

## Curriculum Vitae Beate Gertrud Liepert

Lamont-Doherty Earth Observatory of Columbia University  
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### Scientific Interests

Climate variability from inter-annual to centennial time scales; effects of anthropogenic aerosols and greenhouse gases on climate, global dimming, regional climate feedbacks related to energy, water and carbon cycles, extreme climates, aerosols and radiation measurements, air pollution in urban and suburban environments;

### Education

- 1995 Doctor in Natural Science, Institute of Meteorology, Department of Physics, Ludwig - Maximilians University Munich, Germany
- 1990 Masters degree in Meteorology, Institute of Meteorology and Chair of Bioclimatology and Air Pollution Research, Ludwig - Maximilians University Munich, Germany
- 1983 Abitur (qualifying degree for university) Holbein – Gymnasium Augsburg, Germany

### Professional Affiliations

- 2005 – present Research Scientist at Lamont-Doherty Earth Observatory of Columbia University
- 1999 - 2005 Doherty Associate Research Scientist at Lamont-Doherty Earth Observatory of Columbia University
- 1996 - 1999 Post-doctoral Research Scientist at Lamont-Doherty Earth Observatory of Columbia University
- Summer1983 Internship at Meteorological Observatory Hohenpeissenberg, Germany; ozone measurements with Brewer and Dobson instruments

### Adjunct and Visiting Scientist Positions

- Fall 2005 Adjunct professor at Barnard College, New York NY
- 2003 – present Adjunct scientist at Max-Planck Institute for Meteorology, Hamburg Germany
- 5/2003 and 8/2003 Visiting scientist at NASA Langley Research Center, Hampton VA
- 2/2002 - 2/2003 Visiting scientist at Max-Planck Institute for Meteorology, Hamburg Germany
- 1996 – present Adjunct scientist at NASA Goddard Institute for Space Studies, New York NY

### Professional Activities for the Scientific Community

- Regular article reviews for Geophysical Research Letters, Journal of Geophysical Research, Journal of Climate, International Journal of Climatology, Journal of Atmospheric Sciences, Theoretical and Applied Climatology, Science;

- Regular proposal reviews for NSF, NOAA, NASA, Inter-American Institute, European Community Research Framework Programme, Netherlands Space Program;
- Climate model evaluation for the fourth Assessment Report of the Intergovernmental Panel on Climatic Change IPCC AR4;
- Organization of the special session: "Magnitude and possible causes of declining global solar radiation" at AGU/CGU Spring Assembly Montreal May 2004; session was selected for AGU/CGU press conference;
- International expert for the Evaluation Panel of the European Commission 6<sup>th</sup> Research Framework Programme (topic priority "Global change and Ecosystems), 2004
- Co-convener (invited by V. Ramanathan) AGU Fall Assembly session "Aerosol and Climate Interactions" San Francisco December 11, 2002;
- Member of the Atmospheric Radiation Measurement Program Science Team of Department of Energy, 1997-2000
- Member of the Global Aerosol Climatology Program Science Team of NASA and GEWEX (Global Energy and Water Experiment of United Nations World Meteorological Organisation), 1998-2001
- Organization (with W. Broecker) of conference: "Eemian Interglacial" Eemfest at Lamont observatory Palisades, New York, October 18 –19, 1999;
- Idea and organization of interdisciplinary workshop for graduate students of the Bavarian Climate Research Programme on "Impacts of anthropogenic climate change on biology, meteorology, hydrology and agriculture in the Alps", Bayerischer Wald Germany, January 1993;
- Technical Consultant for the Bavarian Corps of Engineers (TUV Bayern e.V.); author of assessment reports on impact and distribution of air pollution from industrial plants, distribution of nuclear pollution from nuclear power plants, assessment of climate impacts of planned refineries in context of the Kyoto treaty; Munich Germany, July to December 1991;

#### **Professional Activities for the Columbia Earth Institute Community**

- 2005 – present Member of "Executive committee" of Lamont Observatory the governing body of the Observatory
- 2002 – 2005 Member of "Promotion and career" sub-committee of Executive Committee of Lamont Observatory
- 1998 – 2000 Member of "Environmental committee" of Lamont Observatory

