Jong-Jin Baik

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Education

Ph.D. in Atmospheric Science, 1989, Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, U.S.A. (minor: Mathematics)
Thesis title: Tropical cyclone simulations with the Betts convective adjustment scheme
(advisors: Mark DeMaria and Sethu Raman)

M.S. in Meteorology, 1986, Department of Meteorology, Seoul National University, Korea
Thesis title: Evaporation associated with polar air outbreaks over the Yellow Sea
(advisor: Sung Sam Kim)

B.S. in Earth Science Education, 1984, Department of Earth Science Education, Seoul National University, Korea

Professional Careers

2007 –	Professor, School of Earth and Environmental Sciences, Seoul National University, Korea Also affiliated with Interdisciplinary Program of Computational Science and Technology, Seoul National University, Korea since 2017
2011	Visiting Professor, Graduate School of Wind Energy, Pohang University of Science and Technology (POSTECH), Korea
2003 – 2007	Associate Professor, School of Earth and Environmental Sciences, Seoul National University, Korea
2001 – 2003	BK21 Research Associate Professor, School of Earth and Environmental Sciences, Seoul National University, Korea
1995 – 2001	Associate Professor, Department of Environmental Science and Engineering, Gwangju Institute of Science and Technology, Korea
2000	Senior Visitor, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, U.K.
1994 – 1995	Visiting Associate Professor, Center for Climate System Research, University of Tokyo, Japan
1993 – 1994	Senior Scientist, Global Environment Laboratory, Yonsei University, Korea
1991 – 1993	USRA Research Scientist, Severe Storms Branch, NASA/Goddard Space Flight Center, U.S.A.
1990 – 1991	Postdoctoral Fellow, Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, U.S.A.

1990 Visiting Scientist, Hurricane Research Division, Atlantic Oceanographic and Meteorological Laboratory/NOAA, U.S.A.

Teaching Courses

Atmospheric thermodynamics (undergraduate course)
Atmospheric prediction and lab. (undergraduate course)
Atmospheric Physics 2 (undergraduate course)
Mesoscale meteorology (graduate course)
Cloud physics (graduate course)

Current Students and Postdoctoral Fellows

advising 3 M.S. students, 3 Ph.D. students, and 1 postdoc.

Ph.D. Graduates Supervised

Jae-Jin Kim, 2001, Gwangju Institute of Science and Technology
Thesis title: Flow and pollutant dispersion in urban street canyons
Affiliation: Associate professor, Department of Environmental Atmospheric Sciences, Pukyong National University, Korea
Yeon-Hee Kim, 2003, Gwangju Institute of Science and Technology
(supervised jointly with Prof. Jai-Hoon Lee)
Thesis title: Meteorological aspects of urban heat islands
Affiliation: Senior research scientist, Applied Meteorology Research Division, National Institute of Meteorological Sciences, Korea
Sang-Hyun Lee, 2008, Seoul National University
Thesis title: Development of a vegetated urban canopy model and its application to urban heat island simulations
Affiliation: Associate professor, Department of Atmospheric Science, Kongju National University, Korea
Ji-Young Han, 2010, Seoul National University
Thesis title: Convectively forced mesoscale flows and aerosol-cloud interactions
Affiliation: Research scientist, Korea Institute of Atmospheric Prediction Systems, Korea
Young-Hee Ryu, 2012, Seoul National University
Thesis title: Urban impacts on local circulation and air quality
Affiliation: Postdoctoral fellow, Atmospheric Chemistry Observations and Modeling Laboratory, National Center for Atmospheric Research, U.S.A.
Seung-Bu Park, 2013, Seoul National University
Thesis title: Turbulence coherent structures and scalar dispersion over heated urban surfaces
Affiliation: Research scientist, Korea Institute of Atmospheric Prediction Systems, Korea
Kyung-Hwan Kwak, 2014, Seoul National University

Thesis title: Microscale flow, gas-phase chemistry, and dispersion in urban areas
Affiliation: Assistant professor, School of Natural Resources and Environmental Science, Kangwon National University, Korea

Gantuya Ganbat, 2015, Seoul National University
Thesis title: Local circulations in mountainous urban areas
Affiliation: Researcher, Information and Research Institute of Meteorology, Hydrology and Environment, Mongolia

Hyunho Lee, 2016, Seoul National University
Thesis title: Effects of in-cloud turbulence on clouds and precipitation
Affiliation: Assistant professor, Department of Atmospheric Science, Kongju National University, Korea

Jaemyeong Mango Seo, 2018, Seoul National University
Thesis title: Dynamics and modeling of thermally and orographically forced flows and convection
Affiliation: Postdoctoral fellow, Precipitating Convection Group, Max Planck Institute for Meteorology, Germany

Jambajamts Lkhamjav, 2018, Seoul National University
Thesis title: A quasi-stochastic collection model and cloud and precipitation modeling
Affiliation: Assistant professor, Department of Applied Mathematics, National University of Mongolia, Mongolia

Beom-Soon Han, 2019, Seoul National University
Thesis title: Large-eddy simulations of urban turbulence, boundary layer, and air quality
Affiliation: Postdoctoral fellow, Research Institute of Basic Sciences, Seoul National University, Korea

