

SCOTT E. PALO
VICTOR CHARLES SHELKE ENDOWED PROFESSOR
DEPARTMENT OF AEROSPACE ENGINEERING SCIENCES
UNIVERSITY OF COLORADO BOULDER

EDUCATION

PH.D., UNIVERSITY OF COLORADO, ELECTRICAL ENGINEERING, 1994

Dissertation Title: *Analysis of the semiannual oscillation and the quasi-two-day wave in the mesosphere and lower-thermosphere using a spectral model and data collected with the Christmas Island radar systems.*

Thesis Advisor: Susan K. Avery

M.S., UNIVERSITY OF COLORADO, ELECTRICAL ENGINEERING, 1990

B.S., CLARKSON UNIVERSITY, ELECTRICAL AND COMPUTER ENGINEERING, 1987

RESEARCH AND ACADEMIC EXPERIENCE

UNIVERSITY OF COLORADO, BOULDER CO

7/17-Present	Faculty Director for Aerospace and Defense
5/13-Present	Professor, Ann and HJ Smead Department of Aerospace Engineering Sciences
12/12-Present	Affiliate Faculty, Atmospheric and Oceanic Sciences Department
10/07-Present	Courtesy Appointment, Electrical, Computer and Energy Engineering Department
07/14-06/17	Associate Dean for Research, College of Engineering and Applied Science
11/11-06/14	Associate Chair for Undergraduate Studies, Aerospace Engineering Sciences
8/08-5/13	Associate Professor, Aerospace Engineering Sciences
8/01-8/08	Assistant Professor, Aerospace Engineering Sciences
4/99-8/01	Assistant Research Professor, Joint appointment with Aerospace Engineering Sciences and Electrical and Computer Engineering
1/97-4/99	Research Associate, Aerospace Engineering Sciences

NATIONAL CENTER FOR ATMOSPHERIC RESEARCH, BOULDER CO

1/95-1/97	Postdoctoral Research Fellow, High Altitude Observatory
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UNIVERSITY OF COLORADO, BOULDER CO

5/88-12/94	Research Assistant, Electrical and Computer Engineering
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BUSINESS EXPERIENCE

BLUE CUBED COMMUNICATIONS CORPORATION (BC³), BOULDER CO

01/18-Present	President and CEO
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DELTA BRIDGE, ALEXANDRIA VA

09/17-Present	Technical consultant
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BLUE CANYON TECHNOLOGIES (BCT), BOULDER CO

09/10-Present	RF and systems technical consultant
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AWARDS AND HONORS

Victor Charles Schelke Endowed Professor, 2014-2019
 Aerospace Engineering Sciences Distinguished Performance Award, 2016
 Max S. Peters College of Engineering Service Award, 2015
 Inaugural Aerospace Engineering Sciences Service Award, 2014
 NASA Group Achievement Award – MIZOPEX Campaign, 2014
 University of Colorado Emerging Leaders Program Fellow, 2012-2013
 University of Canterbury – Erskine Fellow, 2009
 United States Antarctic Service Medal, 2008
 University of Colorado - Council on Creative Work Faculty Fellowship, 2008
 NASA Group Achievement Award – TIMED mission, 2008
 University of Colorado - Dean's Award for Outstanding Junior Faculty, 2007
 AIAA - Educator of the Year, Rocky Mountain Region, 2007
 Fulbright Senior Specialist Fellowship, 2007
 Sigma Xi - Northwest Regional Young Investigator, 2004 & 2006
 National Science Foundation - Early Career Award, 2005
 University of Colorado - Dean's Outstanding Teaching Award, 2005
 National Center for Atmospheric Research - HAO Postdoctoral Research Fellow, 1995-1997

PROFESSIONAL ORGANIZATIONS

Institute of Electrical and Electronic Engineers (IEEE) – Senior Member
 American Institute of Aeronautics and Astronautics (AIAA) – Associate Fellow
 American Geophysical Union (AGU) – Regular Member
 International Union of Radio Scientists (URSI) – Regular Member Commission G
 American Society of Engineering Educators (ASEE) – Regular Member
 Sigma Xi – Full member

RESEARCH CENTER AFFILIATIONS

Colorado Center for Astrodynamics Research (CCAR)
 Research and Engineering Center for Unmanned Vehicles (RECUV)

SCOTT E. PALO

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES (2850[#] CITATIONS, H-INDEX 31, I-10 INDEX 62)

1. Buck¹, S., S. Oerlemans and S.E. Palo, "Experimental Validation of a Wind Turbine Turbulent Inflow Noise Prediction Code", *J. Sound and Vibration*, 2018 (in press).
2. Vaudrin¹, C., and S.E. Palo, "Complex Plane Specular Meteor Radar Interferometry", *Radio Sci.*, 2018, DOI: 10.1002/2017RS006317 (in press).
3. Mason, J.P, M. Baumgart, B. Rogler, C. Downs, M. Williams, T.N. Woods, S.E. Palo, P.C. Chamberlin, S. Solomon, A. Jones, X. Li, R. Kohnert and A. Caspi, "MinXSS-1 CubeSat On-Orbit Pointing and Power Performance: The First Flight of the Blue Canyon Technologies XACT 3-axis Attitude Determination and Control System, *J. of Small Satellites*, Vol 6., No. 3, pp 651-662, 2017.
4. Loucks¹, D.C, S.E. Palo, M.D. Pilinski, G. Crowley, I. Azeem and D. Hampton, "High-Latitude GPS Phase Scintillation from E Region Electron Density Gradients During the December 20-21, 2015 Geomagnetic Storm", *Journal of Geophysical Research Space Physics*, Vol. 122, No. 7, 7473-7490, 2017.
<http://dx.doi.org/10.1002/2016JA023839>
5. Larson, K.M. S.E. Palo, C. Roesler, M. Mattia, V. Bruno, M. Coltelli and D. Fee, "Detection of Plumes at Redoubt and Etna Volcanoes using the GPS SNR Method", *Journal of Volcanology Geothermal Research*, Vol 344, 26-39, 2017.
<http://doi.org/10.1016/j.jvolgeores.2017.04.005>
6. Lieberman, R.S., D.M. Rigglin, V. Nguyen, S.E. Palo, D.E. Siskind, N.J. Mitchell, G. Strober, S. Wilhelm and N.J. Livesey, "Global observations of two-day wave coupling to the diurnal tide", *Journal of Geophysical Research Atmospheres*, Vol 122, No. 8, 4135-4149, 2017.
<http://dx.doi.org/10.1002/2016jd025144>
7. Woods, T.N. A. Caspi, P.C. Chamberlin, A. Jones, R. Kohnert, J.P. Mason, C.S. Moore, S. Palo, C. Rouleau, S.C. Solomon, J. Machol, R. Vierec, "New Solar Irradiance Measurements from the Miniature X-Ray Solar Spectrometer CubeSat", *The Astrophysical Journal*, Vol. 835, No. 2, 2017.
<https://doi.org/10.3847/1538-4357/835/2/122>
8. Weibel¹, D., D. Lawrence and S.E. Palo, "Optical Beacon Sensor for Small Un-manned Aerial System State Estimation", *J. of Field Robotics*, Vol. 34, No. 3, pp477-494, 2017.
<http://dx.doi.org/10.1002/rob.21648>
9. Buck¹, S., S. Oerlemans, S.E. Palo, "Experimental Characterization of Turbulent Inflow Noise on a Full-scale Wind Turbine", *J. of Sound and Vibration*, Vol. 385, pp. 219-238, 2016.
<http://dx.doi.org/10.1016/j.jsv.2016.09.010>
10. Gerhardt¹, D., and S.E. Palo, "Volume Magnetization for System-Level Testing of Magnetic Materials within Small Satellites", *Acta Astronautica*, Vol. 127, pp. 1-12, 2016.
<http://dx.doi.org/10.1016/j.actaastro.2016.05.017>
11. Pilinski, M.D., R.L. McNally, B.A. Bowman, S.E. Palo, J.M. Forbes, B.L. Davis, R.G. Moore, K. Kemble, C. Koehler, and B. Sanders. "Comparative Analysis of Satellite Aerodynamics and Its

<https://scholar.google.com/citations?user=LSxumr4AAAAJ&hl=en>

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Application to Space-Object Identification", *J. Spacecraft and Rockets*, Vol. 53, No. 5, pp. 876-886, 2016.

<http://dx.doi.org/10.2514/1.A33482>

12. Nguyen¹, V.A., S.E. Palo, R.S. Lieberman, J.M. Forbes and D.A. Orland, "Generation of Secondary Waves Arising from Nonlinear Interactions between the Quasi Two-Day Wave and the Migrating Diurnal Tide", *J. Geophysical Research*, Vol. 121, No. 13, pp. 7762-7780, 2016.
<http://dx.doi.org/10.1002/2016JD024794>
13. Mason¹, J.P. T.N. Woods, A. Caspi, P.C. Chamberlin, C. Moore, A. Jones, R. Kohnert, X. Li, S. Palo, and S. C. Solomon. "Miniature X-Ray Solar Spectrometer: A Science-Oriented, University 3U CubeSat", *J. Spacecraft and Rockets*, Vol. 53, No. 2, pp. 328-339, 2016.
<http://dx.doi.org/10.2514/1.A33351>
14. de Boer, G., S. Palo, B. Argrow, G. LoDolce, J. Mack, R-S. Gao, H. Telg, C. Trussel, J. Fromm, C. N. Long, G. Bland, J. Maslanik, B. Schmid and T. Hock, "The Pilatus Unmanned Aircraft System for Lower Atmospheric Research", *Atmospheric Measurement Techniques*, Vol. 9, pp. 1845-1857, 2016.
<http://dx.doi.org/10.5194/amt-9-1845-2016>
15. Cassano, J.J, M.W. Seefeldt, S.E. Palo, S.L. Knuth, A. Bradley, P.D. Herman, P.A. Kernborne and N.J. Logan, "Observations of the Atmosphere and Surface State Over Terra Nova Bay, Antarctica Using Unmanned Aircraft Systems", *Earth Syst. Sci. Data*, Vol. 8, 115–126, 2016.
<http://dx.doi.org/10.5194/essd-8-115-2016>
16. Weibel¹, D., D. Lawrence and S.E. Palo, "Small Un-manned Aerial System Attitude Estimation for Flight in Wind", *J. of Guidance, Control, and Dynamics*, Vol. 38, No. 7, pp. 1300-1305., 2015.
<http://dx.doi.org/10.2514/1.G000888>
17. Bradley¹, A., S.E. Palo, D. Lawrence, G. LoDolce and D. Weibel, "Air Deployed Micro Buoy measurement of temperatures in the marginal ice zone upper ocean during MIZOPEX campaign", *J. of Ocean. and Atmos. Tech*, Vol. 32, pp. 1058-1070, 2015.
<http://dx.doi.org/10.1175/JTECH-D-14-00209.1>
18. Truskowski, A.O., J.M. Forbes, X. Zhang, S.E. Palo, "New perspectives on thermosphere tides: 1. Lower thermosphere spectra and seasonal-latitudinal structures", *Earth, Planets and Space*, 66:136, doi:10.1186/s40623-014-0136-4, 2014.
19. Nguyen¹, V., and S.E. Palo, "Transmission of planetary wave effects to the upper atmosphere through eddy diffusion modulation", *J. Atmos. Solar. Terr. Res.*, Volumes 117, Pages 1-6, ISSN 1364-6826, DOI: 10.1016/j.jastp.2014.04.008, 2014.
20. Gerhardt¹, D., S.E. Palo, X. Li, L. Blum, Q. Schiller and R. Kohnert, "The Colorado Student Space Weather Experiment (CSSWE) On-Orbit Performance", *J. of Small Satellites*, Vol. 03, No. 01, pp. 265-281, 2014.
21. Li, X., S. Palo, R. Kohnert, D. Gerhardt, L. Blum, Q. Schiller, D. Turner, W. Tu, N. Sheiko, and C. S. Cooper, Colorado student space weather experiment: Differential flux measurements of energetic particles in a highly inclined low Earth orbit, in *Dynamics of the Earth's Radiation Belts and Inner Magnetosphere*, Geophys. Monogr. Ser., vol. 199, edited by D. Summers, I. R. Mann, D. N. Baker, and M. Schulz, pp. 385–404, AGU, Washington, D. C., doi:10.1029/2012GM001313, 2013.
22. Nguyen¹, V., and S.E. Palo, "A technique for estimating the short term variability of the diurnal tide utilizing multiple satellites", *J. Atmos. Solar. Terr. Res.*, Volumes 105–106, Pages 39-53, ISSN 1364-6826, <http://dx.doi.org/10.1016/j.jastp.2013.07.008>, 2013.
23. Li, X., Q. Schiller, L. Blum, S. Califf, H. Zhao, W. Tu, D. Turner, D. Gerhardt, S. Palo, R. Selesnick, S. Kanekal, D.N. Baker, J. Fennell, J.B. Blake, M. Looper, G. D. Reeves, and H. Spence, First Results

