

# Timothy James Lang

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## **PRESENT POSITION**

Research Scientist  
Department of Atmospheric Science  
Colorado State University  
Fort Collins, CO 80523  
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## **PERSONAL INFORMATION**

614 Keenesburg Ct  
Fort Collins, CO 80525  
Born 27 August 1973, Denver, CO  
Married to Ashley Calvin-Lang  
Father to Aurora and Owen

## **EDUCATION**

**DOCTOR OF PHILOSOPHY, ATMOSPHERIC SCIENCE**  
Colorado State University, Fort Collins, CO

*May 2001*

**MASTER OF SCIENCE, ATMOSPHERIC SCIENCE**  
Colorado State University, Fort Collins, CO

*December 1997*

**BACHELOR OF ARTS, PHYSICS**  
University of San Diego, San Diego, CA

*May 1995*

## **EXPERIENCE**

**RESEARCH SCIENTIST III**

*November 2007-Present*

**RESEARCH SCIENTIST II**

*July 2004-October 2007*

**RESEARCH SCIENTIST I**

Dept. of Atmospheric Science  
Colorado State Univ., Fort Collins, CO  
Dr. Steven A. Rutledge, Supervisor

*November 2002-June 2004*

**POST-DOCTORAL RESEARCH FELLOW**

Division of Engineering and Applied Sciences  
Harvard Univ., Cambridge, MA  
Dr. Ana P. Barros, Supervisor

*January 2001-October 2002*

**GRADUATE RESEARCH AND TEACHING ASSISTANT**

Dept. of Atmospheric Science  
Colorado State Univ., Fort Collins, CO  
Dr. Steven A. Rutledge, Adviser

*June 1995-December 2000*

**RESEARCH ASSISTANT**

Summer Institute on Atmospheric and Hydrospheric Sciences  
NASA Goddard Space Flight Center, Greenbelt, MD  
Robert Meneghini, Mentor

*June-August 1994*

**MATHEMATICS TUTOR AND TEACHING ASSISTANT**

University of San Diego, San Diego, CA

*September 1991-May 1995*

## **JOURNAL ARTICLES**

- Rowe, A. K., S. A. Rutledge, T. J. Lang, et al., 2008: Elevation-dependent trends in precipitating features observed by the NAME radar network. Conditionally accepted in *Monthly Weather Review*.
- Nesbitt, S. W., D. Gochis, and T. J. Lang, 2008: The upscale growth of convection along the Sierra Madre Occidental during the North American Monsoon Experiment: Implications for precipitation estimation in complex terrain. Accepted in *Journal of Hydrometeorology*.
- Lang, T. J., and S. A. Rutledge, 2008: Kinematic, microphysical, and electrical aspects of an asymmetric mesoscale convective system observed during STEPS 2000. *Journal of Geophysical Research*, In press.
- Lang, T. J., et al., 2007: Radar-observed characteristics of precipitating systems during NAME 2004. *Journal of Climate*, **20**, 1713–1733.
- Lang, T. J., and S. A. Rutledge, 2006: Cloud-to-ground lightning downwind of the 2002 Hayman forest fire in Colorado. *Geophysical Research Letters*, **33**, DOI:10.1029/2005GL024608.
- Higgins, W., ... , T. J. Lang, et al. 2006: The NAME 2004 Field Campaign and Modeling Strategy. *Bulletin of the American Meteorological Society*, **87**, 79–94.
- Barros, A. P., S. Chiao, T. J. Lang, et al., 2006: From weather to climate – Seasonal and interannual variability of storms in the Himalayas. *Tectonics, climate, and landscape evolution: Geological Society of America Special Paper 398*, Willett, S.D., Hovius, N., Brandon, M.T., and Fisher, D. (eds.), *Penrose Conference Series*, 17-38, DOI: 10.1130/2006.2398(20).
- Lang, T. J., et al., 2004: The Severe Thunderstorm Electrification and Precipitation Study (STEPS). *Bulletin of the American Meteorological Society*, **85**, 1107-1125.
- Lang, T. J., S. A. Rutledge, and J. Stith, 2004: Observations of quasi-symmetric echo patterns in clear air with the CSU-CHILL polarimetric radar. *Journal of Atmospheric and Oceanic Technology*, **21**, 1182-1189.
- Lang, T. J., S. A. Rutledge, and K. C. Wiens, 2004: Origins of positive cloud-to-ground lightning flashes in the stratiform region of a mesoscale convective system. *Geophysical Research Letters*, **31**, DOI:10.1029/2004GL019823.
- Lang, T. J., and A. P. Barros, 2004: Winter storms in the central Himalayas. *Journal of the Japanese Meteorological Society*, **82**, 829-844.
- Barros, A. P., and T. J. Lang, 2003: Monitoring the monsoon in the Himalayas: Observations in central Nepal, June 2001. *Monthly Weather Review*, **131**, 1408-1427.
- Lang, T. J. and S. A. Rutledge, 2002: Relationships between convective storm kinematics, precipitation, and lightning. *Monthly Weather Review*, **130**, 2492-2506.
- Lang, T. J., and A. P. Barros, 2002: An investigation of the onsets of the 1999 and 2000 monsoons in central Nepal. *Monthly Weather Review*, **130**, 1299-1316.
- Dye, J. E., ... , T. J. Lang, et al., 2000: An overview of the Stratosphere-Troposphere Experiment: Radiation, Aerosols, and Ozone (STRAO)-Deep Convection experiment with results for the July 10, 1996 storm. *Journal of Geophysical Research*, **105**, 10023-10045.
- Lang, T. J., et al., 2000: Anomalously low negative cloud-to-ground lightning flash rates in intense convective storms observed during STRAO-A. *Monthly Weather Review*, **128**, 160-173.