Research Interest

Cloud microphysics
Numerical precipitation prediction
Thermally forced mesoscale flows
Urban heat islands
Urban flow, convection, and dispersion
Urban impacts on weather and air quality
Nonlinear dynamics and chaos of thermal convection

Honors and Awards

Teaching Award, College of Natural Sciences, Seoul National University, 2008, 2016
Max Eaton Prize, American Meteorological Society, 1989
Top honor graduate, Department of Earth Science Education, Seoul National University, 1984

Professional Activities and Services (some listed)

Director of Atmospheric Environment Research Institute, Seoul National University, 2014-2016

Chair of Atmospheric Sciences Program, School of Earth and Environmental Sciences, Seoul National University, 2009-2011

Associate Director of School of Earth and Environmental Sciences BK21 Program, Seoul National University, 2009-2011

Organizer of Workshop on Local Meteorology, Korea, 2008, 2010

Co-organizer of The University Allied Workshop on Climate and Environmental Changes, Korea, 2009

Co-convenor of International Workshop on Climate Environment System, Korea, 2008

Executive Director of Climate Environment System Research Center (CES), Seoul National University, 2003-2009

Co-convenor of Typhoons and Mesoscale Weather Session, Asia Oceania Geosciences Society, Singapore, 2004, 2005

Co-organizer of The University Allied Workshop on Climate and Environmental Modeling, Korea, 2005

Reviewer of papers submitted to: Journal of Applied Meteorology and Climatology, Journal of the Atmospheric Sciences, Atmospheric Environment, Environmental Fluid Mechanics, Physics of Fluids, Theoretical and Applied Climatology, Journal of Wind Engineering and Industrial Aerodynamics, Theoretical and Computational Fluid Mechanics, Computer Methods in Applied Mechanics and Engineering, Wind and Structures, Journal of the Air and Waste Management Association, Journal of Geophysical Research, Bulletin of the American Meteorological Society, Air Quality, Atmosphere and Heath, Journal of Environmental Quality, International Journal of Heat and Fluid Flow, Computers and Fluids, Quarterly Journal of the Royal Meteorological Society, Environment and Planning B, Building Simulation: An International Journal, Journal of Oceanography, Asia-Pacific Journal of Atmospheric Sciences, Advances in Atmospheric Sciences, International Journal of Environmental Technology and Management, Environmental Science and Pollution Research, Atmospheric Chemistry and Physics, Monthly Weather Review, Meteorology and Atmospheric Physics, Boundary-Layer Meteorology, CLEAN - Soil, Air, Water, International Journal of Geosciences, Urban Forestry & Urban Greening, Urban Climate, Remote Sensing, Atmospheric Pollution Research, Environmental Pollution, Advances in Meteorology, Aerosol and Air Quality Research, Scientific Reports, Meteorological Applications, Air Quality, Atmosphere and Health, Journal of Climate

Editorial Board: Asia-Pacific Journal of Atmospheric Sciences, editor, 2011-2015
Atmosphere, Korean Meteorological Society, chief editor, 2009

Publications

145. Moon, S., J. M. Seo, B.-S. Han, J. Park, and J.-J. Baik, 2019: A physically extended Lorenz system. Chaos, 29, 063129.

144. Han, B.-S., J.-J. Baik, S.-B. Park, and K.-H. Kwak, 2019: Large-eddy simulations of reactive pollutant dispersion in the convective boundary layer over flat and urban-like surfaces. Boundary-Layer Meteorology, 172, 271-289.

143. Jin, H.-G., H. Lee, and J.-J. Baik, 2019: A new parameterization of the accretion of cloud water by graupel and its evaluation through cloud and precipitation simulations. Journal of the Atmospheric Sciences, 76, 381-400.

142. Seo, J. M., J.-J. Baik, and H.-Y. Chun, 2018: Theoretical investigation of nonhydrostatic effects on convectively forced flows: Propagating and evanescent gravity-wave modes. Physics of Fluids, 30, 126604.

141. Lee, H., and J.-J. Baik, 2018: A comparative study of bin and bulk cloud microphysics schemes in simulating a heavy precipitation case. Atmosphere, MDPI, 9, 475.

140. Lkhamjav, J., H. Lee, Y.-L. Jeon, J. M. Seo, and J.-J. Baik, 2018: Impacts of aerosol loading on surface precipitation from deep convective systems over north central Mongolia. Asia-Pacific Journal of Atmospheric Sciences, 54, 587-598.

139. Jeon. Y.-L., S. Moon, H. Lee, J.-J. Baik, and J. Lkhamjav, 2018: Non-monotonic dependencies of cloud microphysics and precipitation on aerosol loading in deep convective clouds: A case study using the WRF model with bin microphysics. Atmosphere, MDPI, 9, 434.

138. Lee, H., J.-J. Baik, and A. P. Khain, 2018: Turbulence effects on precipitation and cloud radiative properties in shallow cumulus: An investigation using the WRF-LES model coupled with bin microphysics. Asia-Pacific Journal of Atmospheric Sciences, 54, 457-471.

137. Seo, J. M., J.-J. Baik, and S. Moon, 2018: Orographic-convective flows, wave reflection, and gravity-wave momentum fluxes in a two-layer hydrostatic atmosphere. Tellus A: Dynamic Meteorology and Oceanography, 70, 1-16.

