

# CURRICULUM VITAE

SEON KI PARK

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## AFFILIATION

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## EDUCATION

- Ph.D. in Meteorology, University of Oklahoma (1996)
- M.S. in Atmospheric Sciences, Seoul National University, Korea (1986)
- B.S. in Meteorology, Seoul National University, Korea (1984)

## PROFESSIONAL CAREER

- Professor, Department of Environmental Sci. & Eng., Ewha Womans University (Sep. 2008 - Present)
- Senior Research Scientist in Residence, Department of Physics, Computational Sci. & Eng., Chapman University (Feb. 2009 - Feb. 2010; Sabbatical leave from Ewha Womans University)
- Director, Center for Climate/Environment Change Prediction Research, Ewha Womans University (Sep. 2009 - Present)
- Director, Severe Storm Research Center, Ewha Womans University (Mar. 2007 - Present)
- Associate Dean, College of Engineering, Ewha Womans University (Feb. 2007 - Jan. 2008)
- Chairman, Department of Environmental Sci. & Eng., Ewha Womans University (Aug. 2006 - Jul. 2008)
- Associate Professor, Department of Environmental Sci. & Eng., Ewha Womans University (Sep. 2003 - Aug. 2008)

- Assistant Professor, Department of Environmental Sci. & Eng., Ewha Womans University (Sep. 2001 - Aug. 2003)
- Staff Scientist, Climate & Radiation Branch, NASA/GSFC/SSAI (Jan. 2001 - Aug. 2001)
- Assistant Research Professor, Department of Meteorology, University of Maryland (Aug. 1999 - Dec. 2000)
- Research Scientist, Coastal Meteorology Research Program, University of Oklahoma (May, 1999 - Aug. 1999)
- Research Scientist, Cooperative Institute for Mesoscale Meteorological Studies, University of Oklahoma (Mar. 1998 - Apr. 1999)
- Research Scientist, Center for Analysis and Prediction of Storms, University of Oklahoma (Feb. 1996 - Feb. 1998)
- Graduate Research Assistant, School of Meteorology and Center for Analysis and Prediction of Storms, University of Oklahoma (Jan. 1991 - Jan. 1996)
- Weather Forecasting Officer, Republic of Korea Air Force (Mar. 1987 - Jul. 1990)
- Research Associate, Department of Atmospheric Sciences, Seoul National University (Aug. 1986 - Feb. 1987)
- Graduate Research Assistant, Department of Atmospheric Sciences, Seoul National University (Mar. 1984 - Aug. 1986)

## **OTHER PROFESSIONAL EXPERIENCE**

- Instructor, *Earth Observation & Modeling*, Interterm 2011, Chapman University, January 3-28, 2011
- Member, Board of Trustee, The Next Generation NWP Model Development Mission, Funded by KMA (10 Billion KRW per year) (Jan. 2011 - Present)
- Editor, *Scientific Online Letters on the Atmosphere (SOLA)*, Meteorological Society of Japan (Aug. 2009 - Present)
- Editor-in-Chief, *Atmosphere*, Korean Meteorological Society (Jan. 2006 - Jan. 2009)
- Editor, *Atmosphere*, Korean Meteorological Society (Jan. 2006 - Present)
- Editor, *Asia-Pacific Journal of Atmospheric Sciences (APJAS)*, Korean Meteorological Society (Jan. 2006 - Present)
- Chair, Development and Planning Committee, Korean Meteorological Society (Jan. 2008 - Dec. 2008)
- ASEM-DUO Fellowship Visiting Scientist, University of Torino, Italy (Jun. - Jul. 2005)
- Advisory Committee, Forecast Bureau, Korea Meteorological Administration (Jan. 2005 - Present)