#### **Research Projects and Externally Funded Awards**

- 2005 – 2008 "Interannual variability of surface radiation budget and climate feedback", \$812,188 award by NASA (principle investigator B.L.)
- 2004 - 2005 "IPCC 4<sup>th</sup> Assessment Report: Evaluation of surface solar irradiance in coupled climate models", award \$25,026 award by NSF (principle investigator B.L., co-investigator N. Romanou NASA-GISS)
- 2003 - 2005 "Combined impact of aerosol plus greenhouse gas forcing on surface energy budget and water cycle on a multi-decadal timescale", \$367,694 award by NSF (principle investigator B.L.)
- 2002 "Impacts of aerosols on the hydrological cycle in Echem4 experiments" Max-Planck Institute Visiting Scholar Fellowship by Max-Planck Society

- 2001 "Prove of concept study: low cost aerosol vertical profiling with hot-air balloons" \$12,000 award by Vetlessen Foundation (principle investigator B.L., co-investigator Steve Chillrud, Lamont)
- 2000 "Monitoring aerosol optical properties, ozone and water vapor column at Lamont Observatory" \$8, 378 award by NASA (principle investigator Barbara Carlson NASA-GISS, co-investigator B.L.)
- 1999 – 2001 "Surface solar radiation data base", \$300,429 award by NASA (principle investigator B. L.)
- 1996 – 1999 "Interdecadal variations of surface radiation and climate change" \$253,804 award by NOAA (principle investigator B.L., co-investigator George Kukla Lamont)
- 1997 – 2000 "Impact of tropospheric aerosols on the past surface radiation income: calibration with ARM site data", \$15,091 award by DOE (principle investigator George Kukla Lamont, co-investigator B.L.)
- 1992 - 1994 "Decline in surface solar radiation in Germany and an analysis of possible causes", graduate student fellowship, Bavarian Climate Research Programme (principle investigator B.L.)

#### **Teaching Experience – Mentoring**

- Mentor postdoctoral researcher Micheal Previdi, LDEO, 2007
- PhD adviser of Irina Gorodetskaia, DEES Columbia University, 2004 to present
- Adviser of Columbia Earth Institute research assistant Peggy Hannon 2005
- Science mentor of students from minority public high schools in New York City for NASA Goddard Institute for Space Studies Educational Outreach Program "Institute on Climate and Planets" in 2003
- Adviser of senior thesis student project 2004 (Peggy Hannon)
- Adviser of two Lamont summer interns 2004 (Peggy Hannon and Colby Blitz), this project was featured on Columbia University Earth Institute home page
- Adviser of senior thesis student project 2002 (Anna Robertson)

#### **Teaching Experience – Lecturer**

- Guest Lecturer EESC W4030 "Climatic Change" R. Fairbanks in Fall 2006.
- Guest lecturer at Carroll Community College Westminister, MA "How things work" discussion series Oct. 17, 2006
- Guest lecturer at Earth2class "Saturday workshop for educators" a NSF funded program for K12 students, teachers and administrators, Jan. 14 2006
- Lecturer EESC 2100 course: "The Climate System" at Department of Earth and Environmental Studies of Columbia University, this course was co-taught with S. Hemming and A. Gordan fall 2005
- Organization of "New Core Lab" seminar series 2000 at Lamont Observatory
- Teaching Assistant at Meteorological Institute of Ludwig-Maximilians University Munich

#### **Field Campaigns and Field Work**

- Installation of a Multifilter Rotating Shadowband Radiometer Oceanography building for monitoring aerosol optical properties, ozone and water vapor column content in collaboration with City College of New York, NOAA-CREST, November 2006

- Spatial and temporal distribution of aerosol optical properties in New York Metropolitan area compared to MODIS, field campaign in summer 2003
- Vertical profiling of aerosol properties and concentrations in New Jersey “prove of concept study” of low cost vertical profiling onboard hot-air balloons in July 2004 and July – August 2006 (featured in New Yorker Magazine “the talk of the town” section Aug. 28, 2006)

#### **Public Outreach Lectures**

- Panelist and guest lecturer “12th Annual Conference on Environmental Issues” Medgar Evers College, CUNY Brooklyn NY, March 17, 2007 (MEC is a historic black community college)
- Lamont Open House public lecture: “The Dilemma of Global Dimming and Global warming” October 2006
- Columbia West Alumni Organization guest lecturer, Los Angeles CA, 2006
- Lamont Board of Trustees guest lecturer, LDEO, 2006