136. Han, B.-S., J.-J. Baik, K.-H. Kwak, and S.-B. Park, 2018: Large-eddy simulation of reactive pollutant exchange at the top of a street canyon. Atmospheric Environment, 187, 381-389.

135. Kwak, K.-H., S. H. Woo, K. H. Kim, S.-B. Lee, G.-N. Bae, Y.-I. Ma, Y. Sunwoo, and J.-J. Baik, 2018: On-road air quality associated with traffic composition and street-canyon ventilation: Mobile monitoring and CFD modeling. Atmosphere, MDPI, 9, 92.

134. Park, J., P. Billant, J.-J. Baik, and J. M. Seo, 2018: Competition between the centrifugal and strato-rotational instabilities in the stratified Taylor-Couette flow. Journal of Fluid Mechanics, 840, 5-24.

133. Lkhamjav, J., Y.-L. Jeon, H. Lee, J.-J. Baik, and J. M. Seo, 2017: Evaluation of an improved quasi-stochastic collection model through precipitation prediction over north central Mongolia. Journal of Geophysical Research: Atmospheres, 122, 13404-13419.

132. Han, B.-S., K.-H. Kwak, and J.-J. Baik, 2017: Analysis on vortex streets behind a square cylinder at high Reynolds number using a large-eddy simulation model: Effects of wind direction, speed, and cylinder width. Atmosphere, KMS, 27, 445-453.

131. Lkhamjav, J., H.-G. Jin, H. Lee, and J.-J. Baik, 2017: A hail climatology in Mongolia. Asia-Pacific Journal of Atmospheric Sciences, 53, 501-509.

130. Moon, S., B.-S. Han, J. Park, J. M. Seo, and J.-J. Baik, 2017: Periodicity and chaos of high-order Lorenz systems. International Journal of Bifurcation and Chaos, 27, 1750176.

129. Han, B.-S., S.-B. Park, J.-J. Baik, J. Park, and K.-H. Kwak, 2017: Large-eddy simulation of vortex streets and pollutant dispersion behind high-rise buildings. Quarterly Journal of the Royal Meteorological Society, 143, 2714-2726.

128. Park, J., P. Billant, and J.-J. Baik, 2017: Instabilities and transient growth of the stratified Taylor-Couette flow in a Rayleigh-unstable regime. Journal of Fluid Mechanics, 822, 80-108.

127. Lee, H., and J.-J. Baik, 2017: A physically based autoconversion parameterization. Journal of the Atmospheric Sciences, 74, 1599-1616.

126. Seo, J. M., G. Ganbat, and J.-J. Baik, 2017: Dynamics of reversed urban breeze circulation. Journal of the Atmospheric Sciences, 74, 1311-1320.

125. Lkhamjav, J., H. Lee, Y.-L. Jeon, and J.-J. Baik, 2017: Examination of an improved quasi-stochastic model for the collisional growth of drops. Journal of Geophysical Research: Atmospheres, 122, 1713-1724.

124. Jin, H.-G., H. Lee, J. Lkhamjav, and J.-J. Baik, 2017: A hail climatology in South Korea. Atmospheric Research, 188, 90-99.

123. Seo, J. M., G. Ganbat, J.-Y. Han, and J.-J. Baik, 2017: Theoretical calculations of interactions between urban breezes and mountain slope winds in the presence of basic-state wind. Theoretical and Applied Climatology, 127, 865-874.

122. Lee, H., and J.-J. Baik, 2016: Effects of turbulence-induced collision enhancement on heavy precipitation: The 21 September 2010 case over the Korean Peninsula. Journal of Geophysical Research: Atmospheres, 121, 12319-12342.

121. Han, B.-S., K.-H. Kwak, J.-J. Baik, 2016: Diurnal variations of O_3 and NO_2 concentrations in an urban park in summer: Effects of air temperature and wind speed. Journal of Korean Society for Atmospheric Environment, 32, 536-546.

120. Lee, H., and J.-J. Baik, 2016: Effects of uncertainty in graupel terminal velocity on cloud simulation. Atmosphere, KMS, 26, 435-444.

119. Lee, S.-H., H. Lee, S.-B. Park, J.-W. Woo, D.-I. Lee, and J.-J. Baik, 2016: Impacts of in-canyon vegetation and canyon aspect ratio on the thermal environment of street canyons: numerical investigation using a coupled WRF-VUCM model. Quarterly Journal of the Royal Meteorological Society, 142, 2562-2578.

118. Ganbat, G., and J.-J. Baik, 2016: Wintertime winds in and around the Ulaanbaatar metropolitan area in the presence of a temperature inversion. Asia-Pacific Journal of Atmospheric Sciences, 52, 309-325.

117. Park, J., H. Lee, and J.-J. Baik, 2016: Periodic and chaotic dynamics of the Ehrhard-Muller system. International Journal of Bifurcation and Chaos, 26, 1630015.

116. Park, J., B.-S. Han, H. Lee, Y.-L. Jeon, and J.-J. Baik, 2016: Stability and periodicity of high-order Lorenz-Stenflo equations. Physica Scripta, 91, 065202.

