, Robert
Esposito, Larry
Horanyi, Mihaly
Hynek, Brian
Jakosky, Bruce
Li, Xinlin
Pilewskie, Peter
Randall, Cora
Rast, Mark
Schneider, Nicholas
Sternovsky, Zoltan
Toon, Owen B.

Student Advising
Avallone, Linnea
Bagenal, Frances
Hynek, Brian
Randall, Cora
Rast, Mark
Schneider, Nicholas
Sternovsky, Zoltan

Supervisor of Postdoctoral Researchers
Avallone, Linnea
Bagenal, Frances
Jakosky, Bruce
Toon, Owen B.

Vice Chancellor's Innovative Seed Grant Program
Hynek, Brian (Member, Review Panel)

Vice Chancellor's Research Cabinet
Baker, Daniel (Member)

University Center for Atmospheric Research (UCAR)
Randall, Cora (Member, Steering Committee for NASA Living with a Star Heliosphysics post-doc program)

University of Northern Iowa
Hynek, Brian (Member, External Advisory Board; Dept. of Earth Sciences)

University Space Research Association (USRA)
Baker, Daniel (Member Council of Institutes)

Workshop on Radiation Belts
Baker, Daniel (Organizing Committee)

Courses Taught by LASP Faculty

Name	Description
Linnea Avallone	An Interdisciplinary Look at Environmental Problems
Daniel Baker	Space Science – Policy and Practice
Frances Bagenal	Introductory Astronomy
Larry Esposito	Planets, Moons and Rings
Mihaly Horanyi	Graduate Plasma
Mihaly Horanyi	Introductory Physics
Mihaly Horanyi	Graduate Planetary Seminar
Brian Hynek	Extraterrestrial Life
Xinlin Li	Space Hardware
Xinlin Li	Senior Design
Pilewskie, Peter	Atmospheric Radiation Seminar

Pilewskie, Peter	Radiative Processes in Planetary Atmospheres
Pilewskie, Peter	Remote Sensing
Randall, Cora	Policy implications of climate controversies
Randall, Cora	Middle atmosphere coupling and climate seminar
Randall, Cora	Introduction to remote sensing and radiative transfer
Rast, Mark	Independent Study, Research Opportunity for Undergraduates
Rast, Mark	Graduate Seminar, Corona and Solar Wind
Rast, Mark	Introduction to Fluid Dynamics
Schneider, Nicholas	Planets and their Atmospheres
Sternovsky, Zoltan	Aerospace Electronics and Communications
Stewart, Glen	General Astronomy: The Solar System
Stewart, Glen	Planets and Their Atmospheres
Toon, Owen B.	Clouds and Aerosols
Toon, Owen B.	Planetary Atmospheres

FACULTY HONORS/AWARDS

Bagenal, Frances, Boulder Faculty Assembly Excellence in Research Award, 2010.
Baker, Daniel N., Distinguished Research Lecturer Award, Boulder Faculty Assembly, 2010.
Baker, Daniel N., James A. Van Allen Space Environments Award, 2010.
Baker, Daniel N., National Geophysical Research Institute Citation and Award, 2010.
Baker, Daniel N., Elected to National Academy of Engineering 2010.
Holsclaw, G.M., NASA Group Achievement award to the Cassini IVIS team, January 2010.
Holsclaw, G.M., NASA Group Achievement award to the MESSENGER mission team, May 2010.
Randall, Cora E., Selected as a 2010-2011 Excellence in Leadership Fellow, of the University Development Institute.
Schneider, Nicholas, Teaching Excellence Award, Boulder Faculty Assembly, 2010.
Toon, Owen B., University of Colorado Robert L. Stearns Award

Colloquia and Informal Talks
Spring 2010

Albers, Nicole, CU/LASP, The F Ring: One of Saturn's most puzzling rings
Asphaug, Erik, UC/Santa Cruz, Giant impacts large and small
Ayres, Tom, CU/CASA, The solar oxygen problem: Crisis, catastrophe, or opportunity?
Baker, Daniel, CU/LASP, MESSENGER to Mercury: Exploring the Sun's nearest neighbor (CU Distinguished Research Lecturer)
Birner, Thomas, CSU, Structural characteristics of the Brewer-Dobson Circulation
Borucki, William, PI/Kepler Mission, Kepler: Progress in the detection of Earth-size planes in the habitable zone of solar-like stars

Brain, David, UC/Berkeley, The Ins and Outs of Martian Mini-Magnetospheres

Delamere, Peter, CU/LASP, The Kelvin-Helmholtz instability in Saturn's outer magnetosphere

Dois, Vincent, CU/LASP, Constraints on Io's neutral atmosphere from six Galileo flybys: A chemical modeling of the Io-Torus interaction

Elkington, Scot, CU/LASP, Sources or losses, The cause and effect of ultra low-frequency magnetospheric pulsations in the Van Allen radiation belts

Elkington, Scot, CU/LASP, Energetic particles trapped in space: Understanding Earth's Van Allen Radiation Belts

Emery, Barbara, HAO, Auroral inputs over 30 years, in Solar Minimum, and in the TIEGCM

Eriksson, Stefan, CU/LASP, First Hall field observation at a solar wind reconnection exhaust

Farr, Nathan, CU/LASP, Using a Global Magnetohydrodynamic Model to determine the start of the substorm recovery phase

Fleshman, Bobby, CU/LASP, Modeling Saturn's water-based Enceladus Torus

Fraser, Brian, Univ. of Newcastle, Australia, EMIC waves, geomagnetic storms and plasma plumes

Gannon, Jennifer, USGS, Adiabatic scaling of GOES electrons

Gosling, John, CU/LASP, Magnetic reconnection in the solar wind: A retrospective

Green, James, CU/APS, New results from the Cosmic Origins Spectrograph on Hubble

Hodges, Richard, CU/LASP, The lunar atmosphere: Some ado about almost nothing

Hynek, Brian, CU/LASP, The scientific utility of meteorites and the Antarctic Search for Meteorites Program

Kempf, Sascha, Max Planck Institute, Liquid water on Saturn's Ice Moon Enceladus

Kempf, Sascha, Max Planck Institute, Characteristics of impact plasmas and their implications for the design of a dust mass spectrometer

Knipp, Delores, HAO/NCAR, Enhanced thermospheric density: The roles of East-West and northward interplanetary magnetic field

Konopka, Uwe, Max Planck Inst., Complex plasmas: From the laboratory to experiments on the International Space Station

Kopp, Gregory, CU/LASP, Solar incoming and outgoing radiometry for climate studies

Li, Xinlin, CU/LASP, CU's CubeSat mission: Solar energetic particles and outer radiation belt electrons

Laundal, Karl, University of Bergen, Seasonal and IMF dependent nightside polar cap contraction during substorm expansion phase

Lu, Gang, HAO, Dual reversed convection and magnetospheric reconfiguration under strongly northward IMF

McClintock, William, CU/LASP, Exploring Mercury's surface-bound exosphere with the Mercury atmospheric and surface composition spectrometer: Results from the three MESSENGER flybys

McCoy, Robert, Office of Naval Research, Kirtland AFB, Naval Space Science and Technology Initiatives

Moffatt, Jerel, CU/LASP, SPICE

Morishima, Ryuji, CU/LASP, Recent progress in Type 1 migration theory

Poppe, Andrew, CU/LASP, Plasma physics of the lunar surface

Reinard, Alysha, NOAA/SWPC, Using helioseismology to improve space weather

Rodriguez, J.A.P., Planetary Science Institute, The characteristics of the Martian cyrolithosphere in zones of outflow channel occurrence

Rodriguez, Juan, NOAA, The east-west effect in GOES solar proton flux measurements

Snow, Martin, CU/LASP, Solar Minimum: Low, lower, lowest?

Srama, Ralf, Max Planck Institute, The Cassini Cosmic Dust Analyzer: Constraints and results

Srama, Ralf, Max Planck Institute, Instrumentation for dust astronomy

Sternovsky, Zoltan, CU/LASP, Dust in Space: What Can We Learn from It?

Tian, Feng, CU/LASP, Planetary upper atmospheres under strong XUV radiation

Tu, Weichao, CU/LASP, A case study of radiation belt electron dynamics: Quantification of source, loss, and transport

Voigt, Christiana, NOAA, Particles in the tropopause region – detection of contrails ad volcanic aerosol during the CONCERT campaign 2008

Wang, Xu, CU/LASP, Laboratory studies of lunar dust transport

Wiltberger, Michael, HAO, Effects of ionospheric oxygen outflow on magnetospheric configuration

Zalucha, Angela, MIT, An analysis of Pluto occultation light curves using an atmospheric radiative-conductive model

Fall 2010

Avallone, Linnea, CU/ATOC/LASP, Exploring the Antarctic ozone hole using long-duration balloons

Barr, Amy, SwRI, Formation of the Ganymede/Callisto dichotomy and Titan‘s interior state from impacts during the late heavy bombardment

Blum, Lauren, CU/LASP, Examining a proxy for EMIC waves based on source particle distributions

Che, Haihong, CU/CIPS, Buneman instability in a magnetized current-carrying plasma with velocity shear

Delamere, Peter, CU/LASP, Solar wind interaction with the giant magnetosphere

Delamere, Peter, CU/LASP, Jupiter’s aurorae

Dubovik, Oleg, Lab d’Optique Atmospherizue, France, Development of the approach for comprehensive retrieval of aerosol properties from enhanced satellite observations

Dubovik, Oleg, Lab d’Optique Atmospherizue, France, The retrievals of detailed aerosol from AERONET Sun/Sky-radiometers: Overview of inversion principles, products and advances

Elkington, Scot, CU/LASP, Direct driving of magnetospheric ULF waves by the solar wind

Fan, Yuhong, HAO, Formation and eruption of coronal flux ropes and torsional Alfven waves

Holsclaw, Greg, CU/LASP, NASA’s MESSENGER Mission: Unlocking the mysteries of Mercury

Klahr, Hubert, Max-Planck Institute for Astronomy, Heidelberg, The Nature of Turbulence in Circumstellar Disks: Magnetorotational and Baroclinic Instability

Knipp, Delores, CU/ASEN, What DMSP data reveal about M-I coupling during intervals of strong IMF

Levison, Hal, SwRI, Oort cloud formation: The role of the Sun's birth cluster

Lotko, William, Dartmouth College, What causes Sawtooth Oscillations in magnetospheric convection?

Meinke, Bonnie, Raina Gough, and Scott Knappmiller, CU/LASP, OVID: Observing Vehicle for Io Discovery

Mursula, K., Univ. of Oulu, Finland, Latest news about the Bashful Ballerina

Peterson, Bill, CU/LASP, Oxygen in the magnetosphere; What role does it play in the formation of geomagnetic storms?

Poppe, Andrew, CU/LASP, Comparison of simulations and experimental measurements

Redmon, Rob, NOAA/LASP, A global view of O+ upward flows and outflow rates during non-storm times

Rosenlof, Karen, NOAA, Stratospheric circulation changes and their relation to species distributions

Tao, Jianbao, CU/LASP, Results from the first Lunar-Wake Flyby of ARTEMIS on Wake Potential, Electron Beams and Electrostatic Waves

Teh, Wai-Leong, CU/LASP, Evolutions of flux transfer events (FTEs): Qualitative force-balance model

Wilson, R.J., The path of DEvIAnT moments: Why extracting thermal plasma parameters (n,T,V) of outer planetary magnetospheres is so tricky: progress made and results

Woods, Tom, CU/LASP, First results from SDO Extreme ultraviolet Variability Experiment (EVE)

Publications

Achilleos, N., et al., Influence of hot plasma pressure on the global structure of Saturn's magnetodisk, Geophys. Res. Lett., 37, 20201, doi:10.1029/2010GL045159, 2010.

Alexeev, I.I., et al., Mercury's magnetospheric magnetic field after the first two MESSENGER flybys, Icarus, 209, #1, Sp. Iss. SI, 29-39, 2010.

Andersson, L., R.E. Ergun, and A.I.F. Stewart, The Combined Atmospheric Photochemistry and Ion Tracing Code: Reproducing the Viking Lander results and initial outflow results, Icarus 206, 120, 2010.

Auer, S., et al., A self-triggered dust trajectory sensor, Nucl. Instrum. and Meth., A., 2010.

Baker, D.N., and D.J. Baker, Interagency Collaboration: Beware!, Space News, p. 19 and 21, 6 December 2010.

Baker, D.N., and F.A. Tarantino, Advancing technology: Engaging the next generation, Space News, pp. 15 and 17, 10 May 2010.

Baker, D.N., et al., Assessment of impediments to interagency collaboration on space and Earth science missions, National Academies Press, Washington, D.C., www.nap.edu, 2010.

Baker, D.N., Perspectives on Geospace Plasma Coupling, Proceedings, Modern Challenges in Nonlinear Plasma Physics Conference, American Institute of Physics, #1320, 10-22, 2010.

Baker, D.N., The Earth's Secrets, Hidden in the Skies, Guest Column, The New York Times, p. A23, 27 May 2010.

