

CURRICULUM VITAE

Daewon W. Byun, Professor

Department of Geosciences and Department of Chemistry (Joint Appointment)

Director, Institute for Multidimensional Air Quality Studies

College of Natural Sciences and Mathematics

University of Houston, Houston, Texas 77204

Tel: (W) 713-743-0707, (H) 281-980-8781, Email: dbyun@mail.uh.edu

Education

Ph.D. Atmospheric Science, 1987: North Carolina State University, NC

M.S. Atmospheric Science, 1983: North Carolina State University, NC

B.S. Meteorology, 1977: Seoul National University, Korea

Professional Experience

Professor, Department of Geosciences and Chemistry (Joint Appointment), Univ. Houston, 2001 - Present

Physical Scientist, National Oceanic and Atmospheric Administration (NOAA), 1992 – 2001

Environmental Protection Agency (on assignment from NOAA), 1992 - 2001

Adjunct Professor, North Carolina State University, 1998 - Present

Senior Scientific Specialist, Computer Sciences Corporation, 1988 - 1992

Meteorologist, Environmental Research and Technology/ENSR, 1987 - 1988

Research Assistant, North Carolina State University, 1981 - 1987

Weather Officer, Navy Fleet Weather Center (R.O.K.), 1977 – 1981

Graduate Advisor for Ph.D. Students (UH, Rutgers University, UNC, NCSU, SNU, KNU, etc.)

Host and advisor to EPA and NOAA postdocs (3), international visiting scientists (4), and UH postdocs (5)

Workshop and meeting organization of multidisciplinary and multi-institutional projects

Review papers for various journals and proposals for federal and state agencies

Awards and Honors

2000 NOAA Air Resources Laboratory “Paper of the Year” Award (Byun 1999a &b)

1999 EPA Silver Medal Award for Superior Service (Development of Models-3 CMAQ)

1993 – 2000 Outstanding Performance Awards, NOAA (every year)

1991 Individual Recognition Award, Computer Sciences Corporation

1985 Elected as a member of Pi Mu Epsilon

1983 Elected as a member of Phi Kappa Pi

Achievements

Implementation and evaluation of Regional Acid Deposition Model (RADM)

Design and development of EPA’s Models-3 Community Multi-scale Air Quality

(CMAQ) modeling system (Science team leader of Models-3/MCAQ and project officer for related cooperative agreements)

One-atmosphere air quality modeling concept linking meteorology and chemistry (the idea is being realized in the NCAR/NOAA’s Weather Research and Forecasting model development.

Professional Associations

Director of the UH Institute for Multidimensional Air Quality Studies (IMAQS)

Science Board member of the NCAR and NOAA Weather Research and Forecasting (WRF) project

External Advisory committee of the Models-3 Community Modeling and Analysis System (CMAS)

Executive Board member of the TNRC’s Interim Science Steering Committee

Science Advisory Committee, Texas Environmental Research Center, HARC

Associate Editor, Journal of Environmental Informatics

AMS Committee, Meteorological Aspects of Air Pollution

American Meteorological Society, American Geophysical Union, Phi Kappa Pi, Pi Mu Epsilon

Theoretical and Applied Research Areas

Air pollution modeling, emissions and atmospheric chemistry

Meteorology and mesoscale dynamic

Boundary layer physics, turbulence and diffusion

Numerical algorithms for atmospheric transport and chemistry solvers

Environmental model evaluation techniques, sensitivity and uncertainty studies

Software engineering for science models and data

Invited Lectures and Seminars

1994: Invited speaker at the Eulerian Air Quality Modeling Workshop, Chuncheon, Korea

1996: Invited speaker at the Fourth Supercomputing Workshop of NIES, Tsukuba, Japan

1996: Invited seminar at the Korea Institute of Science & Technology, Seoul, Korea

1999: Lectures at the Workshop on Ozone Forecasting System for Seoul City, Korea

1999: Invited seminar and lectures at the Kangwon National University, Chuncheon, Korea

1999: Invited seminar at Program in Environmental Fluid Dynamics, ASU, Tempe, AZ

2000: Invited seminar at NIES, Tsukuba, and visiting scientist at Kyushu University, Japan

2000: Invited speaker at the Institute for Mathematics & Its Applications, Minneapolis, MN

2000: Invited speaker at the Houston Air Quality Workshop, Houston, TX

2000: Invited seminar at Earth System Science Center, University of Alabama at Huntsville, AL

2000: Invited speaker at the Workshop on Air Quality Modeling Challenges, Taiwan

2000: Invited seminar and lectures at the University of Houston, Houston, TX

2001: Invited seminar at the University of Iowa, Iowa City, IA

2001: Invited seminar at the ASU, Tempe, AZ

2001: Invited seminar at Texas A&M, College Station, TX & at Lamar University, Beaumont, TX

2002: Invited seminar at Pusan University, Korea & Invited seminar at Kyushu University, Japan

2003: Invited paper at Community Air Quality Modeling Workshop, Japan

Selected List of Recent Publications

Byun, D.W., and coauthors, 2003, Information infrastructure for air quality modeling and analysis: Application to the Houston-Galveston ozone nonattainment area., *J. of Env. Informatics* (accepted for publication)

Byun, D. et al. 2003, *Eulerian Dispersion Models*. Chapter 10 of *AIR QUALITY MODELING - Theories, Methodologies, Computational Techniques, and Available Databases and Software. Vol. I - Fundamentals* (P. Zannetti, Editor). Published by The EnviroComp Institute (<http://www.envirocomp.org/>) and the Air & Waste Manag. Assoc. (<http://www.awma.org/>).

Byun, D.W. and coauthors. 2003: EPA's Third Generation Air Quality Modeling System: Description of the Models-3 Community Multiscale Air Quality (CMAQ) Model. (submitted to *J. of Mech. Review*)

Byun, D.W. and S.-M. Lee, 2002: Numerical advection of trace species under non-uniform density distribution. In the IMA volume on Air Quality Modeling, ed. D. Chock and G. Carmichael.

Byun, D.W., 1999a: Dynamically consistent formulations in meteorological and air quality models for multi-scale atmospheric applications: Part I. Governing equations in generalized coordinate system. *J. of Atmos. Sc.*, Vol 56, 3789-3807.

Byun, D.W., 1999b: Dynamically consistent formulations in meteorological and air quality models for multi-scale atmospheric applications: Part II. Mass conservation issues. *J. of Atmos. Sc.*, Vol 56, 3808-3820.

Alapaty, K.A., J.E. Pleim, S. Raman, D.S. Niyogi, and D.W. Byun, 1997: Simulation of atmospheric boundary layer processes using local- and nonlocal-closure schemes. *J. of Appl. Meteor.* Vol 36, 214-233.

Zhang, M., I. Uno, S. Sugata, Z. Wang, D. Byun, and H. Akimoto, 2002: Numerical study of boundary layer ozone transport and photochemical ozone production in east Asia in the wintertime. *Geophys. Res. Letters*. Vol. 29, NO. 11, 10.1029/2001GL014368