- Supercomputer Users Committee, Korea Institute of Sci. & Tech. Information (Oct. 2005 - Present)
- Convener, *International Winter School and Workshop on Climate/Environment Change*, January 4-7, 2011, Seoul, Korea
- Convener, *International Joint Seminar on Computational Science: Prospects, Opportunities and Applications*, December 21, 2010, Seoul, Korea
- Convener, *International Joint Seminar on Climate/Environment Change*, January 14, 2010, Pyungchang, Korea
- Convener, *International Winter School on Climate/Environment Change*, January 12-13, 2010, Pyungchang, Korea
- Program Committee Chair and Convener, *Int. Conf. on Mesoscale Convective Systems and High-Impact Weather/Climate in East Asia (ICMCS-VII)*, November 11-13, Seoul, Korea
- Co-convener, *2nd Italy-Korea Joint Seminar on Climate Change*, December 14-16, 2008, Torino, Italy
- Convener, *1st Korea-Italy Joint Seminar on Climate Change*, December 5, 2007, Seoul, Korea
- Convener, *4nd Sasaki Symposium on Data Assimilation for Atmospheric, Oceanic, and Hydrologic Applications*, 8th Annual Meeting, Asia-Oceania Geophysics Society, August 8-12, 2011, Taipei, Taiwan
- Convener, *3rd Sasaki Symposium on Data Assimilation for Atmospheric, Oceanic, and Hydrologic Applications*, 7th Annual Meeting, Asia-Oceania Geophysics Society, July 5-9, 2010, Hyderabad, India
- Convener, *2nd Sasaki Symposium on Data Assimilation for Atmospheric, Oceanic, and Hydrologic Applications*, 5th Annual Meeting, Asia-Oceania Geophysics Society, June 16-20, 2008, Busan, Korea
- Convener, *1st Sasaki Symposium on Data Assimilation for Atmospheric, Oceanic, and Hydrologic Applications*, 4th Annual Meeting, Asia-Oceania Geophysics Society, July 31 - August 4, 2007, Bangkok, Thailand
- Convener, Session on *Data Assimilation for Atmospheric, Oceanic, and Hydrologic Applications*, 2nd Annual Meeting, Asia-Oceania Geophysics Society, June 20-24, 2005, Singapore
- Convener, *Minisymposium on Atmospheric Data Assimilation and Retrieval*, 5th SIAM Conference on Mathematical and Computational Issues in the Geosciences, March 24-27, 1999, San Antonio, Texas
- President, Oklahoma Chapter, Korean-American Scientists and Engineers Association (KSEA) (1997 - 1998)
- Organizer and Leading Speaker, *ARPS Workshop for Korean Users*, April 14-15, 1997, Korea Meteorological Administration, Seoul, Korea

- Invited Visiting Scientist, Meteorological Research Institute, Korea Meteorological Administration (Mar. 23 - May 18, 1997)
- Editor, *Asian Meteorology Online Newsletter (AMON)* (Jan. 1997 - Present)
- Organizing Committee, *Joint US-Korea Workshop on Storm- and Mesoscale Weather Analysis and Prediction* (1995 - Present)

#### **AWARDS and SCHOLARSHIP**

- *Research Grant Outstandingness Award*, Ewha Womans University (2009)
- *Minister's Award*, Ministry of Environment, Republic of Korea (2008)
- *Teaching Excellence Award*, Ewha Womans University (2008)
- *Research Grant Excellence Award*, Ewha Womans University (2006, 2008, 2010)
- *ASEM-DUO Fellowship*, DUO-Korea, ASEM-DUO Fellowship Programme (2005)
- *Administrator's Award*, Korea Meteorological Administration (1998)
- *CAPS Recognition*, Center for Analysis and Prediction of Storms, University of Oklahoma (1996)
- *Cleo Cross International Scholarship*, University of Oklahoma (1993)
- *Commander in Chief's Award*, The Combined Forces Command of ROK and USA (1989)

#### **RECENT RESEARCH GRANTS**

- NRF, *Center for Climate/Environment Change Prediction Research (CCCPR)*, PI, 1,200,000,000 KRW (03/01/10 to 02/28/11, year 2/7)
- NRF, *Center for Climate/Environment Change Prediction Research (CCCPR)*, PI, 500,000,000 KRW (09/01/09 to 02/28/10, year 1/7)
- CCCPR/NRF, *Development of Coupled Regional Climate-Land Surface Process Model Considering Interaction Processes*, PI, 490,000,000 KRW (03/01/10 to 02/28/11, year 2/7)
- CCCPR/NRF, *Development of Coupled Regional Climate-Land Surface Process Model Considering Interaction Processes*, PI, 176,000,000 KRW (09/01/09 to 02/28/10, year 1/7)
- EMC/ME, *Development of Environmental/Ecological Adaptation Strategy against Climate Change*, Co-PI, 112,500,000 KRW (04/11/10 to 04/10/11, year 2/10)
- EMC/ME, *Development of Environmental/Ecological Adaptation Strategy against Climate Change*, Co-PI, 112,500,000 KRW (07/11/09 to 04/10/10, year 1/10)