Baker, D.N., Thoughts for Successful Public Outreach in Solar and Space Physics, Eos, 2010.
Bardeen, C.G., et al., Numerical simulations of the three-dimensional distribution of polar mesospheric clouds and comparisons with Cloud Imaging and Particle Size (CIPS) experiment and the Solar Occultation for Ice Experiment (SOFIE) observations, J. Geophys. Res., 115, D10204, 2010.
Benna, M., Modeling of the magnetosphere of Mercury at the time of the first MESSENGER flyby, Icarus, 209, #1, Sp. Iss. SI, 3-10, 2010.
Bergstrom, R.W. et al., Aerosols spectral absorption in the Mexico City area: Results from airborne measurements during MILAGRO/INTEX B., Atmos. Chem. Phys., 10, 6333-6343, 2010.
Bierwirth, E., et al., A new method to retrieve the aerosol layer absorption coefficient from airborne flux density and actinic radiation measurements, J. Geophys. Res., 115, D14211, 2010.
Bradley, E.T., L.W. Esposito, et al., Far ultraviolet spectral properties of Saturn's rings from Cassini USIV, Icarus, 206, 458-466, 2010.
Bucholtz, A., et al., Directly measured heating rates of a tropical Subvisible cirrus cloud, J. Geophys. Res., 115, D00J09, 2010.
Burger, M.N., et al., Monte Carlo modeling of sodium in Mercury's exosphere during the first two MESSENGER flybys, Icarus, 209, 63-74, 2010.
Calahan, R.F., et al., Temperature responses to spectral solar variability on decadal time scales, Geophys. Res. Lett., 37, L07705, 2010.
Calais, E., et al., Geophysical Research Letters: New policies improve top-cited geosciences journal, EOS, 91, #38, p. 337, 21 September 2010.
Chen, Y., et al., Rate of radial transport of plasma in Saturn's inner magnetosphere, J. Geophys. Res., 115, A14, 10211, doi:10.1029/2010JA015412, 2010.
Chollet, E.E., J.T. Gosling, et al., Multipoint connectivity analysis of the Ma 2007 solar energetic particle events, J. Geophys. Res., 115, A12106, doi:10.1029/2010JA015552, 2010.
Clyne, J., K. Gruchalla, and M. Rast, VAPOR: Visual, Statistical and Structural analysis of astrophysical flows, in Numerical Modeling of space Plasma Flows Astronomical Society of the Pacific, p.323, 2010.
Coddington, O., et al., Examining the impact of overlying aerosols in the retrieval of cloud optical properties from passive remote sensing, J. Geophys. Res., 115, D10211, 2010.
Collette, A., and W. Gekelman, Structure of an exploding laser-produced plasma, Phys. Res. Lett., 105, 195003, 2010.
Colwell, J., et al., Saturn's rings from Cassini UVIS stellar occultations, Icarus, 140, 1569-1578, 2010.
Criscuoli, S., et al., Radiative emission of solar features in Ca II K, Astronomy and Astrophysics, 523, 773-776, doi:10.1051/0004-6361/201014762, 2010.
Crowder, M., et al., Reducing particle adhesion by material surface engineering, in Optical System Contamination: Effects, Measurements, and Control, 2010, (S.A. Straka and N. Carosso, eds.), Proceedings of SPIE, 7794, 77940G, doi: 10.1117/12.859956, 2010.

Cuzzi, J.N., L.W. Esposito, et al., An evolving view of Saturn's dynamic rings, Science, 327, 1470-1475, 2010.
Delamere, P.A., and F. Bagenal, Solar wind interaction with Jupiter's magnetosphere, J. Geophys. Res., 115, A10201, 2010.
Delamere, P.S., R.J. Wilson, and A. Masters, The Kelvin-Helmholtz instability in Saturn's outer magnetosphere, AGU Fall meeting abstracts, A1938, 2010.
Delory, G.T., M. Horanyi, et al., The LADEE Mission: The next step after the discovery of water on the Moon, 41st Lunar and Planetary Science Conference Abstract #2459, 2010.
Deng, X., et al., Wave and particle characteristics of earthward electron injections associated with dipolarization fronts, J. Geophys. Res., 115, A09225, 2010.
Desroche, M., F. Bagenal, and P.A. Delamere, Potential reconnection sites at Jupiter's magnetopause, AGU Fall meeting abstracts, B1812, 2010.
DeWitt. H.L., et al., The formation of sulfate and elemental sulfur aerosols under varying laboratory conditions: Implications for early Earth, Astrobiology, 10, 773-781, 2010.
DiAchille, G., and B. Hynek, Ancient ocean on Mars supported by global distribution of deltas and valleys, Nature Geoscience, 3, 459-463, doi:10.1038/ngeo891, 2010.
DiAchille, G., and B. Hynek, Chapter 10; Deltas and valley networks on Mars: Implications for a global hydrosphere, in Lakes on Mars, (Cabrol and Grin, eds.), ISBN 978-0-444-52854-4, 2010.
Didkovsky, L.V., et al., First results from the EUV Spectro Photometer (ESP) on the SDO Extreme Ultraviolet Variability Experiment (EVE), AGU Fall Meeting abstract A1595, 2010.
Dolinar, E., G. Holsclaw, et al., Lyman alpha airglow observations from SORCE SOLSTICE, AGU Fall Meeting abstract SA51A-1610, 2010.
Dols, V.M., et al., Io's extended neutral sulfur and oxygen clouds supplied by electron impact dissociation of an SO2 atmosphere, AGU Fall meeting abstracts, C1778, 2010.
Domingue, D.L., G.M. Holsclaw, et al., Whole-disk spectrophotometric properties of Mercury: Synthesis of MESSENGER and ground-based observations, Icarus, 209, 101-124, 2010.
Dove, A., M. Horanyi, et al., Characterization of a UV-generated photoelectron sheath, 41st Lunar and Planetary Science Conference Abstract #2406, 2010.
Ebert, R.W., D. J. McComas, F. Bagenal, and H. A. Elliott, Location, Structure, and Motion of Jupiter's Dusk Magnetospheric Boundary from ~1625 to 2550 RJ, J. Geophys. Res., 115, A12223, 2010.
Elliot, J.P., and L.W. Esposito, Regolith depth growth on an icy body orbiting Saturn and evolution of bidirectional reflectance due to surface composition changes, Icarus, doi:10.1016/j.icarus.2010.10.031.
Elteto, S., and O.B. Toon, Retrieval algorithm for atmospheric dust properties from Mars Global Surveyor thermal emission spectrometer data during global dust storm 2001A, Icarus, 10, 566-588, 2010.
Ergun, R.E., et al., Spacecraft charging and ion wake formation in the near-Sun environment, Phys. Plasma 17, 072903, 2010.
Ermolli, I., et al., Radiative emission of solar features in the Ca II K line: Com-

parison of measurements and models, Astronomy and Astrophysics, 523, A55, 2010.
Esposito, L.W., et al., Cassini UVIS stellar occultation observations of Saturn's rings, Astron. J., 140, p.1569, 2010.
Esposito, L.W., Composition, Structure, Dynamics and Evolution of Saturn's rings, Ann. Rev. of Earth and Planet. Science, 38, 383-410, 2010.
Fan, T., and O.B. Toon, Modeling sea-salt aerosol in a coupled climate and sectional microphysics model: Mass, optical depth and number concentration, Atmos. Chem. and Phys. Discuss., 10, 24499-24561, 2010.
Fang, X., Parameterization of monoenergetic electron ionization, Geophys. Res. Lett., 37, L22106, 2010.
Farr, N. L., D. N. Baker, and M. Wiltberger, Using a global magnetohydrodynamic model to study the start of the substorm recovery phase, J. Geophys. Res., doi:10.1029/2010JA015802, 2010.
Feldman, W.C., D.N. Baker, et al., Evidence for extended acceleration of solar flare ions from 1–8 MeV solar neutrons detected with the MESSENGER Neutron Spectrometer, J. Geophys. Res., 115, A01102, doi:10.1029/2009JA014535, 2010.
Fleshman, B.L., et al., Modeling the Enceladus plume-plasma interaction, Geophys. Res. Lett., 2010.
Fleshman, B.L., P. A. Delamere, and F. Bagenal, A Sensitivity Study of the Enceladus Torus., J. Geophys. Res., 115, E04007, 2010.
Fleshman, B.L., P.A. Delamere, and F. Bagenal, Modeling the Enceladus Plume-Plasma Interaction, Geophys. Res. Lett., 37, L03202, 2010.
Fleshman, B.L., P. Delamere, and F. Bagenal, The source of Saturn's extended neutral cloud, AGU Fall meeting abstracts, C1768, 2010.
Gerard, J.C., L.W. Esposito, et al., EUV spectroscopy of the Venus dayglow with UVIS on Cassini, Icarus, 211, Iss. 1, 70-80, 2010.
Goetz, G., et al., Preliminary comparison of the flares as seen by SDO-EVE-ESP and GOES XRS, AGU Fall Meeting abstract A1833+, December 2010.
Gosling, J.T., et al., A torsional Alfven wave embedded within a small magnetic flux rope in the solar wind, Ap. J., submitted, 2010.
Gosling, J.T., The structure and evolution of the three-dimensional solar wind, in Heliophysics III: Evolving solar activity and the climates of space and Earth, (C.J. Schrivjer and G.L. Siscoe, eds.), Cambridge University Press, 217-242, 2010.
Gosling, J.T., W.-L. Ten, and s. Eriksson, A Torsional Alfven wave embedded within a small magnetic flux rope in the solar wind, Astrophys. J. Lett., 719:L36-40, doi:10.1099/2041-8205/719/1/L36, 2010.
Gosling, J.T., Magnetic Reconnection in the solar wind: An Update, AIP Conf. Proceedings, 25 March 2010 doi:10.1063/1.3395833.
Gough, R.V., et al., Methane adsorption on a Martian soil analog: An abiogenic explanation for methane variability in the Martian atmosphere, Icarus, 207, 165-174, 2010.
Grava, C., N.M. Schneider, and C. Barbieri, Io, the closest Galileo's Medicean Moon: Changes in its Sodium cloud caused by Jupiter Eclipse, in Galileo's Medicean Moons; Their Impact on 400 Years of discovery,

Proceedings of the International Astronomical Union, IAU Symposium, Col. 269, pp. 224-228, Padova, Italy, 6-9 January, 2010.
Gustin, J., L.W. Esposito, et al., Characteristics of Saturn's FUV airglow from limb viewing spectra obtained with Cassini-UVIS, Icarus, 210, 270-283, 2010.
Haigh, J.D., et al., An influence of solar spectral variations of radiative forcing of climate, Nature, 467, 696-699, doi:10.1038/nature09426, 2010.
Harder, J.W., et al., The SORCE SIM solar spectrum: Comparisons with recent observations, Solar Physics, 263, 2010.
Hassenkopf, C.A., et al., Optical properties of Titan and Earth haze laboratory analogs in the mid-visible, Icarus, 207, 903-913, 2010.
He, Z., et al., The large-scale magnetospheric electric field observed by Double Star TC-1, Annales Geophysicae, 28(9), 1625-1631, 2010.
Hedelt, P., L.W. Esposito, et al., Titan's atomic hydrogen corona, Icarus, 210, Iss. 1, 424-435, 2010.
Hendrix, R., The ultraviolet reflectance of Enceladus: Implications for surface composition, Icarus, 206, 2010.
Hendrix, R., G. Holsclaw, et al., The surface composition of Mimas: Ultraviolet constraints, AGU Fall Meeting Abstract P31B-1533, 2010.
Hess, S.L.B., D. M. Malaspina, and R. E. Ergun, Growth of the Langmuir cavity eigenmodes in the solar wind, J. Geophys. Res., 115, A10103, 2010.
Hess, S., et al., Modeling of the longitudinal modulation of the Io interaction, AGU Fall meeting abstracts, C1775, 2010.
Hess, S.L., et al., Power transmission and particle acceleration along the Io flux tube, J. Geophys. Res., 115, 6205, 2010.
Holsclaw, G.M., et al., A comparison of the ultraviolet to near-infrared spectral properties of Mercury and the Moon as observed by MESSENGER, Icarus, 209, 179-194, 2010.
Holsclaw, G.M., et al., Measurement of the disk-integrated polarization of the Moon in the ultraviolet, AGU Fall Meeting Abstract P51C-1451, 2010.
Horanyi, M., G.E. Morfill, and T.E. Cravens, Spokes in Saturn's B ring: Could lightning be the cause?, IEEE Transactions on Plasma Science, 37, 874-879, 2010.
Horanyi, M., and A. Juhasz, Plasma conditions and the structure of the Jovian ring, J. Geophys. Res., 115, A09202, doi: 10.1029/2010JA015472, 2010.
Horanyi, M., et al., Dusty plasmas in the solar system, in Complex and Dusty Plasmas: From Laboratory to Space, (Fortov and Morfill, eds.), CRC Press, ISBN: 978120083
118, p. 291, 2010.
Hynek, B., Undated global map of Martian valley networks and implications for climate and hydrologic processes, J. Geophys. Res., 115, E09008, 2010.
Hynek, B., Extraterrestrial digital elevation models: Constraints on Planetary Evolution, with focus on Mars, International J. of Remote Sensing, 2010.
James, D., V. Hoxie, and M. Horanyi, Polyvinylidene fluoride dust detector response to particle impacts, Rev. Sci. Instruments, 81, 034501, 2010.
Kalnajs, L.E., and L. M. Avallone, A novel lightweight low-power dual-beam ozone photometer utilizing solid-state optoelectronics, Journal of Atmospheric and Oceanic Technology, 27,

