

Biographical Sketch – Mary K. Hudson

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Eleanor and A. Kelvin Smith Professor of Physics
Department of Physics and Astronomy
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(a) Professional Preparation

UCLA	Physics	Ph.D., 1974
UCLA	Physics	M.S., 1971
UCLA	Physics	B.S., 1969

(b) Appointments

1969-71,	Associate Staff, Space Sciences Lab, The Aerospace Corporation, El Segundo
1972-74,	Research Assistant, Physics, U.C.L.A.
1974-86,	Research Physicist, UCB
1980-85,	Senior Fellow, UCB
1984-90,	Associate Professor of Physics, Dartmouth College
1990-	Professor of Physics, Dartmouth College; Eleanor and A. Kelvin Smith Professor in the Arts and Sciences
1996-04,	Chair, Physics and Astronomy Department, Dartmouth
2010-16,	Affiliate Scientist, Senior RNCAR HAO

(c) Publications

Five Most Relevant:

Hudson, M. K., S. R. Elkington, J. G. Lyon, V. A. Marchenko, I. Roth, M. Temerin, J. B. Blake, M. S. Gussenhoven, J. R. Wygant (1997), Simulations of radiation belt formation during storm sudden commencements, *J. Geophys. Res.*, *102*(A7), 14,087–14,102, doi:10.1029/97JA03995.

Hudson, M., B. Kress, J. Mazur, K. Perry, and P. Slocum (2004), 3D modeling of shock-induced trapping of solar energetic particles in the Earth's magnetosphere, *J. Atmos. Sol. Terr. Phys.*, *66*(15–16), 1389–1397, doi:[10.1016/j.jastp.2004.03.024](https://doi.org/10.1016/j.jastp.2004.03.024).

Engel, M. A., B. T. Kress, M. K. Hudson and R. S. Selesnick (2015), Simulations of inner radiation belt proton loss during geomagnetic storms, *J. Geophys. Res. Space Physics*, *120*, 9323–9333, doi:[10.1002/2015JA021568](https://doi.org/10.1002/2015JA021568).

Engel, M. A., B. T. Kress, M. K. Hudson, and R. S. Selesnick (2016), Comparison of Van Allen Probes radiation belt proton data with test particle simulation for the 17 March 2015 storm, *J. Geophys. Res. Space Physics*, *121*, 11,035–11,041, doi:[10.1002/2016JA023333](https://doi.org/10.1002/2016JA023333).

Kress, B. T., M. K. Hudson, R. S. Selesnick, C. J. Mertens, and M. Engel (2015), Modelling geomagnetic cutoffs for space weather applications, *J. Geophys. Res. Space Physics*, 120, 5694–5702, doi: 10.1002/2014JA020899.

Five additional publications:

Selesnick, R. S., M. K. Hudson, and B. T. Kress (2010), Injection and loss of inner radiation belt protons during solar proton events and magnetic storms, *J. Geophys. Res.*, 115, A08211, doi:10.1029/2010JA015247.

Selesnick, R. S., M. K. Hudson, and B. T. Kress (2013), Direct observation of the CRAND proton radiation belt source, *J. Geophys. Res.*, 118, doi:10.1002/2013JA019338.

Selesnick, R. S., D. N. Baker, A. N. Jaynes, X. Li, S. G. Kanekal, M. K. Hudson, and B. T. Kress (2014), Observations of the inner radiation belt: CRAND and trapped solar protons, *J. Geophys. Res.*, 119, 6541–6552, doi:[10.1002/2014JA020188](https://doi.org/10.1002/2014JA020188).

Selesnick, R. S., D. N. Baker, A. N. Jaynes, X. Li, S. G. Kanekal, M. K. Hudson, and B. T. Kress (2016), [Inward diffusion and loss of radiation belt protons](#), *Journal of Geophysical Research: Space Physics*, 121, 3, doi:10.1002/2015ja022154.

Hudson, M. K., D. N. Baker, J. Goldstein, B. T. Kress, J. Paral, F. Toffoletto, and M. Wiltberger (2014), [Simulated magnetopause losses and Van Allen Probe flux dropouts](#), *Geophysical Research Letters*, doi:10.1002/2014gl059222.

(d) Synergistic Activities

Co-PI, NSF-STC Center for Integrated Space Weather Modeling (CISM), 2002 - 2013

Co-Chair NRC Committee on Solar and Space Physics 2012-2018

Member NRC Decadal Survey Steering Committee, 2010-12

Chair, NSF Geospace Environment Modelling Steering Committee 2000-03.

American Geophysical Union Fellow, SPA Secretary and Member SPA Education Committee,

AGU James B. Macelwane Medal (1984) and John Adam Fleming Medal (2017)

(e) Collaborators and Other Affiliations

(i) Collaborators in 48 months before proposal: Dan Baker, Miles Engel, Ashley Greeley, Allison Jaynes, Shri Kanekal, Brian Kress, John Lyon, Richard Selesnick, Xiaochen Shen, Michael Wiltberger, John Wygant

(ii) Graduate and Postdoctoral Advisors: Charles Kennel and Forrest Mozer

(iii) Thesis Adviser and Postgraduate Sponsor: Ph.D. students: Robert L. Lysak, 1980, Earl F. Witt, 1984, Rachelle A. Bergmann, 1985, UC Berkeley; Perry Gray, Xinlin Li, Victor Marchenko, Elena Belova, Marc Lessard, Scot Elkington, Jerry Goldstein, Shawn Young, Kara Perry, Thiago Brito, Zhao Li, Shuo Wu, Miles Engel, Maulik Patel, Wonde Eshetu, Murong Qin; **M.S. students:** Xiaomei Zhu, Evguenia Miftakhova, Alicia Eccles Sanchez, Feifei Chu, Yelena Goryunova, Dartmouth College