115. Kwak, K.-H., S.-H. Lee, J. M. Seo, S.-B. Park, and J.-J. Baik, 2016: Relationship between rooftop and on-road concentrations of traffic-related pollutants in a busy street canyon: Ambient wind effects. Environmental Pollution, 208, 185-197.

114. Ganbat, G., J. M. Seo, J.-Y. Han, and J.-J. Baik, 2015: A theoretical study of the interactions of urban breeze circulation with mountain slope winds. Theoretical and Applied Climatology, 121, 545-555.

113. Ganbat, G., and J.-J. Baik, 2015: Local circulations in and around the Ulaanbaatar, Mongolia, metropolitan area. Meteorology and Atmospheric Physics, 127, 393-406.

112. Park, J., H. Lee, Y.-L. Jeon, and J.-J. Baik, 2015: Periodicity of the Lorenz-Stenflo equations. Physica Scripta, 90, 065201.

111. Park, S.-B., J.-J. Baik, and S.-H. Lee, 2015: Impacts of mesoscale wind on turbulent flow and ventilation in a densely built-up urban area. Journal of Applied Meteorology and Climatology, 54, 811-824.

110. Ganbat, G., J.-J. Baik, and Y.-H. Ryu, 2015: A numerical study of the interactions of urban breeze circulation with mountain slope winds. Theoretical and Applied Climatology, 120, 123-135.

109. Park, S.-B., J.-J. Baik, and B.-S. Han, 2015: Large-eddy simulation of turbulent flow in a densely built-up urban area. Environmental Fluid Mechanics, 15, 235-250.

108. Park, S.-B., K.-H. Kwak, B.-S. Han, G. Ganbat, H. Lee, J. M. Seo, S.-H. Lee, and J.-J. Baik, 2015: Measurements of turbulent flow and ozone at rooftop and sidewalk sites in a high-rise building area. SOLA, 11, 1-4.

107. Lee, H., J.-J. Baik, and J.-Y. Han, 2015: Effects of turbulence on warm clouds and precipitation with various aerosol concentrations. Atmospheric Research, 153, 19-33.

106. Kwak, K.-H., J.-J. Baik, Y.-H. Ryu, and S.-H. Lee, 2015: Urban air quality simulation in a high-rise building area using a CFD model coupled with mesoscale meteorological and chemistry-transport models. Atmospheric Environment, 100, 167-177.

105. Lee, H., J.-J. Baik, and J.-Y. Han, 2014: Effects of turbulence on mixed-phase deep convective clouds under different basic-state winds and aerosol concentrations. Journal of Geophysical Research: Atmospheres, 119, 13506-13525.

104. Lee, K.-Y., K.-H. Kwak, Y.-H. Ryu, S.-H. Lee, and J.-J. Baik, 2014: Impacts of biogenic isoprene emission on ozone air quality in the Seoul metropolitan area. Atmospheric Environment, 96, 209-219.

103. Park, S.-B., and J.-J. Baik, 2014: Large-eddy simulations of convective boundary layers over flat and urbanlike surfaces. Journal of the Atmospheric Sciences, 71, 1880-1892.

102. Han, J.-Y., J.-J. Baik, and H. Lee, 2014: Urban impacts on precipitation. Asia-Pacific Journal of Atmospheric Sciences, 50, 17-30.

101. Kwak, K.-H., and J.-J. Baik, 2014: Diurnal variation of NO_x and ozone exchange between a street canyon and the overlying air. Atmospheric Environment, 86, 120-128.

100. Woo, S., J.-J. Baik, H. Lee, J.-Y. Han, and J. M. Seo, 2013: Nonhydrostatic effects on convectively forced mesoscale flows. Atmosphere, KMS, 23, 293-305.

99. Ganbat, G., J.-Y. Han, Y.-H. Ryu, and J.-J. Baik, 2013: Characteristics of the urban heat island in a high-altitude metropolitan city, Ulaanbaatar, Mongolia. Asia-Pacific Journal of Atmospheric Sciences, 49, 535-541.

98. Ryu, Y.-H., J.-J. Baik, and S.-H. Lee, 2013: Effects of anthropogenic heat on ozone air quality in a megacity. Atmospheric Environment, 80, 20-30.

97. Park, S.-B., J.-J. Baik, and Y.-H. Ryu, 2013: A large-eddy simulation study of bottom-heating effects on scalar dispersion in and above a cubical building array. Journal of Applied Meteorology and Climatology, 52, 1738-1752.

96. Lee, K.-Y., K.-H. Kwak, S.-B. Park, and J.-J. Baik, 2013: Sensitivity of ozone to NO_x and VOCs in a street canyon. Journal of Korean Society for Atmospheric Environment, 29, 307-316.

95. Park, S.-B., and J.-J. Baik, 2013: A large-eddy simulation study of thermal effects on turbulence coherent structures in and above a building array. Journal of Applied Meteorology and Climatology, 52, 1348-1365.

94. Kwak, K.-H., J.-J. Baik, and K.-Y. Lee, 2013: Dispersion and photochemical evolution of reactive pollutants in street canyons. Atmospheric Environment, 70, 98-107.

93. Ryu, Y.-H., and J.-J. Baik, 2013: Daytime local circulations and their interactions in the Seoul metropolitan area. Journal of Applied Meteorology and Climatology, 52, 784-801.