#### **Public Outreach General**

- Panelist Rivertown Film Society Nyack Center Discussion of documentary “The inconvenient Truth” March 3, 2007
- Regular participation Lamont Open House
- Regular reviewer of popular science books and manuscripts for Columbia University Press Science Edition (since 1998)
- Scientific advisor to Project “Lighter than air” introduction of new generation of zeppelin air-ships Academy of Design Berlin (1994)

#### **Invited Presentations and Invited Lectures**

- 2006 AGU Fall Meeting, San Francisco CA  
 Lecture University of California Berkeley  
 Lecture University of Cape Town South Africa  
 Lecture Institute of Marine and Coastal Sciences, Rutgers University Brunswick NJ  
 European Geophysical Society EGS Meeting, Vienna Austria  
 GEWEX Radiative Flux Assessment Workshop, Williamsburg VA
- 2005 IPCC AR4 Workshop: Analyses of Climate Model Simulations, Honolulu HI  
 Lecture Scripps Institute of Oceanography, San Diego CA  
 Lecture McGill University, Montreal Canada  
 Energy Modeling Forum, Workshop on Climate Change Impacts and Integrated Assessments, Snowmass CO  
 AGU Fall Meeting, San Francisco CA
- 2004 Australian Academy of Science Workshop on Pan Evaporation, Canberra Australia  
 Lecture Oregon State University, Corvallis OR  
 PACLIM Pacific Climate Workshop, Monterey CA  
 Workshop on Aerosols and Hydrological Cycle, Aspen Global Change Institute, Aspen CO  
 Lecture Atmosphere and Oceanic Colloquium SUNY University, Stony Brook NY

- 2003 Workshop of History of Carbonaceous Aerosols NASA GISS, New York NY  
Lecture Federal Technical University, Zurich Switzerland  
Lecture NASA Langley Research Center, Hampton VA
- 2002 International Global Atmospheric Chemistry Symposium, Crete Greece  
Lecture University, Hanover Germany  
Lecture Max-Planck Institute for Meteorology, Hamburg Germany
- 2001 Lecture Queens College, New York NY
- 2000 Lecture 38<sup>th</sup> Goddard Memorial Symposium American Astronautical Society, Greenbelt MD  
Lecture at Biosphere II, Tucson AZ
- 1999 Workshop "Climate Change in the Past 50 Years" NASA GISS, New York NY
- 1998 Lecture Brookhaven National Laboratory, Upton, NY,
- 1996 Lecture NOAA National Climate Data Center, Ashville NC  
Lecture Lamont-Doherty Earth Observatory, Palisades NY

#### **Conference Paper Presentations**

- 2007 NASA MAP (Modeling, Assimilation and Prediction) Workshop, College Park MA March 7, 2007
- 2006 Joint IGAC/CACGP/WMO Symposium Cape Town South Africa  
European Geophysical Society General Assembly, Vienna Austria  
First iLEAPS Conference, Boulder CO
- 2005 AMS Conference on Hydrology, San Diego CA  
AMMA, Dakar Senegal  
AGU Fall Meeting, San Francisco CA
- 2004 AGU Fall Meeting, San Francisco CA  
AGU/CGU Spring Joint Assembly, Montreal Canada
- 2003 AGU Fall meeting San Francisco CA
- 2002 AGU Fall meeting San Francisco CA  
General Assembly European Geophysical Society, Nice France
- 2001 AGU Chapman Conference on Atmospheric Absorption of Solar Radiation, Estes Park CO  
Conference On Global Warming and the Next Ice Age, Halifax Canada  
AMS Millennium Symposium on Atmospheric Chemistry, Albuquerque NM
- 2000 International Radiation Symposium, St. Petersburg Russia  
European Geophysical Society General Assembly, Den Haag Netherlands
- 1999 AGU Fall Meeting, San Francisco CA  
ARM DOE Science Meeting, Phoenix AZ  
AMS Conference on Climate Change Detection and Attribution, Dallas TX
- 1998 ARM DOE Science Team Meeting, San Antonio TX
- 1997 ARM DOE Science Team Meeting, Tucson AZ
- 1995 A&WMA International Specialty Conference on Climate Change, Phoenix AZ
- 1994 Third German-German Climate Conference, Potsdam Germany

## Scientific Publications

2007

**Liepert, B.**, E. Dutton, M. Wild: Reply to “ a perspective on global dimming, and brightening” submitted EOS.

Schmidt, G., A. Romanou, **B. Liepert**: Reply to “ a perspective on global dimming, and brightening” submitted EOS.