869, doi: 10.1175/2009JTECHA 1362.1,2010.
Kanekal, S.G., D.N. Baker, and R.L. McPherron, On the seasonal dependence of relativistic electron fluxes, Ann. Geophys., 28, #5, 1101-1106, 2010.
Kellett, S., et al., Saturn's ring current: Local time dependence and temporal variability, J. Geophys. Res., 116, #A5, doi:10.1029/2010JA016216, 2010.
Kellett, S., et al., Nature of the ring current in Saturn's dayside magnetosphere, J. Geophys. Res., 115, A14, 8201, doi:10.1029/2009JA015146, 2010.
Killen, R.M., et al., Observations of metallic species in Mercury's exosphere, Icarus, 209, 75-87, 2010.
Kindel, B., et al., Observations and modeling of ice cloud shortwave spectral albedo during the Tropical Composition, Cloud and Climate Coupling Experiment (TC4), J. Geophys. Res., 115, D00J18, 2010.
King, M.D., and S.B. Johnson, Earth Science, in Space Exploration and Humanity, An Historical Encyclopedia, (S.B. Johnson, ed.), ABC-CLIO, 132-143, 2010.
King, M.D., et al., Remote sensing of the radiative and microphysical properties of clouds during TC4: Results from MAS, MASTER, MODIS, and MISR, J. Geophys. Res., 115, D00J07, doi:10.1029/2009JD013277, 2010.
Knappmiller, S., et al., Using DSMC modeling of rocket aerodynamics as a measurement aid in the mesosphere, Next-generation suborbital researchers conference, LPI Contribution # 1534, p. 45, 2010.
Kopp, G., et al., The SORCE Science Meeting Summary, The Earth Observer, 22, #4, 2010.
Korth, Haje, et al., The Interplanetary Magnetic Field Environment at Mercury's Orbit, Planetary and Space Science, doi:10.1016/j.pss.2010.10.014, 2010.
Krueger, H., M. Horanyi, et al., Three years of Ulysses dust data: 2005 to 2007, Planetary and Space Science, 58, Iss. 7-8, 951-964, 2010.
Krueger, H., M. Horanyi, et al., Galileo dust data from the Jovian system: 2000 to 2003, Planetary and Space Science, 58, Iss. 7-8, 965-993, 2010.
Lazerson, S.A., et al., How do heavy ions affect plasma entry and transport processes?, AGU Fall meeting abstracts, 6, 2010.
Liu, W., et al., Solar wind influence on Pc4 and Pc5 ULF wave activity in the inner magnetosphere, J. Geophys. Res., 115, A12201, 2010.
Lyapustin, A., et al., Analysis of snow bidirectional reflectance from ARCTAS Spring-2008 campaign, Atmos. Chem. Phys., 10, 4359-4375, 2010.
McCollough, J.P., et al., Physical mechanisms of compressional EMIC wave growth, J. Geophys. Res., 115, A10214, doi:10.1029/2010JA015393, 2010.
McEwen, A.S., et al., The High Resolution Imaging Science Experiment (HiRISE) during MRO's Primary Science Phase (PSP), Icarus, 205, 2010.
McGouldrick, K., et al., Sulfuric acid in the atmospheres of the terrestrial planets, Planet. Space Sci., 59, #10, doi:10.1016/j.pss.2010.05.020, 2010.
Main, D.S., D. L. Newman, and R. E. Ergun, Conditions for establishing quasi-stable double layers in the Earth's auroral upward current region, Phys. Plasma 17, 122901, 2010.

Malaspina, D.M., Iver H. Cairns, and R. E. Ergun, The 2fp radiation from localized Langmuir waves, J. Geophys. Res., 115, A01101, 2010.

Malaspina, D.M., P.J. Kellogg, S.D. Bale, and R.E. Ergun, Measurements of Rapid Density fluctuations in the solar wind, Ap. J., 711, #1, 322 doi: 10.1088/0004-637X/711/1/322. 2010.

Mishchenko, M., et al., Accurate monitoring of terrestrial aerosols and total solar irradiance: The NASA GLORY mission, Proc. IEEE International Symposium, pp. 758-760, 978-1-4244-9566-5, 25 July 2010.

Mitchell, T.R., and G.R. Stewart, Evolution of the solar nebula and planet growth under the influence of photoevaporation, Ap. J., 722, 1115-1130, 2010.

Morrill, J.S., et al., Comparing estimates of the MgII Index at solar minimum from 1961 to 1981 with the observed MgII index from 1978 to Present, in SOHO-23: Understanding a Peculiar Solar Minimum, ASP Conference Series, 428, p. 315, 2010.

Munsat, T., M. Horanyi, et al., Lunar dust transport package, 41st Lunar and Planetary Science Conference Abstract #2538, 2010.

Nielsen, K., et al., Seasonal variation of the quasi 5-day planetary wave: Causes and consequences for polar mesospheric cloud variability in 2007, J. Geophys. Res., 115, D18111, 2010.

Nishimura, Y., J. Bortnik, W. Li, R. M. Thorne, L. R. Lyons, V. Angelopoulos, S. B. Mende, Bonnell, O. Le Contel, C. Cully, R. Ergun and U. Auster, Identifying the driver of pulsating Aurora, Science 330, 81-84, 2010.

Opitz, A., et al., Temporal evolution of the solar-wind electron core density at solar minimum by correlating SWEA measurements from STEREO A and B, Solar Physics, 266, pp. 369-377, doi: 10.1007/s11207010-9613-5, 2010.

Osterloo, M., The geologic context of proposed chloride-bearing materials on Mars, J. Geophys. Res., 115, 2010.

Perez-Hoyos, S., et al., Venus spectrophotometry during the MESSENGER mission flyby, Highlights of Spanish Astrophysics, V., 2010.

Peterson, W.K., et al., The Electronic Geophysical Year (eGY), (H. Gupta, ed.), Springer, 2010.

Peterson, W.K., Open access to digital information: Opportunities and challenges identified during the Electronic Geophysical Year, Data Science Journal, 8, 2010.

Petrinec, S.A., et al., Cusp energetic ions as tracers for particle transport into the magnetosphere, J. Geophys. Res., doi:10.1029/ 2009/JA014919, 2010.

Phan, T.D., J.T. Gosling, et al., The dependence of magnetic reconnection on plasma β and magnetic shear: Evidence from solar wind observations, Astrophys. J. Lett., 719, L199-L203, doi:10.1088/204 2-8205-719-2-L199, 2010.

Poppe, A., First results from the Venetia Burney Student Dust Counter on the New Horizons Mission, Geophys. Res. Lett., L11101, doi: 10.1029/2010GL043300, 2010.

Poppe, A., M. Horanyi, et al., Measurements of the interplanetary dust population by the Venetia Burney student dust counter on the New Horizons Mission, 41st Lunar and Planetary Science Conference Abstract #1219, 2010.

Poppe, A., and M. Horanyi, Simulations of the Lunar photoelectron sheath and as-

sociated dust grain levitation equilibria, 41st Lunar and Planetary Science Conference Abstract #1218, 2010.
Poppe, A., and M. Horanyi, Simulations of the photoelectron sheath and dust levitation on the Lunar surface, J. Geophys. Res., 115, A08106, doi: 10.1029/2010JA015286, 2010.
Poppe, A., Simulation of polyvinylidene fluoride detector response to hypervelocity particle impact, Nucl. Instr. Methods in Physics. Res., A622, 583587, 2010.
Pryor, W.R., L.W. Esposito, et al., The auroral footprint of Enceladus at Saturn, Nature, 472, #7343, 331-333, 2010.
Pryor, W.R., G.M. Holsclaw, et al., Interplanetary hydrogen Lyman-alpha emission observations from the Mercury atmospheric and surface composition spectrometer on the MESSENGER spacecraft, AGU Fall Meeting Abstract SH21A-1797, December 2010.
Rabier, F., L. Avallone, et al., Le projet Concordiasi en Antarctique, La Météorologie, 69, 42.
Rabier, F., L. Avallone, et al., The CONCORDIASI Project in Antarctica, Bulletin of the American Meteorological Society, 91, 69, 10.1175/2009 BAMS2764.1, 2010.
Rast, M.P., Is there such a thing as quiet Sun?, in SOO-23: Understanding a peculiar solar minimum, ASP Conference Series, V. 428, (Cranmer, Hoeksema, and Kohl, eds.), San Francisco: Astronomical Society of the Pacific, 87-92, 2010.
Ray, L.C., R. E. Ergun, P. A. Delamere, and F. Bagenal, Magnetosphere-ionosphere coupling at Jupiter: Effect of field-aligned potentials on angular momentum transport, J. Geophys. Res., 115, A09211, 2010.
Redmon, R.J., W. K. Peterson, L. Andersson, E. A. Kihn, W. F. Denig, M. Hairston, and R. Coley (2010), Vertical thermal O+ flows at 850 km in dynamic auroral boundary coordinates, J. Geophys. Res., 115, A00J08, doi:10.1029/2010JA015589, 2010.
Reufer, A., et al., Models of high velocity impacts into dust-covered ice: Application to Martian northern lowlands, Planet. Space Sci., doi:10.1016/j.pss. 2010.040.008, 2010.
Robbins, S., The volcanic history of Mars: High-resolution crater-based studies of the Calderas of twenty volcanoes, Icarus, 211, #2, 1179-1203, 2010.
Robertson, S., Special Issue on Physics of Dusty Plasmas 2010, IEEE Transactions on Plasma Science, 38, Iss. 4, 766-767, 2010.
Robock, A., and O.B. Toon, Local nuclear war, global suffering, Sci. Amer., 202, 74-81, 2010.
Rodgers, E.M., et al., Nitric oxide density enhancements due to solar flares, Adv. Space Res., 45, #1, 4 January 2010.
Rodriguez-Martinez, M., et al., Harmonic growth of ion-cyclotron waves in Saturn's magnetosphere, J. Geophys. Res., 115, A14, 9207, doi: 10.1029/2009 JA015000, 2010.
Sarris, T.E., et al., THEMIS observations of the spatial extent and excitation of field line resonances, Geophys. Res. Lett., 37, L15104, 2010.
Sasaki, T., G.R. Stewart, and I. Ida, Origin of the different architectures of the Jovian and Saturnian satellite systems, Ap. J., Volume 714 Number 2, 1052 doi: 10.1088/0004-637X/714/2/1052, 2010.

Schmidt, K.S., et al., A new method for deriving aerosol solar radiative forcing and its first application within MILAGRO/ INTEX-B, Atmos. Chem. Phys., 10, 7829-7843, 2010.

Schmidt, K.S., et al., Apparent absorption of solar spectral irradiance in heterogeneous ice clouds, J. Geophys. Res., 115, D00J22, doi:10.1029/2009JD013124, 2010.

Schneider, N.M., Io's escaping atmosphere; Continuing the legacy of Surprise, in Galileo's Medicean Moons: Their impact on 400 Years of Discovery, Proceedings of the International Astronomical Union, IAU Symposium, Vol. 269, Padova, Italy, 6-9 January 2010.

Searls, M.L., et al., Seasonal defrosting of the Phoenix Landing site, J. Geophys. Res., 115, E00E24, doi:10.1029 /JE003438, 2010.

Sharma, S., D.N. Baker, A. Binde, and V.P. Dimri, Complexity and Extreme Events: Interdisciplinary Science of Natural Hazards, in Chapman Conference on Complexity and Extreme Events in Geosciences, Eos, Vol. 91, No. 30, 27 July 2010.

Sizemore, H.G., et al., In situ analysis of ice table depth variations in the vicinity of small rocks at Phoenix landing site, J. Geophys. Res., 115, E00E09, dooi:10.1029/1009JE003414, 2010.

Slavin, J.A., D.N. Baker, and G. Gloeckler, MESSENGER Observations of Extreme Loading and Unloading of Mercury's Magnetic Tail, Science, Vol. 329, #5992, 665-668, doi: 10.1126/science.1188067, Published Online 15 July 2010, Published in print 6 August 2010.

Slavin, J.A., D.N. Baker, et al., MESSENGER observations of large flux transfer events at Mercury, Geophys. Res. Lett., 37, L02105, #6, doi:10.1029/2009GL041485, 2010.

Snow, M., W.E. McClintock, and T.N. Woods, Solar spectral irradiance variability in the ultraviolet from SORCE and UARS SOLSTICE, Adv. Space Res., 46, 296-302, 2010.

Sternovsky, Z. et al., Novel instrument for dust astronomy: Dust telescope, IEEE Aerospace Conference Proceedings, 2010.