92. Lee, H., J.-J. Baik, and J.-Y. Han, 2013: Sensitivity of numerical solutions to time step in a nonlinear atmospheric model. Journal of the Korean Earth Science Society, 34, 51-58.

91. Ryu, Y.-H., J.-J. Baik, K.-H. Kwak, S. Kim, and N. Moon, 2013: Impacts of urban land-surface forcing on ozone air quality in the Seoul metropolitan area. Atmospheric Chemistry and Physics, 13, 2177-2194.

90. Ryu, Y.-H., J.-J. Baik, and J.-Y. Han, 2013: Daytime urban breeze circulation and its interaction with convective cells. Quarterly Journal of the Royal Meteorological Society, 139, 401-413.

89. Ryu, Y.-H., J.-J. Baik, and S.-H. Lee, 2012: Performance comparison of an urban canopy model under different meteorological conditions. Atmosphere, KMS, 22, 429-436.

88. Baik, J.-J., K.-H. Kwak, S.-B. Park, and Y.-H. Ryu, 2012: Effects of building roof greening on air quality in street canyons. Atmospheric Environment, 61, 48-55.

87. Han, J.-Y., and J.-J. Baik, 2012: Nonlinear effects on convectively forced two-dimensional mesoscale flows. Journal of the Atmospheric Sciences, 69, 3391-3404.

86. Ryu, Y.-H., and J.-J. Baik, 2012: Quantitative analysis of factors contributing to urban heat island intensity. Journal of Applied Meteorology and Climatology, 51, 842-854.

85. Park, S.-B., J.-J. Baik, S. Raasch, and M. O. Letzel, 2012: A large-eddy simulation study of thermal effects on turbulent flow and dispersion in and above a street canyon. Journal of Applied Meteorology and Climatology, 51, 829-841.

84. Han, J.-Y., J.-J. Baik, and A. P. Khain, 2012: A numerical study of urban aerosol impacts on clouds and precipitation. Journal of the Atmospheric Sciences, 69, 504-520.

83. Kwak, K.-H., and J.-J. Baik, 2012: A CFD modeling study of the impacts of NO_x and VOC emissions on reactive pollutant dispersion in and above a street canyon. Atmospheric Environment, 46, 71-80.

82. Kwak, K.-H., J.-J. Baik, S.-H. Lee, and Y.-H. Ryu, 2011: Computational fluid dynamics modelling of the diurnal variation of flow in a street canyon. Boundary-Layer Meteorology, 141, 77-92.

81. Ryu, Y.-H., J.-J. Baik, and S.-H. Lee, 2011: A new single-layer urban canopy model for use in mesoscale atmospheric models. Journal of Applied Meteorology and Climatology, 50, 1773-1794.

80. Kwak, K.-H., Y.-H. Ryu, and J.-J. Baik, 2011: Temporal and spatial variations of NO_x and ozone concentrations in Seoul during the solar eclipse of 22 July 2009. Journal of Applied Meteorology and Climatology, 50, 500-506.

79. Lee, S.-H., and J.-J. Baik, 2011: Evaluation of the vegetated urban canopy model (VUCM) and its impacts on urban boundary layer simulation. Asia-Pacific Journal of Atmospheric Sciences, 47, 151-165.

78. Grimmond, C. S. B., M. Blackett, M. J. Best, J.-J. Baik, S. E. Belcher, J. Beringer, S. I. Bohnenstengel, I. Calmet, F. Chen, A. Coutts, A. Dandou, K. Fortuniak, M. L. Gouvea, R. Hamdi, M. Hendry, M. Kanda, T. Kawai, Y. Kawamoto, H. Kondo, E. S. Krayenhoff, S.-H. Lee, T. Loridan, A. Martilli, V. Masson, S. Miao, K. Oleson, R. Ooka, G. Pigeon, A. Porson, Y.-H. Ryu, F. Salamanca, G. J. Steeneveld, M. Tombrou, J. Voogt, D. T. Young, and N. Zhang, 2011: Initial results from Phase 2 of the international urban energy balance models comparison. International Journal of Climatology, 31, 244-272.

77. Grimmond, C. S. B., M. Blackett, M. J. Best, J. Barlow, J.-J. Baik, S. E. Belcher, S. I. Bohnenstengel, I. Calmet, F. Chen, A. Dandou, K. Fortuniak, M. L. Gouvea, R. Hamdi, M. Hendry, T. Kawai, Y. Kawamoto, H. Kondo, E. S. Krayenhoff, S.-H. Lee, T. Loridan, A. Martilli, V. Masson, S. Miao, K. Oleson, G. Pigeon, A. Porson, Y.-H. Ryu, F. Salamanca, L. Shashua-Bar, G.-J. Steeneveld, M. Tombrou, J. Voogt, D. Young, and N. Zhang, 2010: The International Urban Energy Balance Models Comparison Project: First results from phase 1. Journal of Applied Meteorology and Climatology, 49, 1268-1292.

76. Princevac, M., J.-J. Baik, X. Li, H. Pan, and S.-B. Park, 2010: Lateral channeling within rectangular arrays of cubical obstacles. Journal of Wind Engineering and Industrial Aerodynamics, 98, 377-385.