Gorodetskaya, I., B. Tremblay, **B. Liepert**, R. Cullather, M. Cane: Modification of Arctic Ocean short-wave radiation budget due to cloud and sea ice properties in coupled models and observations. accepted J. Climate.

Contributing author to IPCC fourth Assessment Report chapter 3: Atmospheric observations, in press.

D'Arrigo, R., R. Wilson, **B. Liepert** and P. Cherubini: On the 'Divergence Problem' in Northern Forests: A Review of the Tree-Ring Evidence and Possible Causes. *Global and Planetary Change. In press.*

Romanou, N., **B. Liepert**, G. Schmidt, W. B. Rossow, R. Ruedi, Y. H. Zhang: 20<sup>th</sup> Century reductions in surface solar irradiance in simulations and observations. *Geophys. Res. Lett.* 34, L05713, doi:10.1029/2006GL028356

2005

**Liepert, B.**, and A. Romanou 2005. Global dimming and brightening and the water cycle. *Bull. Amer. Meteor. Soc.* 86, 622-623.

\***Liepert, B.**: Reduced surface solar radiation, global warming and the water cycle. *Proceedings of Workshop on Pan Evaporation, Australian National Academy of Sciences Canberra, Nov 22-23, 2004.* www.science.org.au/natcoms/pan-evap.pdf

2004

\*Cohen, S., **B. Liepert**, G. Stanhill: Global dimming comes of age. *EOS* 85, 38, 362.

Hansen, J., T. Bond, H. Gaegler, **B. Liepert**, T. Novakov, B. Schichtel: Carbonaceous aerosols in the industrial era. *EOS, Vol. 85, (note: peer-reviewed article) 25, 241-244.*

**Liepert, B.**, J. Feichter, U. Lohmann, and E. Roeckner: Can aerosols spin down the hydrological cycle in a moister and warmer world? *Geophys. Res. Lett.* Vol 31, L06207, doi:10.1029/2003GL019060.

Feichter, J., U. Lohmann, **B. Liepert**, and E. Roeckner: Nonlinear aspects of the climate response to greenhouse gas and aerosol forcing. *J. Climate*, Vol. 17, 12, 2384-2398.

2002

**Liepert, B. G.**: Observed Reductions in Surface Solar Radiation in the United States and Worldwide from 1961 to 1990. *Geophys. Res. Lett.* 29,12.

**Liepert, B. G.** and I. Tegen: Multi-Decadal Solar Radiation Trends in the United States and Germany and Direct Tropospheric Aerosol Forcing. *J. Geophys. Res.*,107/D12.

2001

\***Liepert, B. G.**: Multi-Decadal Solar Radiation Observations and their Relevance to Cloud and Aerosol Changes. *Proceedings 1. Intl. Conf. On Global Warming and the Next Ice Age, Halifax, Canada, August 19 - 24, 2001.*

**Liepert, B. G.** and U. Lohmann: A Comparison of Surface Observations and ECHAM4-GCM Results relevant to the Indirect Aerosol Effect. *J. Climate*, 14/6, 1078-1091.

2000

\***Liepert, B.G.:** Solar Radiation, Cloud Cover and Precipitation Observations Compared to ECHAM4-GCM Experiments. *Int'l Radiation Symposium 2000: Current Problems in Atm. Radiation*. Eds. W.L. Smith, Y.M. Timofeyev, St. Petersburg, Russia.

**Prior 1999**

Wild, M. and **B. Liepert:** Excessive Transmission of Solar Radiation through the cloud-free atmosphere in GCMs. *Geophys. Res. Letters*, 25/12, 2165-2168.

**Liepert, B. G.:** Recent Changes in Solar Radiation under Cloudy Conditions in Germany, *Int. J. Climatology*, 17, 1581-1593.

**Liepert, B. G.** and G. J. Kukla: Decline in Solar Radiation with Increased Horizontal Visibility in Germany between 1964 and 1990. *J. Climate*, 10, 2391-2401.