Stevens, M.H., et al., Tidally induced variations of PMC altitudes and ice water content using a data assimilation system, J. Geophys. Res., 115, D18209, 2010.

Tamppari, L.K., et al., Phoenix and MRO coordinated atmospheric measurements, J. Geophys. Res., 115, E00E17, doi:10.1029/20009JE003415, 2010.

Thayer, J.P., K. Greer, and V.L. Harvey, Front-like behavior in the Arctic wintertime upper stratosphere and lower mesosphere, J. Geophys. Res., 115, D00N04, doi:10.1029/2010JD014278, 2010.

Teh, W.-L., S. Eriksson, et al., THEMIS observations of a secondary magnetic island within the Hall electromagnetic field region at the magnetopause, Geophys. Res. Lett., 37, L21102, doi:10.1029/2010GL045056, 2010.

Thurairajah, B., et al., Gravity wave activity in the Arctic stratosphere and mesosphere during the 2007-2008 and 2008-2009 Stratospheric sudden warming, J. Geophys. Res., 115, D00N06, doi:10.1029/2010JD014125, 2010.

Thurairajah, B., et al., Rayleigh lidar observations of reduced gravity wave activity during the formation of an ele-

vated stratopause in 2004 at Chatanika, Alaska, J. Geophys. Res., 115, D13109, doi:10.1029/2009DJ013036, 2010.
Tian, F., et al., Photochemical and climate consequences of sulfur outgassing on early Mars, Earth and Planet. Sci. Lett., 295, 412-418, 2010.
Toohey, D., L. Avallone, et al., Aviation and Chemistry and Transport Processes in the Upper Troposphere and Lower Stratosphere, Bulletin of the American Meteorological Society, 91,485, doi: 10.1175/2009BAMS2841.1, 2010.
Toon, O.B., T. Segura, and Z. Zahnle, The formation of Martian river valleys by impacts, Ann. Rev. Earth Planet. Sci., 38, 303-322, 2010.
Toon, O.B., et al., Planning, implementation, and first results of the Tropical Composition, Cloud and Climate Coupling Experiment (TC4), J. Geophys. Res., 115, 2010.
Trainer, M.G., et al., Enhanced CO2 trapping in water ice via atmospheric deposition with relevance to Mars, Icarus, 206, 707-715, 2010.
Trainer, M.G., et al., Limits on the trapping of atmospheric CH4 in Martian polar ice analogs, Icarus, 208, 192-197, 2010.
Travnicek, P., et al., Mercury's magnetosphere-solar wind interaction for northward and southward inter-planetary magnetic field: Hybrid simulation results, Icarus, http://dx.doi.org/10.1016/j.icarus. 2010.01.008, 2010.
Tu, W., et al., Quantification of the precipitation loss of radiation belt electrons observed by SAMPEX, J. Geophys. Res. Lett., 115, A07210, 2010.
Turner, D., et al., On phase space density radial gradients of Earth's outer belt electrons prior to sudden solar wind pressure enhancements: Results from distinctive events and a superposed epoch analysis, J. Geophys. Res., 115, A1, 2010.
Vervack, R.J., et al., Mercury's complex exosphere: Results from MESSENGER's Third Flyby, Science, 329, 2010.
Viticchie, B., Et al., Modeling the solar irradiance background via numerical simulation, Astrophys. and Space Sci., 328, 39-42, 2010.
Vukicevic, T., O. Coddington, and P. Pilewskie, Characterizing the retrieval of cloud properties from optical remote sensing, J. Geophys. Res., 115, D20211, 2010
Wang, X., M. Horanyi, and S. Robertson, Investigation of dust transport on the lunar surface in a laboratory plasma with an electron beam, J. Geophys. Res., 115, A11102, doi: 10.1029/2010JA015465, 2010.
Williams, K.E., C.P. McKay and O.B. Toon, Do ice caves exist on Mars?, Icarus, 209, 358-368, 2010.
Wilson, R.J., et al., Properties of the thermal ion plasma near Rhea as measured by the Cassini plasma spectrometer, J. Geophys. Res., 115, A05201, doi:10.1029/2009JA014679, 2010.
Wilson, R.J., F. Bagenal, and P.A. Delamere, Cassini CAPS measurements of thermal ion properties: An update, AGU Fall Meeting Abstracts, A1907, 2010.
Wind, G.S., et al., Multilayer cloud detection with the MODIS near-infrared water vapor absorption band, J. Appl. Meteor. Climatology, 49, 2315-2333, 2010.
Wolf, E.T., and O.B. Toon, Fractal organic hazes provide an ultraviolet shield for

early Earth, Science 328, 1266-1268, 2010.
Wolf, E.T., and O.B. Toon, The hazy details of early earth's atmosphere response, Science, 330, 754-755, 2010.
Woodraska, D., et al., Data Access for the EUV variability experiment on the NASA Solar Dynamics Observatory, AGU Abstract SH22A-03, December 2010.
Woods, T.N., A. Jones, et al., SDO extreme Ultraviolet variability experiment (EVE): Instrument and first light, AAS meeting abstract #216, 308, May 2010.

Works in Progress

Albers, N.M., L.W. Esposito, et al., Saturn's F Ring as seen by Cassini UVIS: Kinematics and Statistics, Icarus, under review, 2010.
Auguston, K., et al., Modeling the near-surface shear layer: Diffusion schemes studied with CSS, in GONG/SOHO, accepted, 2010.
Bagenal, Frances, and P.A. Delamere, Mass and energy flow through the magnetospheres of Jupiter and Saturn, J. Geophys. Res., in press, 2010.
Baillie, K., L.W. Esposito, L.W., et al., Waves in Cassini UVUS stellar occultations 2. Waves in the C Ring, Icarus, accepted, 2010.
Baker, D.N., et al., The space environment of Mercury at the times of the second and third MESSENGER flybys, Planetary and Space Science, submitted, 2010.
Baker, D.N., The once and future "Super" magnetic storm, Sky and Telescope, submitted, 2010.
Brakebusch, M., C.E. Randall, et al., Polar O3 loss studies utilizing SE-WACCM and MLS, J. Geophys. Res., in preparation, 2010.
Collins, G.S., et al., The relationship between impact angle and crater ellipticity, Geophys. Res. Lett., in review, 2010.
Cuzzi, J.N., L.W. Esposito, et al., An evolving view of Saturn's dynamic rings, Science, in press, 2010.
Delamere, P.A., and F. Bagenal, Solar wind-driven flows in Jupiter's magnetosphere, J. Geophys. Res., in press, 2010.
Delamere, P.A., R.J. Wilson, and A. Masters, Kelvin-Helmholtz instability at Saturn's magnetopause: II Hybrid simulations, J. Geophys. Res., submitted, 2010.
Duncan, N., et al., The Electrostatic Lunar Dust Analyzer (ELDA) for the detection and trajectory measurement of slow dust particles on the lunar surface, Planet. Space Sci., submitted, 2010.
Esposito, L.W., Composition, structure, dynamics and evolution of Saturn's rings, Ann. Rev. of Earth and Planetary Sciences, in press, 2010.
Esposito, L.W., et all, Moon-triggered clumping in Saturn's rings, Icarus, under review, 2010.
Fontenla, John, et al., High-resolution solar spectral irradiance from extreme ultraviolet to far infrared, J. Geophys. Res., submitted, 2010.
France, J., et al., A climatology of stratopause temperature and height in the polar vortex and anticyclones, J. Geophys. Res., in preparation, 2010.

Grün, E., M. Horanyi, and Z. Sternovsky, The Lunar Dust Environment, Planet. Space Sci., accepted, 2010.
Hansen, C.J., L.W. Esposito, et al., The composition and structure of the Enceladus Plume, Science, submitted 2010.
Hess, S.L., et al., Power transmission from satellite-magnetosphere interaction to aurora emissions, J. Geophys. Res., submitted, 2010a.
Ho, G.C., D.N. Baker, et al., Observations of suprathermal electrons in Mercury's magnetosphere during the three MESSEGER flybys, Planetary and Space Science, in press, 2010.
Hoke, M.R.T., B.M. Hynek, and G. Tucker, Formation timescales of Martian fluvial systems, J. Geophys. Res., in review, 2010.
Holt, L.A., C.E. Randall, et al., Atmospheric effects of energetic particle precipitation in the Arctic winter 1978-1979 Revisited, J. Geophys. Res., in preparation, 2010.
Hsu, H.-W., et al., Cassini dust stream particle measurements during the first three orbits at Saturn, J. Geophys. Res., submitted, 2010.
Hsu, H.-W., et al., Stream particles as the probe of the dust-plasma-magnetosphere interaction at Saturn, J. Geophys. Res., submitted, 2010.
Hsu, H.-W., H. Krüger, and F. Postberg, Dynamics, composition, and origin of Jovian and Saturnian dust stream particles, Astrophysics and Space Science Library, Springer, submitted, 2010.
Hynek, B.M., et al., Geological evidence for a migrating Tharsis plume on early mars, Earth and Planetary Science Letters, in review, 2010.
Hynek, B.M., and G. DiAchille, Geologic map or Meridiani Planum region, Mars, USGS Planetary Mapping Program, in review, 2010.
Hynek, B.M., et al., Cerro Negro Volcano, Nicaragua: An assessment of geological and potential biological systems on early Mars, GSA Special Publications: Planetary Analog Environments, in review, 2010.
Karlsson, B., et al., On the early start of the southern hemisphere 2009-2010 PMC season, Geophys. Res. Lett., in preparation, 2010.
Kindel, B., et al., Solar spectral absorption by marine stratus clouds: Measurements and modeling, J. Geophys. Res., in press, 2010.
King, M.D., and M.K. Hobish, Satellite instrumentation and imagery, in Encyclopedia of Climate and Weather, 2nd Edition, (S.H. Schneider, ed.), Oxford University Press, in press, 2010.
Linsky, J., et al., Far ultraviolet continuum emission: A new diagnostic of chromospheres for solar-mass stars, submitted, Ap.J., 2010.
Luo, B., et all., On energetic electrons (>38 keV) in the central plasma sheet: Data analysis and modeling, J. Geophys. Res., under review, 2010.
McCollough, J.P., S. Elkington, and D.N. Baker, The Role of Shabansky Orbits in Compression-related EMIC Wave Growth, J. Geophys. Res., submitted, 2010.
McGouldrick, K., et al., Quantification of middle and lower cloud variability and mesoscale dynamics from Venus Express/VIRTIS observations at 1.74μm, Icarus, submitted, 2010.
Meinke, B.K., et al., Classification of F ring features observed in Cassini UVIS occultations, Icarus, in revision, 2010.
Merkel, A., et al., The impact of solar spectral irradiance variability on mid-

dle atmospheric ozone, Geophys. Res. Lett., accepted, 2010.
Mitchell, T.R., and Stewart, G.R., Photoevaporation as a truncation mechanism for circumplanetary disks, Ap. J., submitted, 2010.
Molaverdikhani, K., K. McGouldrick, and L.W. Esposito, The abundance and distribution of the unknown ultraviolet absorber in the Venusian atmosphere, Icarus, submitted, 2010.
Murphy, N., and B. Jakosky, Physical properties of terrestrial duricrust with application to Mars, in preparation, 2010.
Raines, J.M., D.N. Baker, et al., MESSENGER observations of the plasma environment near Mercury, Planetary and Space Science, in press, 2010.
Robbins, S.J., and B.M. Hynek, A complete impact crater database for Mars to 1.5-km-diameter, J. of Geophys. Res., in preparation, 2010.
Robbins, S., Secondary craters from Lyot, Mars, Geophys. Res. Lett., in press, 2010.
Shprits, Y., D. Subbotin, B. Ni, R. Horne, D.N. Baker, and P. Cruce, Profound change of the near Earth radiation environment caused by solar superstorms, J. Geophys. Res., submitted, 2010.
Shprits, Y.Y., D. Subbotin, B. Ni, R.B. Horne, D.N. Baker, and P. Cruce, Catastrophic change of the near Earth radiation environment caused by solar superstorms, Nature Phys., submitted, 2010.
Stevens, M.H., L.W. Esposito, et al., The production of Titan's far ultraviolet nitrogen airglow, J. Geophys. Res., in press, 2010.
Tao, J., Andersson, L., et al., A model of electromagnetic electron phase-space holes and its application, J. Geophys. Res., in press, 2010.
Tien, Feng, Revisiting HCN chemistry in early Earth atmosphere, EPSL, under review, 2010.
Tierney, L.L., and B. Jakosky, Habitability of Meridiani Planum, Mars, in preparation, 2010.
Turner, D., et al., Multi-spacecraft observations of a foreshock-induced magnetopause disturbance exhibiting distinct plasma flows and an intense density compression, J. Geophys. Res., in press, 2010.
White, O.R., G. Kopp, et al., The cycle 23-24 minimum: A benchmark in solar variability and effects in the heliosphere, Solar Physics, submitted, 2010.
Wilson, R.J., et al., Kelvin-Helmholtz instability at Saturn's magnetopause: I Cassini ion data analysis, J. Geophys. Res., submitted, 2010.
Xu, F.A., L.W. Esposito, et al., Markov chain formalism for polarized light transfer in plane-parallel atmospheres, with numerical comparison to the Monte Carlo method, Optical Express, in press, 2010.