75. Kim, J.-J., and J.-J. Baik, 2010: Effects of street-bottom and building-roof heating on flow in three-dimensional street canyons. Advances in Atmospheric Sciences, 27, 513-527.

74. Han, J.-Y., and J.-J. Baik, 2010: Theoretical studies of convectively forced mesoscale flows in three dimensions. Part II: Shear flow with a critical level. Journal of the Atmospheric Sciences, 67, 694-712.

73. Lee, S.-H., and J.-J. Baik, 2010: Statistical and dynamical characteristics of the urban heat island intensity in Seoul. Theoretical and Applied Climatology, 100, 227-237.

72. Baik, J.-J., S.-B. Park, and J.-J. Kim, 2009: Urban flow and dispersion simulation using a CFD model coupled to a mesoscale model. Journal of Applied Meteorology and Climatology, 48, 1667-1681.

71. Tang, W., G. Haller, J.-J. Baik, and Y.-H. Ryu, 2009: Locating an atmospheric contamination source using slow manifold. Physics of Fluids, 21, 043302.

70. Lee, S.-H., C.-K. Song, J.-J. Baik, and S.-U. Park, 2009: Estimation of anthropogenic heat emission in the Gyeong-In region of Korea. Theoretical and Applied Climatology, 96, 291-303.

69. Han, J.-Y., and J.-J. Baik, 2009: Theoretical studies of convectively forced mesoscale flows in three dimensions. Part I: Uniform basic-state flow. Journal of the Atmospheric Sciences, 66, 947-965.

68. Ryu, Y.-H., and J.-J. Baik, 2009: Flow and dispersion in an urban cubical cavity. Atmospheric Environment, 43, 1721-1729.

67. Park, Y.-S., and J.-J. Baik, 2008: Analytical solution of the advection-diffusion equation for a ground-level finite area source. Atmospheric Environment, 42, 9063-9069.

66. Kang, Y.-S., J.-J. Baik, and J.-J. Kim, 2008: Further studies of flow and reactive pollutant dispersion in a street canyon with bottom heating. Atmospheric Environment, 42, 4964-4975.

65. Han, J.-Y., and J.-J. Baik, 2008: A theoretical and numerical study of urban heat island-induced circulation and convection. Journal of the Atmospheric Sciences, 65, 1859-1877.

64. Kim, Y.-H., S.-B. Ryoo, J.-J. Baik, I.-S. Park, H.-J. Koo, and J.-C. Nam, 2008: Does the restoration of an inner-city stream in Seoul affect local thermal environment? Theoretical and Applied Climatology, 92, 239-248.

63. Kim, Y.-H., and J.-J. Baik, 2007: Structure and evolution of a numerically simulated thunderstorm outflow. Journal of Korean Earth Science Society, 28, 857-870.

62. Han, J.-Y., J.-J. Kim, and J.-J. Baik, 2007: Flow regimes of continuously stratified flow over a double mountain. Atmosphere, KMS, 17, 231-240.

61. Kim, S.-Y., H.-Y. Chun, and J.-J. Baik, 2007: Sensitivity of typhoon-induced gravity waves to cumulus parameterizations. Geophysical Research Letters, 34, L15814, doi:10.1029/2007GL030592.

60. Han, J.-Y., and J.-J. Baik, 2007: Influences of ice microphysical processes on urban heat island-induced convection and precipitation. Atmosphere, KMS, 17, 195-205.

59. Park, S.-B., and J.-J. Baik, 2007: An investigation of flow and pollutant dispersion in three-dimensional asymmetric street canyons using a CFD model. Journal of Korean Society for Atmospheric Environment, 23, 214-224.

58. Baik, J.-J., Y.-H. Kim, J.-J. Kim, and J.-Y. Han, 2007: Effects of boundary-layer stability on urban heat island-induced circulation. Theoretical and Applied Climatology, 89, 73-81.

57. Baik, J.-J., Y.-S. Kang, and J.-J. Kim, 2007: Modeling reactive pollutant dispersion in an urban street canyon. Atmospheric Environment, 41, 934-949.

56. Han, J.-Y., and J.-J. Baik, 2006: Seasonal predictability of typhoon activity using an atmospheric general circulation model and observed sea surface temperature data. Journal of the Korean Earth Science Society, 27, 653-658.

55. Shin, S.-E., J.-Y. Han, and J.-J. Baik, 2006: On the critical separation distance of binary vortices in a nondivergent barotropic atmosphere. Journal of the Meteorological Society of Japan, 84, 853-869.

54. Kim, J.-J., H.-J. Song, and J.-J. Baik, 2006: Modeling flow and scalar dispersion around Cheomseongdae. Wind and Structures, 9, 315-330.

53. Chun, H.-Y., I.-S. Song, and J.-J. Baik, 2006: Seasonal variations of gravity waves revealed in rawinsonde data at Pohang, Korea. Meteorology and Atmospheric Physics, 93, 255-273.

52. Kim, S.-Y., H.-Y. Chun, and J.-J. Baik, 2005: A numerical study of gravity waves induced by convection associated with Typhoon Rusa. Geophysical Research Letters, 32, L24816, doi:10.1029/2005GL024662.