**Liepert, B. G.:** Regionale Klimadiagnose mittels Messungen der solaren Strahlung, Universitaet Muenchen- Meteorologisches Institut, Wissenschaftliche Mitteilungen, 69, Ludwig -Maximilians University, Munich, 176pp.

**Liepert, B.,** P. Fabian, H. Grassl: Solar radiation in Germany - Observed Trends and an Assessment of their Causes. Part 1: Regional Approach. *Contr. Atm. Physics*, 67/1, 15-29.

\***Liepert, B. G.:** Solar Radiation in Germany - Observed Trends and their Causes. *Proceedings of A&WMA International Specialty Conference on Climate Change on April 5-8, 1994, Phoenix AR*, Eds. C.V. Mathai and G. Stensland, ISBN 0-923204-11-3.

\***Liepert, B. G.:** Modellrechnungen zum natuerlichen und anthropogenen Impakt auf die solare Einstrahlung. 3. *Deutsche Klimatagung, Potsdam 11.-14. April 1994, Tagungsband*. PIK Reports #1, Potsdam Germany.

\*not peer reviewed

**Other Publications**

- Contributions to free online encyclopedia: [http://www.wikipedia.org/Global\\_dimming](http://www.wikipedia.org/Global_dimming)
- Contributions to RealClimate, which is a web based commentary site on climate science by working climate scientists for the interested public and journalists:
  1. <http://www.realclimate.org/index.php/archives/2006/04/global-dimming-and-climate-models/>
  2. <http://www.realclimate.org/index.php/archives/2005/01/global-dimming-ii/>
- Freelance writer for the science section of the Berlin based newspaper "die tageszeitung"
  1. "Die Flugzeugindustrie will hoch hinauf" Rund 500 Überschall-Jets werden im Jahr 2015 durch die Ozonschicht fliegen" Beate G. Liepert, 15.5.1995 taz Wissenschaft 192 lines, p. 13.
  2. "Fehlerhafte Klimamodelle" Aus Schwefelemissionen entstehen in der Atmosphäre winzige Schwebeteilchen / Sie verschleiern den Treibhauseffekt / Von den Klimaforschern sind sie bisher nicht beachtet worden by Beate G. Liepert, 6.6.1994 taz Wissenschaft 167 lines, p. 13
  3. "Auf der Suche nach den Außerirdischen" Seit über 30 Jahren fahndet die NASA erfolglos nach den "grünen Männchen" by Beate G. Liepert 11.4.1994 taz Wissenschaft 146 lines, p. 13

**Scientific Results Featured in TV Media**

- Guest in news talk show der DOKU talk of ORF (Austrian Broadcasting Corporation), Vienna February 2007

- Production of the German language version “Schatten ueber der Erde” of the BBC TV documentary Austrian Broadcasting Cooperation ORF Vienna, February 2007
- News feature on “Global Dimming” for Carte Blanche MNET South African Satellite TV, a prominent news program aired on the African continent August, 2006
- Featured scientists in BBC documentary “Global dimming the sun” aired in the UK on January 16th 2005 and aired on BBCWorld around the globe.
- PBS Horizon “Dimming the Sun” aired in spring 2006 <http://www.pbs.org/wgbh/nova/sun/>
- Guest in CNN Lou Dobbs tonight aired May 13, 2004

**Scientific Results Featured in Print Media (selection)**

- Columbia University The Record Dec. 4 ,2006 “High-Flying Women Scientist” by Fred Bernstein
- The New Yorker Magazine Aug. 28, 2006 “Talk of the Town: Fieldwork, Up, up and away” by Nick Paumgarten
- Science News Sep. 24, 2005 “Dim View” by S. Perkins.
- The Christian Science Monitor May 12, 2005 “Can Earth take the heat of global brightening?” by Peter Spott
- Scientific American Aug. 2004 “The Darkening Earth” by David Appell
- Time Magazine May 24, 2004 “Cloud cover: Is earth getting darker? M. Nash.
- The New York Times May 13, 2004 “Globe grows darker as sunshine diminishes” by Ken Chang
- Nature News Service Apr. 1, 2004 “Less rain in a warmer world” by Philip Ball
- The Guardian Dec 18, 2003 “Goodbye Sunshine” by David Adam