

# BRIAN I. MAGI

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## EDUCATION

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- 2006     **Ph. D., University of Washington**, Atmospheric Sciences  
1998     **B. Sc., University of Arizona**, Physics and Applied Math, Cum Laude

## PROFESSIONAL EXPERIENCE

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- 2011-  
present     **Assistant Professor of Earth Science**, Department of Geography and Earth Sciences,  
University of North Carolina at Charlotte, Charlotte, North Carolina, USA  
**Research topics:** Global fire modeling, spatiotemporal variability of fire-climate-human  
interconnectivity; climate model evaluation using remote sensing data products; global  
lightning parameterization/characterization; local air quality and aerosol measurements
- 2010-  
2011     **Associate Research Scholar**, Atmospheric and Oceanic Sciences Program and Carbon  
Mitigation Initiative, Princeton University, Princeton, New Jersey, USA  
**Research topics:** Prognostic global fire modeling; spatiotemporal distribution of global  
fires and fire regimes; observationally-based statistical parameterization of fire Member  
of NOAA GFDL Climate and Ecosystems Group  
**Related activities:** Member of NOAA GFDL Climate and Ecosystems Group, worked with  
NOAA GFDL Land Model (Version 3)
- 2007-  
2009     **Postdoctoral Research Associate**, Atmospheric and Oceanic Sciences Program, Princeton  
University, Princeton, New Jersey, USA  
**Research topics:** Simulations of global and regional aerosol properties using the NOAA  
GFDL Atmosphere Model (Versions 2 and 3); evaluation of simulated output against  
remote-sensing data products (MODIS, MISR, AERONET, in situ data)  
**Related activities:** Member of NOAA GFDL Atmospheric Physics and Chemistry Group
- 2006     **Postdoctoral Research Associate**, Department of Atmospheric Sciences, University of  
Washington, Seattle, Washington, USA  
**Research topics:** Derivation of techniques to adapt in situ aircraft measurements for use  
as input to a radiative transfer model (Fu-Liou); assessment of measurement-based  
uncertainties in modeled aerosol radiative forcing
- 1999-  
2006     **Graduate Research Assistant**, Department of Atmospheric Sciences, University of  
Washington, Seattle, Washington, USA  
**Research topics:** In situ aerosol and chemistry data collection, analysis, and synthesis;  
model analysis of regional aerosol radiative forcing compared to climate model output  
**Related activities:** Aerosol scientist on aircraft-based field campaigns (SAFARI Aug-Sep  
2000 in southern African countries but mainly Botswana, South Africa, and Namibia;  
CLAMS in Jul-Aug 2001 in Virginia, USA, and based at the NASA Wallops Island Facility)

## TEACHING

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Details about teaching available at <http://clas-pages.uncc.edu/mesas/teaching/>

- **Global Environmental Change** (ESCI 3101, 3 credit hours, ~50 students): Introduction to modern-day climate change via directed readings and informal writing
- **Atmospheric Thermodynamics** (METR 3210, 3 credit hours, ~15 students): Discussion of the chemical composition and behavior of air, and how air moves to create weather
- **Physical Meteorology** (METR 3220, 3 credit hours, ~15 students): Introductions to cloud physics, sunlight in the atmosphere, and the role of weather in air quality via quantitative problem sets
- **Atmospheric Chemistry** (METR 4220 / ESCI 5220, 3 credit hours, ~15 students): Discussion of stratospheric chemistry and the ozone layer, air quality chemistry, with quantitative problem sets and a course project
- **Applied Climatology** (METR 4150 / ESCI 5150, 3 credit hours, Writing-Intensive, ~10 students), small enrollment course exploring aspects of climatology within the context of modern-day climate change with process-based writing serving as the evaluation mechanism for the course
- **Climate Dynamics** (METR 4205 / ESCI 5205, 3 credit hours, course in preparation for Spring 2017), treatment of modes of natural variability, such as El Nino, and their effects on weather and climate

## REFEREED PUBLICATIONS (ADVISEE)

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All publications available at <https://clas-pages.uncc.edu/mesas/publications/>

