

Brian Hannon Kahn

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Education:

Ph.D, Atmospheric Sciences, University of California at Los Angeles (UCLA) Department of Atmospheric and Oceanic Sciences (DAOS) (2004)
M.S., Atmospheric Sciences, UCLA DAOS (2001)
B.S. (with honors), Meteorology, San Jose State University (SJSU) (1995)

Experience:

Research Scientist, JPL (2011–)
Scientist, JPL (2009–2011)
Visiting Researcher, Joint Institute for Regional Earth System Science and Engineering (JIFRESSE)/UCLA (2009–)
Assistant Researcher IV, JIFRESSE/UCLA (2008)
NASA Postdoctoral Program (NPP) Fellow (2005–2008)
Academic Part-Time Researcher, JPL (2003–2005)
Graduate Research Assistant to Dr. Annmarie Eldering (2000–2004)
Teaching Fellow, UCLA (1999–2002)
On-Air Personality for *Pulse of This Planet*, KKUP, 91.5 FM, Cupertino, CA (1998–2004)
Lab Instructor, Physics, SJSU (1997–1999)
Lecturer, Weather and Climate, SJSU (1997–1999)
Exchange Student, Urals State University, Ekaterinburg, Russia (1996–1997)
Summer Internship, NWSFO Anchorage, Alaska (Summers of 1994 and 1995)

Honors and Awards:

NPP Fellowship Award (2005–2008)
NASA Earth Systems Science (ESS) Fellowship (2001–2004)
Brian Bosart Award, UCLA DAOS (2001)
Neiburger Teaching Award, UCLA DAOS (2000)
Scholarship to attend Urals State University, Ekaterinburg, Russia (1996–1997)

Professional Activities:

Member, CALIPSO/CloudSat Science Team (2008–present)
Member, American Geophysical Union (AGU) and the American Meteorological Society (AMS)
Lead cloud scientist for the NASA AIRS project (2005–present)
Reviewer (~15/year) for *Atmosphere-Ocean*, *Atmos. Chem. Phys.*, *Dyn. Atmos. Oceans*,
Geophys. Res. Lett., *IEEE Geosci. Remote Sens. Lett.*, *IEEE Trans. Geosci. Remote Sens.*, *J. Appl. Meteor.*, *J. Appl. Meteor. Climatol.*, *J. Atmos. Ocean. Tech.*, *J. Atmos. Sci.*, *J. Geophys. Res.*, *Remote Sensing, Rem. Sens. Env.*, and reviewer of NASA and ARM proposals

Refereed Publications (H = 12):