51. Baik, J.-J., R.-S. Park, and J.-J. Kim, 2005: Dependency of the horizontal length of cavity region on Reynolds number and ridge asymmetry. Journal of the Korean Meteorological Society, 41, 473-479.

50. Kim, J.-J., and J.-J. Baik, 2005: Classification of flow regimes in urban street canyons using a CFD model. Journal of Korean Society for Atmospheric Environment, 21, 525-535.

49. Kim, J.-J., and J.-J. Baik, 2005: An investigation of flow and scalar dispersion in an urban area using a CFD model. Journal of the Korean Meteorological Society, 41, 733-749.

48. Kim, Y.-H., and J.-J. Baik, 2005: Spatial and temporal structure of the urban heat island in Seoul. Journal of Applied Meteorology, 44, 591-605.

47. Kim, J.-J., and J.-J. Baik, 2005: Physical experiments to investigate the effects of street bottom heating and inflow turbulence on urban street-canyon flow. Advances in Atmospheric Sciences, 22, 230-237.

46. Chun, H.-Y., I.-S. Song, J.-J. Baik, and Y.-J. Kim, 2004: Impact of a convectively forced gravity wave drag parameterization in NCAR CCM3. Journal of Climate, 17, 3530-3547.

45. Kim, Y.-H., and J.-J. Baik, 2004: Daily maximum urban heat island intensity in large cities of Korea. Theoretical and Applied Climatology, 79, 151-164.

44. Ho, C.-H., J.-J. Baik, J.-H. Kim, D.-Y. Gong, and C.-H. Sui, 2004: Interdecadal changes in summertime typhoon tracks. Journal of Climate, 17, 1767-1776.

43. Kim, J.-J., and J.-J. Baik, 2004: A numerical study of the effects of ambient wind direction on flow and dispersion in urban street canyons using the RNG k-ε turbulence model. Atmospheric Environment, 38, 3039-3048.

42. Baik, J.-J., J.-J. Kim, and H. J. S., Fernando, 2003: A CFD model for simulating urban flow and dispersion. Journal of Applied Meteorology, 42, 1636-1648.

41. Kim, J.-J., and J.-J. Baik, 2003: Effects of inflow turbulence intensity on flow and pollutant dispersion in an urban street canyon. Journal of Wind Engineering and Industrial Aerodynamics, 91, 309-329.

40. Sun, A., H.-Y. Chun, J.-J. Baik, and M. Yan, 2002: Influence of electrification on microphysical and dynamical processes in a numerically simulated thunderstorm. Journal of Applied Meteorology, 41, 1112-1127.

39. Baik, J.-J., and J.-J. Kim, 2002: On the escape of pollutants from urban street canyons. Atmospheric Environment, 36, 527-536.

38. Kim, Y.-H., and J.-J. Baik, 2002: Maximum urban heat island intensity in Seoul. Journal of Applied Meteorology, 41, 651-659.

37. Chun, H.-Y., and J.-J. Baik, 2002: An updated parameterization of convectively forced gravity wave drag in large-scale models. Journal of the Atmospheric Sciences, 59, 1006-1017.

36. Kim, J.-J., and J.-J. Baik, 2001: Urban street-canyon flows with bottom heating. Atmospheric Environment, 35, 3395-3404.

35. Kim, J.-J., J.-J. Baik, and H.-Y. Chun, 2001: Two-dimensional numerical modeling of flow and dispersion in the presence of hill and buildings. Journal of Wind Engineering and Industrial Aerodynamics, 89, 947-966.

34. Baik, J.-J., Y.-H. Kim, and H.-Y. Chun, 2001: Dry and moist convection forced by an urban heat island. Journal of Applied Meteorology, 40, 1462-1475.

33. Baik, J.-J., and J.-S. Paek, 2001: Relationship between vertical wind shear and typhoon intensity change, and development of three-predictor intensity prediction model. Journal of the Meteorological Society of Japan, 79, 695-700.

32. Chun, H.-Y., M.-D. Song, J.-W. Kim, and J.-J. Baik, 2001: Effects of gravity wave drag induced by cumulus convection on the atmospheric general circulation. Journal of the Atmospheric Sciences, 58, 302-319.

31. Chun, H.-Y., I.-S. Song, and J.-J. Baik, 2001: Effects of time-varying basic-state flow by cloud momentum flux on multicell-type storms. Journal of the Korean Meteorological Society, 37, 589-606.

30. Baik, J.-J., and J.-S. Paek, 2000: A neural network model for predicting typhoon intensity. Journal of the Meteorological Society of Japan, 78, 857-869.

29. Baik, J.-J., R.-S. Park, H.-Y. Chun, and J.-J. Kim, 2000: A laboratory model of urban street-canyon flows. Journal of Applied Meteorology, 39, 1592-1600.

28. Baik, J.-J., and J.-S. Paek, 2000: Performance test of back-propagation neural network in typhoon track and intensity prediction. Korean Journal of Atmospheric Sciences, 3, 33-38.

27. Yoo, J.-A., and J.-J. Baik, 1999: Flow regimes of two-dimensional, stratified flow over an isolated mountain. Journal of the Korean Meteorological Society, 35, 384-395.

26. Baik, J.-J., and J.-J. Kim, 1999: A numerical study of flow and pollutant dispersion characteristics in urban street canyons. Journal of Applied Meteorology, 38, 1576-1589.

