

Richard Dunk

Research Scientist

Rutgers Center for Environmental Prediction

Education

- B.A. (1967): Science Education, Glassboro State College (Rowan University).
- B.S. (1972): Environmental Science (Meteorology), Rutgers University.
- M.S. (1976): Meteorology, Rutgers University.
- Ph.D. (1993): Environmental Science, Rutgers University.

Experience

- Science Teacher (1967-1968): East Brunswick Public Schools.
- Meteorologist (1968-1971): US Army.
- Environmental Engineer (1972-1974): Research Cottrell.
- Sr. Environmental Engineer (1974-1985): US Metals Refining Co.
- Environmental Manager and Meteorologist (1986-1990): AMAX, Inc.
- Sr. Environmental Scientist and Consulting Meteorologist (1990-2002): GPU, Inc.

Professional Organizations

- American Meteorological Society (AMS).
- National Council for Industrial Meteorologists (NCIM).
- Air and Waste Management Association (AWMA).

Certifications

- Certified Consulting Meteorologist (CCM).
- Certified Teacher (Science Education), NJ State Board of Education.
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Awards and Publications

- Graduated Rutgers University with “Highest Honors”.
- Received EPRI (Electric Power Research Institute) Innovative Design Award for developing a *Predictive Emissions Monitoring System for Power Plant Operations*.
- Dunk, R. (1979): *Prediction and Air Quality Impact Assessment of Fugitive Emissions Associated with Copper Smelter Operations*, paper presented at the annual meeting for the Association of Industrial and Chemical Engineers (AIChE).
- Ratcliff, M., Petersen, R., Dunk, R., and DeToro, J. (1996): *Comparison of Wind Tunnel and ISDM Model Simulations of Sea Breeze Fumigations*, paper presented at the annual AWMA meeting.
- Served on various EPRI committees and task force groups associated with atmospheric dispersion modeling and meteorological monitoring.

Current Research

- Investigation and development of probabilistic modeling and prediction methods for determining contemporaneous and “lagged” relationships among climate indicators (e.g., NAO indices based on geopotential heights, composited western North Atlantic SST anomalies, soil moisture anomalies, analog year analysis, etc.) and climate variables (e.g., air temperatures, including *extreme* temperatures, over the Mid-Atlantic region). This regional approach will utilize multivariate statistical methodology incorporating discriminant classification, time series, regression, and extreme value analyses. Once statistical and potential inherent physical relationships are established, a selected numerical climate model will be used to evaluate these relationships.
- Study and evaluation of NJ sea breeze dynamics including internal boundary layer development, inland propagation, effects of coastal upwelling, structure of the sea breeze circulation and associated wind/temperature gradient and vertical profile configurations. The implications of this research will be to improve coastal observations and associated weather forecasts for coastal areas that impact various governmental, industrial, and recreational activities. Also, improved applications for air quality assessment within and adjacent to coastal areas should result from this research.
- Evaluate and implement improved in-situ and remote meteorological monitoring systems that will represent NJ’s diverse climate zones.