- [1] Yue, Q., E. J. Fetzer, **B. H. Kahn**, S. Wong, G. Manipon, A. Guillaume, and B. Wilson (2013), Cloud-state dependent sampling in AIRS observations based on CloudSat cloud classification, *J. Climate* (submitted)
- [2] Yue, Q., **B. H. Kahn**, M. M. Schreier, H. Xiao, E. J. Fetzer, J. Teixeira, and K. Suselj (2013), Transitions of cloud-topped marine boundary layers characterized by AIRS, MODIS, and a large eddy simulation model, *J. Geophys. Res.* (submitted).
- [3] Tian, B., E. J. Fetzer, **B. H. Kahn**, J. Teixeira, E. Manning, and T. Hearty (2013), Near decade long tropospheric air temperature and specific humidity records from AIRS for CMIP5 model evaluation, *J. Geophys. Res.* (in press)
- [4] Ou, S.-C., **B. H. Kahn**, K. N. Liou, Y. Takano, M. M. Schreier, and Q. Yue (2013), Retrieval of cirrus cloud properties from the Atmospheric Infrared Sounder: The k-coefficient approach combined with SARTA plus delta-four stream approximation, *IEEE Trans. Geosci. Remote Sens.* (in press)
- [5] Devasthale, A., M. Tjenström, M. Caian, M. A. Thomas, **B. H. Kahn**, and E. J. Fetzer (2012), Influence of the Arctic Oscillation on the vertical distribution of clouds as observed by the A-train constellation of satellites, *Atmos. Chem. Phys.*, **12**, 10535–10544, doi:10.5194/acp-12-10535-2012.
- [6] Wu, L., H. Su, R. G. Fovell, B. Wang, J. T. Shen, **B. H. Kahn**, S. M. Hristova-Veleva, B. H. Lambrigtsen, E. J. Fetzer, and J. H. Jiang (2012), Relationship of environmental relative humidity with North Atlantic tropical cyclone intensity and intensification rate, *Geophys. Res. Lett.*, **39**, L20809, doi:10.1029/2012GL053546.
- [7] Braverman, A. J., E. J. Fetzer, **B. H. Kahn**, E. M. Manning, R. B. Oliphant, and J. P. Teixeira (2012), Massive data set analysis for NASA's Atmospheric Infrared Sounder, *Technometrics*, **54**, 1–15, doi:10.1080/00401706.2012.650504.
- [8] Casey, S. P., E. J. Fetzer, and **B. H. Kahn** (2012), Revised identification of tropical oceanic cumulus congestus as viewed by CloudSat, *Atmos. Chem. Phys.*, **12**, 1587–1595.
- [9] Wong, S., E. J. Fetzer, **B. H. Kahn**, B. Tian, B. Lambrigtsen, and H. Ye (2011), Closing the global water vapor budget with AIRS water vapor, MERRA reanalysis, TRMM and GPCP precipitation, and GSSTF surface evaporation, *J. Climate*, **24**, 6307–6321.
- [10] **Kahn, B. H.**, S. L. Nasiri, M. M. Schreier, and B. A. Baum (2011), Impacts of sub-pixel cloud heterogeneity on infrared thermodynamic phase assessment, *J. Geophys. Res.*, **116**, D20201, doi:10.1029/2011JD015774.
- [11] Yue, Q., **B. H. Kahn**, E. J. Fetzer, and J. Teixeira (2011), Relationship between oceanic boundary layer clouds and lower tropospheric stability observed by AIRS, CloudSat, and CALIOP, *J. Geophys. Res.*, **116**, D18212, doi:10.1029/2011JD016136.
- [12] **Kahn, B. H.**, J. Teixeira, E. J. Fetzer, A. Gettelman, S. M. Hristova-Veleva, X. Huang, A. K. Kochanski, M. Köhler, S. K. Krueger, R. Wood, and M. Zhao (2011), Temperature and water vapor variance scaling in global models: Comparisons to satellite and aircraft data, *J. Atmos. Sci.*, **68**, 2156–2168, doi:10.1175/2011JAS3737.1
- [13] Nasiri, S. L., V. T. Dang, **B. H. Kahn**, E. J. Fetzer, E. M. Manning, M. M. Schreier, and R. A. Frey (2011), Comparing MODIS and AIRS infrared-based cloud retrievals, *J. Appl. Meteor. Clim.*, **50**, 1057–1072, doi:10.1175/2010JAMC2603.1.
- [14] Martins, J. P. A., J. Teixeira, P. M. M. Soares, P. M. A. Miranda, **B. H. Kahn**, V. Dang, F. W. Irion, E. Fetzer and E. F. Fishbein (2010), Infrared sounding of the trade-wind boundary layer: AIRS and the RICO experiment, *Geophys. Res. Lett.* **37**, L24806, doi:10.1029/2010GL045902.