- from CSSWE CubeSat: Characteristics of Relativistic Electrons in the Near-Earth Environment During the October 2012 Magnetic Storms, *Journal of Geophysical Research*, 118, doi:10.1002/2013JA019342, 2013.
24. Li, X., S. Palo, R. Kohnert, L. Blum, D. Gerhardt, Q. Schiller, and S. Califf, "Small Mission Accomplished by Students – Big Impact on Space Weather Research", *Space Weather*, 11, 55-56, doi:10.1002/swe.20025, 2013.
 25. Pilinski¹, M., B.M. Argrow, S.E. Palo and B.R. Bowman, "A Semi-Empirical Satellite Accommodation Model for Spherical and Randomly Tumbling Objects", *AIAA J. Spacecraft and Rockets*, V50, 556-571, doi:10.2514/1.A32348, 2013.
 26. Chandran¹, A., Rusch, D. W., Thomas, G. E., Palo, S. E., Baumgarten, G., Jensen, E. J., and Merkel, A. W. Atmospheric gravity wave effects on polar mesospheric clouds: A comparison of numerical simulations from CARMA 2D with AIM observations. *Journal of Geophysical Research: Atmospheres* (1984–2012), 117(D20), 2012.
 27. Shriver¹, P. M., Palo, S. E., Zenick, R. G., and Balas, M. J., "Reward-Lifetime Scheduling Approach to the Autonomous Spacecraft Power Management Problem", *Journal of Aerospace Computing, Information, and Communication*, 9(2), 58-67, 2012.
 28. Li, X., S. Palo, R. Kohnert, D. Gerhardt, L. Blum, Q. Schiller, D. Turner, W. Tu, N. Sheiko, and C. S. Cooper, Colorado Student Space Weather Experiment: Differential flux measurements of energetic particles in a highly inclined low Earth orbit, in *Dynamics of the Earth's Radiation Belts and Inner Magnetosphere*, Geophys. Monogr. Ser., vol. 199, edited by D. Summers et al., 385–404, AGU, Washington, D. C., doi:10.1029/2012GM001313, 2012.
 29. Pilinski¹, M.D., Argrow, B. M., Palo, S.E., Moe, K., Sutton, E., Doornbos, E., & Marcos, F., Drag coefficients of satellites with concave geometries: Comparing models and observations. *Journal of Spacecraft and Rockets*, 48(2), 2012.
 30. Crocker¹, R.I., J.A. Maslanik, J.J. Adler, S.E. Palo, U.C. Herzfeld, and W.J. Emery, "A Sensor Package for Ice Surface Characterization Using Small Unmanned Aircraft Systems", *IEEE Trans. Geosci. Remote Sens.*, 50, doi:10.1109/TGRS.2011.2167339, 2012.
 31. Chang¹, L.C., W.E. Ward, S.E. Palo, J. Du, D.-Y. Wang, H.-L. Liu, M.E. Hagan, Y. Portnyagin, J. Oberheide, L.P. Goncharenko, T. Nakamura, P. Hoffmann, W. Singer, P. Batista, B. Clemesha, A.H. Manson, D.M. Riggan, C.-Y. She, T. Tsuda, T. Yuan, "Comparison of Diurnal Tide in Models and Ground-Based Observations during the 2005 Equinox CAWSES Tidal Campaign", *J. Atmos. Solar Terr. Phys.*, 78=79, doi:10.1016/j.jastp.2010.12.010, 2012.
 32. Chang¹, L.C., J. Liu, and S.E. Palo, Propagating planetary wave coupling in SABER MLT temperatures and GPS TEC during the 2005/2006 austral summer, *J. Geophys. Res.*, 116, A10324, doi:10.1029/2011JA016687, 2011.
 33. Suzuki, S., M. Tsutsumi, S.E. Palo, Y. Ebihara, M. Taguchi and M. Ejiri, "Mesospheric Gravity Waves over the South Pole", *J. Geophys. Res.*, doi:10.1029/2011JD015882, 2011.
 34. Pilinski¹, M., K. Moe, S.E. Palo and B.M. Argrow, "Measuring absolute thermospheric densities and accommodation coefficients using paddlewheel satellites: Past findings, present uses and future mission concepts", *J. of Astronautical Sciences*, v58, n3, pp 531, 2011.
 35. Chang¹, L.C., S. E. Palo and H.-L. Liu, "Short-term variability in the migrating diurnal tide caused by interactions with the quasi 2 day wave", *J. Geophys. Res.*, 116, D12112, doi:10.1029/2010JD014996, 2011.
 36. Li, X., Palo, S. and Kohnert, R. "Small Space Weather Research Mission Designed Fully by Students", *Space Weather*, v9, S04006, doi:10.1029/2011SW000668, 2011.
 37. Pilinski¹, M., B.M. Argrow, S.E. Palo, "A Semi-Empirical Model for Satellite Energy-Accommodation Coefficients", *AIAA J. Spacecraft Rockets*, v47, n6, doi:10.2514/1.49330, 2010.

38. Chang¹, L. C., S. E. Palo, H.-L. Liu, T.-W. Fang, and C. S. Lin, "Response of the thermosphere and ionosphere to an ultra fast Kelvin wave", *J. Geophys. Res.*, 115, A00G04, doi:10.1029/2010JA015453, 2010.
39. Iimura¹, H., D. C. Fritts, Q. Wu, W. R. Skinner, and S. E. Palo, "Nonmigrating semidiurnal tide over the Arctic determined from TIMED Doppler Interferometer wind observations", *J. Geophys. Res.*, 115, D06109, doi:10.1029/2009JD012733, 2010.
40. Chandran¹, A., D. W. Rusch, A. W. Merkel, S. E. Palo, G. E. Thomas, M. J. Taylor, S. M. Bailey, and J. M. Russell, "Polar mesospheric cloud structures observed from the cloud imaging and particle size experiment on the Aeronomy of Ice in the Mesosphere spacecraft: Atmospheric gravity waves as drivers for longitudinal variability in polar mesospheric cloud occurrence", *J. Geophys. Res.*, 115, D13102, doi:10.1029/2009JD013185, 2010.
41. Forbes, J.M. X. Zhang, S.E. Palo, J. Russell, C.J. Mertens and M. Mlynczak, "Kelvin waves in the stratosphere, mesosphere and lower thermosphere temperatures as observed by TIMED/SABER during 2002-2006", *Earth, Planets and Space*, 61, 447-453, 2009.
42. Chang¹, L.C., J.P. Thayer, J. Lei, and S.E. Palo, Isolation of the Global MLT Thermal Response to Recurrent Geomagnetic Activity, *Geophys. Res. Lett.*, 36, doi:10.1029/2009GL039305, 2009.
43. Merkel, A.W., D.W. Rusch, S.E. Palo, J.M. Russell III, and S.M. Bailey, Mesospheric Planetary Wave Effects on Global PMC Variability Inferred from AIM-CIPS and TIMED-SABER for the Northern Summer 2007 Season, *J. Atmos. and Solar Terr. Res.*, 71, doi:10.1016/j.jastp.2008.12.001, 2009.
44. Chandran¹, A., D.W. Rusch, S. E. Palo, G.E. Thomas, and M.J. Taylor, Gravity Wave Observations in the Summertime Polar Mesosphere for the Cloud Imaging and Particle Size (CIPS) Experiment on the AIM Spacecraft, *J. Atmos. and Solar Terr. Res.*, 71, doi:10.1016/j.jastp.2008.09.041, 2009.
45. Iimura¹, H., S. E. Palo, Q. Wu, T.L. Killeen, S.C. Solomon and W.R. Skinner, Structure of the nonmigrating semidiurnal tide above Antarctica observed from the TIMED Doppler Interferometer, *J. Geophys. Res.*, 114, D11102, doi:10.1029/2008JD010608, 2009.
46. Chang¹, L. C., S. E. Palo, and H. Liu, Short-term variation of the $s = 1$ nonmigrating semidiurnal tide during the 2002 stratospheric sudden warming, *J. Geophys. Res.*, 114, D03109, doi:10.1029/2008JD010886, 2009.
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53. Palo, S.E., J.M. Forbes, X. Zhang, J. Russell, C.J. Mertens, and M.G. Mlynczak, "An Eastward Propagating Two-Day Wave: Evidence for Nonlinear Planetary Wave and Tidal Coupling in the Mesosphere and Lower Thermosphere", *Geophys. Res. Lett.*, 34(7) 10.1029/2006GL027728, 2007.

54. Lau, E., S.K. Avery, J.P. Avery, S.E. Palo and N.A. Makarov, "Tidal analysis of meridional winds at the South Pole using a VHF interferometric meteor radar", *J. Geophys. Res.*, 111, D16108, doi:10.1029/2005JD006734, 2006.
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79. Forbes, J.M., S.E. Palo and F.A. Marcos, "Longitudinal structures in lower thermospheric density", *J. Geophys. Res.*, 104, 4373-4386, 1999.
80. Palo, S.E., R.G. Roble and M.E. Hagan, "TIME-GCM results for the quasi-two-day wave", *Geophys. Res. Lett.*, 25, 3783-3786, 1998.
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PEER REVIEWED COMMITTEE REPORTS

1. Toward an Integrated Arctic Observing Network, Report of the National Research Council Committee on Designing an Arctic Observing Network, Polar Research Board, Division on Earth and Life Studies. Chair: W. B Lyons. Members: K. Alverson, D. Barber, J.G. Bellingham, T.V. Callaghan, L.W. Cooper, M. Edwards, S. Gearhard, M. McCammon, J. Morrison, S.E. Palo, A. Proshutinsky, L-O. Reiersen, V.E. Romanovsky, P. Schlosser, J. Stroeve, C. Tweedie and J. Walsh, 2006.

OTHER PEER REVIEWED PUBLICATIONS

1. Brackin, P., S. Howe, P. Rodgers, R.K. Stanfill, S. Beyerlein, J. Kanai, J. Vallino and S. Palo, "Guest Editorial: The 2016 Capstone Design Conference", *Int. J. of Eng. Ed.*, v33, n5, pp. 1388-1392, 2017.
2. Beyerlein, S., J. Goldberg, S. Howe, S. Palo, R. Rogge and R. K. Stanfill, "Guest Editorial: The 2014 Capstone Design Conference", *Int. J. of Eng. Ed.*, v31, n6, pp. 1726-1726, 2015.
3. Howe, S., J. Goldberg, S. Palo, and P. Rodgers, "Guest Editorial: The 2012 Capstone Design Conference", *Int. J. of Eng. Ed.*, v30, n1, pp. 2-5, 2014.
4. Howe, S., Goldberg, J., Palo, S., Terpenney, J., "Guest Editorial: The 2010 Capstone Design Conference", *Int. J. of Eng. Ed.*, v27, n6, pp. 1160-1162, 2011.

PEER REVIEWED CONFERENCE PROCEEDINGS

1. Buck¹, S., T. Oerlertmans, and S. Palo, "Experimental Validation of a Wind Turbine Turbulent Inflow Noise Prediction Code", Proc. of the 22nd AIAA/CEAS Aeroacoustics Conference, Lyon, France, 2016.
2. Mason¹, J.P., T.N. Woods, G. Allison, M.L. Cirbo, S. Folley, A. Jones, R. Kohnert, X. Li, C. Moore, A. Caspi and S. Palo, "Miniature X-Ray Solar Spectrometer (MinXSS) A Science Oriented, University 3U CubeSat", Proc. of the AIAA Small Satellite Conference, Logan, UT, 2015.
3. Altunc, S., O. Kegege, S. Bundick, H. Shaw, S. Schaire, G. Bussey, G. Crum, J.C. Burke, S. Palo, D. O'Connor, "X-band CubeSat Communication System Demonstration", Proc. of the AIAA Small Satellite Conference, Logan, UT, 2015.
4. Palo, S.E., "High Rate Communications for CubeSats", Proc. of the IEEE International Microwave Symposium, Phoenix, AZ, 2015.
5. Palo, S.E., D. O'Connor, E. DeVito, R. Kohnert, G. Crum and S. Altunc, "Expanding CubeSat Capabilities with a Low Cost Transceiver", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2014.
6. Schiller¹, Q., D. Gerhardt¹, L. Blum¹, X. Li and S.E Palo, "Design and Scientific Return of a Miniaturized Particle Telescope Onboard the Colorado Student Space Weather Experiment (CSSWE) CubeSat", *Proc. of the IEEE Aerospace Conference*, Big Sky, MT, 2014.
7. Palo, S.E., G. Stafford and A. Hoskins, "An Agile Multi-Use Nano Star Camera for Constellation Applications", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2013.
8. Buck¹, S., S. Palo and P. Moriarty, "Application of Phased Array Techniques for Amplitude Modulation Mitigation", *Proc. of the 5th International Conference on Wind Turbine Noise*, Denver, CO, 2013.
9. Buck¹, S., S. Palo, P. Moriarty, J. Roadman, and M. Asheim, "Acoustic Array Design for Wind Turbine Noise Measurements", *Proc. of the 5th International Conference on Wind Turbine Noise*, Denver, CO, 2013.
10. Palo, S., X. Li, D. Gerhardt¹, D. Turner¹, R. Kohnert, V. Hoxie and S. Batiste, "Conducting Science with a CubeSat: The Colorado Student Space Weather Experiment", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2010.

