E. J. Rigler’s Publications and Presentations

***Publications:***

The following list of publications demonstrates my ability to communicate the results of my research to scientific and technical peers in the space weather community. The list includes my own papers (i.e., primary author), and papers on which I contributed significant enough material and/or scientific or technical insights to be included as co-author. All have been peer-reviewed, either by a dissertation committee, by a journal editor with assistance from unaffiliated colleagues, or as part of a formal software engineering design review.

Baker, D.N., R.S. Weigel, **E.J. Rigler**, R.L. McPherron, D. Vassiliadis, C.N. Arge, G.L.  
Siscoe, and H.E. Spence (2004), Sun-to-Magnetosphere Modeling: CISM Forecast Model  
Development Using Linked Empirical Methods, *Journal of Atmospheric and Solar-  
Terrestrial Physics*, vol. 66, 1491-1497

**Rigler, E.J.** (2004), *Predicting Radiation Belt Electron Flux with Adaptive Multi-Input Linear Filters*, Ph.D. Thesis, Department of Aerospace Engineering Sciences, University of Colorado

**Rigler, E.J.**, D.N. Baker, R.S. Weigel, D. Vassiliadis, and A.J. Klimas (2004), Adapative Linear Prediction of Radiation Belt Electrons Using the Kalman Filter, *Space Weather*, vol. 2, doi:10.1029/2003SW000036

**Rigler, E.J.**, D.N. Baker, R.S. Weigel, and D. Vassiliadis (2005), Solar Wind-Driven Electron Radiation Belt Response Functions at 100-min. Time Scales, *Advances in Space Research*, vol. 36, doi:10.1016/j.asr.2003.09.070

**Rigler, E.J.**, M. Wiltberger, and D.N. Baker (2007), Radiation Belt Electrons Respond to Multiple Solar Wind Inputs, *Journal of Geophysical Research*, vol. 112, doi:10.1029/2006JA012181

**Rigler, E.J.**, and D.N. Baker (2008), A State Space Model of Radiation Belt Electron Flux Dynamics, *Journal of Atmospheric and Solar-Terrestrial Physics*

**Rigler, E.J.**, and S. Hill (2009) GOES-R SUVI Composite Image, *NOAA/NESDIS/STAR Algorithm Theoretical Basis Document, Test Plan and Results, and Implementation and User’s Guide*

**Rigler, E.J.**, and S. Hill (2009) GOES-R SUVI Difference Image, *NOAA/NESDIS/STAR Algorithm Theoretical Basis Document, Test Plan and Results, and Implementation and User’s Guide*

**Rigler, E.J.**, and S. Hill (2011) GOES-R SUVI Coronal Hole Image, *NOAA/NESDIS/STAR Algorithm Theoretical Basis Document, Test Plan and Results, and Implementation and User’s Guide*

**Rigler, E.J.**, and S. Hill (2011) GOES-R SUVI Thematic Maps, *NOAA/NESDIS/STAR Algorithm Theoretical Basis Document, Test Plan and Results, and Implementation and User’s Guide*

Vassiliadis, D., A.J. Klimas, R.S. Weigel, D.N. Baker, **E.J. Rigler**, S.G. Kanekal, T. Nagai, S.F. Fung, R.W.H. Friedel, and T.E. Cayton (2003), Structure of Earth’s Outer Radiation Belt Inferred from Long-term Electron Flux Dynamics, *Geophysical Research Letters*, vol. 30, doi:10.1029/ 2003GL017328

Weigel, R.S., T. Detman, **E.J. Rigler**, and D.N. Baker (2006), Decision Theory and the Analysis of Rare Event Space Weather Forecasts, *Space Weather*, vol. 4, doi:10.1029/2005SW000157

Weigel, R.S., D.N. Baker, **E.J. Rigler**, and D. Vassiliadis (2004), Predictability of Large Geomagnetic Disturbances Based on Solar Wind Conditions, *IEEE Transactions on Plasma Science*, vol. 32, 1506-1510

***Presentations:***

The following list includes technical presentations from formal engineering design reviews, invited seminars, and presentations made at national and international scientific conferences. It only includes those presentations for which I was primary author and presenter. Oral and poster presentations are identified, as are “Invited” talks and presentations for which I received awards.

**Rigler, E.J.**, D.N. Baker, T.G. Onsager, and R.L. McPherron (2001, oral presentation), Characterizing Outer-Belt Electron Flux Variability in Both the Frequency and Time Domains, AGU Spring Meeting, Boston.

**Rigler, E.J.**, and D.N. Baker (2001, poster presentation, “Outstanding Student Paper” award), Linear Prediction Filter Analysis of Solar Wind Magnetosphere Coupling: Studies at Non-Geosynchronous Altitudes and High Time Resolution, AGU Fall Meeting, San Francisco.

**Rigler, E.J.**, D.N. Baker, D. Vassiladis, S.G. Kanekal, and A.J. Klimas (2002, oral presentation), Solar Wind-Driven Radiation Belt Response Functions at Sub-Daily Time Scales Using SAMPEX Orbit-Averaged Electron Fluxes, AGU Spring Meeting, Washington, D.C.

**Rigler, E.J.**, D.N. Baker, D. Vassiliadis, A.J. Klimas, and S.G. Kanekal (2002, invited oral presentation), Evolving Electron Efficiency as a Function of Changing Solar Wind Conditions – A Global History Written with Adaptive Linear Response Functions, Western Pacific Geophysics Meeting, Wellington, New Zealand.