Papers Presented at Scientific Meetings

Albers, N., Saturn's B. ring edge, UVIS Team Meeting, Boulder, CO, June 2010.

Albers, N., M. Sremcevic, and L.W. Esposito, An analytical orbital model of Saturn's F ring strands, Europlanet 2010, Rome, Italy, 19-25 September 2010.

Albers, N., M. Sremcevic, and L.W. Esposito, Moon-influenced ringlets and edges in Saturn's rings, EGU 2010, Vienna, Austria, 3-8 April, 2010.

Avallone, L., In Cloud measurements of winds, temperature and relative humidity, Workshop on In Situ Airborne Instrumentation, Seaside, OR, July 2010.

Avallone, L., In situ measurements of stratospheric ozone from long-duration balloons during Concordiasi, Concordiasi Workshop, France, March 2010.

Bagenal, F., Magnetotail of Jupiter, EGU, Vienna, May 2010.

Bagenal, F.; Delamere, P. A., Mass and Energy Flow Through the Jovian Magnetosphere, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Bailey, S.M., et al., Dynamics of the mesopause region as revealed in images of Polar Mesospheric Clouds, COSPAR 2010, Bremen, Germany, July 2010.

Baker, D.N. and A. Charo, Solar and Space Physics Research Decadal Survey: 2013-2002, Space Weather Workshop, Boulder, CO, 29 April 2010.

Baker, D.N., A remarkable natural experiment: The extremely quiet sun (2007-2009) and its effect on Earth's radiation belts, Theory of the Magnetosphere, Santa Fe, NM, 4-8 October, 2010

Baker, D.N., Advanced technology needs in a university setting, Planetary Science Technology Review Panel, NASA Planetary Division, 27 May 2010.

Baker, D.N., and A. Charo, The 2013-2023 Decadal Survey in Solar and Space Physics, Space Studies Board Meeting, Washington, DC, 8-10, March 2010.

Baker, D.N., and S.G. Kanekal, Long-term radiation belt observations with SAMPEX, Radiation Belt Storm Probes (RBSP) Science working team Meeting, Boulder, CO, 31 August 2010.

Baker, D.N., Computation, modeling and data exploration: Fundamental pillars of Heliophysical science, Advanced Computational Capabilities for Exploration in Heliophysical Science (ACCEHS), NCAR, Boulder, CO, 16 August 2010.

Baker, D.N., Critical Infrastructure Support for Space Weather, Space Weather Enterprise Forum, National Press Club, Washington, DC, 8 June 2010.

Baker, D.N., Decadal Survey Overview, A Decadal Strategy for Solar and Space Physics Atmospheric-Ionosphere-Magnetosphere Interactions Panel Meeting, NCAR Mesa Lab, Boulder, CO, 19 November 2010.

Baker, D.N., Expression of Thanks on Behalf of AGU, Chapman Conference on Complexity and Extreme Events in Geosciences, Hyderabad, India, 15-19 February 2010.

Baker, D.N., J.A. Van Allen and the Beginnings of the U.S. Space Program, American Institute of Aeronautical and Astronautics (AIAA), 48th Aerospace Sciences Meeting Orlando, FL, 5 January 2010.

Baker, D.N., MESSENGER to Mercury; Exploring the Sun's nearest neighbor, Distinguished Research Lecture, University of Colorado, 16 April 2010.

Baker, D.N., NASA Contributions to Canadian ORBITALS mission, Invited remarks (via phone), Canadian Space Agency briefing, 17 March 2010.

Baker, D.N., National Solar Observatory Proposal, presentation to Physics Department, University of Colorado, Boulder, 13 April 2010.

Baker, D.N., NSO Bid Opportunity, presentation to Aerospace Engineering Faculty, University of Colorado, Boulder, 9 April 2010.

Baker, D.N., Overview of LASP and Space Activities, Congressional Briefings, Univ. of Colorado, Boulder, CO, 12 August 2010.

Baker, D.N., Planning for the next NRC decadal survey in solar and space physics, Geospace Environment Modeling (GEM) Summer Workshop, Snowmass Village, CO, 23 June 2010.

Baker, D.N., Predicting and mitigating impacts of extreme space weather, AGU Fall Meeting, San Francisco, CA, 13-17 December, 2010.

Baker, D.N., Radiation Belt Conditions: Solar Minimum, Geospace Environment Modeling (GEM) Summer Workshop, Snowmass Village, CO, 24 June 2010.

Baker, D.N., REU Overview and Welcome, NSF Research Experience for Undergraduates, LASP, U. of Colorado, Boulder, CO, 14 June 2010.

Baker, D.N., S. G. Baker, D.N., Heliophysics and space weather, IAA Academy Day, Bremen, Germany, 17 July 2010.

Baker, D.N., S.G. Kanekal, and X. Li, Nature's remarkable experiment: The extremely quiet Sun (2007-2009) and its effect on Earth's radiation belts, COSPAR 2010, Bremen, Germany, July 2010

Baker, D.N., Solar Dynamics Observatory, University of Colorado Press Briefing, Boulder, CO, 4 February 2010.

Baker, D.N., Solar wind conditions during the MESSENGER second and third flybys of Mercury, solicited presentation, Massachusetts Institute of Technology, 9 June 2010.

Baker, D.N., Space weather observations and modeling: Basic research with a high public purpose, National Security Space Institute Briefing, Boulder, CO, 2 February 2010.

Baker, D.N., Space weather specification and geospace forecasting, Space weather specification and geospace forecasting, AGU Fall Meeting, San Francisco, CA, 13-17 December, 2010.

Baker, D.N., Substorm injection and magnetospheric particle energization – Review, Electric Field and Waves (EFW) Science Working Team Meeting, U. of Minnesota, Minneapolis, 26 May 2010.

Baker, D.N., Substorms at Mercury: Old questions and new insights, MESSENGER BepiColombo Workshop, Boulder, CO, 2 November 2010.

Baker, D.N., Survey Overview, and Charge to the Panel, A Decadal Strategy for Solar and Space Physics Atmospheric-Ionosphere-Magnetosphere Interactions Panel Meeting, NCAR Mesa Lab, Boulder, CO, 15 November 2010.

Baker, D.N., The 2013-2022 Decadal Survey in Solar and Space Physics, Cluster 10th Anniversary Workshop, Corfu, Greece, 2010.

Baker, D.N., The Earth's radiation belts during quiet and active solar condi-

tions, Cluster 10th Anniversary Workshop, Corfu, Greece, 2010.

Baker, D.N., The Earth's Van Allen Radiation Belts: Old Questions and New Missions, Physics Colloquium, University of Colorado, 10 February, 2010.

Baker, D.N., The economic and societal impacts of extreme space weather events, Keynote Address Chapman Conference on Complexity and Extreme Events in Geosciences, 15-19 February 2010.

Baker, D.N., The Economic and Societal Impacts of Extreme Space Weather Events, U.S. Army Space Power Wargame Seminar, "A Day without space," Keynote Speaker, Colorado Springs, CO, 10 February 2010.

Baker, D.N., The economic and societal impacts of space weather, 12th SCOSTEP Symposium, Berlin, Germany, 12-16 July 2010.

Baker, D.N., The economic and societal impacts of space weather, Heliophysics Summer School, Boulder, CO, August 4, 2010.

Baker, D.N., The Knowledge Transfer Program of CISM, Advisory Council Presentation, Boston University, 10 March 2010.

Baker, D.N., Value, strengths, and synergies in the CU-LASP-GeoOptics Partnership, GeoOptics Interim Program Review, Status Update, and Open House, Boulder, CO, October 13-15, 2010.

Baker, D.N., Visualization of tail dynamics, MMS Science Working Team Meeting, Harbourtowne Resort, St. Michaels, MD, 19 October, 2010.

Baker, D.N., X. Li, et al., CubeSat program carrying a miniaturized REPT instrument, Radiation Belt Storm Probes (RBSP) Science working team Meeting, Boulder, CO, 31 August 2010.

Bierwirth, E., et al., Different views on the Arctic surface albedo, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Brakebusch, M., et al., Polar ozone loss in a changing climate, Aura science meeting, September 2010.

Cairns, B., et al., Accurate monitoring of terrestrial aerosols and total solar irradiance: The NASA GLORY mission, SPIE Remote Sensing , September 2010.

Calahan, R.F., et al., Modeling the temperature responses to spectral solar variability of decadal and centennial time scales, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Carstens, J., et al., Analysis of the uncertainties of the PMC parameter retrieval from a CIPS scattering profile, CEDAR meeting, Boulder, CO, June 2010.

Collette, A., The Colorado Center for Lunar Dust and Atmospheric Studies, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Collette, A., Structure of an exploding laser-produced plasma, APS DPP meeting, 2010.

D'Amore, M., et al., Compositional units on Mercury from principal component analysis of MESSENGER reflectance spectra, Lunar and Planetary Institute Science Conference Abstracts, 41, March 2010.

D'Amore, M., G. Holsclaw, et al., Principal component spectral matching of laboratory and MESSENER observations and compositional units on Mercury, European Planetary Science Congress, Rome, Italy, 20-24 September 2010.

Delamere, P.A., Solar wind interaction with the giant magnetospheres, Europlanet Workshop, Liege, Belgium, October 2010.
Delamere, P.A., Neutral and plasma tori of Jupiter and Saturn, UAH workshop, Nashville, TN, October 2010.
Delamere, P.A., Internally-driven giant magnetospheres, GEM workshop, Snowmass, CO, June 2010.
Delamere, P.A., Solar wind interaction with the giant magnetospheres, Space Sciences Laboratory Seminar, Berkeley, CA, October 2010.
Desroche, M. J., F. Bagenal, and P.A. Delamere, Potential reconnection sites at Jupiter's magnetopause, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Dolinar, E., et al., Lyman alpha airglow observations from SORCE SOLSTICE, AGU Fall Meeting, San Francisco, CA, 13-17 December, 2010.
Dols, V.J., et al., Io's Extended Neutral Sulfur and oxygen clouds supplied by electron impact dissociation of an SO2 atmosphere, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Dols, V. J.; Burger, M. H.; Delamere, P. A.; Bagenal, F., Oxygen Clouds Supplied by Electron Impact Dissociation of an SO2 Atmosphere, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Domingue, E.L., et al., Analysis of the dedicated spectral photometric observations from MESSENGER's third Mercury flyby, Lunar and Planetary Institute Science Conference Abstracts, 41, March 2010.
Dove, A., Experimental investigations of the lunar photoelectron sheath, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Drake, K.J., et al., Dust telescopes and active dust collectors: Linking dust to their sources, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Drake, K.J., et al., The Electrostatic Lunar Dust Analyzer (ELDA) instrument, Dusty Visions, Gottingen, Germany, 4-16 July 2010.
Ebert, R. W., D. McComas, F. Bagenal, H.A. Elliott, and M.E. Hill, Composition of the <7.5 keV/Q Plasma in Jupiter's Magnetotail from ~150 to 2550 RJ, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Ebert, R. W., D. McComas, F. Bagenal, and H.A. Elliott, Location, Structure, And Motion Of Jupiter's Dusk Magnetospheric Boundary From 1625 To 2550 RJ, DPS/AAS, October 2010.
Eichler, H., et al., Effects of cirrus spatial heterogeneity and ice particle shape on remote sensing of cirrus optical thickness and effective crystal radius – A case study, EGU General Assembly, Vienna, Austria, 2010.
Eichler, H., et al., Cirrus spatial heterogeneity and ice crystal shape: Effects on remote sensing of cirrus optical thickness and effective crystal radius, AMS 13th Conf. of Atmospheric Radiation, Portland, OR, 2010.
Elkington, S.R., et al., Access of ionospheric oxygen to the near-Earth plasma sheet during geomagnetically quiet conditions, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Elphic, R.C., The lunar atmosphere and dust environment explorer (LADEE): New mission, longstanding questions, Lunar Exploration Analysis Group, 14-16 September 2010.

Ergun, R.E., Double Layers on Auroral Field Lines, Cluster-THEMIS Workshop, Corfu, Greece, 2010

Ergun, R.E., Large-Scale Effects of Parallel Electric Fields, University of California, Berkeley, 2010.

Ergun, R.E., Parallel Electric Fields in the Magnetotail, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Ergun R.E., Double Layers on Auroral Field Lines, Auroral Plasma Physics Workshop, Beaulieu, France, 2010

Eriksson, S., et al., FTE dynamics and effects on local and remote regions near the dayside magnetopause reconnection layer: Using the Space Weather Explorer at CCMC, 5th CCMC Workshop, Key Largo, Florida, January 2010.

Eriksson, S., et al., THEMIS FTE encounter between oppositely directed reconnection jets at the dayside subsolar region on 27 June 2007, Fall AGU meeting, San Francisco, CA, 14 December 2010.

Eriksson, S., et al., DMSP and AMPERE dB observations for 5 April 2010 storm growth phase: IMF By effects and dawnside FAC evaluation, GEM meeting, San Francisco, CA 12 December 2010.