11. Gerhardt¹, D. and S.E Palo, "Passive Magnetic Attitude Control for CubeSat Spacecraft", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2010. – Paper won 2nd place in the Frank J. Redd Student Scholarship (paper) competition.
12. Tanner, J. and S. Palo, "Project Based Learning at the Graduate Level", *Proc. of the 2010 Capstone Design Conference*, Boulder, CO, 2010.
13. Pilinski¹, M. and S.E. Palo, "An Innovative Method for Measuring Drag on Small Satellites", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2009. – Paper won 1st place in the Frank J. Redd Student Scholarship (paper) competition.
14. Davis¹, B. and S.E. Palo, "The Design and Development of a Separation System for a Low-Cost Spherical Nanosatellite", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2009. – Paper won 2nd place in the Frank J. Redd Student Scholarship (paper) competition.
15. Williams¹, A.D. and S.E. Palo, "Forced Air Convection Thermal Switch Concept for Responsive Space Missions", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2006.
16. Williams¹, A.D. and S.E. Palo, "Issues and Implications of the Thermal Control System on Responsive Space Missions", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2006.
17. Fulton¹, J., S. Palo and D. Mackison "Modified Hybrid Coordinate Approach for Small Flexible Spacecraft with Gravity Gradient Stabilization", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2006.
18. Williams¹, A.D. and S.E. Palo, "Issues and Implications of the Thermal Control System on the Six Day Spacecraft", *Proc. of the 4th Responsive Space Conference*, Los Angeles, CA, AIAA-RS4-2006-6001, 2006.
19. Pisano¹, W.J., D.A. Lawrence, and S.E. Palo, "Low-Cost UAV Avionics for Autonomous Antenna Calibration", *Proc. of the AIAA Unmanned Unlimited Conference*, 2005.
20. Shriver¹, P., "Opening the Door to Smart Power Management in Small Satellites", *Proc. of the AIAA Small Satellite Conference*, Logan, UT, 2003. – Paper won 3rd place in the Frank J. Redd Student Scholarship (paper) competition.

OTHER CONFERENCE PROCEEDINGS

1. Simley¹, E., P. Moriarty, and S. Palo, "Aeroacoustic Noise Measurements of a Wind Turbine with BSDS Blades using an Acoustic Array," *48th AIAA Aero. Sci. Mtg.*, 2010.
2. Mackison, D., J. Fulton, and S. Palo, "LQ Attitude Control-Frequency Shaped, Modal Weighting, LTR, GCC and Order Reduction", *Proc. of the AIAA Astrodynamics Specialists Conference*, Keystone, CO, 2006.
3. Williams¹, A.D. and S.E. Palo, "Forced Air Convection Thermal Switch Concept for Responsive Space Missions", *Proc. of the 9th International Energy Conversion Engineering Conference*, San Diego, CA, 2006.
4. Williams¹, A.D. and S.E. Palo, "Modeling and Analysis of a Robust Thermal Control System Based on Forced Convection Thermal Switches", *Proc. of the SPIE Defense and Security Symposium*, Kissimmee, FL, 2006.
5. Williams¹, A.D. and S.E. Palo, "A Comparison of Thermal Management Design Using Thermal Switches to Traditional Design Approaches with Application to Responsive Space Missions", *Proc. of the 4th International Energy Conversion Engineering Conference*, San Diego, CA, 2006.
6. Axelrad, P., D.M. Akos, K.M. Larson, G.H. Born, R.S. Nerem, and S. Palo, "GPS Research and Education at the University of Colorado, Boulder", *Proc. of the Institute of Navigation 60th Annual Meeting*, Dayton, OH, 2004.

7. Eheim¹, C., C. Dixon, B.A. Argrow, and S. Palo, "TornadoChaser: A Remotely-Piloted UAV for Insitu Meteorological Measurements", *Proc. of the 1st AIAA Conference on Unmanned Aerospace Vehicles*, 2002.
8. Palo, S.E., J.L. Chang, S.K. Avery, A.C. Riddle, and K.S. Gage, "Detection of outliers in stratospheric/tropospheric wind velocity estimates", *Proc. of the Seventh Workshop on Technical and Scientific Aspects of MST Radar*, Hilton Head, SC, 237-240, 1996.
9. Chang, J.L., S.K. Avery, A.C. Riddle, S.E. Palo, J.R. McAfee, and K.S. Gage, "Preliminary observations of tropospheric gravity wave momentum fluxes measured with the Christmas Island ST radar", *Proc. of the Seventh Workshop on Technical and Scientific Aspects of MST Radar*, Hilton Head, SC, 50-53, 1996.
10. Palo, S.E., and S.K. Avery, "Analysis of nonstationary time series using the Wigner-Ville distribution", *Proc. of the Fifth Workshop on Technical and Scientific Aspects of MST Radar*, Aberystwyth, UK, University College of Wales, 464-469, 1992.

TECHNICAL REPORTS

1. de Boer, G., B. Argrow, G. Bland, J. Elston, D. Lawrence, J. Maslanik, S. Palo, and M. Tschudi, "Evaluation of Routine Atmospheric Sounding Measurements using Unmanned Systems (ERASMUS) Science Plan", DOE Office of Science Atmospheric Radiation Measurement (ARM) Program DOE/SC-ARM-15-048, 2015.
2. Buck, S., J. Roadman, P. Moriarty and S. Palo, "Acoustic Array Development for Wind Turbine Noise Characterization", NREL/TP-5000-60457, 2013.

PAPERS IN REVISION, REVIEW AND PREPARATION

1. Vaudrin¹, C., and S.E. Palo, "The Colorado Software Defined Radar: System Description and First Results", *Radio Sci.*, *Radio Science* (in revision).
2. de Boer, G., M.D. Ivey, B. Schmid, D.A. Lawrence, D. Dexheimer, F. Mei, J. Hubbe, A.O. Bendure, J.O.E. Hardesty, M.D. Shupe, A. McComiskey, H. Telg, C. Schmitt, S. Y. Matrosov, I. Brooks, J. Creamean, A. Solomon, D.D. Turner; C. Williams; M. Maahn, B. Argrow; S.E. Palo; C.N. Long; R-S Gao, and J. Mather, "A Bird's Eye View: Development of an Operational ARM Unmanned Aerial Capability for Atmospheric Research in Arctic Alaska", *Bulletin of the American Meteorological Society*, (in revision).
3. Bradley¹, A.C., and S.E. Palo, "Characteristic Upper Ocean Temperature Profiles of a Seasonally Ice-Free Western Arctic", *Polar Science* (in review).
4. Gerhardt¹, D., and S.E. Palo, "Passive Magnetic Attitude Control Settling Prediction with On-Orbit Verification using the Colorado Student Space Weather Experiment CubeSat", in preparation for submission to *Acta Astronautica*.
5. Vaudrin¹, C., and S.E. Palo, "An Approach to Multistatic Meteor Radar Scattering: The Ground Illumination Pattern", in preparation for submission to *Radio Sci.*

SCOTT E. PALO RESEARCH FUNDING

SPONSORED PROJECTS

AGENCY	TITLE	START DATE	END DATE	PI, Co-PI, Co-I	TOTAL
NSF/ NSWP	A study of large-scale ionospheric structure using the TOPEX/Poseidon TEC measurements	SEP-96	AUG-99	Co-PI	\$70,520
NSF/ CEDAR	Investigation of the quasi-two-day wave using a general circulation model	JAN-97	DEC-00	PI	\$139,497
CoRA ¹	MF radar collaborative studies	APR-97	MAR-00	PI	\$40,137
NASA/ MTPE	Chemical and dynamical variability in the middle atmosphere	JAN-98	DEC-00	Co-I	\$306,846
AFOSR	A low-cost, remotely-deployable, meteor radar system for mesosphere/ionosphere coupling studies	JAN-98	NOV-00	PI	\$108,464
NASA/ GSFC	Educational Outreach	MAR-98	FEB-02	PI	\$14,739
NASA/ OSS	Extraction of planetary waves from satellite observations	APR-98	FEB-02	PI	\$129,563
NASA/ OSS	Tides, planetary wave and eddy forcing of the mean MLT circulation for the TIMED science working group	APR-98	AUG-01	Co-I	\$305,260
NSF/ CEDAR	An intensive co-located intercomparison of radar and optical wind and temperature measurements in the mesopause region	JAN-99	DEC-00	PI	\$31,390
NSF/ Aeronomy	Dynamics of the Antarctic MLT region using ground-based radar and TIMED instruments	JAN-00	DEC-01	Co-PI	\$285,668
NSF/ Aeronomy	Coordinated analysis of the zonal mean circulation and semidiurnal tide in the mesosphere and lower-thermosphere using ground-based radar and TIMED observations	FEB-00	JAN-02	PI	\$59,712
NSF/OPP	Long-term wind and temperature measurements in the Arctic mesosphere and lower thermosphere	FEB-00	JAN-05	PI	\$691,021
AFOSR	A remotely-deployable system for measuring low-latitude atmosphere-ionosphere disturbances	APR-01	MAR-02	PI	\$184,950
AeroAstro	Autonomous satellite power scheduling (Phase 1 – NASA/STTR)	JAN-03	JAN-04	PI	\$16,416
NASA/ OSS	Tides, planetary wave and eddy forcing of the mean MLT circulation for the TIMED science working group	JAN-03	DEC-06	Co-I	\$1,407,000
NSF/ CEDAR	Planetary wave induced tidal variability	JAN-03	DEC-06	PI	\$217,998

AGENCY	TITLE	START DATE	END DATE	PI, Co-PI	TOTAL
NSF/ Aeronomy	High latitude dynamical studies using radar and satellite observations	SEP-03	AUG-06	PI	\$306,377
AeroAstro	Autonomous spacecraft power scheduling (Phase 2 - NASA/STTR)	MAY-04	MAY-06	PI	\$21,030
NSF/ Aeronomy	CAREER: Development of a distributed multistatic meteor radar system	JAN-05	DEC-11	PI	\$497,395
NASA	Global structure and modeling of the non-migrating tides using TIMED, GPS and ground-based measurements	JAN-05	DEC-07	PI	\$276,401
CoRA ¹	Micro meteors and their interaction with the atmosphere: A comprehensive study using the Arecibo and Jicamarca observations	AUG-05	OCT-06	PI	\$59,288
NSF/ANS	Ice freeboard, roughness and topography for UAV laser profilometry, satellite and surface observations: relationships to ice dynamical and thermodynamical properties	AUG-05	JUL-08	Co-PI	\$735,224
NASA	MESA global voyagers	OCT-05	SEP-07	PI	\$44,995
CoRA ¹	Interhemispheric analysis of polar MLT radar observations	JAN-06	DEC-07	PI	\$46,495
NSF/OPP	Collaborative studies of the Antarctic mesosphere and lower-thermosphere	SEP-06	AUG-11	PI	\$1,431,245
AFRL	Drag and neutral density explorer	JAN-07	JAN-09	Co-PI	\$110,000
NASA	Application of high-rate GPS occultation data to enhance understanding of turbulence in the upper troposphere, stratosphere and ionosphere	JAN-08	DEC-10	Co-PI	\$545,000
NSF/ CEDAR	CEDAR: Nonlinear Wave-Wave Induced Diurnal Tidal Variability	JAN-09	DEC-13	PI	\$262,500
AFRL	Drag and neutral density explorer	JAN-09	JAN-13	Co-PI	\$110,000
NSF	CubeSat: Colorado Student Space Weather Experiment	JAN-10	DEC-13	Co-PI	\$834,946
GTRI	Defeating Technology Surprise: Design & Build of Autonomous Cyber Exploiting Cubesats	JUL-10	Nov-12	PI	\$133,496
NSF	Collaborative Research: Ocean-Ice-Atmosphere Interactions in the Terra Nova Bay Polynya, Antarctica	AUG-11	JUL-14	Co-PI	\$1,053,986

AGENCY	TITLE	START DATE	END DATE	PI, CO-PI	TOTAL
NREL	Acoustic Array Development for Wind Turbine Testing	AUG-11	SEP-13	PI	\$226,153
NASA	Marginal Ice Zone Observations and Processes Experiment (MIZOPEX)	OCT-11	SEP-14	Co-PI	\$3,002,820
NASA	High Rate Cubesat X-band/S-band Communication System	OCT-13	SEP-15	PI	\$219,513
GATS	Data Analysis Support	FEB-14	AUG-14	PI	\$65,974
NSF	Collaborative Research: CubeSat Constellation for QB50 Mission	MAY-14	APR-18	PI	\$186,250
NASA	Thermodynamics and Heat Storage in the Marginal Ice Zone Oceanic Mixed Layer	AUG-14	JUL-17	PI	\$72,000
NASA	Miniature X-Ray Solar Spectrometer (MinXSS) Cubesat Mission	JUL-14	JUL-17	Co-PI	\$957,821
DOE	Evaluation of Routine Atmospheric Scientific Measurements using Unmanned Systems	JUL-14	JUL-16	Co-PI	\$206,296
NASA	Real-Time Volcanic Ash Detection Using a GPS Array Concept	APR-14	MAR-17	Co-PI	\$596,311
NSF	CNIC: US-Germany workshop on catalyzing development of a multistatic meteor radar for lower thermospheric and mesospheric wind fields	AUG-15	JUL-16	PI	\$64,765
JPL	Design of a CubeSat Communication System for Constellation Science	OCT-15	SEP-16	PI	\$52,394
JPL	Non-linearly interacting waves in Earth's upper atmosphere as discerned in the JPL "MUSTARD" observation record	OCT-15	SEP-17	PI	\$39,028
DARPA	UAV deployed microbuoys for Arctic Sensing	SEP-15	MAR-17	PI	\$463,899
NSF	CEDAR: Understanding Day-to-Day Tidal Variability	Apr-16	Mar-19	PI	\$381,663
NSF	Lower thermospheric science using a new meteor radar at McMurdo	Oct-16	Sep-21	PI	\$1,012,212
ARFL	MAXWELL: A CubeSat for High Rate Communications	Jan-16	Dec-17	PI	\$109,991
AIA	Remote Sensing Tools, Applications, and Processing (TAP) Room Advanced Industry Accelerator (AIA) Infrastructure	Jul-16	Jun-19	PI	\$1,467,838
The Aerospace Corp.	Deep Space Navigation Graduate Project	Sep-16	May-18	PI	\$50,000
NOAA	Advancement and Deployment of Air-Deployable Micro Buoys (ADMBs) for Oceanic Research	Jul-17	Dec-18	Co-I	\$429,513
NASA	Solar Cycle Studies for the Miniature X-ray Solar Spectrometer (MinXSS) CubeSat Missions	Apr-18	Apr-22	Co-I	\$2,242,633