25. Kim, J.-J., and J.-J. Baik, 1999: A numerical study of thermal effects on flow and pollutant dispersion in urban street canyons. Journal of Applied Meteorology, 38, 1249-1261.

24. Paek, J.-S., and J.-J. Baik, 1999: Initial vortex structure, symmetric and asymmetric circulations, and barotropic tropical cyclone motion. Journal of the Korean Meteorological Socity, 35, 201-214.

23. Baik, J.-J., and J.-S. Paek, 1999: Effects of the total relative angular momentum of initial vortex on barotropic tropical cyclone motion. Journal of the Korean Meteorological Society, 35, 215-226.

22. Chun, H.-Y., I.-S. Song, and J.-J. Baik, 1999: Some aspects of internal gravity waves in the multicell-type convective system. Meteorology and Atmospheric Physics, 69, 205-222.

21. Paek, J.-S., and J.-J. Baik, 1999: Roles of symmetric and asymmetric circulations in barotropic tropical cyclone motion. Journal of the Korean Meteorological Society, 35, 1-19.

20. Baik, J.-J., H.-S. Hwang, and H.-Y. Chun, 1999: Transient, linear dynamics of a stably stratified shear flow with thermal forcing and a critical level. Journal of the Atmospheric Sciences, 56, 483-499.

19. Baik, J.-J., H.-S. Hwang, and H.-Y. Chun, 1999: Transient critical-level effect for internal gravity waves in a stably stratified shear flow with thermal forcing. Physics of Fluids, 11, 238-240.

18. Chun, H.-Y., and J.-J. Baik, 1998: Momentum flux by thermally induced internal gravity waves and its approximation for large-scale models. Journal of the Atmospheric Sciences, 55, 3299-3310.

17. Baik, J.-J., and H.-S. Hwang, 1998: Tropical cyclone intensity prediction using regression method and neural network. Journal of the Meteorological Society of Japan, 76, 711-717.

16. Kim, Y.-H., and J.-J. Baik, 1998: Effects of background stability on density currents. Journal of the Korean Meteorological Society, 34, 154-168.

15. Baik, J.-J., and J.-S. Paek, 1998: A climatology of sea surface temperature and the maximum intensity of western North Pacific tropical cyclones. Journal of the Meteorological Society of Japan, 76, 129-137.

14. Baik, J.-J., and H.-Y. Chun, 1997: A dynamical model for urban heat islands. Boundary-Layer Meteorology, 83, 463-477.

13. Baik, J.-J., and H.-Y. Chun, 1996: Effects of nonlinearity on the atmospheric flow response to low-level heating in a uniform flow. Journal of the Atmospheric Sciences, 53, 1856-1869.

12. Baik, J.-J., and M. Takahashi, 1995: Sensitivity of the GCM-simulated large-scale structures to two cumulus parameterizations. Journal of the Meteorological Society of Japan, 73, 975-991.

11. Chun, H.-Y., and J.-J. Baik, 1994: Weakly nonlinear response of a stably stratified atmosphere to diabatic forcing in a uniform flow. Journal of the Atmospheric Sciences, 51, 3109-3121.

10. Oh, J.-H., Y. Noh, J.-J. Baik, and S.-M. Lee, 1994: Implementation of cloud-topped mixed layer in a general circulation model. Journal of the Korean Meteorological Society, 30, 615-630.

9. Rodgers, E. B., J.-J. Baik, and H. F. Pierce, 1994: The environmental influence on tropical cyclone precipitation. Journal of Applied Meteorology, 33, 573-593.

8. Baik, J.-J., S.-M. Lee, and C.-H. Cho, 1993: Examinations of convective processes representations and inertial stability in a tropical cyclone model. Journal of the Korean Meteorological Society, 29, 307-323.

7. DeMaria, M., J.-J. Baik, and J. Kaplan, 1993: Upper-level eddy angular momentum fluxes and tropical cyclone intensity change. Journal of the Atmospheric Sciences, 50, 1133-1147.

6. Baik, J.-J., 1992: Conceptualizations and high school earth science educational guides of tropical cyclone motion and development. Journal of the Korean Earth Science Society, 13, 419-433.

5. Baik, J.-J., 1992: Response of a stably stratified atmosphere to low-level heating – An application to the heat island problem. Journal of Applied Meteorology, 31, 291-303.

4. Baik, J.-J., M. DeMaria, and S. Raman, 1991: Tropical cyclone simulations with the Betts convective adjustment scheme. Part III: Comparisons with the Kuo convective parameterization. Monthly Weather Review, 119, 2889-2899.

3. Businger, S., and J.-J. Baik, 1991: An arctic hurricane over the Bering Sea. Monthly Weather Review, 119, 2293-2322.

2. Baik, J.-J., M. DeMaria, and S. Raman, 1990: Tropical cyclone simulations with the Betts convective adjustment scheme. Part II: Sensitivity experiments. Monthly Weather Review, 118, 529-541.

1. Baik, J.-J., M. DeMaria, and S. Raman, 1990: Tropical cyclone simulations with the Betts convective adjustment scheme. Part I: Model description and control simulation. Monthly Weather Review, 118, 513-528.