Eriksson, S., Poynting flux observations for 15 May 2005 Storm: Relation to high-latitude reconnection driven convection and NBZ currents, GEM meeting, Snowmass Village, CO, 22 June 2010.

Eriksson, S., Configuration of field-aligned currents during dayside energy deposition, MURI meeting, U. of Colorado, Boulder, 27 October 2010.

Eriksson, S., et al., First observation of reconnection Hall fields in the solar wind, Cluster 10th Anniversary workshop, Corfu, Greece, 30 September 2010.

Farr, N.L., D.N. Baker, et al., Using MHD modeling to specify inner heliosphere conditions during the three MESSENGER Mercury flybys, AGU Fall Meeting, San Francisco, CA, 13-17 December, 2010.

Fleshman, B.L., P.A. Delamere, and F. Bagenal, The Source of Saturn's Extended Neutral Cloud, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Fleshman, B.L., P.A. Delamere, and F. Bagenal, The Source of Saturn's Extended Neutral Cloud, DPS/AAS, October 2010.

Fontenla, John, First accurate and surprising observations of Solar Spectral Irradiance by the SIM-SORCE instrument, AAS/SPD Joint Meeting, Miami, FL.

Fontenla, John, The Solar Radiation Physical Modeling (SRPM) approach, current status, and issues, AGU Meeting of the Americas, August Brazil, 2010.

Fontenla, John, MURI progress on Area 6: Solar features forecast, MURI meeting, Boulder, CO, 2010.

Fontenla, John, First results of modeling the UV solar spectral irradiance (SSI), AGU Meeting of the Americas, Brazil, August 2010.

Fontenla, John, SRPM input on WAVVM, WACCM Workshop, Boulder, CO, 2010.

France, J., et al., HIRDLS, MLS, and SABER observations of the stratopause, Aura science team meeting, September 2010.

France, J., et al., HIRDLS, MLS and SABER observations of the stratopause, U. of Colorado Student Poster

Conference, Boulder, CO, December 2010.
France, J., et al., HIRDLS, MLS and SABER observations of the stratopause, EOS Aura Science team Meeting, Boulder, CO, 1 October, 2010.
France, J., et al., HIRDLS, MLS, and SABER observations of the stratopause, HIRDLS Science Team Meeting, Boulder, CO, 27-29 September 2010.
Georgiev, G.T., et al., The effect of incident light polarization on vegetation bidirectional reflectance factor, Proc. International Geoscience and Remote Sensing Symposium, Honolulu, HI, 3636, 1652-1655, 2010.
Gosling, J.T., Small magnetic flux ropes, toriodal Alfven waves, and reconnection in ICMEs and flux ropes, STEREO, ACE, Wind Workshop, Kennebunkport, ME, June 2010.
Gosling, J.T., One-sided Alfvenic fluctuations in the solar wind, SHINE meeting, Santa Fe, NM, July 2010.
Gosling, J.T., Magnetic reconnection and the changing topology of the solar wind, SHINE meeting, Santa Fe, NM, July 2010.
Gosling, J.T., A torsional Alfven wave embedded within a small magnetic flux rope in the solar wind, ACE Science working Team Meeting, APL, Laurel, MD, October, 2010.
Gosling, J.T., A torsional Alfven wave embedded within a small magnetic flux rope in the solar wind, Fall AGU meeting, San Francisco, CA, 14 December 2010.
Gosling, J.T., Magnetic reconnection in the solar wind, Space Science Laboratory, Univ. of California, Berkeley, CA, September 2010.
Gosling, J.T., Pervasive reconnection in the solar wind and the ever-changing topology of the heliospheric magnetic field, STEREO-Wind Workshop, Space Science Laboratory, University of California, Berkeley, CA, December 2010.
Greer, K., et al., Climatology of upper stratospheric and lower mesospheric disturbances in the polar winter, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Greer, K., et al., Front-like formations in the Middle atmosphere; A precursor to sudden stratospheric warmings?, CEDAR Workshop, Boulder, CO, 22 June 2010.
Grün, E., Nano-dust analyzer, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Grün, E., Compositional mapping of the surfaces of Europa and Ganymede, Division of Planetary Science meeting, 2010.
Guan, H., et al., Absorption properties of biomass burning aerosol: A closure study using the I3RC community radiative transfer model and ARCTAS measurements, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Gumbel, J., et al., Common volume observations of Noctilucent Clouds by Odin/OSIRIS and AIM/CIPS, COSPAR 2010, Bremen, Germany, July 2010.
Harber, D., K. Heuerman, and G. Kopp, Validation of the GLORY TIM and a ground-based SORCE TIM, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Harder, J.W., et al., What the SORCE SIM observations tell about solar spectral irradiance, Aspen Global Change Institute, Aspen, CO, June 2010.

Harder, J.W., et al., Measured and modeled trends in solar spectral irradiance variability in the visible and infrared, COSPAR Scientific Assembly, Bremen, Germany, July 2010.
Harder, J.W., et al., Application of solar spectral irradiance variability in an Earth atmospheric model, 7th Canadian Solar Workshop, St. Emile de Suffolk, Quebec, Canada, October 2010.
Harder, J.W., et al., Measured and modeled trends in solar spectral irradiance variability in the visible and infrared, SORCE meeting, Keystone, CO, 2010.
Harder, J.W., et al., Solar spectral Irradiance: Current understanding and challenges for the future, World Meteor. Org., Geneva Switzerland, March 2010.
Harvey, V.L., et al., Mesospheric transport in WACCM, AGU Fall Meeting, San Francisco, CA, December 2010.
Harvey, V.L., Four dimensional evolution of the Arctic vortex and anticyclones during the 2010 SSW, CEDAR Workshop, Boulder, CO22 June 2010.
Helbert, J., et al., Combining high-temperature spectroscopy and principal component analysis to understand Mercury surface spectra from MESSENGER, Lunar and Planetary Institute Science Conference Abstracts, 41, March 2010.
Hendrix, R., G. Holsclaw, et al., Saturn's icy moons: UV reflectance spectra and links to Enceladus' plume gases, in European Planetary Science Congress 2010, Rome, Italy, 20-24 September 2010.
Hertzog, A., L. Avallone, et al., Concordiasi, a long-duration balloon campaign dedicated to the polar atmosphere, COSPAR Scientific Assembly, Bremen, Germany, July 2010.
Holsclaw, G.M., et al., Measurement of the disk-integrated polarization of the Moon in the ultraviolet, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Holsclaw, G.M., et al., The LASP Lunar Albedo Measurement and Analysis from SOLSTICE (LLAMAS), Lunar and Planetary Institute Science Conference Abstracts, 41, March 2010.
Horanyi, M., In Situ measurements of interplanetary and interstellar dust, Irvine, CA, 2010.
Horanyi, M., LDEX-PLUS: Lunar Dust Experiment with Chemical analysis Capability to search for water, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Horanyi, M., Charged dust in the solar system: Direct and indirect evidence, AAS, Miami, FL, May 2010.
Horanyi, M., Plasma physics of the Lunar surface, ICTP, Italy, July 2010.
Horanyi, M., The lunar surface: A dusty plasma laboratory, Heliophysics and cosmology, Boulder, CO, October 2010.
Hsu, H.-W., Saturnian stream particles as a probe of Enceladus' interior, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Imhoff, M. L., et al., Emerging implications of a ten-year Terra data record for Earth science, International Geoscience and Remote Sensing Symposium, Honolulu, HI, 2010.
Jackman, C.H., et al., Polar northern hemisphere middle atmospheric influence due to energetic particle precipitation in January 2005, COSPAR Scientific Assembly, Bremen, Germany, July 2010.

Jones, A.R., Locating flares with SDO-EVE-ESP, EVE Space Weather workshop, October 2010.
Jones, A.R., and J. Goetz, ESP: Flare detection and location, EVE Space Weather workshop, October 2010.
Juhasz, A., Tomography of the heliosphere: Ulysses dust measurements, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Kanekal, S.G. and D.N. Baker, Energization and loss of relativistic electrons in the inner magneto-sphere, COSPAR Scientific Assembly, Bremen, Germany, July 2010.
Karlsson, B., et al., On inter-hemispheric coupling in the middle atmosphere, COSPAR 2010, Bremen, Germany, July, 2010.
Kempf, S., Enceladus Dust production – New insights from Cassini, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Kindel, B.C., et al., Measurements and modeling of solar spectral absorption by liquid water clouds, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
King, M.D., et al., Spatial and temporal distribution of clouds as observed by MODIS onboard the terra and Aqua satellites, International Symposium on the A-Train satellite constellation, New Orleans, LA, 2010.
King, M.D., et al., Ten years of Earth observations from MODIS: What has been accomplished? International Geoscience and Remote Sensing Symposium, Honolulu, HI, 2010.
King, M.D., The remote sensing of cloud optical properties: Teruyuki Nakajima and his contributions. Radiation, Clouds, Aerosols, and climate Symposium, Sendai, Japan, 2010.
Knappmiller, S., et al., Charge and Mass of Meteoritic Smoke Particles (CHAMPS) Rocket Campaign, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Kopp, G., et al., SORCE science team meeting summary, Earth Observer, 22, July-August 2010.
Kopp, G., et al., Hyperspectral imagery radiometry improvements for visible and near-infrared climate studies, ESTF 2010.
Kopp, G., Total solar irradiance record accuracy and recent improvements, COSPAR 2010, July 2010.
Kopp, G., et al., Total solar irradiance instrument validations improve TSI record, SORCE Science meeting, May 2010.
Kopp, G., Aspen Global Change Institute (AGCI) workshop: Global change and the solar-terrestrial environment, June 2010.
Kopp, G., K. Heuerman, and D. Harber, International pyroheliometer comparison 2010 results from SORCE/TIM, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Korth, H., and D.N. Baker, The Interplanetary Magnetic Field Environment at Mercury's Orbit, COSPAR, Bremen, Germany, July 2010.
Korth, H., D.N. Baker, et al., Mercury's magnetospheric response to the dynamics of the space environment, BepiColombo Workshop, Boulder, CO, 2 November 2010.
Kozyra, J.U., et al., High speed stream activity in an IMF-By magnetosphere, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
LeBlanc, S.E., et al., Retrieval of aerosol properties, surface albedo, and radiative forcing from SSFR, AATS-14, and

HSRL measurements during CalNex and ARCTAS, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Li, X., Quantify the precipitation loss of radiation belt electrons observed by SAMPEX, NASA/RBSP EFI Science workshop, University of Minnesota, May 2010.

Li, X., Quantify the precipitation loss of radiation belt electrons observed by SAMPEX, Chinese Space Weather meeting, Shanghai, China, 28 June-2 August, 2010.

Li, X., Determining the loss of radiation belt electrons: What measurements and models are required? Meeting of Americas, Brazil, August 2010.

Li, X., Energetic electrons in the central plasma sheet and ULF in the inner magnetosphere: Cluster and THEMIS observations, Cluster 10th Anniversary Workshop, Greece, September 2010.

Li, X., An abrupt ending of long dormant outer radiation belt electrons: The external and internal conditions that made this possible, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Li, X., CubeSat: Colorado Student Space Weather Experiment, Beijing, August 2010.

Li, X., Determining the loss of radiation belt electrons: What measurements and models are required?, Beijing, August 2010.

Li, X., Determining the loss of radiation belt electrons: What measurements and models are required?, Univ. of Colorado, Boulder, November 2010.

Likhanskii, A., 3D particle-in-cell (PIC) simulations of plasma sheath formation above lunar craters, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Livi, R., et al., Levenberg-Marquardt Algorithm Applied to Cassini-CAPS Corotational Data, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Luebke, A., and L.M. Avallone, Development of a climatology for cirrus cloud ice water content and its application to climate model parameterizations, AMS 13th Conference on Cloud Physics, Portland, OR, June 2010.

McBride, P.J., et al., Cloud property retrievals from surface spectral transmittance and airborne spectral reflectance: Comparisons with satellite, microwave, and in-situ observations during CalNex, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

McClintock, W., et al., Insights into the nature of Mercury's surface-bound exosphere: Results from the three MESSENGER flybys, COSPAR 2010, Bremen, Germany, July 2010.

McEwen, A., et al., Science Rationale for an Io Volcano Observer (IVO) Mission, LPSC, March 2010.

McGouldrick, K., Quantifying the evolution of the Venus clouds, SwRI Colloquium Series, 30 November 2010.

McGouldrick, K., Observing the clouds of Venus from the ultraviolet to the infrared, Venus Exploration and Analysis Group meeting, Madison, WI, September 2010.

McGouldrick, K., First results of an investigation of sulfur dioxide in the ultraviolet from Pioneer Venus through Venus Express, DPS, Pasadena, CA, 2-8 October 2010.