1 – CoRA is Colorado Research Associates a Division of Northwest Research Associates

SUPPORTED RESEARCH STAFF

NAME	POSITION	DATES	TOPIC
Dr. Irfan Azeem	Post-Doc	2000-2002	Analysis of UARS measurements
Dr. Elias Lau	Research Assoc.	2007-2009	Meteor Radar Support
Mr. Gabriel LoDolce	Prof. Res. Assoc.	2012-2016	MIZOPEX and meteor radar analysis

RESEARCH SUMMARY

Number of Projects: 52 Total: 35 as PI and 17 as Co-PI or Co-I

Total Research Funding: \$21,271,701

Total Research Funding as PI: \$9,459,104

SCOTT E. PALO

SUPERVISED DOCTORAL DISSERTATIONS

DOCTORAL DISSERTATIONS

1. Shriver, P., "Development and Analysis of a Resource-Aware Power Management System as Applied to Small Spacecraft", University of Colorado (AES), December 2005.
2. Fulton, J., "LQG/LTR Optimal Attitude Control of Small Flexible Spacecraft Using Free-Free Boundary Conditions", University of Colorado (AES), August 2006.
3. Kang, C., "Meteor Radar Signal Processing and Error Analysis", University of Colorado (AES), August 2008.
4. Iimura, H., "Dynamics of the Nonmigrating Semidiurnal Tide in the Mesosphere and Lower Thermosphere over the Antarctic and Arctic", University of Colorado (AES), December 2008.
5. Chandran, A., "Gravity Wave Effects on the Occurrence and Brightness of Polar Mesospheric Clouds", University of Colorado (AES), May 2010.
6. Chang, L., "Nonlinear Interaction of Atmospheric Tides and Planetary Waves in the Mesosphere and Lower Thermosphere", (AES), December 2010.
7. Pilinski, M., "Dynamic Gas-Surface Interaction Modeling for Satellite Aerodynamic Computations", (AES), December 2011. (Jointly advised with Professor Brian Argrow).
8. Gerhardt, D., "Passive Magnetic Attitude Control for Cubesats", University of Colorado (AES), May 2014.
9. Weibel, D., "Improving the accuracy of in-situ lower ABL wind measurements using sUAS", University of Colorado (AES), August 2015. (Jointly advised with Professor Dale Lawrence)
10. Vaudrin, C., "New Observational and Modeling Techniques for Multistatic Specular Meteor Radar", University of Colorado (AES), May 2016.
11. Nguyen, V., "Global –Scale, Nonlinearly-Generated Waves in the Space-Atmosphere Interaction Region", University of Colorado (AES), Dec 2016.
12. Bradley, A., "Ice Formation in the Arctic Ocean: Observed Processes and Climate Feedbacks", University of Colorado (AES), Dec 2016.
13. Buck, S., "An Investigation into Wind Turbine Acoustic Noise Variability" (AES), May 2017.
14. Loucks, D., "Impact of High-Latitude Ionospheric E Region Enhancements on Global Positioning System Scintillations in the Alaskan Sector" (AES), May 2017.

CURRENT PHD STUDENTS

1. Rainville, N., working on GPS sensing of volcanic plumes, PhD expected 2018.
2. VanBuren, D., working on cubesat communications, PhD expected 2019.
3. Dahir, A., working on deep space cubesat navigation, PhD expected 2020.
4. Nell, N., working on NASA sounding rocket and CUTE Cubesat, PhD expected 2020. (jointly advised with Professor Kevin France)
5. Wang, J., working on short term tidal variability, PhD expected 2021.
6. Schaub, B., working on space weather using cubesats, PhD expected 2022.
7. Marino, J., working on meteor radar, PhD expected 2021.

SCOTT E. PALO

SUPERVISED MASTERS THESES

MASTERS THESES

1. Fernandez, A., "Engineering the Digital System for the Student Dust Counter", University of Colorado (ECE), 2004.
2. Williams, A., "Robust Satellite Thermal Control Using Forced Air Convection Thermal Switches for Operationally Responsive Space Missions", University of Colorado (AES), 2005.
3. Pisano, W., "Computationally Efficient Control Methods and Hardware for Autonomous Antenna Calibration", University of Colorado (AES), 2006.
4. Chang, L., "Analysis of the Migrating Diurnal Tide in the Whole Atmosphere Community Climate Model", University of Colorado (AES), 2006.
5. Rochester, L., "An FPGA Based Digital Radar for Meteor Radar Applications", University of Colorado (ECE), 2007.
6. Smith, L., "System Model of a UAV and Sensor Package for the Measurement of Sea Ice Freeboard, Roughness and Topography", University of Colorado (AES), 2007.
7. Johnson, K., "A Numerical Model for VHF Meteor Radar Systems", University of Colorado (AES), 2008.
8. Loucks, D., "The Communications and Systems Engineering for the Drag and Neutral Density Experiment", University of Colorado (AES), 2008.
9. Edwards, M., "Comprehensive Error Analysis and Integration of an Airborne Laser Profiling System for Arctic Sea Ice Freeboard Measurements", University of Colorado (AES), 2008.
10. Pilinski, M., "A Miniaturized Mass Spectrometer for Small Satellites", University of Colorado (AES), 2008.
11. Zainuddin, M., "COBRA Meteor Radar Antenna Designs", University of Colorado (ECE), 2009.
12. Simley, E., "Development of an Acoustic Array for Wind Turbine Aeroacoustic Noise Analysis", University of Colorado (ECE), 2010.
13. Dhakal, T., "Development of Dropsonde System for Antarctic Atmospheric Profiling", University of Colorado (AES), 2010.
14. Nguyen, V., "Estimating the Short Term Variability of the Migrating Diurnal Tide through Satellite Observations", University of Colorado (AES), 2011.
15. Estante, F., "Correlation Between the Non-migrating Semidiurnal Tide Observed at South Pole and Stationary Planetary Waves in the Northern Hemisphere", University of Colorado (AES), 2012.
16. Kemble, K., "Development of a Miniature Instrument for Measuring Velocity, Temperature and Composition in the Ionosphere and Thermosphere", University of Colorado (AES), 2013.
17. Truesdale, N., "Modular and Reusable Power System Design for the BRRISON Balloon Telescope", University of Colorado (AES), 2013.

SCOTT E. PALO TEACHING

COURSES TAUGHT

SEMESTER	COURSE
Spring 1999	ASEN 3300, Aerospace Electronics and Communications
Fall 1999	ASEN 4018, Senior Projects I: Design Synthesis – Project Advisor
Spring 2000	ASEN 3300, Aerospace Electronics and Communications ASEN 4028, Senior Projects II: Design Practicum – Project Advisor
Spring 2001	ASEN 3300, Aerospace Electronics and Communications ASEN 4028, Senior Projects II: Design Practicum – Project Advisor
Fall 2001	ASEN 4519/5519, Real-Time Data Acquisition ASEN 4018, Senior Projects I: Design Synthesis – Project Advisor
Spring 2002	ASEN 3300, Aerospace Electronics and Communications ASEN 4028, Senior Projects II: Design Practicum – Project Advisor
Fall 2002	ASEN 5254, Radar and Remote Sensing ASEN 4018, Senior Projects I: Design Synthesis – Project Advisor
Spring 2003	ASEN 4028, Senior Projects II: Design Practicum – Project Advisor
Fall 2003	ASEN 4519/5519, Real-Time Data Acquisition ASEN 4018, Senior Projects I: Design Synthesis – Project Advisor
Spring 2004	ASEN 4028, Senior Projects II: Design Practicum – Project Advisor
Fall 2004	ASEN 4519/5519, Microcontroller Fundamentals with Aerospace Applications ASEN 4018, Senior Projects I: Design Synthesis – Project Advisor
Spring 2005	ASEN 4028, Senior Projects II: Design Practicum – Project Advisor
Fall 2005	ASEN 4018, Senior Projects I: Design Synthesis - Course co-coordinator ASEN 4519/5519, Microcontroller Fundamentals with Aerospace Applications
Spring 2006	ASEN 4028, Senior Projects II: Design Practicum - Course co-coordinator ASEN 4519, Introduction to Senior Projects ASEN 6210, Remote Sensing Seminar
Fall 2006	ASEN 4018, Senior Projects I: Design Synthesis - Course coordinator ASEN 4519/5519, Microcontroller Fundamentals with Aerospace Applications
Spring 2007	ASEN 4028, Senior Projects II: Design Practicum - Course coordinator ASEN 4519, Introduction to Senior Projects ASEN 5519, Space Hardware Design I – LAMA project
Fall 2007	ASEN 4018, Senior Projects I: Design Synthesis - Course coordinator ASEN 6519, Space Hardware Design II – LAMA project
Spring 2008	ASEN 4028, Senior Projects II: Design Practicum - Course coordinator ASEN 5519, Space Hardware Design I – REPTile/FLIE project

COURSES TAUGHT

SEMESTER	COURSE
Fall 2008	ASEN 4519/5519, Microcontroller Fundamentals with Aerospace Applications ASEN 6519, Space Hardware Design II – REPTile/FLIE project
Fall 2009	Sabbatical
Spring 2010	Sabbatical
Fall 2010	ASEN 4018, Senior Projects I: Design Synthesis – Project Advisor ASEN 5018, Space Hardware Design I – CSSWE <u>cubesat</u> project
Spring 2011	ASEN 4028, Senior Projects II: Design Practicum – Project Advisor ASEN 5254, Radar and Remote Sensing ASEN 5018/6028, Graduate Projects – CSSWE <u>cubesat</u> project
Fall 2011	ASEN 4519/5519, Microavionics ASEN 4018, Senior Projects I: Design Synthesis – Project Advisor ASEN 5519/6519 – Astrodynamics Seminar ASEN 5018/6028, Graduate Projects – CSSWE <u>cubesat</u> project
Spring 2012	ASEN 4028, Senior Projects II: Design Practicum – Project Advisor ASEN 5018, Graduate Projects – MinXSS <u>cubesat</u> project
Fall 2012	ASEN 4519/5519, Microavionics ASEN 4018, Senior Projects I: Design Synthesis – Project Advisor ASEN 5018/6028, Graduate Projects – MinXSS <u>cubesat</u> project
Spring 2013	ASEN 4028, Senior Projects II: Design Practicum – Project Advisor ASEN 5018/6028, Graduate Projects – MinXSS <u>cubesat</u> project
Fall 2013	ASEN 4018, Senior Projects I: Design Synthesis – Project Advisor ASEN 5018/6028, Graduate Projects – MinXSS <u>cubesat</u> project ASEN 5018, Graduate Projects – CUSP project
Spring 2014	ASEN 4028, Senior Projects II: Design Practicum – Project Advisor ASEN 5018, Graduate Projects – QB50 <u>cubesat</u> project ASEN 6028, Graduate Projects – CUSP project
Fall 2014	ASEN 5018/6028, Graduate Projects – QB50 <u>cubesat</u> project
Spring 2015	ASEN 5018/6028, Graduate Projects – QB50 <u>cubesat</u> project
Fall 2015	ASEN 5018/6028, Graduate Projects – QB50 <u>cubesat</u> project ASEN 5018/6028, Graduate Projects – CubeQuest <u>cubesat</u> project
Spring 2016	ASEN 5018/6028, Graduate Projects – QB50 <u>cubesat</u> project ASEN 5018/6028, Graduate Projects – CubeQuest <u>cubesat</u> project ASEN 5018/6028, Graduate Projects – MAXWELL <u>cubesat</u> project ASEN 5254, Radar and Remote Sensing
Fall 2016	ASEN 5018/6028, Graduate Projects – Course Coordinator
Spring 2017	ASEN 5018/6028, Graduate Projects – Course Coordinator

SENIOR PROJECTS ADVISED

SEMESTERS	PROJECT
F99/S00	Fly by wireless
F01/S02	Tornadochasers UAV
F02/S03	Unmanned underwater vehicle (Hydrobuff) Tornadochasers UAV Drag free satellite
F03/S04	Camcube Remote aquatic vehicle
F04/S05	Heavy lift UAV (HAVUC) Skier location and performance experiment (SLOPE)
F10/S11	Telescopic high definition earth imaging apparatus (THEIA) Extended range of versatile exploration rovers (XROVER)
F11/S12	Diurnal star tracking for balloon borne attitude determination (DAYSTAR) Sample targeting and retrieval rover (STARR)
F12/S13	Low Earth Orbit Project for the Acquisition and Recovery of Debris (LEOPARD) Auroral Camera for Exploring Space (ACES)
F13/S14	Telemetric Interplanetary Regolith Explorer for Seismic Investigation of Asteroid Surfaces (TIRESIAS) Signal Integrity Verifying Autonomous Quadrotor (SIVAQ)