**Rigler, E.J.**, and D.N. Baker (2002, oral presentation), Solar Wind to Radiation Belt Energetic Electron Response Functions Using Multi-Channel Prediction Filters, AGU Fall Meeting, San Francisco.

**Rigler, E.J.** (2003, invited seminar), Predicting Radiation Belt Electron Fluxes with Adaptive Multi-Channel Linear Filters, Los Alamos National Laboratory Science Seminar, April 21st, Los Alamos.

**Rigler, E.J.**, D.N. Baker, D. Vassiliadis, and R.S. Weigel (2003, oral presentation), Data Assimilation Methods for Characterizing Radiation Belt Dynamics, IUGG, Sapporo, Japan.

**Rigler, E.J.**, D.N. Baker, R.S. Weigel, D. Vassiladis, and A.J. Klimas (2003, poster presentation, “Outstanding Student Paper” award), Adaptive Prediction of Radiation Belt Electrons with the Kalman Filter, AGU Fall Meeting, San Francisco.

**Rigler, E.J.** (2004, invited seminar), Adaptive Linear Prediction of Radiation Belt Electrons using Kalman Filters, SEC Weekly Science Seminar, February 12th, Boulder.

**Rigler, E.J.**, D.N. Baker, R.S. Weigel, D. Vassiladis, and A.J. Klimas (2004, poster presentation), Predicting Radiation Belt Electron Flux with Adaptive Linear State-Space Models, AGU Fall Meeting, San Francisco.

**Rigler, E.J.**, D.N. Baker, D. Vassiladis, and M. Wiltberger, and S.G. Kanekal (2005, oral presentation), Studying Radiation Belt Electrons with Linear State-Space Models, AGU Fall Meeting, San Francisco.

**Rigler, E.J.**, D.N. Baker, M.R. Presicci, R.S. Weigel, and D. Vassiladis (2005, poster presentation), Studying Time-Varying Radiation Belt Electron Flux Dynamics with Adaptive State Space Models, Joint Assembly (AGU, SEG, NABS, SPD/AAS) Spring Meeting, New Orleans.

**Rigler, E.J.** (2006, invited seminar), Statistical Models of Magnetospheric Dynamics, NCAR/HAO Weekly Science Colloquium, June 14th, Boulder.

**Rigler, E.J.**, M. Wiltberger (2006, poster presentation), Optimal Parameter Estimation for Empirical Ionosphere used as LFM Inner Boundary Conditions, GEM Summer Workshop, Snowmass.

**Rigler, E.J.** (2006, invited seminar), Statistical Models of Magnetospheric Dynamics, LASP Friends of the Magnetosphere Weekly Science Colloquium, October 3rd, Boulder.

**Rigler, E.J.**, and M. Wiltberger (2007, oral presentation), Improving Global Magnetosphere Models with Optimized Ionospheric Boundary Conditions, NCAR/IMAGe Theme of the Year Workshop III, May 21-23, Boulder.

**Rigler, E.J.**(2007, invited seminar), Adaptive State Estimation in Space Weather Forecasts: Radiation Belt Electron Flux, AFRL Science Seminar, September 20, Boston.

**Rigler, E.J.**(2007, invited seminar), Reducing Parameter Estimation Bias in Empirical Models: A Case for Data Assimilation in Radiation Belt Science, George Mason Univ. Computational Astrophysics Seminar, September 26, Fairfax.

**Rigler, E.J.,** and S.M. Hill (2008, poster presentation), Extending the Dynamic Range of Solar UV Images with Optimized Variable Exposure Composites, GOES-R Risk Reduction Research Annual Meeting @ Univ. of Wisconsin, June 26th, Madison.

**Rigler, E.J.**, C.N. Arge, and L. Mayer (2008, poster presentation), Optimizing Coronal and Solar Wind Model Inputs with Data Assimilation (Is it worth it?), AGU Fall Meeting, San Francisco.

**Rigler, E.J.**, and S.M. Hill (2009, oral presentation), GOES-R Risk Reduction Space Weather Team Critical Design Review: SUVI Composite Images, SUVI Fixed Difference Images, and SUVI Running Difference Images, March 18th, Boulder.

**Rigler, E.J.,** and S.M. Hill (2009, poster presentation), Solar Ultraviolet Image Processing Algorithms, GOES-R Risk Reduction Research Annual Meeting @ Univ. of Maryland, July 24th, Adelphi.

**Rigler, E.J.**, and S.M. Hill (2009, oral presentation), GOES-R Risk Reduction Space Weather Team Software Delivery and Demonstration: SUVI Composite Images, SUVI Fixed Difference Images, and SUVI Running Difference Images, December 1st, Boulder.

**Rigler, E.J.**, and S.M. Hill (2010, poster presentation), Bayesian Pixel Classification in Multichannel Solar EUV Images, Boulder Solar Day Workshop, March 5th, Boulder.

**Rigler, E.J.,** S.M. Hill, R. Viereck, and M. Shouldis (2010, poster presentation), GOES-R Solar EUV and X-ray Measurements for Space Weather, GOES-R Risk Reduction Research Annual Meeting @ Univ. of Wisconsin, June 10th, Madison.

**Rigler, E.J.**, and S.M. Hill (2010, oral and poster presentation), Bayesian Pixel Classification in Multichannel Solar EUV Images, Solar Image Processing Workshop, September 12th-16th, Les Diablerets, Switzerland.

**Rigler, E.J.**, and S.M. Hill (2010, oral presentation), GOES-R Risk Reduction Space Weather Team Critical Design Review: SUVI Coronal Hole Images, and SUVI Thematic Maps, November 11th, Boulder.