## **PRESENTED CONFERENCE PAPERS**

- Lang, T. J., and S. A. Rutledge, 2008: A statistical framework for the analysis of large lightning and radar datasets. 3<sup>rd</sup> Conference on the Meteorological Applications of Lightning Data, American Meteorological Society, New Orleans, LA.
- Lang, T. J., et al., 2007: Polarimetric radar analysis of convection in the complex topography of northwestern Mexico during NAME 2004. 6<sup>th</sup> Conference of Mesoscale Meteorology and Typhoon in East Asia, Taipei, Taiwan.
- Lang, T. J., and S. A. Rutledge, 2006: Kinematic, microphysical, and electrical aspects of an asymmetric bow-echo mesoscale convective system observed during STEPS 2000. American Geophysical Union Fall Meeting, San Francisco, CA.
- Lang, T. J., and S. A. Rutledge, 2006: Cloud-to-ground lightning downwind of the 2002 Hayman forest fire in Colorado. 2<sup>nd</sup> Conference on the Meteorological Applications of Lightning Data, American Meteorological Society, Atlanta, GA.

- Lang, T. J., 2005: On the uses of polarimetric radar to study thunderstorm electrification: Current techniques and potential future applications. Invited Talk, American Geophysical Union Fall Meeting, San Francisco, CA.
- Lang, T. J., et al., 2005: Radar observations during NAME 2004. Part I: Data products and quality control. 32<sup>nd</sup> Radar Meteorology Conference, American Meteorological Society, Albuquerque, NM.
- Lang, T. J., et al., 2005: Radar observations during NAME 2004. Part II: Preliminary results. 32<sup>nd</sup> Radar Meteorology Conference, American Meteorological Society, Albuquerque, NM.
- Lang, T. J., and S. A. Rutledge, 2005: One severe storm with two distinct electrical regimes during its lifetime: Implications for nowcasting severe weather with lightning data. 1<sup>st</sup> Conference on the Meteorological Applications of Lightning Data, American Meteorological Society, San Diego, CA.
- Lang, T. J., S. A. Rutledge, et al., 2003: Positive cloud-to-ground and other horizontally propagating lightning in the convective line and stratiform rain regions of a MCS observed during STEPS. American Geophysical Union Fall Meeting, San Francisco, CA.
- Lang, T. J., S. A. Rutledge, et al., 2003: Observations of clear-air dumbbell-shaped echo patterns with the CSU-CHILL polarimetric radar. 31<sup>st</sup> Radar Meteorology Conference, American Meteorological Society, Seattle, WA.
- Lang, T. J., and A. P. Barros, 2002: Observations and modeling of winter storms in the Himalayas. American Geophysical Union Fall Meeting, San Francisco, CA.
- Lang, T. J., and A. P. Barros, 2002: Modeling precipitation and orographic land-atmosphere interactions in the Himalayas. TRMM International Science Conference, Honolulu, HI.
- Lang, T. J., and A. P. Barros, 2002: On the mechanisms determining the spatial variability of heavy precipitation in the Himalayas. 16<sup>th</sup> Conference on Hydrology, American Meteorological Society, Orlando, FL.
- Lang, T. J., and S. A. Rutledge, 2001: On the relationships between convective storm kinematics, precipitation, and lightning. 7<sup>th</sup> International Conference on Precipitation, Rockport, ME.
- Lang, T. J., and A. P. Barros, 2001: An investigation of the onsets of the 1999 and 2000 monsoons in central Nepal. 7<sup>th</sup> International Conference on Precipitation, Rockport, ME.
- Lang, T. J., S. A. Rutledge, et al., 1999: Combined dual-Doppler, multiparameter radar, and lightning observations of a severe convective storm. 11<sup>th</sup> International Conference on Atmospheric Electricity, Guntersville, AL.
- Lang, T. J., S. A. Rutledge, et al., 1997: Relationship between storm structure and lightning activity in convection observed during STERAO-A. American Geophysical Union Fall Meeting, San Francisco, CA.