INDEPENDENT STUDY STUDENTS ADVISED

NAME	SEMESTER	PROJECT
Mr. Mathew Smith (MS, ECE)	Spring 2000	Meteor array antenna modeling
Mr. Chris Eheim (BS, AES)	Spring 2002	UAV user interface
Mr. Cory Dixon (BS, AES)	Spring 2002	UAV avionics
Mr. Scott Miller (BS, AES)	Spring 2003	PIC microcontroller development
Mr. Thomas Bateman (BS, AES)	Spring 2004	Aircraft stability augmentation
Mr. William Pisano (BS, AES)	Spring 2004	PIC based helicopter controller
Mr. Dan Veronica (PhD, CEAE)	Spring 2004	Microcontroller based building control
Mr. Jason Durrie (BS, AES)	Spring 2005	Interfacing microcontroller to MMC memory
Mr. John Niece (BS, AES)	Spring 2005	Compact flash based data recorder
Mr. Tim Schilling (BS, AES)	Spring 2005	USB based data logger
Mr. Chris Bermel (BS, AES)	Fall 2007	Cosmic Reflectron for Isotopic Analysis
Mr. Colin Miller (BS, AES)	Fall 2007	Cosmic Reflectron for Isotopic Analysis
Ms. Brandi Casey (BS, AES)	Fall 2007	Cosmic Reflectron for Isotopic Analysis
Mr. J. Doug Bean (MS, AES)	F07/S08	Meteor Radar Software
Mr. Lee Jasper (MS, AES)	Fall 2009	DANDE Mission Operations Development
Mr. Michael Reher (BS, AES)	Fall 2009	Cubesat System Analysis
Mr. Lee Jasper (MS, AES)	Fall 2010	DANDE Mission Operations Development
Mr. Jake Binney (MS, AES)	S11/F11	SIMION particle simulations
Mr. Murali Nallamothe (MS, ECE)	Spring 2011	Cubesat communications system
Ms. Lynn Kendrick (MS, ECE)	Fall 2011	Cubesat antenna simulation and test
Mr. Gabe LoDolce (MS, AES)	Spring 2012	MIZOPEX sonde embedded system
Mr. Chris Bergner (MS, ECE)	Summer 2012	GPS disciplined oscillator
Mr. Jacob Cook (MS, ECE)	Summer 2013	Cubesat attitude control system
Mr. John Bullock (BS, ECE)	Spring 2014	CUSP project software development
Ms. Alice Bradley (PhD, AES)	Spring 2014	Sea Ice processes
Mr. David Hall (MS, AES)	Summer 2014	Cubesat systems and testing
Ms. Megan Scheele (MS, AES)	Summer 2014	Cubesat thermal and mechanical system
Mr. Sujit Nandkumar (MS, ECE)	Spring 2015	QB50 Cubesat CDH software
Mr. Nick Rainville (PhD, AES)	Spring 2015	QB50 Cubesat ADCS software
Mr. Andrew Dahir (PhD, AES)	Spring 2015	QB50 Cubesat Solar Cells

INDEPENDENT STUDY STUDENTS ADVISED - CONTINUED

NAME	SEMESTER	PROJECT
Mr. Nicholas Nell (MS, ECE)	Spring 2015	QB50 CubeSat CDH slotOS software
Mr. Swapnil Paratey (MS, ECE)	Spring 2015	QB50 CubeSat CDH-ADCS interface
Mr. Gaurav Shukla (MS, ECE)	Spring 2015	QB50 CubeSat CDH software
Mr. John Sobtzak (MS, ECE)	Spring 2015	QB50 CubeSat antenna design
Mr. John Stark (MS, ECE)	Summer 2015	QB50 CubeSat electronics design and test
Mr. Swapnil Paratey (MS, ECE)	Summer 2015	QB50 CubeSat CDH-ADCS interface
Mr. John Sobtzak (MS, ECE)	Summer 2015	QB50 CubeSat COM design
Mr. Nick Rainville (PhD, AES)	Fall 2015	QB50 CubeSat ADCS software
Mr. Andrew Dahir (PhD, AES)	Fall 2015	QB50 CubeSat Project Manager
Mr. Nicholas Nell (MS, ECE)	Fall 2015	QB50 CubeSat CDH slotOS software
Mr. Andre Lucas Antunes De Sa (PhD, AES)	Spring 2016	QB50 ADCS simulation
Mr. Akash Baskar (MS, ECE)	Spring 2016	Software defined radio
Mr. Alex Forsman (MS, AES)	Summer 2016	CU-E3 CubeSat project management
Mr. Robert Kane (MS, ME)	Summer 2016	CU-E3 CubeSat mechanical design
Mr. Brett Shaffer (MS, AES)	Summer 2016	MAXWELL CubeSat PDR
Mr. Andrei Iskra (BS, AES)	Fall 2016	CU-E3 CubeSat mechanical fabrication
Mr. Andre Lucas Antunes De Sa (PhD, AES)	Fall 2016	QB50 ADCS algorithms
Mr. Colden Rouleau (PhD, AES)	Fall 2016	MAXWELL CubeSat CDH design

MENTORED UNDERGRADUATE STUDENTS

NAME	DATES	PROJECT
Mr. Mike Kionka (BS, ECE)	1998-2000	Schematic capture and construction of meteor radar hardware
Mr. Scott Miller (BS, AES)	2003	Microcontroller development
Mr. Tyler Lewis (BS, AES)	2005	GPS receiver testing
Mr. Zach Eichmeyer (BS, AES & ECE)	2004-2006	Schematic capture and mechanical design
Mr. Zhuo Jing (BS, ECE)	2006-2007	Radar Receiver testing
Mr. Travis Schafhausen (BS, AES & ECE)	2006-2007	Mechanical design and construction, schematic capture
Ms. Samantha Krenning (BS, AES)	2008	Meteor radar application software
Mr. J. Michael Gordon (BS, AES)	2009	Data acquisition software development
Mr. Bruce Chen (BS, ECE)	2010-2011	Data visualization (DLA)
Mr. Nick Truesdale (BS, AES)	2012	Mentor Graphics (Earn Learn)
Mr. Austin Cerny (BS, AES)	2012-2013	Cubesat antenna deployment design (DLA)
Mr. Thomas Waters (BS, ME)	2013-2014	Cubesat mechanical design (DLA)
Ms. Alexandra Hickey (BS, ME)	2014-2016	Cubesat mission design (Work Study)
Mr. Jeffrey Fukushima (BS, ME)	2014-2015	Cubesat software (DLA)
Mr. Aaron About (BS, AES)	2016-2017	Cubesat structural design (DLA)
Mr. Kyle Wislinsky (BS, ECEE)	2017-2018	Cubesat RF component design (DLA)

SCOTT E. PALO SERVICE

Service – National and International

- American Institute of Aeronautics and Astronautics Public Policy Committee, 2015-present
- Colorado Space Business Round Table, Board of Directors, 2015-present
- American Astronautical Society International Space Station Utilization Committee, 2013-present
- American Institute of Aeronautics and Astronautics Small Satellite Technical Committee, Executive Committee, 2013-present
- QB50 “An international network of 50 CubeSats for multi-point, in-situ measurements in the lower thermosphere and re-entry research”, Executive Committee, 2010-present
- Editor, Sensors Journal (ISSN 1424-8220; 5-year impact factor 2.474), 2015-2016
- American Institute of Aeronautics and Astronautics Rocky Mountain Symposium invited panelist: Education and Industry Panel, 2015
- American Institute of Aeronautics and Astronautics Rocky Mountain Symposium invited panelist: Political Influences on the Colorado Aerospace Economy Panel, 2016
- International Journal of Engineering Education Special Issue on Capstone Design, vol 30-1 2012-2013, Guest Editor
- QB50 “An international network of 50 CubeSats for multi-point, in-situ measurements in the lower thermosphere and re-entry research”, Sensor Selection Working Group, 2010-2012
- International Journal of Engineering Education Special Issue on Capstone Design, vol 27-6, 2010-2011, Guest Editor
- ICSU Committee on Space Research (COSPAR) Chairman, subcommission C-2, The Earth’s middle atmosphere and lower ionosphere, 2006-2014
- NSF South Pole Users Committee (SPUC) 2009-2012
- NASA Heliophysics panel review, 2010
- ICSU Scientific Committee on Antarctic Research (SCAR), Chair Pan-Antarctic Observing System action group, 2007-2009
- NSF Space Weather program panel review, 2007
- ICSU Scientific Committee on Antarctic Research (SCAR), Co-chair ICESTAR thematic group C, 2004-2009
- ICSU Scientific Committee on Solar Terrestrial Research (SCOSTEP), Climate and Weather of the Sun-Earth System (CAWSES), Atmospheric Coupling project coordinator, 2004-2008.
- Department of Energy external review committee for Los Alamos National Laboratory Deployable Adaptive Processing Systems (DAPS) program, 2005
- National Academy of Science, Polar Research Board committee on Designing an Arctic Observing Network, 2004-2006
- National Academy of Science, committee on Distributed Arrays of Small Instruments (DASI) for Research and Monitoring in Solar-Terrestrial Physics, 2004.
- ICSU Committee on Space Research (COSPAR) Vice Chairman, subcommission C-2, The Earth’s middle atmosphere and lower ionosphere, 2002-2006
- NSF Coupling, Energetics and Dynamics (CEDAR) program panel review, 2004
- Barrow Arctic Sciences Consortium science advisory group, 2001-2003.

Service – College and Campus

- College of Engineering Associate Dean for Research, 2014-2017
- College of Engineering Graduate Education Council (GEC), 2014-2017
- College of Engineering Dean's Cabinet, 2014-2017
- Chair, College of Engineering Faculty Research Board, 2014-2017
- Boulder Campus Institute Directors Council, 2013-2017
- Boulder Campus Research Review Board, 2014-2015
- Boulder Campus Faculty Information Technology Advisory Committee, 2011-2016
- Boulder Campus Chancellor's Grand Challenge Steering Committee, 2013-2014
- Boulder Campus Federal Relations Advisory Council, 2013-2014
- College of Engineering Coordinator for Research Opportunities Position Search Chair - 2014
- College of Engineering Undergraduate Education Council (UEC), 2011-2014
- University of Colorado Graduate School External Advisory Committee (EAC) , 2010-2014
- OIT Spaces Study Committee, 2012-2013
- University of Colorado Emerging Leaders Program, 2012-2013
- Boulder Campus Search Committee for Associate Director of Academic Technology, 2010-2011
- University of Colorado Coordinator for Platteville Colorado research site, 2008-2013
- College of Engineering Faculty Leadership Advancement Group, 2006-2007
- Internal Reviewer for the Colorado Space Grant Consortium, 2006
- Faculty Advisor for the Multicultural Engineering Program Fall Fling, 2001 & 2002.
- Chair, University of Colorado Multicultural Engineering Program associate chair search committee, 2002.

Service – Aerospace Engineering Sciences

- AES Executive Committee, 2012-present
- Primary Unit Evaluation Committee for Professor Eric Frew, 2017-2018
- Primary Unit Evaluation Committee for Professor Dennis Akos, 2016-2017
- AES faculty search committee 2014-2017
- Chair, Instructor Search Committee, 2015-2016
- Professor Zoltan Sternovsky Mentoring Committee, 2009-2016
- Aerospace Ventures Committee, 2013-2015
- Associate Chair for Undergraduate Studies, 2011-2014
- Chair, Undergraduate committee 2011-2014
- Building, Architecture and Program Plan Committee, 2013-2014
- Graduate Committee, 2013-2014
- Professor Jeff Thayer promotion PUEC, 2011-2012
- Dr. Jim Maslanik reappointment PUEC, 2011-2012
- Focus Area Lead for Astrodynamics and Satellite Navigation, 2011-2012
- Chair, Instructor Search Committee, 2011-2012
- Chair Facilities committee 2011-2012
- Facilities committee 2010-2011
- Professor Ryan Starkey reappointment PUEC 2010-2011
- Focus Area Lead for Remote Sensing Earth and Space Science, 2010-2011
- Mr. Joe Tanner Mentoring Committee, 2008-2012
- Graduate Committee, 2010-2012

- Fundraising Committee, 2009-2012
- Chair, Senior Projects Committee, 2006-2007
- Chair, CDIO Committee, 2006-2007
- Space Initiative Committee, 2006-2007
- Building Study Feasibility Committee, 2006-2007
- Colorado Center for Astrodynamics Research IT Committee, 2005-2007
- Co-Chair, Senior Projects Committee, 2005-2006
- Chair, KD Wood Colloquium Committee, 2005-2006
- Graduate Program Restructuring Committee, 200-32005
- Senior Projects Committee, 2002-2004
- LASP Cooperation Committee, 2002-2004
- Undergraduate Education Committee, 2003-2005
- Shop Committee, 2002-2003
- Co-Mentor for the National Center for Atmospheric Research (NCAR) Significant Opportunities in Atmospheric Research and Science (SOARS) Program (1996,1998,1999).
- Organized and directed Space Sciences Day at the CU Minority Engineering Program Exploring Engineering Institute, June 12-15, 1998.