- NIER/ME, *Study on Basic Technology and Applications of Loading Instruments in Earth Environmental Satellite (II)*, Co-PI, 650,000,000 KRW (04/15/10 to 12/15/10)
- NIER/ME, *Study on Basic Technology and Applications of Loading Instruments in Earth Environmental Satellite (I)*, Co-PI, 700,000,000 KRW (04/01/09 to 11/25/09)
- NIER/ME, *Global and Regional Scale Climate-Atmosphere Coupled Modeling Study (III)*, PI, 60,000,000 KRW (03/26/10 to 12/25/10)
- NIER/ME, *Development of Inventory for Impact Evaluation and Adaptation Measures due to Climate Change in Water Resource and Quality (II)*, PI, 116,000,000 KRW (03/11/09 to 11/25/09)
- NIER/ME, *Development of Inventory for Impact Evaluation and Adaptation Measures due to Climate Change in Water Resource and Quality (I)*, PI, 165,469,580 KRW (04/30/08 to 12/15/08)
- NIMR/KMA, *Development of Global Sand Dust Storm Prediction Model and Data Assimilation Technique*, PI, 95,500,000 KRW (05/08/08 to 11/28/08)
- KMA, *Establishment of Next-Generation Numerical Weather Prediction System*, PI, 900,000,000 KRW (03/17/08 to 12/05/08)
- CATER, *Adaptive Observation and Data Assimilation for Improving Typhoon Forecasts*, PI, 180,000,000 KRW (04/10/06 to 01/31/07)

## **PUBLICATIONS**

See attached list of publication. Conference papers are not listed.

## PUBLICATIONS

### Books:

1. **Park, S.K.**, and L. Xu, Eds., 2009: *Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications*. Springer, 455 pp.

### Refereed Book Chapters:

1. Lee, Y.H., **S.K. Park**, D.-E. Chang, J.-C. Ha, and H.-S. Lee, 2009: Parameter estimation using the genetic algorithm in terms of quantitative precipitation forecast. Chapter 11 in *Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications*, S.K. Park, and L. Xu, Eds., Springer, 217-227.
2. **Park, S.K.**, K.K. Droegemeier, and C.H. Bischof, 1996: Automatic differentiation as a tool for sensitivity analysis of a convective storm in a 3-D cloud model. Chapter 18 in *Computational Differentiation: Techniques, Applications, and Tools*, M. Berz, C. Bischof, G. Corliss, and A. Griewank, Eds., SIAM, Philadelphia, PA, 205-214.

### Refereed Journal Articles (In Preparation or Submitted):

1. Oh, S., M. Galli, **S.K. Park**, and C. Cassardo, 2011: Hydrological effects of climate change in the Alps and in the Po valley. To be submitted to *Nature*.
2. Galli, M., S. Oh, C. Cassardo, and **S.K. Park**, 2011: The effects of climate change on the land surface energy budget in the Alpine area and in the Po valley. To be submitted to *J. Climate*.

### Refereed Journal Articles (SCI – In Press or Published):

1. Kim, H.H., **S.K. Park**, D. Zupanski, and M. Zupanski, 2010: Uncertainty analysis using the maximum likelihood ensemble filter and WRF and comparison with dropwindsonde observations in Typhoon Sinlaku (2008). *Asia-Pacific J. Atmos. Sci.*, **46**, 317-325.
2. Chang, D.-E., D.-K. Lee, and **S.K. Park**, 2010: Observational experiment and predictability of high-impact weather. *Asia-Pacific J. Atmos. Sci.*, **46**, 231-232.
3. Lee, Y. H., J.-S. Lee, **S.K. Park**, D.-E. Chang, and H.-S. Lee, 2010: Temporal and spatial characteristics of fog occurrence over the Korean Peninsula. *J. Geophys. Res.*, **115**, D14117, doi:10.1029/2009JD012284.
4. Cassardo, C., **S.K. Park**, B.M. Thakuri, D. Priolo, and Y. Zhang, 2009: Energy and hydrologic budgets in the surface layer during a monsoon season in Korea. *J. Hydrometeor.*, **10**, 1379-1396.
5. Kim, Y.H., K.-I. Chang, J.J. Park, **S.K. Park**, S.-H. Lee, Y.-G. Kim, and K.T. Jung, and K. Kim 2009: Comparison between a reanalyzed product by 3-dimensional variational assimilation technique and observations in the Ulleung Basin of the East/Japan Sea. *J. Mar. Syst.*, **78**, 249-264.