Malaspina, D., S. Hess, and R.E. Ergun, Localized Langmuir eigenmodes and solar radio bursts, 7th International Workshop on Planetary, Solar and He-

liospheric radio Emissions, Graz, Austria, September 2010.
Malaspina, D., S. Hess, and R.E. Ergun, Size and amplitude distributions of Langmuir-Eigenmodes in the solar wind, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Mellon, M.T., et al., Geographical variations in polygonal ground on Mars: Polygon size and its relationship to ground ice, Lunar and Planetary Institute Science Conference Abstracts, 41, March 2010.
Miranova, I., et al., Effect of an extreme solar energetic particle event on January 20, 2005 on polar stratospheric aerosols, COSPAR 2010, Bremen, Germany, July 2010.
Morrill, J., D. Socker, R. Willson, and G. Kopp, Fall 2010 total solar irradiance calibration workshop, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Nielsen, K., et al., AIM: A survey of polar mesospheric clouds over Antarctica, Scientific Committee on Antarctic Research, August 2010.
Pagaran, J.A., et al., Intercomparison of spectral irradiance measurements and provision of alternative radiation scheme for CCMs of middle atmosphere, COSPAR 2010, Bremen, Germany, July 2010.
Peck, E.D., et al., Effect of energetic particle precipitation on the atmosphere as simulated by WACCM, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Peterson, W.K., Photoelectrons as a tool to evaluate spectral and temporal variations of solar EUV irradiance over solar cycle time scales, Boulder Solar Day, 2010.
Peterson, W.K., Photoelectrons as a tool to evaluate spectral and temporal variations of solar EUV irradiance over solar cycle time scales, ePOP Science meeting, Montreal, Canada, February, 2010.
Peterson, W.K., Observations of O+ ions in transit from the ionosphere: The pipeline, COSPAR 2010, Bremen, Germany, July 2010.
Peterson, W.K., Oxygen in the magnetosphere; What role does it play in the formation of geomagnetic storms?, Theory of the Magnetosphere: Discussion of unsolved problems, Santa Fe, NM, 4-8 October 2010.
Peterson, W.K., et al., Photoelectrons as a tool to monitor solar EUV variability over solar rotation and solar cycle time scales, CEDAR Meeting, Boulder, CO, June 2010.
Peterson, W.K., et al., Photoelectrons as a tool to evaluate spectral and temporal variations of solar EUV irradiance models over solar rotation and solar cycle time scales, COSPAR 2010, Bremen, Germany, July 2010.
Peterson, W.K., Oxygen in the magnetosphere: What role does it play in the formation of geomagnetic storms?, Friends of the Magnetosphere seminar at LASP, 14 September 2010.
Peterson, W.K., et al., Photoelectrons as a tool to evaluate spectral and temporal variations of solar EUV irradiance models, AFOSR MURI Meeting, Boulder, CO, 27 October 2010.
Peterson, W.K., et al., Photoelectrons as a tool to evaluate spectral and temporal variations of solar EUV and XUV irradiance models over solar rotation time scales, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Pilewskie, P., et al., Variability in SCIAMACHY Earth-reflected solar spectral radiance: Guidance for Climate benchmarking, COSPAR 2010, Bremen, Germany, July 2010.

Pilewskie, P., Variability in SCIAMACHY Earth-reflected solar spectral radiance: Guidance for Climate benchmarking, AMS Radiation Conference, Seattle, WA, 27 June-1 July 2010.

Platnick, S., et al., Ten years of cloud products from MODIS Terra; Trend analysis, International Geoscience and Remote Sensing Symposium Honolulu, HI 2010.

Poppe, A.R., Non-monotonic potentials above the lunar surface: Implications for electron reflectometry measurements, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Presicci, M.R., D.N. Baker, and S.G. Kanekal, Variations of Earth's radiation belt intensities on time scales of days throughout the 11-year solar cycle, AGU Fall Meeting, San Francisco, CA, 13-17 December, 2010.

Pryor, W.R., et al., Interplanetary hydrogen Lyman-alpha emission observations from the Mercury atmospheric and surface composition spectrometer on the MESSENGER spacecraft, AGU Fall Meeting, San Francisco, CA, 13-17 December, 2010.

Randall, C.E., Atmospheric coupling via energetic particle precipitation: Coupling, Energetics and Dynamics of Atmospheric Regions, CEDAR Meeting, Boulder, CO, June 2010.

Randall, C.E., et al., Atmospheric coupling via energetic particle precipitation, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Randall, C.E., et al., Impact of energetic particle precipitation on the middle atmosphere, SCOSTEP, Berlin, Germany, July 2010.

Randall, C.E., Atmospheric coupling via energetic particle precipitation, Aspen Global Change Institute workshop on Global Change and the Solar Terrestrial Environment, 14 June 2010.

Rast, M.P., Turbulence Transport I, ISIMA 2010, Santa Cruz, CA, 9 July 2010.

Rast, M.P., Toward a mixed Eulerian-Lagrangian turbulent transport model, ISIMA 2010, Santa Cruz, CA, 9 July 2010.

Rast, M.P., The Advanced Technology Solar Telescope (ATST): Probing the nature of solar magnetism, APS Dept, U. of Colorado, Boulder, 26 April 2010.

Rast, M.P., Supergranule variability in Mt. Wilson Ca II K images, AAS, 23-27 May 2010.

Rast, M.P., Modeling the near-surface shear layer through coupled simulations of surface and deep convection, GONG-2010, France, 27 June-2 July 2010.

Rast, Vorticity and helicity of coherent turbulent structures in Taylor-Green and ABC flows, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Rast, Wavelet decomposition of Taylor-Green forced-turbulence; sensitivity of the incoherent component statistics to threshold value, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Redemann, J., et al., Studying the radiative environment of individual biomass burning fire plumes using multi-platform observations; An example ARCTAS case study on June 30, 2008, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Redmon, R., et al., A global view of O+ upward flows and outflow rates during non-storm times, COSPAR, Bremen, Germany, July 2010.

Redmon, R., et al., A global view of O+ upwelling and outflow rates between DMSP and POLAR, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Richard, E.C., et al., Future long-term measurements of solar spectral irradiance variability: Achievements and lessons from the SORCE SIM, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Richard, E.C., et al., Long-term measurements of solar spectral irradiance variability: Toward the establishment of a climate record, COSPAR Scientific Assembly, Bremen, Germany, July 2010.

Roberts, Y., et al., Multivariate analysis of hyperspectral Earth-reflected solar radiance, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Robertson, S.H., An ion analyzer for the lunar surface with E parallel to B., Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Roman, M., et al., Characterization of surface directional reflectance properties over the U.S. Southern Great Plains from airborne measurements and surface observations, International Geoscience and Remote Sensing Symposium, Honolulu, HI, 2010.

Russell, J.M., III, et al., The Aeronomy of Ice in the Mesosphere Mission: Science results after five PMC seasons, AMS Meeting, Atlanta, GA, February 2010.

Russell, J.M., III, et al., Observations of Polar Mesospheric Clouds from space and their scientific implications, SCOSTEP meeting, Berlin, Germany, July 2010.

Schmidt, S., et al, Airborne measurements of solar radiation: The value of spectrally-resolved observations for cloud-aerosol remote sensing and energy budget, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Schmidt, S., et al., The spectral shape of shortwave cloud albedo and apparent absorption, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Schneider, N.M., Enceladus: The Great Ocean Debate, Colloquium at Berkeley, 21 October 2010.

Schneider, N.M., Do the plumes on Enceladus come from a salty ocean, U. Padova, Italy, 22 March 2010.

Schneider, N.M., Studies of atmospheric escape: Io, Enceladus and Mars, Rome, 29 March 2010.

Schneider, N.M., All of Planetary Science, LASP Teacher Workshop Keynote presentation, 6 June 2010.

Schneider, N.M., Watching atmospheres escape, LPL, Tucson, AZ, 2 October 2010.

Schneider, N.M., Tips and tools for teaching planetary science, UC Berkeley, 21 October 2010.

Shinn, A.; Bagenal, F., Anticipating Juno, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Shu, A.J., The Dust Accelerator Facility at the Colorado Center for Lunar dust and Atmospheric Studies, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Shu, A.J., The Dust Accelerator Facility at CCLDAS, 52nd Annual Meeting of the APS Division of Plasma Physics, 8-12 November, 2010.

Slavin, J., D.N. Baker, et al., MESSENGER observations of recon-

nection and its effects in Mercury's magnetosphere, BepiColombo Workshop, Boulder, CO, 2 November 2010.

Smith, J.A., et al., Simulation of intercontinental transport of smoke from the Siberian forest fires of 2001, ATOC Department, Boulder, CO 2010.

Smith, J.A., et al., Intercontinental transport of smoke from the Siberian forest fires of 2003, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Smith J.A., et al., Intercontinental transport of smoke from the Siberian forest fires of 2003, AERO Center, NASA/GSFC, Greenbelt, MD, 2010.

Snow, M., et al., The Research Experience for Undergraduates Program in solar and space physics at the University of Colorado, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Snow, M., et al., The Research Experience for Undergraduates Program in solar and space physics at the University of Colorado, Astronomical Society of the Pacific Meeting, Boulder, CO 2010.

Snow, M., and E. Wood, Successful science through Research Experience for Undergraduates (REU), Heliophysics Faculty workshop, San Francisco, CA, 2010.

Snow, M., Comparison of stellar spectra from SOLSTICE and SPICAM, FONDUE Working Group, International Space Studies Institute, Bern, Switzerland, January 2010.

Snow, M., T. Woods, and O.R. White, Irradiance observations of solar active longitudes over three solar cycles, COSPAR, Bremen, Germany, 2010.

Snow, M., Observations of the extended hydrogen atmosphere of Venus from SOLSTICE, FONDUE Working Group, International Space Studies Institute, Bern, Switzerland, January 2010.

Snow, M., et al., Solar ultraviolet irradiance variability during the decline of Cycle 23, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Sremcevic, M., et al., Saturn's rings under a microscope: Cassini UVIS results, EPSC meeting, Rome, Italy, 2010.

Sternovsky, Z., et al., Planetary magnetosphere probed by charged dust particles, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Sternovsky, Z., The lunar surface: A dusty plasma laboratory, NLSI Director's Virtual Seminar Series, 8 November 2010.

Sternovsky, Z., Investigation of near-surface lunar dust transport in the laboratory, COSPAR 2010, Bremen, Germany, July 2010.

Sternovsky, Z., et al., Instrumentation for the in-situ detection and analysis of interstellar dust particles, Dusty Visions, 4-16 July 2010, Gottingen, Germany.

Sternovsky, Z., Electric field and plasma measurements on the lunar surface using deployable booms, Lunar Dust, Plasma and Atmosphere: The next steps, 27-29 January, 2010, Boulder, CO.

Sternovsky, Z., et al., The Lunar Dust Experiment (LDEX) for the Lunar Atmospheric and Dust Environment Explorer (LADEE) Mission, National Radio Science Meeting (URSI), 5-8 January, 2010, Boulder, CO.

Sternovsky, Z., et al., Planetary magnetospheres probed by charged dust particles, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.

Sternovsky, Z., et al., The Lunar Dust Experiment (LDEX) instrument for the Lunar Atmosphere and Dust Environ-

ment Explorer (LADEE) Mission, COSPAR 2010, Bremen, Germany, July 2010.
Sternovsky, Z., et al., Interstellar dust instrumentation, DPS, Pasadena, CA, 2-8 October 2010.
Sternovsky, Z., et al., The Electrostatic Lunar dust Analyzer (ELDA) for the detection and trajectory measurement of slow dust particles, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Stewart, G.R., Dynamical surprises in Saturn's rings, An Ighigaki International Conference on Evolving Theory for Planet Formation, 20-26 June, 2010.
Tan, B., et al., Comparative study of stratopause at the South Pole and Rothera, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Tien, Feng, Titan's early atmosphere, DPS meeting, Pasadena, CA, 2010.
Tien, Feng, Planetary upper atmospheres under extreme solar EUV environments, U. of Arizona, Tucson, 2010.
Tien, Feng, Planetary upper atmospheres under extreme solar EUV environments, SwRI, San Antonio, TX, 2010.
Tien, Feng, The thermosphere/ionospheres of terrestrial planets under intense solar XUV radiation, AGU Chapman Conference, Charleston, SC, 2010.
Tien, Feng, Planetary atmosphere stability in the habitable zones of M-stars, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Thurairajah, B., et al., Gravity wave activity in the Arctic stratosphere and mesosphere during the 2007-2008 and 2008-2009 stratospheric warming events, CEDAR Workshop, Boulder, CO, 22 June 2010.
Tian, F., NH3 and the faint young Sun problem, Peking University, April 2010.
Viereck, R.A., et al., Trends in solar UV and EUV irradiance: An update to the MgII Index and a comparison of proxies and data to evaluate trends of the last 11-year solar cycle, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Von Savigny, C., et al., First determination of the fractal perimeter dimension of noctilucent clouds, COSPAR 2010, Bremen, Germany, July 2010.
Wang, X., et al., Laboratory investigations of lunar dust transport, Workshop on Lunar Dust, Plasma and Atmosphere: The Next Steps, Boulder, CO, 2010.
Wang, X., et al., Laboratory investigations of lunar dust transport, 2010 USNC-URSI National Radio Science Meeting, Boulder, CO, 2010.
Wang, X., Dust transport and electric field distributions in planetary craters, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Wang, X., Dust transport near electron beam impact and shadow boundaries, 3rd Annual NASA Lunar Science Forum, Moffett Field, CA, 2010.
Ware Dewolfe, A., et al., Solar Irradiance data products at the LASP Interactive Solar Irradiance Datacenter (ISIRD), Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Weilicki, B.A., et al., CLARREO: Decadal change accuracy for space-based emitted Infrared spectra, reflected solar spectra and radio occultation, AMS Atmospheric Radiation Conference, June 2010.
Wilson, R.J., Is there a torus at Rhea?, CAPS Team meeting #40, Windsor, UK, 2010.