Service – Conferences and Workshops

- Chaired a session at the European CubeSat Conference, London, England, September 2015
- National Capstone Conference organizing and program committee, 2006-2016
- European CubeSat Conference Organizing Committee, 2012-2016
- Chaired a session at the European CubeSat Conference, Estavayer-le-lac, Switzerland, October 2014
- Co-Chair National Capstone Design Conference, 2007-2010.
- Chaired a session at the AIAA Small Satellite Conference, Logan Utah, August 2009
- Chaired a session at the XXIV General Assembly of the International Union of Geodesy and Geophysics, Perugia Italy, July 2007.
- Main Scientific Organizer for a session entitled “Meteor Science and Techniques: Composition, Sources, Sinks and Global Distribution of Meteoric Metals”, at the 36th COSPAR scientific assembly, Beijing, China, Jul 2006.
- Organized and convened a workshop on TIMED/CEDAR Collaborative Atmospheric Dynamics at the NSF CEDAR workshop, Santa Fe NM, June 2005.
- Organized, convened, and chaired a session entitled “Emerging Technology for Environmental Sensor Networks I”, at the American Geophysical Union meeting, San Francisco, CA, Dec 2005.
- Organized, convened, and chaired a session entitled “Mesosphere and Lower Thermosphere; Energetics and Dynamics Posters”, at the American Geophysical Union meeting, San Francisco, CA, Dec 2005.
- Sponsored, organized and convened a workshop on Antarctic mesosphere and lower thermosphere wind and temperature observations, Sep 26-29, 2005, Hobart, Tasmania.
- Organized, convened, and chaired a workshop on Mesosphere and Lower Thermosphere Zonal Mean and Wave Variabilities at the NSF CEDAR workshop, Santa Fe NM, June 2005.
- Chaired a session at the IAGA/ICMA workshop on Vertical Coupling in the Atmosphere/Ionosphere System, Bath UK, July 2004.
- Organized, convened, and chaired a workshop on Polar Mesospheric and Lower/Thermospheric Dynamics at the NSF CEDAR workshop, Santa Fe NM, June 2004.

- Sponsored, organized and convened a workshop on radar MLT measurement techniques, June 12 & 13, 2003, University of Colorado, Boulder CO.
- Organized, convened, and chaired a workshop on TIMED science and validation at the NSF CEDAR workshop, Longmont CO, June 2003.
- Deputy scientific organizer for session C2.3 “The non-zonal structures in the middle atmosphere and lower-thermosphere” at the 34th COSPAR scientific assembly, Houston TX, Nov 2002.
- ICSU International Union of Radio Scientists (URSI) National Radio Science meeting technical committee, 2001.
- ICSU International Union of Radio Scientists (URSI) National Radio Science meeting steering committee, 2001.
- NSF relocatable optical and radiowave measurement techniques workshop steering committee, 2001.
- Organized and convened a measurement intercomparison workshop at the NSF CEDAR workshop, Boulder CO, June 2000.
- Organized, convened, and chaired a session entitled “The Mesosphere/Lower Thermosphere Region: Structure, Dynamics, Composition and Emission”, at the American Geophysical Union meeting, May 2000.
- Organized and convened data analysis workshop at the NSF CEDAR Workshop, Boulder CO, June 1996.
- Organized, convened and edited a report for the Large-Scale Waves and Dynamics Working Group at the second NASA/NSF sponsored TIMED/CEDAR workshop, March 25-26, 1998.

Reviewer for:

Advances in Space Research
 Annales Geophysicae
 Earth, Planets and Space
 Geophysical Research Letters
 Geomagnetism and Aeronomy International
 Journal of Geophysical Research - Space Physics
 Journal of Geophysical Research - Atmospheres
 Journal of Atmospheric and Solar-Terrestrial Physics
 National Capstone Design Conference
 National Science Foundation
 NASA
 Radio Science
 Sensors Journal
 U.S. Civilian Research and Defense Organization

SCOTT E. PALO PRESENTATIONS

INVITED PRESENTATIONS

1. Palo, S.E. "The Rise of Small Satellites and the Potential Scientific Impact", Invited Seminar, Boston University, Oct., 2017.
2. Palo, S.E., "Using a Constellation of CubeSats to Conduct Thermospheric Science: The QB50 Mission", Invited Plenary Speaker, NSF Coupling, Energetics and Dynamics Workshop, Keystone, CO, Jun., 2017.
3. De Boer, G., M. Shupe, A. McComiskey, J. Creamean, C.R. Williams, S.Y. Matrosov, A. Solomon, D. Turner, M. Norgren, M. Maahn, D. Lawrence, B. Argrow. S.E. Palo, D. Weibel, N. Curry, T. Hichols, P. D'Amore and W. Finamore", Recent Observational Efforts Using the DOE ARM Observatory at Oliktok Point, Alaska", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2016.
4. Palo, S.E., "Some Thoughts on Gnu and Software Defined Radio", GnuRadio Conference, Boulder Colorado, September 2016 (Keynote Speaker).
5. Palo, S.E., "A Very Incomplete History of Meteor Radar with a Focus on Winds", Multistatic Meteor Radar Workshop, Kuhlungsborn, Germany, June 2016.
6. Li, X., T. Woods, S.E. Palo, J. Mason and R. Kohnert, "Generations of CubeSat in University of Colorado to Address Heliospheric Physics", 2015 Asia-Oceania Geosciences Society (AOGS) Meeting, Singapore, Aug. 2015.
7. Palo, S.E., "So you want to build a CubeSat?" Smead Symposium, Vail CO, May 2015.
8. Palo, S.E., "Using Small Satellites to Conduct Space Physics Research", Leibnitz Institute for Atmospheric Physics, Kuhlungsborn Germany, Oct. 2014.
9. Palo, S.E., X. Li, D. Gerhardt, L. Blum, Q. Schiller and R. Kohnert, On-Orbit Performance of the Colorado Space Weather Experiment (CSSWE)", 224th American Astronomical Society Meeting, Boston, MA, May., 2014.
10. Li, X., S.E. Palo, et al., "Colorado Student Space Weather Experiment (CSSWE) CubeSat Mission: A Success in Education, Engineering, and Science", NSF GEM workshop, Snowmass, Colorado, Jun. 2013.
11. Li, X., S.E. Palo, et al., "New results from the Colorado CubeSat and comparison with Van Allen Probes data", AGU Meeting of Americas, Cancun, Mexico, May 2013.
12. Li, X., S.E. Palo, et al., "First Results from Colorado Student Space Weather Experiment (CSSWE): Energetic Particle Distribution in Near Earth Environment", Space Weather Week Meeting, Boulder, Colorado, Apr. 2013.
13. Li, X., S.E. Palo, et al., "Science Results from Colorado Student Space Weather Experiment (CSSWE): Energetic Particle Distribution in Near Earth Environment", EGU, Vienna, Apr. 2013.
14. Palo, S.E., "Excellence in Aerospace Engineering Sciences", CU Leeds School of Business Annual Advisory Board Meeting Keynote Address, Boulder, CO, Apr. 2013.
15. Li, X., S.E. Palo, et al., "Small Mission (CSSWE) – Big Impact on Space Weather Research, an invited talk given to Deep Space Exploration Society", Boulder, Colorado, Mar. 2013.
16. Palo, S.E., "Cool Science in Antarctica: The Near Earth Space Environment", Colorado Spring Cool Science Festival, Colorado Springs, CO, Oct. 2012.
17. Palo, S.E., "Rossby Waves: A Tutorial", CEDAR workshop, Santa Fe, NM, June 2012.
18. Palo, S.E. and C. Vaudrin, "The Mesosphere: Linking Earth to Space", Amundsen-Scott South Pole station, February 2011.
19. Palo, S.E., "Solar Forced Thermal Tides in the Atmosphere", University of Canterbury, New Zealand, Apr., 2010.

20. Simley E., P. Moriarty, S. Palo, "Development of an Acoustic Array for Wind Turbine Noise Analysis", National Renewable Energy Laboratory, Golden, CO, Dec., 2008.
21. Palo, S.E., M. Pilinski, B. Davis, K. Kemble, "The Drag and Neutral Density Explorer Satellite", United Launch Alliance, Littleton, CO, Nov., 2008.
22. Palo, S.E., M. Pilinski, B. Davis, B. Gilles, A. Tomchek, "The Drag and Neutral Density Explorer Satellite", Laboratory for Atmospheric and Space Physics, Boulder, CO, Oct., 2008.
23. Palo, S.E., "Solar Forced Tides in the Atmosphere", Australian Antarctic Division, Hobart, Tasmania, Dec. 2007.
24. Palo, S.E., M. Iimura, Q. Wu, T.L. Killeen, and S.C. Solomon, "Structure of the Polar Non-Migrating Semidiurnal Tide Observed from TIDI", XXIV General Assembly of the IUGG, Perugia, Italy, Jul. 2007.
25. Palo, S.E., "Educational Aspects on Small Satellites from an Aerospace Engineering Perspective", CEDAR workshop", Santa Fe, NM, June 2007.
26. Palo, S.E., "A Tutorial on Meteor Radar Systems", CEDAR workshop", Santa Fe, NM, June 2007.
27. Palo, S.E., Upward Propagating Solar Induced Dynamical Influences on the Polar Mesosphere and Lower Thermosphere: Atmospheric Tides, Greenland Space Science Symposium, Kangerlussuaq Greenland, May, 2007.
28. Palo, S.E., "Meteors, meteor radar and mesospheric winds", Laboratory for Atmospheric and Space Physics, Boulder, CO, Oct., 2006.
29. Kozyra, J.U., G. Crowley, B.A. Emery, X.Fang, G. Maris, M. G. Mlynczak, R. J. Niciejewski, S. E. Palo, L. J. Paxton, C. E. Randall, P.-P. Rong, J. M. Russell III, W. Skinner, S. C. Solomon, E. R. Talaat, Q. Wu, J.-H.Yee, "Changes in the upper/middle atmosphere during powerful high speed streams in 2003: A new pathway for forcing long-term variability", The Second International Symposium on Space Climate, Long-Term Change in the Sun and its Effects in the Heliosphere and Planet Earth, Sinaia, Romania, Sep., 2006.
30. Forbes, J.M., S.E. Palo, X. Zhang, J.M. Russell, C.J. Mertens, and M. Mlynczak, "Vertical coupling by planetary waves as revealed by the SABER instrument on TIMED" , IAGA/ICMA Workshop on Vertical Coupling in the Atmosphere/Ionosphere System, Varna, Bulgaria, Sep., 2006.
31. Forbes, J.M., X. Zhang, S.E. Palo, J.M. Russell, C.J. Mertens, and M. Mlynczak, "Mesosphere-thermosphere penetration of stratosphere planetary waves from TIMED/SABER temperature measurements" , 36th COSPAR Scientific Assembly, Beijing, China, Jul., 2006.
32. Portnyagin, Yu.I., T. Solovjova, E. Merzlyakov, J. Forbes, S.E. Palo, M.E. Hagan, et. al., "Mesosphere/lower thermosphere migrating diurnal tide model", 36th COSPAR Scientific Assembly, Beijing, China, Jul., 2006.
33. Palo, S.E., "Meteors, winds, sodium and tides: What is the connection?", Sigma Xi, Boulder, CO, Nov., 2005.
34. Palo, S.E., A. Weatherwax, K. Kauristie, A. Ridley, V. Papitashvili et al., "ICESTAR: Interhemispheric conjugacy effects in solar-terrestrial and aeronomy research", 32nd Annual European Meeting on Atmospheric Studies by Optical Methods", London, Ontario, Sep., 2005.
35. J.M. Forbes, S.E. Palo, J. Russell, C.J. Mertens, G. Burns, P. Espy and T. Kawahara, "Troposphere-Thermosphere planetary wave coupling during the 2002 southern hemisphere pre-stratwarm period", 10th Scientific Assembly of IAGA, Tolouse France, Jul., 2005.
36. Kozyra, J.U., G. Crowley, B.A. Emery, G. Lu, M. Hagan, M. Mlynczak, R.J. Niciejewski, S.E. Palo, L.J. Paxton, J.M. Russell, S.C. Solomon, W. Skinner, Q. Wu, J-H, Yee and X.H. Fang, "Response of the upper/middle atmosphere to high-speed streams in the solar wind: First comprehensive TIMED/CEDAR observations", Chapman conference on corotating solar wind streams and recurrent geomagnetic activity, Manaus, Brazil, Feb., 2005.
37. Forbes, J.M., S.E. Palo, A. Svoboda, M.E. Hagan, S. Miyahara, and M. Yoshikawa, "Mesosphere-Thermosphere Coupling", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2004.