6. **Park, S.K.**, D.-L. Zhang, and H.H. Kim, 2008: Impact of dropwindsonde data on the track forecasts of a tropical cyclone: An observing-systems simulation experiment study. *Asia-Pacific J. Atmos. Sci.*, **44**, 85-92.
7. Kim, J.-H., C.-H. Ho, H.-S. Kim, C.-H. Sui, and **S.K. Park**, 2008: Systematic variation of summertime tropical cyclone activity in the western North Pacific in relation to the Madden-Julian oscillation. *J. Climate*, **21**, 1171-1191.
8. **Park, S.K.**, and E. Lee, 2007: Synoptic features of orographically enhanced heavy rainfall on the east coast of Korea associated with Typhoon Rusa (2002). *Geophys. Res. Lett.*, **34**, L02803, doi:10.1029/2006GL028592.
9. Park, M.-S., Y.-S. Choi, C.-H. Ho, C.-H. Sui, **S.K. Park**, and M.-H. Ahn, 2007: Regional cloud characteristics over the tropical northwestern Pacific as revealed by Tropical Rainfall Measuring Mission (TRMM) Precipitation Radar and TRMM Microwave Imager. *J. Geophys. Res.*, **112**, D05209, doi:10.1029/2006JD007437.
10. Lee, Y.H., **S.K. Park**, and D.-E. Chang, 2006: Parameter estimation using the genetic algorithm and its impact on quantitative precipitation forecast. *Annal. Geophys.*, **24**, 3185-3189.
11. Kim, J.-H., C.-H. Ho, C.-H. Sui, and **S.K. Park**, 2005: Dipole structure of interannual variations in summertime tropical cyclone activity over East Asia. *J. Climate*, **18**, 5344-5356.
12. Song, H.-J., S.-H. Huh, C.-H. Ho, J.-H. Kim, and **S.K. Park**, 2005: Typhoon track prediction by support vector machine using data reduction methods. *Lecture Notes in Artificial Intelligence*, **3801**, 503-511.
13. **Park, S.K.**, and E. Kalnay, 2004: Inverse three-dimensional variational data assimilation for an advection-diffusion problem: Impact of diffusion and hybrid application. *Geophys. Res. Lett.*, **31**, L04102.
14. Gao, B.-C., P. Yang, G. Guo, **S.K. Park**, W. J. Wiscombe, and B. Chen, 2003: Measurements of water vapor and high clouds over the Tibetan plateau with the Terra MODIS instrument. *IEEE Trans. Geosci. Remote Sensing*, **41**, 895-900.
15. **Park, S.K.**, and D. Zupanski, 2003: Four-dimensional variational data assimilation for mesoscale and storm-scale applications. *Meteor. Atm. Phys.*, **82**, 173-208.
16. Yang, P., B.-C. Gao, W.J. Wiscombe, M.I. Mishchenko, S. Platnick, A. Huang, B.A. Baum, Y.X. Hu, D. Winker, S.-C. Tsay, **S.K. Park**, 2002: Inherent and apparent scattering properties of homogeneous or coated spheres embedded in absorbing host medium. *Appl. Optics.*, **41**, 2740-2759.
17. Kalnay, E., **S.K. Park**, Z.-X. Pu, and J. Gao, 2000: Application of the quasi-inverse method to data assimilation. *Mon. Wea. Rev.*, **128**, 864-875.
18. **Park, S.K.**, and K.K. Droegemeier, 2000: Sensitivity analysis of a 3D convective storm: Implications for variational data assimilation and forecast error. *Mon. Wea. Rev.*, **128**, 140-159.