- [15] Lee, S., **B. H. Kahn**, and J. Teixeira (2010), Characterization of liquid water content distributions from CloudSat, *J. Geophys. Res.*, **115**, D20203, doi:10.1029/2009JD013272.
- [16] Schreier, M. M., **B. H. Kahn**, A. Eldering, D. A. Elliott, E. Fishbein, F. W. Irion, and T. S. Pagano (2010), Radiance comparisons of MODIS and AIRS using spatial response information, *J. Atmos. Ocean. Tech.*, **27**, 1331–1342, doi: 10.1175/2010JTECHA1424.1.
- [17] Su, H., J. H. Jiang, J. D. Neelin, **B. H. Kahn**, J. W. Waters, N. J. Livesey, and Y. Gu (2010), Reply to comment by R. Rondanelli and R. S. Lindzen on “Variations in convective precipitation fraction and stratiform area with sea surface temperature,” *J. Geophys. Res.*, **115**, D06203, doi:10.1029/2009JD012872.
- [18] **Kahn, B. H.**, and J. Teixeira (2009), A global climatology of temperature and water vapor variance scaling from the Atmospheric Infrared Sounder, *J. Climate*, **22**, 5558–5576, doi: 10.1175/2009JCLI2934.1.
- [19] **Kahn, B. H.**, A. Gettelman, A. Eldering, E. J. Fetzer, and C. K. Liang (2009), Cloudy and clear sky relative humidity distributions in the upper troposphere observed by the A-train, doi:10.1029/2009JD011738, *J. Geophys. Res.*, **114**, D00H02, doi:10.1029/2009JD011738.
- [20] Wu, D. L., S. A. Ackerman, R. Davies, D. J. Diner, M. J. Garay, **B. H. Kahn**, B. C. Maddux, C. M. Moroney, G. L. Stephens, J. P. Veefkind, and M. A. Vaughan (2009), Vertical distributions and relationships of cloud occurrence frequency as observed by MISR, AIRS, MODIS, OMI, CALIPSO, and CloudSat, *Geophys. Res. Lett.*, **36**, L09821, doi:10.1029/2009GL037464.
- [21] Davis, S. M., L. M. Avallone, **B. H. Kahn**, K. G. Meyer, and D. Baumgardner (2009), Comparison of airborne in situ measurements and MODIS retrievals of cirrus cloud optical and microphysical properties during the Midlatitude Cirrus Experiment (MidCiX), *J. Geophys. Res.*, **114**, D02203, doi:10.1029/2008JD010284.
- [22] Fetzer, E. J., W. G. Read, D. Waliser, **B. H. Kahn**, B. Tian, H. Vömel, F. W. Irion, H. Su, A. Eldering, M. de la Torre-Juarez, J. Jiang, and V. Dang (2008), Comparison of upper tropospheric water vapor observations from the Microwave Limb Sounder and Atmospheric Infrared Sounder, *J. Geophys. Res.*, **113**, D22110, doi:10.1029/2008JD010000.
- [23] Nasiri, S. L., and **B. H. Kahn** (2008), Limitations of bispectral infrared cloud phase determination and potential for improvement, *J. Appl. Meteor. Climatol.*, **47**, 2895–2910.
- [24] **Kahn, B. H.**, and D. M. Sinton (2008), A preferred scale for warm core instability in a non-convective moist basic state, *J. Atmos. Sci.*, **65**, 2907–2921.
- [25] Su, H., J. H. Jiang, Y. Gu, J. D. Neelin, **B. H. Kahn**, D. Feldman, Y. L. Yung, J. W. Waters, N. J. Livesey, M. L. Santee, and W. G. Read (2008), Variations of tropical upper tropospheric clouds with sea surface temperature and implications for radiative effects, *J. Geophys. Res.*, **113**, D10211, doi:10.1029/2007JD009624.
- [26] **Kahn, B. H.**, C. K. Liang, A. Eldering, A. Gettelman, Q. Yue, and K. N. Liou (2008), Tropical thin cirrus and relative humidity observed by the Atmospheric Infrared Sounder, *Atmos. Chem. Phys.*, **8**, 1501–1518.
- [27] **Kahn, B. H.**, M. T. Chahine, G. L. Stephens, G. G. Mace, R. Marchand, Z. Wang, C. D. Barnet, A. Eldering, R. E. Holz, R. E. Kuehn, and D. G. Vane (2008), Cloud-type comparisons of AIRS, CloudSat, and CALIPSO cloud height and amount, *Atmos. Chem. Phys.*, **8**, 1231–1248.
- [28] Yue, Q., K. N. Liou, S. C. Ou, **B. H. Kahn**, P. Yang, and G. G. Mace (2007), Interpretation of AIRS data in thin cirrus atmospheres based on a fast radiative transfer model, *J. Atmos. Sci.* **64**, 3827–3842.

- [29] Weisz, E., J. Li, W. P. Menzel, A. K. Heidinger, **B. H. Kahn**, and C.-Y. Liu (2007), Comparison of AIRS, MODIS, CloudSat and CALIPSO cloud top height retrievals, *Geophys. Res. Lett.*, **34**, L17811, doi:10.1029/2007GL030676.
- [30] **Kahn, B. H.**, E. Fishbein, S. L. Nasiri, A. Eldering, E. J. Fetzer, M. J. Garay, and S.-Y. Lee (2007), The radiative consistency of Atmospheric Infrared Sounder and Moderate Resolution Imaging Spectroradiometer cloud retrievals, *J. Geophys. Res.*, **112**, D09201, doi:10.1029/2006JD007486.
- [31] **Kahn, B. H.**, A. Eldering, A. J. Braverman, E. J. Fetzer, J. H. Jiang, E. Fishbein, and D. L. Wu (2007), Toward the characterization of upper tropospheric clouds using Atmospheric Infrared Sounder and Microwave Limb Sounder observations, *J. Geophys. Res.*, **112**, D05202, doi:10.1029/2006JD007336.
- [32] Tinetti, G., V. S. Meadows, D. Crisp, N. Kiang, **B. H. Kahn**, E. Bosc, E. Fishbein, T. Velusamy, and M. Turnbull (2006), Detectability of planetary characteristics in disk-averaged spectra II: Synthetic spectra and light-curves of Earth, *Astrobiology*, **6**, 881–900.
- [33] **Kahn, B. H.**, K. N. Liou, S. -Y. Lee, E. F. Fishbein, S. DeSouza-Machado, A. Eldering, E. J. Fetzer, S. E. Hannon, and L. L. Strow (2005), Nighttime cirrus detection using Atmospheric Infrared Sounder channels and total column water vapor, *J. Geophys. Res.*, **110**, doi:10.1029/2004JD005430.
- [34] Eldering, A., **B. H. Kahn**, F. P. Mills, F. W. Irion, H. M. Steele, and M. R. Gunson (2004), Vertical profiles of aerosol volume from high-spectral-resolution infrared transmission measurements II. Results, *J. Geophys. Res.*, **109**, D20201, doi:10.1029/2004JD004623.
- [35] Braverman, A., and **B. Kahn** (2004), Visual data mining for quantized, spatial data. Invited paper, Proceedings in Computational Statistics, Physica-Verlag/Springer.
- [36] **Kahn, B. H.**, A. Eldering, M. Ghil, S. Bordoni, and S. A. Clough (2004), Sensitivity analysis of cirrus cloud properties from high-resolution infrared spectra. Part I: Methodology and synthetic cirrus, *J. Climate*, **17**, 4856–4870.
- [37] Steele, H. M., A. Eldering, B. Sen, G. C. Toon, F. P. Mills, and **B. H. Kahn** (2003), Retrieval of Stratospheric Aerosol Size and Composition Information from Solar Infrared Transmission Spectra, *Appl. Opt.*, **42**, 2140–2154.
- [38] **Kahn, B. H.**, A. Eldering, S. A. Clough, E. J. Fetzer, E. F. Fishbein, M. R. Gunson, S. -Y. Lee, P. F. Lester, and V. J. Realmuto (2003), Near micron-sized cirrus cloud particles in high-resolution infrared spectra: An orographic case study, *Geophys. Res. Lett.*, **30**(8), 1441, doi:10.1029/2003GL016909.
- [39] **Kahn, B. H.**, A. Eldering, F. W. Irion, F. P. Mills, B. Sen, and M. R. Gunson (2002), Cloud identification in Atmospheric Trace Molecule Spectroscopy infrared occultation measurements, *Appl. Opt.*, **41**, 2368–2380.

