

KREMENA T. DARMENOVA

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EDUCATION

Georgia Institute of Technology, Atlanta, GA - Ph.D. in Atmospheric Sciences, 2006
Sofia University, Sofia, Bulgaria - M.S. in Physics, 1998

WORK EXPERIENCE

Northrop Grumman – Atmospheric Sciences and Engineering Department

Meteorologist 5 (August 2009 – present)

Developing a regional downscaling capability using a set of Regional Climate Models and the IPCC models for climate adaptation decision aid applications

Georgia Institute of Technology - School of Earth and Atmospheric Sciences

Research Scientist II (July 2007 – July 2009)

Investigated the linkage between land use changes and regional mineral dust aerosol emissions in Northern Eurasia for the last 50 years under the NASA's Northern Eurasian Earth Science Partnership Initiative (NEESPI).

Postdoctoral fellow (June 2006 - June 2007)

Developed an advanced dust emission module that integrates with the Weather Research and Forecast (WRF) model to provide a comprehensive characterization of atmospheric mineral aerosols.

Research Assistant (September 2003 - May 2006)

Delivered key research assessing uncertainties in dust emission in the Aral Sea Region caused by meteorological fields predicted with the weather forecast model MM5.

University of Colorado at Boulder - Program of Atmospheric and Oceanic Sciences

Research Assistant (August 2001 - August 2003)

Integrated analysis of satellite observations (TOMS, SeaWiFS, and MODIS) and meteorological data to constrain the regions of origin, mid- and long-range transport of Asian dust outbreaks and pollution episodes on a case-by-case basis.

Great Lakes Environmental Center, Columbus, Ohio

Environmental Technician (March 2000 - August 2001)

Integral contributor to EPA's large-scale Unregulated Contaminants Monitoring Regulation (UCMR) program of sampling water across several states to advance research into classifying new previously undefined water contaminants.

National Institute of Meteorology and Hydrology, Sofia, Bulgaria

Research Fellow (January 1999 - January 2000)

Made vital improvement to existing air pollution model by incorporating parameterizations for different stability regimes in atmosphere, significantly increasing degree of accuracy and validity.

SKILLS

- Weather forecast models: *NCAR MM5*, *NCAR WRF*
- Regional climate models: *RegCM*
- High Performance Computing (HPC): NCAR Black Forest/Blue Ice, NGC HPC, BNL Blue Gene, ORNL Jaguar
- Program languages: *Python*, *Perl*, *NCL*, *Fortran*, *C*
- Visualization tools: *NCL*, *NCAR graphics*, *Vis5D*, *Gri*, *MatPlotLib*

SELECTED PUBLICATIONS

Journal articles

- Darменова K., I.N. Sokolik, Y. Shao, B. Marticorena, G. Bergametti, Development of a physically-based dust emission module within the Weather Research and Forecasting (WRF) model: Assessment of dust emission parameterizations and input parameters for source regions in Central and East Asia, *J. Geophys. Res.*, 114, D14201, doi:10.1029/2008JD011236, 2009
- Darменова K. and I.N. Sokolik, Assessing uncertainties in dust emission in the Aral Sea region caused by meteorological fields predicted with a mesoscale model. *Global Planet. Change*, 56, 297-310, 2007
- Darменова K., I.N. Sokolik, and A. Darmenov, Characterization of East Asian dust outbreaks in Spring of 2001 using ground-based and satellite data. *J. Geophys. Res.*, doi: 10.1029/2004JD004842, 2005
- Darменова, K., M. Kolarova, and D. Syrakov, Application of Gaussian models for computation of the field of concentration and deposition in 30 km area around NPP Kozloduj in normal exploitation of the plant, XXI Symposium: Physics in preservation of man and his environment, pp. 27-30, Giolechitsa, Bulgaria, 25-27 June, 1999
- Darменова, K., Is the science of air pollution attractive to young people in Europe?, *EUROSAP, Newsletters*, v.35, pp.26-29, Nov 1999
- Darменова K., The air pollution problem, *Vik Journal - edition of the Bulgarian Department of Civil Defense*, v. 12, Bulgaria, Dec 1999

Conference Proceedings

- Darменова, K., G. Higgins, H. Kiley, D. Apling, Assessment of regional climate change and development of climate adaptation decision aids for energy use in the Southwestern US, Federation of Earth Science Information Partners summer conference, Knoxville, TN, July 2010.
- Darменова, K., G. Higgins, R. Alliss, H. Kiley, D. Apling, 2010, Development of dynamical downscaling for climate decision aid applications, 11th WRF Users Workshop, Boulder, CO, 21-25 June 2010
- Darменова, K., G. Higgins, R. Alliss, H. Kiley, D. Apling, 2009, Development of dynamical downscaling for regional climate modeling and decision aid applications, American Geophysical Union, Fall Meeting, 2009, abstract #A33A-0226
- Darменова, K. and I.N. Sokolik, 2008, Dust emission and deposition in regional models, Third International Dust Workshop, Leipzig, Germany, September, 2008