19. **Park, S.K.**, 1999: Nonlinearity and predictability of convective rainfall associated with water vapor perturbations in a numerically-simulated storm. *J. Geophys. Res.*, **104** (D24), 31575-31588.
20. **Park, S.K.**, and K.K. Droegemeier, 1999: Sensitivity analysis of a moist 1D Eulerian cloud model using automatic differentiation. *Mon. Wea. Rev.*, **127**, 2180-2196.
21. **Park, S.K.**, and K.K. Droegemeier, 1997: Validity of the tangent linear approximation in a moist convective cloud model. *Mon. Wea. Rev.*, **125**, 3320-3340.

#### Refereed Journal Articles (Non-SCI):

1. Galli, M., S. Oh, C. Claudio, and **S.K. Park**, 2010: The occurrence of cold spells in the Alps related to climate change. *Water*, **2**(3), 363-380; doi:10.3390/w2030363.
2. Kim, H.H., and **S.K. Park**, 2008: Current status of intensive observing period and development direction. *Atmosphere*, **18**, 147-158 (in Korean with English abstract).
3. Kwon, H. J., S.-H. Won, and **S.K. Park**, 2006: Climatological differences between the two Typhoon Centers' tropical cyclone information in the Western North Pacific. *J. Korean Meteor. Soc.*, **42**, 183-192.
4. Lee, D.H., H.J. Kwon, S.-H. Won, and **S.K. Park**, 2006: Typhoon simulation with a parameterized sea surface cooling. *Atmosphere*, **16**, 97-110 (in Korean with English abstract).
5. Sohn, E.-H., M.-H. Ahn, D.-E. Chang, and **S.K. Park**, 2006: A quality control algorithm of rawinsonde wind data: Application to the East Asian region. *J. Korean Meteor. Soc.*, **42**, 107-127.
6. Sohn, B.J., J.C. Nam, **S.K. Park**, M.-H. Ahn, J.-M. Yoo, H.-S. Lee, D.-E. Chang, C.-H. Ho, D.-H. Bae, S.-J. Kim, H.-J. Oh, 2005: Proposing research and development activities for utilizing the Global Precipitation Measurement (GPM). *Atmosphere*, **15**, 47-57 (in Korean with English abstract).
7. **Park, S.K.**, 2005: Observation programs: Current status and future visions. *Atmosphere*, **15**, 141-148 (in Korean with English abstract).
8. **Park, S.K.**, and E. Lee, 2005: Characteristics on land-surface and soil models coupled in mesoscale meteorological models. *Atmosphere*, **15**, 1-16 (in Korean with English abstract).
9. **Park, S.K.**, 2004: Role of supercomputers in numerical prediction of weather and climate. *Atmosphere*, **14**(4), 19-23 (in Korean with English abstract).
10. **Park, S.K.**, 2004: The Observing System Research Predictability Experiment (THORPEX) and potential benefits for Korea and the East Asia. *Atmosphere*, **14**(3), 41-54.
11. **Park, S.K.**, 2004: In-situ observation of tornado: TOTO vs. DOROTHY. *Atmosphere*, **14**(2), 7-10 (in Korean with English abstract).
12. **Park, S.K.**, 2003: Estimation of total precipitable water in East Asia using the MODIS satellite data. *J. Korean Atmos. Env. Soc.*, **19**, 149-155.



13. **Park, S.K.**, 2003: Behavior of tangent linear and adjoint solutions in a chaotic dynamical system. *Korean J. Atmos. Sci.*, **6**, 47-53.
14. **Park, S.K.**, 2003: Variational data assimilation for optimal initial conditions in air quality modeling. *J. Korean Atmos. Env. Soc.*, **19**, 75-81.
15. **Park, S.K.**, 2003: Data assimilation for oceanographic application: A brief overview. *J. Korean Soc. Oceanogr.*, **38**, 52-59.
16. **Park, S.K.**, 2002: The Earth Observing System (EOS) program for synthetic monitoring of the Earth environment. *Atmosphere*, **12(4)**, 56-68 (in Korean with English abstract).
17. **Park, S.K.**, 2002: Recent trend in developing the four-dimensional variational data assimilation. *Atmosphere*, **12(2)**, 10-12 (in Korean).
18. **Park, S.K.**, and D.-K. Lee, 1987: Synoptic aspects of a northeastward moving extratropical cyclone developed in the East Asia coast. *J. Korean Meteor. Soc.*, **23**, 1-25 (in Korean with English abstract).