Invited Presentations:

- [1] **Kahn, B. H.** (2011), Practical examples of AIRS, MODIS, and CloudSat-centric synergy of temperature, water vapor, and clouds, ESA-NASA Workshop on A-train Constellation Management, May 17th, Montreal, Quebec, Canada.
- [2] **Kahn, B. H.** (2011), A few ideas on using A-train observations of temperature, water vapor, and clouds to evaluate and "improve" the realism of climate models, Department of Atmospheric Sciences seminar series, University of Utah, March 10th.

- [3] **Kahn, B. H.**, J. Teixeira, E. J. Fetzer, A. Gettelman, S. M. Hristova-Veleva, X. Huang, A. K. Kochanski, M. Köhler, S. K. Krueger, R. Wood, and M. Zhao (2010), Temperature and water vapor variance scaling from the Atmospheric Infrared Sounder, climate models, and aircraft data, Fall Meeting, American Geophysical Union, San Francisco, CA.
- [4] **Kahn, B. H.** (2009), A-train studies of temperature and water vapor variance scaling and upper tropospheric relative humidity distributions, Department of Atmospheric Science seminar series, Colorado State University, April 23rd.
- [5] **Kahn, B. H.** (2008), An observational view of clouds, temperature, humidity, and small-scale variability from the A-train, Yuk Yung lunch seminar, California Institute of Technology, Pasadena, CA, November 4th.
- [6] **Kahn, B. H.** (2008), Relationships between clouds, temperature, and humidity: A perspective from AIRS, CloudSat, and CALIPSO, AeroCenter at the Goddard Space Flight Center, Greenbelt, MD, September 12th.
- [7] **Kahn, B. H.** (2008), Ice cloud and humidity distributions viewed by the A-train, Department of Atmospheric and Oceanic Sciences, University of Colorado, Boulder, Colorado, March 24th.
- [8] **Kahn, B. H.** (2007), The retrieval of cirrus quantities from AIRS observations: Some challenges and opportunities, Hyperspectral Imaging and Sounding of the Environment topical meeting, Optical Society of America, Santa Fe, New Mexico, February 11–15.
- [9] **Kahn, B. H.**, M. T. Chahine, G. G. Mace, R. Marchand, and G. L. Stephens (2006), A combined view of CloudSat and AIRS cloud fields, Fall Meeting, American Geophysical Union, San Francisco, CA.
- [10] **Kahn, B. H.** (2006), An AIRS-centric view of global cloudiness from the A-train, Department of Atmospheric Sciences, Texas A&M University, College Station, TX, October 17th.
- [11] **Kahn, B. H.** (2005), Towards characterizing cirrus clouds with the Atmospheric Infrared Sounder, Yuk Yung lunch seminar, California Institute of Technology, Pasadena, CA, August 16th.
- [12] **Kahn, B. H.** (2005), On the detection and retrieval of cirrus cloud properties using AIRS data, Department of Meteorology, Penn State University, State College, PA, April 21st.
- [13] **Kahn, B. H.** (2004), On cirrus (and aerosol) properties from high-resolution infrared spectra, Yuk Yung lunch seminar, California Institute of Technology, Pasadena, CA, January 20th.