## **THESES AND TECHNICAL REPORTS**

- Rutledge, S., S. Nesbitt, R. Cifelli, T. Lang, et al., 2005: Report and recommendations of the Global Precipitation Mission (GPM) Ground Validation (GV) Front Range Pilot Project. NASA GPM Project Office, 67 pp.
- Barros, A. P., and T. J. Lang, 2003: Exploring spatial modes of variability of terrain-atmosphere interactions in the Himalayas during monsoon onset. Hydrosociences Rep. Series 03-001, Division of Engineering and Applied Sciences, Harvard University, 51 pp.
- Lang, T. J., 2000: On the relationships between convective storm kinematics, microphysics, and lightning. Ph.D. Dissertation, Colorado State Univ., 238 pp.
- Lang, T. J., 1997: Relationship between storm structure and lightning activity in Colorado convection observed during STERAO-A. Master's Thesis, Colorado State Univ., 167 pp.

## **PROFESSIONAL ACTIVITIES**

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|---|------------------------------|
| •Program Committee Member & Session Chair,<br>3 <sup>rd</sup> Conf. on Meteorol. Applications of Lightning Data | January 2008                 |
| •Attendee, TiMREX Project Planning Workshops  | November 2007, February 2008 |
| •Expert Witness, Fox/Kracke/Shearer vs. USA   | August-October 2007          |
| •Member, AMS STAC Committee on Atmospheric Electricity  | January 2007-Present         |

- Radar Scientist, C3VP Project, Canada January 2007
- Radar Scientist, NAMMA Project, Cape Verde Islands August-September 2006
- Program Committee Member, Session Chair, & Student Paper Judge, 2<sup>nd</sup> Conf. on Meteorol. Applications of Lightning Data January 2006
- Invited Speaker, AGU Fall Meeting December 2005
- Attendee, LANL Workshop on Satellite Lightning Detection September 2004
- Principal Investigator, NAME Project, Mexico July-August 2004
- Radar Scientist, GPM Pilot Project, Colorado May-June 2004
- Attendee, NAME Scientific Working Group Meetings November 2003, March 2005
- Session Chair, AGU Fall Meeting December 2002
- Member, American Geophysical Union September 2002-Present
- Lead Scientist, MOHPREX Project, Nepal June 2001
- Radar Scientist, STEPS Project, Colorado/Kansas May-July 2000
- Radar Scientist, TRMM-LBA Project, Brazil January-February 1999
- Radar Scientist, CSU-CHILL Summer Operations, Colorado June-August 1998
- Participant, MEaPRS Project, Oklahoma May 1998
- Participant, STERAO-A Project, Colorado June-August 1996
- Reviewer of Scientific Manuscripts, AMS & AGU Journals 1996-Present
- Member, American Meteorological Society 1995-1996, March 2007-Present
- American Meteorological Society Fellowship 1995-1996
- Participant, CSU-CHILL Summer Operations, Colorado June-July 1995

### **FUNDED GRANTS**

Studies of convection and lightning, National Science Foundation, Co-Principal Investigator, 2007-2010

Analysis and diagnostic studies from SMN radar and related data in support of NAME, National Oceanic and Atmospheric Administration, Principal Investigator, 2004-2007

Dynamical, microphysical, and electrification studies of mid-latitude convection, National Science Foundation, Co-Principal Investigator, 2003-2006