- 2017      **Submitted February 2017** at *Geoscientific Model Development* (EGU): van Marle, M. J. E., S. Kloster, **B. I. Magi**, J. R. Marlon, A. L. Daniau, R. D. Field, A. Arneth, M. Forrester, S. Hantson, N. M. Kehrwald, W. Knorr, G. Lasslop, F. Li, S. Mangeon, C. Yue, J. W. Kaiser and G. R. van der Werf (2017). "Historic global biomass burning emissions based on merging satellite observations with proxies and fire models (1750-2015)." *Geosci. Model Dev. Discuss.* 2017: 1-56  
<http://www.geosci-model-dev-discuss.net/gmd-2017-32/> and  
<http://www.globalfiredata.org/ar6historic.html>
- In revision January 2017** at *Quaternary International* (Elsevier) Special Issue on The Human-Climate-Fire Nexus: "Global Modern Charcoal Database (GMCD): a tool for exploring proxy-fire linkages and spatial patterns of biomass burning", D. Hawthorne, C.J.C. Mustaphi, J. Aleman, O. Blarquez, D. Colombaroli, A.L. Daniau, J.R. Marlon, M. Power, B. Vanniere, C. Carcaillet, E.N. Githumbi, Y. Han, S. Hantson, N. Kehrwald, **B. Magi**, R. Marchant, O. Ayodele, R. Muriuki, X. Yue (2016), Global Modern Charcoal Database (GMCD): a tool for exploring proxy-fire linkages and spatial patterns of biomass burning.
- 2016      **Magi, B. I., T. Winesett**, and D. J. Cecil (2016), Estimating Lightning from Microwave Remote Sensing Data, *Journal of Applied Meteorology and Climatology*, 55, 2021-2036,  
<http://journals.ametsoc.org/doi/abs/10.1175/JAMC-D-15-0306.1>
- Hantson, S., S. Kloster, M. Coughlan, A.-L. Daniau, B. Vannière, T. Brücher, N. Kehrwald, and **B. I. Magi** (2016), Fire in the Earth System: Bridging Data and Modeling Research, *Bulletin of the American Meteorological Society*, 97(6), 1069-1072,  
<http://journals.ametsoc.org/doi/full/10.1175/BAMS-D-15-00319.1>
- Marlon, J. R., R. Kelly, A.L. Daniau, B. Vannière, M.J. Power, P. Bartlein, P. Higuera, O. Blarquez, S. Brewer, T. Brücher, A. Feurdean, G.G. Romera, V. Iglesias, S.Y. Maezumi, **B. Magi**, C.J. Courtney Mustaphi, and T. Zhihai (2016) Reconstructions of biomass burning from sediment-charcoal records to improve data-model comparisons, *Biogeosciences*, 13, 3225-3244, 10.5194/bg-13-3225-2016, <http://www.biogeosciences.net/13/3225/2016/bg-13-3225-2016.html>