38. Forbes, J.M., S.E. Palo, M.E. Hagan, S. Miyahara, and F. Vial, "New perspectives on Atmospheric Tides and Planetary Waves from the TIMED Mission", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2004.
39. Palo, S.E., C. Meek, A. Manson, C. Hall, D. Riggin, R.A. Vincent, D. Murphy, N. Mitchell, J.M. Forbes, J. Russell, M. Mlynczak, and C. Mertens, "Using ground-based radar and TIMED observations to study tidal and planetary wave interactions", 35th Assembly of the Committee on Space Research, Paris, France, Jul. 2004.
40. Palo, S.E., H. Liu, R.G. Roble, R. Garcia, J.M. Russell, and M. Mlynczak, "Propagation of the quasi-two-day wave into the thermosphere/ionosphere system using the NCAR TIMEGCM", IAGA/ICMA workshop on vertical coupling in the atmosphere/ionosphere system, Bath, UK, Jul. 2004.
41. Palo, S.E., "Bipolar Aeronomy: Coupling the lower, middle and upper atmosphere", ICESTAR workshop, Veillefranche-sur-mer, France, Apr. 2004.
42. Palo, S.E., "Using meteors to measure the wind", Amundsen-Scott South Pole station, January 2004.
43. Palo, S.E., "TIMED/CEDAR studies using SABER and ground-based radar", International Antarctic Workshop, Adelaide, Australia, Oct. 2003.
44. Palo, S.E., "An update on CEDAR/TIMED ground-based radar collaboration", joint US/Japan workshop", Jackson Hole, WY, Sep. 2003.
45. Forbes, J.M., J. Russell, X. Zhang, S. Miyahara, S. Palo, S. Miyoshi, M. Mlynczak, C.J. Mertens, and R. Garcia, "Nonmigrating tides as measured by the SABER instrument on TIMED during April-May 2002", Joint European Geophysical Society and American Geophysical Union Meeting, Nice, France, Apr. 2003.
46. Palo, S.E., "Tides in the mesosphere", GPS Earth Observatory Workshop, Jet Propulsion Laboratory, Pasadena, CA, Mar. 2003.
47. Palo, S.E., "Ionospheric and thermospheric variability: Effects of upward propagating global-scale waves", American Geophysical Union Spring Meeting, Boston, MA, Jun. 2001.
48. Palo, S.E., "Nonlinear wave/wave interactions in the middle atmosphere", Workshop on Lower Atmosphere Effects on the Ionosphere and Upper Atmosphere, Prague, Czech Republic, 2000.
49. Palo, S.E., "Using combined satellite and ground-based observations to infer large-scale dynamical structure", Planetary Scale Mesopause Observing System Workshop, Toronto, Canada, 2000.
50. Palo, S.E., "Tides and planetary waves in the polar mesopause region: A review of observations and theory", 9th Workshop on Technical and Scientific Aspects of MST Radar, Toulouse, France, 2000.
51. Palo, S.E., "Meteor radar aeronomy: Observations over South Pole", National Center for Atmospheric Research High Altitude Observatory Colloquium, Boulder, CO, 1998.
52. Palo, S.E., R.G. Roble, and M.E. Hagan, "Simulations of the quasi-two-day wave in the TIME-GCM: Effects in the middle atmosphere", International Symposium on Dynamics and Structure of the Mesopause Region, Kyoto, Japan, 1998.
53. Forbes, J.M., Yu. I. Portnyagin, N. A. Makarov, S.E. Palo, and E.G. Merzlyakov, "Dynamics of the lower thermosphere over South Pole from meteor radar measurements", International Symposium on Dynamics and Structure of the Mesopause Region, Kyoto, Japan, 1998.
54. Palo, S.E. and M.E. Hagan, "An intercomparison between GSWM, UARS and ground based radar observations: A case study in January 1993", American Geophysical Union Spring Meeting, Baltimore, MD, 1997.
55. Palo, S.E., "The quasi-two-day wave: Observations, theory and modeling", National Center for Atmospheric Research High Altitude Observatory Colloquium, Boulder, CO, 1996.
56. Avery, S.K. and S.E. Palo, "The periodogram and its statistical properties", 9th Annual CEDAR Workshop, Boulder, CO., 1993.
57. Avery, S.K., S.E. Palo, R.A. Vincent and D. Lessicar, "Radar wind measurements during the ALOHA-90 campaign", American Geophysical Union Fall Meeting, San Francisco, CA, 1990.

CONTRIBUTED PRESENTATIONS

1. Rainville¹, N., S.E. Palo, and K.M. Larson, "Applying the GNSS Volcanic Ash Plume Detection Technique to Consumer Navigation Receivers", American Geophysical Union Fall Meeting, New Orleans, LA, Dec., 2017.
2. Palo, S.E. A. Dahir, N. Rainville, A. Antunes de Sa, C. Rouleau, N. Nell, M. Woods and B. Schwab, "Lessons learned from the Challenger Mission on QB50", European Cubesat Conference, Oostende, Belgium, Nov. 2017.
3. Palo, S.E. J. Sobtzak, B. Fried, K. Wislinsky, V. Joshi, D. Bansal, A. Aboaf, C. Dhangekar, J. Wagner, M. Williams, M. DeLuca, N. Sonth, T. Moyer, L. Khoo, A. Forsman, T. Green, H. Ma, C. Musgrave, B. Branham, A. Herr, C. Gillard, T. Nielsen, K. Artner, and M. Pilinski, "The Colorado Earth Escape Explorer (CU-E3) a Deep Space Cubesat", European Cubesat Conference, Oostende, Belgium, Nov. 2017.
4. Palo, S., T. Woods, R. Kohnert and J. Mason, "Designing, Building and Operating Small Satellites in a University Environment", 3rd COSPAR Symposium : Small Satellites for Space Research, JeJu Island Korea, Oct., 2017.
5. Woods, T.N., J.P. Mason, A. Chandran, S. Palo and C. Rouleau, "Capacity Building for Sharing Low-Cost CubeSat Ground Stations", 3rd COSPAR Symposium : Small Satellites for Space Research, JeJu Island Korea, Oct., 2017.
6. Sobtzak, J., E. Tianang, B. Branham, N. Sonth, M. DeLuca, T. Moyer, S. Palo, "A Deep Space Radio Communications Link for CubeSats: The CU-E3 Communication Subsystem, Small Satellite Conference, Logan, UT, Aug., 2017.
7. Loucks¹, D., S.E., M. Pilinski, G. Crowley, I. Azeem and D. Hampton, "PFISR GPS Tracking Mode for Researching High Latitude Ionospheric Electronic Density Gradients Associated with GPS Scintillation", URSl, Boulder, CO, Jan., 2017.
8. Bradley¹, A.C., and S.E. Palo, "Understanding first-year ice thickness variability using IceBridge measurements and drift track analysis", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2016.
9. Loucks¹, D., S.E., M. Pilinski, G. Crowley, I. Azeem and D. Hampton, "PFISR GPS Tracking Mode for Researching High Latitude Ionospheric Electronic Density Gradients Associated with GPS Scintillation", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2016.
10. Rainville¹, N., K.M. Larson, S.E. Palo, M. Mattia, M. Rossi, M. Coltelli, C. Roesler and D. Fee, "Detecting Volcanic Ash Plumes with GNSS Signals", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2016.
11. deBoer, G., D. Lawrence, S.E. Palo, B.M. Argrow, G. LoDolce, J. Mack, N. Curry, W. Finamore, J. Fromm, P. D'Amore, D. Weibel, C.N. Long, R-S. Gao, H. Telg, B. Schmid, M. Ivey, A. Bendure and G. Bland, "An update on unmanned aircraft operations along the North Slope of Alaska to understand the lower Arctic troposphere", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2016.
12. Nguyen¹, V., R.S. Lieberman and S.E. Palo, "Impacts of nonlinear tidal-planetary wave interactions on the space-atmosphere interaction region", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2016.
13. Loucks^{1,#}, D., S.E., M. Pilinski, G. Crowley, I. Azeem and D. Hampton, "PFISR GPS Tracking Mode for Researching High Latitude Ionospheric Electronic Density Gradients Associated with GPS Scintillation", 10th Annual Earth Systems and Space Science Poster Conference, Boulder, CO, Nov. 2016. – winner best poster (middle and upper atmosphere).
14. Nguyen¹, V., S.E. Palo and N. Livesey, "Non-Linearly Interacting Waves in the Earth's Upper Atmosphere as Discerned in the New JPL" MUSTARD" Observation Record", JPL SURP Research Conference, Pasadena, CA, Nov. 2016.
15. Dahir¹, A., and S. Palo, "QB50 Challenger: Integration, Testing and Technical Challenges ", AIAA-RM Annual Technical Symposium, Golden CO, Oct. 2016.

16. Rouleau¹, C., A. Dahir, A. Lucas Antunes De Sa, M. Cirbo, M. Woods III, N. Nell, N. Rainville and S. Palo, "QB50 Challenger C&DH Software: Lessons Learned on a Student Team", AIAA-RM Annual Technical Symposium, Golden CO, Oct. 2016.
17. Loucks¹, D., S.E., M. Pilinski, G. Crowley, I. Azeem and D. Hampton, "PFISR GPS Tracking Mode for Researching High Latitude Ionospheric Electronic Density Gradients Associated with GPS Scintillation", AIAA-RM Annual Technical Symposium, Golden CO, Oct. 2016.
18. Palo, S.E., T.N. Woods, J.P. Mason, C.S. Moore, C. Rouleau, C. Downs, D. Hegel, M.D. Baumgartner, B. Rogler, G. Stafford, A. Jones, R. Kohnert, X. Li, S.C. Solomon, P. Chamberlin and A. Caspi, "Mission Overview and Early Operations of the Miniature X-ray Solar Spectrometer (MinXSS) CubeSat", 8th European CubeSat Conference, London England, Sep. 2016.
19. Palo, S.E. and D. Hegel, "XACT – High Performance Nano GN&C Technology", 8th European CubeSat Conference, London England, Sep. 2016.
20. Palo, S.E., A. Dahir, N. Rainville, J. Stark, N. Nell, C. Rouleau, A. Antunes de Sa and M. Woods, "QB50 US01 Challenger, The University of Colorado Boulder QB50 Constellation Satellite", 8th European CubeSat Conference, London England, Sep. 2016.
21. Mason, J.P., M.D. Baumgartner, T.N. Woods, C. Downs, D. Hegel, B. Rogler, G. Stafford, S.C. Solomon, P. Chamberlin, A. Caspi, S.E. Palo, A. Jones, R. Kohnert, X. Li, C.S. Moore, and C. Rouleau, "On-Orbit Performance and the First Flight of the BCT XACT 3-axis ADCS", AIAA Small Satellite Conference Pre-conference CubeSat Workshop, Logan, UT, August 2016.
22. Loucks¹, D., S.E. Palo, M. Pilinski, G. Crowley, I. Azeem and A. Reynolds "High-Latitude GPS Scintillation from E Region Electron Density Gradient During the December 20-21, 2015 Geomagnetic Storm", CEDAR Meeting, Santa Fe, NM, June 2016.
23. Nguyen¹ V., S.E. Palo and R. Lieberman "Inter-annual Variability of Nonlinear Wave Coupling in the Space-Atmosphere Interaction Region", CEDAR Meeting, Santa Fe, NM, June 2016. - **selected as the top student poster award in the MLT section of the CEDAR conference.**
24. Nguyen¹ V., S.E. Palo, R. Lieberman, T. Immel and A. Maute "ENSO Effects on the Diurnal Tide in the MLT Region", CEDAR Meeting, Santa Fe, NM, June 2016.
25. Vaudrin, C. and S.E. Palo, "SDR for Specular Meteor Radar", Multistatic Meteor Radar Workshop, Kuhlungsborn, Germany, June 2016.
26. Vaudrin, C., S.E. Palo and J. Chau, "Complex Plane Specular Meteor Radar Interferometry", Multistatic Meteor Radar Workshop, Kuhlungsborn, Germany, June 2016.
27. Vaudrin, C. and S.E. Palo, "Multistatic Meteor Radar: Forward Scatter Modelling and Simulation", Multistatic Meteor Radar Workshop, Kuhlungsborn, Germany, June 2016.
28. Woods, T.N., A. Caspi, P. Chamberlin, A. Jones, R. Kohnert, X. Li, J. Mason, C. Moore, S. Palo, C. Rouleau and S. Solomon, "Mission Overview of the Miniature X-ray Solar Spectrometer (MinXSS) CubeSat", American Astronomical Society, SPD meeting #47, id.#8.16, Boulder, CO, May 2016.
29. Caspi, A., Woods, T.N., H. Warren, P. Chamberlin, A. Jones, J. Mason, J. McTiernan, C. Moore, S. Palo and S. Solomon, "Science Goals and First Light Analysis from the Miniature X-ray Solar Spectrometer (MinXSS) CubeSat", American Astronomical Society, SPD meeting #47, id.#3.06, Boulder, CO, May 2016.
30. Bradley¹, A.C., S.E. Palo, G. LoDolce, D. Weibel, D. Lawrence, and J. Maslanik, "Microbuoys in Arctic Sensing: novel instruments for low-cost and low-impact observing of the upper ocean", Arctic Observing Summit, Fairbanks, AK, 2016.
31. Palo, S., N. Rainville, A. Dahir, C. Rouleau, J. Stark, N. Nell, J. Fukushima and A. Antunes de Sa, "One of 50: Challenger, the University of Colorado Boulder QB50 Constellation Satellite", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2015.
32. Nguyen¹, V., R. Lieberman, J.M. Forbes and S.E. Palo, "Addressing the Question of Large-Scale Nonlinear Wave Coupling in the Space-Atmosphere Interaction Region", American Geophysical

Union Fall Meeting, San Francisco, CA, Dec., 2015. – received best student poster award, only the top 3-5% of all student posters receive this designation.