Wilson, R.J., Robust error analysis for forward modeling of plasma data, CAPS Team meeting #41, Annapolis, MD, 2010.
Wilson, R.J., R. Bagenal, and P.A. Delamere, Cassini CAPS measurements of thermal ion properties: An update, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Wilson, R.J., and F. Bagenal, Structure and dynamics of the Jovian magnetosphere from five spacecraft, European Planetary Science Congress, Rome, 2010.
Wilson, R. J., F. Bagenal, and P.A. Delamere, Cassini CAPS Measurements of Thermal Ion Properties: An Update, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Xie, J., The Electrostatic Lunar Dust Analyzer (ELDA) for the detection and trajectory measurement of slow dust particles, Fall AGU Meeting, San Francisco, CA, 13-17 December 2010.
Xie, J., et al., Computer model of the Dust Trajectory Sensor (DTS), NLSI Lunar Science Forum, NASA Ames Research Center, 2010.
Yau, A.W., et al., Recent advances in ionospheric ion outflows and ionosphere-thermosphere-magnetosphere coupling: The Akebono connection, Akebono Workshop, Japan, October 2010.
Zhao, Y., et al., Two-dimensional spectral analyses of wave structures in polar mesospheric clouds, COSPAR 2010, Bremen, Germany, July 2010.

SPONSORED PROGRAMS

Andersson, Laila	The Generator Region of the Discrete Aurora
Andersson, Laila	Value Added Services for VxOs: Creation of a Comprehensive Data set for the FAST Small Explorer
Avallone, Linnea	Collaborative Research: Colorado airborne Multi-Phase Cloud Study (CAMPS)
Avallone, Linnea	Measurements of Ice Water Content during MACPEX and Comparisons to Remotely Sensed Cloud microphysical properties
Bagenal, Frances	Dynamics of the Outer Magnetosphere of Saturn
Bagenal, Frances	JUNO Science Support – Phase B Activities
Bagenal, Frances	Modeling of the outer magnetosphere and its coupling to the solar wind
Bagenal, Frances	New Horizon Pluto-Kuiper Belt Mission Phase B
Bagenal, Frances	NSF Astronomy and Astrophysics Post Doctoral Fellowship
Bagenal, Frances	Pluto astronomical observations
Bagenal, Frances	Structure and Dynamics of the Jovian Magnetosphere from five spacecraft
Baker, Daniel	2009 REU Summer Program at LASP: An interdisciplinary undergraduate research program in Solar and Space Physics with NCAR
Baker, Daniel	A New Tenure-Track solar physicist at CU-Boulder: Catalyst for Change
Baker, Daniel	Relativistic electron-proton Telescope (REPT) on the Radiation Belt Storm Probes (RBSP) – Energetic particle, composition, and thermal plasma (ECT) suite
Baker, Daniel	The Center for Integrated Space Weather Modeling (CISM)
Delamere, Peter	Interaction of the Solar Wind with Jupiter's magnetosphere: Boundary Layer processes
Delamere, Peter	Satellite-magnetosphere interactions: A comparison of Io, Enceladus, and Europa
Elkington, Scot	Investigations of the onset, spatial and spectral characteristics of magnetospheric EMIC wave activity
Elkington, Scot	Transport of radiation belt electrons via magnetospheric ULF waves in a realistic geomagnetic field
Elkington, Scot	A new method for combined modeling of local acceleration and radial transport in the radiation belts
Eparvier, Francis	Extreme ultraviolet and X-ray irradiance sensors (EXIS) geostationary operational environmental satellites (GOES)

Ergun, Robert	Analysis of electromagnetic electron phase-space holes and double layers observed by the THEMIS mission
Ergun, Robert	Electric field and waves (EFW) instrument
Ergun, Robert	Magnetospheric Multiscale (MMS) fields investigation digital signal processor and axial double probes
Ergun, Robert	Solar terrestrial relations observatory (STEREO) waves
Ergun, Robert	Time history of events and their macroscopic interactions during substorms (THEMIS)
Eriksson, Stefan	FE generation at the magnetosphere: THEMIS observations and MHD analyses
Esposito, Larry	Cassini Solstice Mission
Esposito, Larry	Cassini Equinox – Cassini extended mission
Esposito, Larry	Cassini UVIS User's Guide
Esposito, Larry	Dynamical interactions between small bodies and giant planets
Esposito, Larry	Dynamics of spinning ring particles and stability of planetary rings
Esposito, Larry	Surface and Atmosphere Geochemical Explorer (SAGE)
Fang, Xiaohua	Collaborative research: Global response of the Martian thermosphere to energetic pickup ions
Fang, Xiaohua	Parameterization of energetic electron and proton impact ionization and its application to global modeling
Fang, Xiaohua	Study of the Martian ionosphere and atmospheric responses to extreme space weather events
Fontenla, John	Neutral atmosphere density interdisciplinary research (NADIR_
Fontenla, John	Physical modeling of the radiative Sun-earth connection
Gosling, John	A study of magnetic reconnection exhausts and small flux ropes in the solar wind using a modern data mining technique
Gosling, John	IMPACT experiment work for STEREO
Gosling, John	Magnetic reconnection in the solar wind and related topics
Gosling, John	Theory and simulation of basic kinetic physics of magnetic reconnection in support of MMS
Harvey, Lynn	CEDAR: Investigation of baroclinic disturbances in the polar wintertime middle atmosphere
Harvey, Lynn	Pan-Arctic studies of the coupled tropospheric, stratospheric, and mesospheric circulation
Hodges, Richard	Dynamic Response of the Environment At the Moon (DREAM); a Node of NASA's Lunar Science Institute
Hodges, Richard	LADEE neutral mass spectrometer investigation
Horanyi, Mihaly	Cassini CDA Equinox Mission Science

Horanyi, Mihaly	Cassini CDA Solstice (XXM)
Horanyi, Mihaly	Lunar Dust Experiment (LDEX)
Horanyi, Mihaly	Lunar Dust Transport
Horanyi, Mihaly	NASA Lunar Dust Institute: Colorado Center for Lunar Dust and Atmospheric Studies
Horanyi, Mihaly	New Horizons Mission Student Dust Counter (SDC)
Horanyi, Mihaly	The Dusty Plasma Environment of the Moon: NRA/NASA Earth and Space Science Fellowship (NESSF) Program
Hynek, Brian	A Global Martian crater database complete to 1.5 km-diameter
Hynek, Brian	Cerro Negro, Nicaragua: An analog for assessing the potential for life on early Mars
Hynek, Brian	Understanding geochemical pathways on early Mars through experiments and modeling
Jakosky, Bruce	Mars atmosphere and volatile evolution mission (MAVEN)
King, Michael	Science team leader of the NASA Ether observing system (EOS) terra and aqua MODIS science team and associated research
Kopp, Greg	A hyperspectral imager to meet CLARREO goals of high absolute accuracy and on-orbit SI traceability
Kopp, Greg	GLORY project – TIM: six ROM budget
Li, Xinlin	Acceleration of radiation belt electrons: In Situ heating vs. inward radial transport
Li, Xinlin	CubeSat: Colorado student space weather experiment
Li, Xinlin	Determining the loss of outer radiation belt electrons: A high priority of LWS/RBSP
Li, Xinlin	Energetic electron dynamics in the magnetosphere
Liu, Wenlong	Study of Pc4 and pc5 ULF pulsations in the inner magnetosphere: THEMIS observation
McClintock, William	Science Team support for the MESSENGER Mission
McClintock, William	MESSENGER mission MASCS instrument engineering support
McClintock, William	Development of a 3D visualization tool for ultravio9let and visible spectrograph exosphere observations during the MESSENGER mission
McCollom, Thomas	Hydrogen generation in Serpentinizing systems
McCollom, Thomas	Bringing the SETI instruments voyages through time astrobiology curriculum to the Space Science teacher's summit
McGrath, Michael	Community Initiative for Cellular Earth Remote Observation (CICERO)
McGrath, Michael	Aeronomy of Ice in the mesosphere (AIM) additional staffing hours, materials and equipment to complete the CIPS instrument

Mellon, Michael	Mechanical strength of Martian soils
Mellon, Michael	Geological interpretation of thermal inertia on Mars
Mellon, Michael	High Resolution Imaging Science Experiment (HIRISE)
Millward, George	Integrated modeling of the atmosphere-ionosphere system
Millward, George	CEDAR: whole-atmosphere modeling of ionospheric responses to atmospheric variability
Pankratz, Christopher	LASP resident archive for SNOE and TIMAS
Pankratz, Christopher	Data restoration and archival of LASP planetary data sets from the 1960s and the 1990s
Peterson, William	Mars Atmosphere and Volatile EvolutioN Mission (MAVEN)
Pilewskie, Peter	Solar spectral and infrared radiative forcing of aerosol particles, aerosol-cloud interactions, and surface albedo characterizations
Pilewskie, Peter	developing a climate data record for total and spectral solar irradiance
Pilewskie, Peter	Solar spectral flux radiometer measurement for ATTREX
Pilewskie, Peter	Analysis of solar spectral irradiance from Crystal-Face, INTEX-NA, INTEX-B: Influence of clouds and aerosols o n the solar radiative energy budget
Possel, William	Kepler mission operations center
Possel, William	ICESat mission operations Delta costs for the new nominal program
Possel, William	Mission operations of the NASA QuikSCAT satellite
Possel, William	Magnetosphere Multiscale (MMS) mission for magnetospheric acceleration, reconnection and turbulence (SMART)
Randall, Cora	Stratospheric chlorine, polar processes and ozone loss: Satellite data analysis and modeling
Randall, Cora	Long-term atmospheric effects of solar proton events and their contribution to the polar solar cycle variations
Randall, Cora	Atmospheric coupling via energetic particle precipitation
Randall, Cora	CEDAR: Investigating atmospheric effects of energetic particle precipitation using whole atmosphere community climate model (WACCM)
Rast, Mark	Solar dynamo probed with simulations of turbulent convection magnetism and shear
Rast, Mark	Modeling the energetics of the dynamic solar atmosphere
Rast, Mark	Precision solar photometric telescope (PSPT) operations and data analysis
Renfrow, Stephanie	Project SPECTRA! Bringing hands-on engineering and solar system exploration data stories to middle and high school students

Renfrow, Stephanie	Strengthening our audience connection with “Icelights” questions of the moment
Rusch, David	IPA agreement for David Rusch
Schmidt, Sebastian	Integration of the solar spectral flux radiometer on NASA aircraft with a miniature active leveling platform
Schmidt, Sebastian	HIRDLS and CALIPSO observations of tropical cirrus
Schneider, Nicholas	Astrobiological potential of impacts on the icy surfaces of Mars, Titan, and Europa
Schneider, Nicholas	Collaborative research: A comparative study of escaping atmospheres using AEOS/HiVIS
Snow, Martin	LASP lunar albedo measurement and analysis from solstice (LLAMAS)
Sternovsky, Zoltan	Chemical composition measurements of cosmic materials using in-situ instrumentation
Sternovsky, Zoltan	Charge and mass of meteoritic smoke particles (CHAMPS)
Stewart, Glen	Dynamical models of planetary rings
Stewart, Glen	Satellite formation of photo-evaporating, gas-starved disks
Tian, Feng	Modeling the formation, composition, and evolution of habitable worlds
Toon, Owen B.	Studies of gully formation on Mars
Toon, Owen B.	Simulating Martian climate evolution with a new GCM
Toon, Owen B.	Airborne tropical tropopause experiment (ATTREX) platform scientist, 3-D microphysical modeling
Toon, Owen B.	Numerical models of noctilucent clouds using the WACCM/CARMA model in support of AIM
Toon, Owen B.	Modeling cloud and aerosols in the upper troposphere and lower stratosphere
Toon, Owen B.	Investigation of atmospheric sulfate aerosols in the upper troposphere using a sectional microphysical model
Toon, Owen B.	Modeling of Asian dust aerosols using a coupled microphysical/climate model
Toon, Owen B.	The faint young Sun problem in the early biotic atmosphere of the Earth
Toon, Owen B.	A 3D coupled climate simulation investigating the faint young Sun paradox
Westfall, James	Strofio Instrument Requirements Review (IRR) Independent Review Board (IRB) consultant
Woods, Thomas	SORCE/EOS solstice
Woods, Thomas	Extreme ultraviolet Variability Experiment (EVE)
Woods, Thomas	GOES-R algorithm development activities for the EUVS and XRS instruments
Woods, Thomas	TIMED SEE experiment