- Kehrwald, N., J. C. Aleman, M. Coughlan, C. J. C. Mustaphi, E. N. Githumbi, **B. I. Magi**, J. R. Marlon, M. J. Power (2016), One thousand years of fires: Integrating proxy and model data, *Frontiers of Biogeography*, vol. 8, issue 1, <http://escholarship.org/uc/search?entity=fb:volume=8:issue=1>
- Eppes, M. C., **B. Magi**, B. Hallet, E. Delmelle, P. Mackenzie-Helnwein, K. Warren, and S. Swami (2016), Deciphering the role of solar-induced thermal stresses in rock weathering, *Geological Society of America Bulletin*, 128, 1315-1338, <http://gsabulletin.gsapubs.org/content/128/9-10/1315.abstract>
- 2015 Rabin, S., **Magi, B. I.**, Shevliakova, E., and Pacala, S (2015), Quantifying regional, time-varying effects of cropland and pasture on vegetation fire, *Biogeosciences*, 12, 6591-6604, doi:10.5194/bg-12-6591-2015, <http://www.biogeosciences.net/12/6591/2015/bg-12-6591-2015.html>
- Magi, B.I.** (2015), Global Lightning Parameterization Based on CMIP5 Climate Model Output, *Journal of Atmospheric and Oceanic Technology*, 32, 434-452, doi:10.1175/JTECH-D-13-00261.1, <http://journals.ametsoc.org/doi/abs/10.1175/JTECH-D-13-00261.1>
- 2012 **Magi, B. I.**, Rabin, S., Shevliakova, E., and Pacala, S (2012), Separating agricultural and non-agricultural fire seasonality at regional scales, *Biogeosciences*, 9, 3003-3012, doi:10.5194/bg-9-3003-2012, <http://www.biogeosciences.net/9/3003/2012/bg-9-3003-2012.html>
- 2011 Donner, L.J, B.L. Wyman, R. Hemler, L.W. Horowitz, Y. Ming, M. Zhao, J. Golaz, P. Ginoux, S. Lin, M.D. Schwarzkopf, J. Austin, ..., **B.I. Magi**, ..., et al. (2011), The Dynamical Core, Physical Parameterizations, and Basic Simulation Characteristics of the Atmospheric Component of the GFDL Global Coupled Model CM3, *Journal of Climate*, 24, 3484-3519, doi:10.1175/2011JCLI3955.1, <http://journals.ametsoc.org/doi/abs/10.1175/2011JCLI3955.1>
- 2009 **Magi, B.I.** (2009), Chemical apportionment of southern African aerosol mass and optical depth, *Atmospheric Chemistry and Physics*, 9, 7643-7655, doi:10.5194/acp-9-7643-2009, <http://www.atmos-chem-phys.net/9/7643/2009/acp-9-7643-2009.html>
- Magi, B.I.**, P. Ginoux, Y. Ming, and V. Ramaswamy (2009), Evaluation of tropical and extratropical Southern Hemisphere African aerosol properties simulated by a climate model, *Journal of Geophysical Research*, 114, D14204, doi:10.1029/2008JD011128, <http://onlinelibrary.wiley.com/doi/10.1029/2008JD011128/full>
- 2008 **Magi, B.I.**, Q. Fu, J. Redemann, and B. Schmid (2008), Using aircraft measurements to estimate the magnitude and uncertainty of the shortwave direct radiative forcing of southern African biomass burning aerosol, *Journal of Geophysical Research*, 113, D05213, doi:10.1029/2007JD009258, <http://onlinelibrary.wiley.com/doi/10.1029/2007JD009258/full>
- Magi, B.**, M. Coughlan, A. Edwards, M. Hurteau, A. Petty, F. Seijo, and C. Wiedimyer (2008), Meeting Report from AIMES (Analysis, Integration and Modeling of the Earth System) Young Scholar's Network Workshop on Cultural Uses and Impacts of Fire: Past, Present, and Future, *Eos*, 89(40), doi:10.1029/2008ES002414, <http://onlinelibrary.wiley.com/doi/10.1029/2008EO400009/full>
- 2007 **Magi, B.I.**, Q. Fu, and J. Redemann (2007), A methodology to retrieve self-consistent aerosol optical properties using common aircraft measurements, *Journal of Geophysical Research*, 112, D24S12, doi:10.1029/2006JD008312, <http://onlinelibrary.wiley.com/doi/10.1029/2006JD008312/full>
- 2005 **Magi, B.I.**, P.V. Hobbs, T.W. Kirchstetter, T. Novakov, D.A. Hegg, S. Gao, J. Redemann, and B. Schmid (2005), Aerosol Properties and Chemical Apportionment of Aerosol Optical Depth at Locations off the United States East Coast in July and August 2001, *Journal of the Atmospheric Sciences*, 62(4), 919-933, doi:10.1175/JAS3263.1, <http://journals.ametsoc.org/doi/abs/10.1175/JAS3263.1>

- 2003 **Magi, B.I.**, P.V. Hobbs, B. Schmid, and J. Redemann (2003), Vertical profiles of light scattering, light absorption, and single scattering albedo during the dry, biomass burning season in southern Africa and comparisons of in situ and remote sensing measurements of aerosol optical depths, *Journal of Geophysical Research*, 108(D13), 8504, doi:10.1029/2002JD002361, <http://onlinelibrary.wiley.com/doi/10.1029/2002JD002361/full>
- Gao, S., D.A. Hegg, P.V. Hobbs, T.W. Kirchstetter, **B.I. Magi**, and M. Sadilek (2003), Water-soluble organic components in aerosols associated with savanna fires in southern Africa: Identification, evolution, and distribution, *Journal of Geophysical Research*, 108(D13), 8491, doi:10.1029/2002JD002324, <http://onlinelibrary.wiley.com/doi/10.1029/2002JD002324/full>
- Kirchstetter, T.W., T. Novakov, P.V. Hobbs, and **B. Magi** (2003), Airborne measurements of carbonaceous aerosols in southern Africa during the dry biomass burning season, *Journal of Geophysical Research*, 108(D13), 8476, doi:10.1029/2002JD002171, <http://onlinelibrary.wiley.com/doi/10.1029/2002JD002171/full>
- Magi, B.I.**, and P.V. Hobbs (2003), Effects of humidity on aerosols in southern Africa during the biomass burning season, *Journal of Geophysical Research*, 108(D13), 8495, doi:10.1029/2002JD002144, <http://onlinelibrary.wiley.com/doi/10.1029/2002JD002144/full>