33. Rainville¹, N., S. Palo, K. Larson and S. Naik, “Development of a GNSS Volcano Ash Plume Detector”, American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2015.
34. Bradley¹, A., S. Palo, and M. Steele “Trapped Heat and Cooling Processes in the Arctic Ocean Surface Mixed Layer”, American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2015.
35. Lieberman, R., D. Riggan, D. Siskind, V. Nguyen, S. Palo, N., Mitchell, N. Livsey, G. Stober, S. Wilhelm, and C. Jacobi, “Observations of Secondary Waves Generated from Interaction Between the 2-Day Wave and the Migrating Diurnal Tide”, American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2015.
36. Schiller¹, Q., X. Li, S. Palo, L. Blum, and D. Gerhardt, “The Colorado Student Space Weather Experiment: A successful student-run scientific spacecraft mission”, American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2015.
37. deBoer, G., D. Lawrence, J. Elston, B. Argrow, S. Palo, N. Curry, W., Finamore, J., Mack, G., LoDolce, B. Schmid, C. Long, G. Bland, J. Maslanik, R-S., Gao, H. Telg, S. Semmer, G. Maclean, K, Ivey, T. Hock, B., Bartram, A., Bendure and M. Stachura, “Development and Deployment of Unmanned Aircraft Instrumentation for Measuring Quantities Related to Land Surface-Atmosphere Interactions”, American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2015.
38. Palo, S.E. T.N. Woods, X. Li, J. Mason, R. Kohnert and C. Rouleau, “Space Weather CubeSat Projects at the University of Colorado Boulder”, AIAA Rocky Mountain Symposium, Golden, CO, Nov., 2015.
39. Bradley¹, A.C, and S.E. Palo, “Temperature Evolution of the Upper Arctic Ocean Mixed Layer Prior to the Onset of Freeze-up”, 9th Annual Earth System and Space Science Poster Conference, Boulder, CO, Nov., 2015.
40. Loucks¹, D., S.E. Palo, M. Pilinski and G. Crowley, “Polar Ionosphere Structure & High Latitude Scintillation Impacts from the March 17, 2013 Geomagnetic Storm”, 9th Annual Earth System and Space Science Poster Conference, Boulder, CO, Nov., 2015.
41. Bradley¹, A.C, S.E. Palo, G. LoDolce, D. Weibel, and D.A. Lawrence, “Near-surface Temperature Gradients Detected by Microbuoys in the Arctic Ocean”, Arctic Observing Open Science Meeting, Seattle, WA, Nov., 2015.
42. Bradley¹, A.C, and S.E. Palo, “Freeze-up in the Arctic Ocean: New Processes in Response to a Changing Climate” Graduate Climate Conference, Woods Hole, MA, Nov., 2015.
43. Bradley¹, A.C, and S.E. Palo, “Temperature Evolution of the Upper Arctic Ocean Mixed Layer Prior to the Onset of Freeze-up” Forum for Arctic Modeling and Observational Synthesis Workshop #4, Woods Hole, MA, Nov., 2015.
44. Vaudrin¹, C., and S.E. Palo, “Meteor Trail Diffusion and Numerical Modeling of the Ground Illumination Pattern”. Seminar at the Leibniz-Institute of Atmospheric Physics (IAP). NSF-CNIC program. Kühlungsborn, Germany, Nov., 2015.
45. Nguyen¹, V., S.E. Palo, R.S. Lieberman, “Observations of Secondary Wave Manifestation Arising from DW1-QTDW Interaction”, CEDAR Meeting, Seattle, WA, June 2015.
46. Loucks¹, D., S.E. Palo, M. Pilinski and G. Crowley, “Polar Ionosphere Structure & High Latitude Scintillation Impacts from the March 17, 2013 Geomagnetic Storm”, CEDAR Meeting, Seattle, WA, June 2015.
47. Nguyen¹, V., S.E. Palo, R.S. Lieberman, “Observations of Secondary Wave Manifestation Arising from DW1-QTDW Interaction”, CEDAR Meeting, Seattle, WA, June 2015.
48. Vaudrin¹, C., and S.E. Palo, “Initial Results from a Recent Multistatic Meteor Wind Radar Experiment”, CEDAR Meeting, Seattle, WA, June 2015.

49. Palo, S.E., D.A. Lawrence, A. Bradley, G. LoDolce and D. Weibel, "Air Deployed Microbouys (ADMB) and Self-Deployed Surface Sondes (SDSS): Tools for Conducting Polar Research" Polar Technology Conference, Denver, CO, Mar., 2015.
50. Vaudrin¹, C. and S.E. Palo, "The Multistatic Meteor Wind Radar: Motivations, System Design and Recent Results", Seminar at the Jet Propulsion Laboratory, Pasadena, CA, Feb., 2015.
51. Palo, S.E., "Interannual Variability of the Atmospheric Tides over South Pole from a Decade of Meteor Wind Observations", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2014.
52. Palo, S.E., X. Li, T. Woods, and R. Kohnert, "University of Colorado CubeSat Student Projects as Successful Model for Teaching Students about Engineering Practices", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2014.
53. Palo, S.E., D. O'Connor, E. DeVito, R. Kohnert, S. Altunc and G. Crum, "Development of an X-Band Transmitter for CubeSats", 6th European CubeSat Symposium, Estavayer-le-Lac, Switzerland, Oct., 2014.
54. Bradley¹, A., S.E. Palo, C. Zappa, G. LoDolce, D. Weibel and D. Lawrence, "Observations of Wind-Induced Motion in the Arctic Marginal Ice Zone", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2014.
55. Tschudi, M., J. Maslanik, W. Emery, S. Palo, et al., "MIZOPEX – A UAS Arctic Campaign During Summer 2013", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2014.
56. Nguyen¹, V., S.E. Palo and R. Lieberman, "Observations of Nonlinear Interaction Between Tides and Planetary Waves", 2014 University of Colorado Research Symposium, Boulder, CO, Nov., 2014.
57. Bradley¹, A.C., S.E. Palo, G. LoDolce, D. Weibel, and D. Lawrence, "Observations of Wind-Driven Processes in The Surface Layer Of The Marginal Ice Zone", Forum for Arctic Modeling and Observational Synthesis Workshop #3, Woods Hole, MA, Oct., 2014.
58. Nguyen¹, V., L. Chang, S.E. Palo and H-Liu, "Simulation of the 16-day wave in the stratosphere and mesosphere using TIME-GCM and MERRA", NSF CEDAR Workshop, Seattle, WA, Jun., 2014.
59. O'Connor, D., S.E. Palo, E. DeVito, R. Kohnert, G. Crum and S. Altunc, "Next Generation CubeSat Communication", Commercial and Government Responsive Access to Space Technology Exchange, Huntsville, AL, 2014.
60. Bradley¹, A.C., S.E. Palo, J. Maslanik, G. LoDolce, D. Weibel, and D.A. Lawrence, "Wind-Driven Processes in the Surface Layer of the Marginal Ice Zone", 44th International Arctic Workshop, Boulder, Colorado, Mar., 2014.
61. Palo, S.E., D. Gerhardt, X. Li, L. Blum, Q. Schiller and R. Kohnert, "One Year of On-Orbit Performance of the Colorado Student Space Weather Experiment", International Union of Radio Science National Meeting, Boulder, CO, Jan., 2014.
62. Vaudrin, C. and S.E. Palo, "Initial Results from a Forward-Scatter Meteor Wind Radar Experiment Based on the Colorado Software Defined Radar (COSRAD)", International Union of Radio Science National Meeting, Boulder, CO, Jan., 2014.
63. Nguyen¹, V., L.C. Chang, H. Liu and S.E. Palo, "Mechanisms Driving the Global and Seasonal Structure of the 16-day Planetary Wave", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2013.
64. Bradley¹, A., S.E. Palo, S.L. Knuth, and J.J. Cassano, "UAS Observations of Polynya Wave Height and Surface Temperature During the September 2012 Terra Nova Bay, Antarctica Field Campaign", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2013.
65. Palo, S.E., D. Weibel, D. Lawrence, G. LoDolce, A.C. Bradley, J. Adler, J. Maslanik and G. Walker, "First Results from UAS Deployed Ocean Sensor Systems during the 2013 MIZOPEX Campaign", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2013.

66. Zappa, C., S. Brown, W.J. Emery, J. Adler, G.A. Wick, M. Steele, S.E. Palo, G. Walker and J.A. Maslanik, "Local Effects of Ice Floes on Skin Sea Surface Temperature in the Marginal Ice Zone from UAVs", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2013.
67. Li, X., Q. Schiller, L. Blum, S. Califf, H. Zhao, A.N. Jaynes, W. Tu, D.L. Turner, D. Gerhardt, S.E. Palo, R. Selesnick, S.G. Kanekal, D.N. Baker, J.F. Fennell, J.B. Blake, M.D. Looper, G.D. Reeves and H. Spence, "Update on Science Results from CubeSat: Colorado Student Space Weather Experiment (CSSWE)" American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2013.
68. Bradley¹, A., and S.E. Palo, "UAS observations of Polynaya Wave Height and Surface Temperature during the September 2012 Terra Nova Bay Antarctica Field Campaign", 2013 University of Colorado Research Symposium, Boulder, CO, Nov., 2013.
69. Vaudrin¹, C., and S.E. Palo, "Ground Illumination Patterns from Specular Meteor Trail Scatter for Optimal Multistatic Meteor Wind Radar Receiver Ground Station Geometries", 2013 University of Colorado Research Symposium, Boulder, CO, Nov., 2013.
70. Gerhardt¹, D., S.E. Palo, X. Li, L. Blum, Q. Schiller and R. Kohnert, "The Colorado Student Space Weather Experiment (CSSWE) On-Orbit Performance", AIAA Small Satellite Conference, Logan, UT, Aug., 2013.
71. Chi-Kuang, C., L.C. Chang, S.E. Palo, Z-W Lin, "An Instrument Suite for the FORMOSAT-7/COSMIC-2 Micro-satellite Constellation", 10th Annual Asia Oceania Geosciences Society Meeting, Brisbane, Australia, Jun., 2013.
72. Palo, S.E. and C. Vaudrin, "Thoughts on Moving Meteor Science Forward", NSF CEDAR Workshop, Boulder, CO, Jun., 2013.
73. Nguyen¹, V. and S.E. Palo, "Transmission of Planetary Wave Effects to the Upper Atmosphere by Modulation of Turbulent Mixing", NSF CEDAR Workshop, Boulder, CO, Jun., 2013.
74. Nguyen¹, V. and S.E. Palo, "Is the Day-to-Day Variability of the Migrating Semidiurnal Tide Deterministic or Stochastic?", NSF CEDAR Workshop, Boulder, CO, Jun., 2013.
75. Vaudrin¹, C. and S.E. Palo, "Optimal Multistatic Specular Meteor Wind Radar Geometries", NSF CEDAR Workshop, Boulder, CO, Jun., 2013.
76. Palo, S.E., D. Gerhardt, X. Li, L. Blum, Q. Schiller and R. Kohnert, "On-Orbit Performance of the Colorado Student Space Weather Experiment", NSF CEDAR Workshop, Boulder, CO, Jun., 2013.
77. Palo, S.E., T. Woods, X. Li, J. Mason, M. Carton, A. Caspi, A. Jones, R. Kohnert and S. Solomon, "MinXSS: A Three Axis Stabilized CubeSat for Conducting Solar Physics", 5th European CubeSat Symposium, Brussels, Belgium, Jun., 2013.
78. Palo, S.E., D. Gerhardt, X.Li, L. Blum, Q. Schiller and R. Kohnert, "On-Orbit Performance of the Colorado Student Space Weather Experiment", 5th European CubeSat Symposium, Brussels, Belgium, Jun., 2013.
79. Palo, S.E., K.D. Kemble, M.D. Pilinski, B.L. Davis, L.E. Jasper, M. Sakaguchi, R.L. McNally, C.M. Cooke, B.T. Sander and C.J. Koehler, "The Wind and Temperature Spectrometer (WTS) and Accelerometer Suite on the DANDE Satellite", 5th European CubeSat Symposium, Brussels, Belgium, Jun., 2013.
80. Li, X., S.E. Palo, et al, "Telescope Measurements of Energetic Particles: from PET to REPT to REPTile", Caltech, Pasadena CA, Apr. 2013.
81. Li, X., S.E. Palo, et al, "Small Mission (CSSWE) – Big Impact on Space Weather Research", NOAA/SWPC, Boulder CO, Feb., 2013.
82. Pilinski, M., B. Argrow, S. Palo, and B. Bowman, "Semi-Empirical Satellite Accommodate Model (SESAM)", IMPACT workshop, Santa Fe, NM, Jan., 2013.
83. Vaudrin¹, C. and S.E. Palo, "A Meteor Wind Radar Measurement Campaign Using the Colorado Software Defined Radar with Meteor Trail Echoes Interpreted Under a Modern Diffusion Theory", International Union of Radio Science National Meeting, Boulder, CO, Jan., 2013.

84. Li, X., S.E. Palo, et al, "Our First CubeSat Mission: Concept to Reality and Impact", LASP, Boulder, CO, Jan., 2013.
85. Li, X., S.E. Palo, et al, "Colorado Student Space Weather Experiment (CSSWE) CubeSat Mission: A Success in Education, Engineering, and Science", NCAR/HAO Jan., 2013.
86. Palo, S.E., D. Lawrence, D. Weibel, G. LoDolce, S. Krist, I. Crocker and J. Maslanik, "UAV deployed sensor system for Arctic Ocean remote sensing", American Geophysical Union Fall Meeting, San Francisco, CA, Dec., 2012.
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