

EDUCATION:

Ph.D., Meteorology, University of Wisconsin, Madison, WI. 1983

M.S., Meteorology, New York University, New York, NY. 1973

B.A., Mathematics, University of Miami, Coral Gables, FL. 1971

SUMMARY:

Dr. Nierow has supported WeatherExtreme as a Forensic Meteorologist and Computer Sciences Corporation as a Senior Meteorologist. He was also involved with the Booz Allen Hamilton's International Aviation Team as a Subject Matter Expert (SME) for weather. In this role, he was assisting the Federal Aviation Administration (FAA's) and National Weather Service (NWS) weather programs. Dr. Nierow was Assistant Chief Meteorologist /System Engineer for the FAA for over 10 years. This included working with government and non-government personnel in developing research requirements and proposing solutions for enhancements to current and new FAA weather systems. He has over 25 years experience as a Program Manager in weather training and research for the NWS. In addition, Dr. Nierow was a forecaster at the NWS Washington Office. These positions, along with his doctorate in meteorology, have given him a broad and diversified knowledge in weather training and research, system engineering, and experience working with different government and non-government agencies.

EXPERIENCE:

Meteorology and Oceanography Independent Consultant

August 2022 - Present

WeatherExtreme Ltd

December 2012-August 2022, Senior Atmospheric and Oceanic Consultant

Forensic Meteorologist:

- Reconstructed past weather events to determine if weather was a factor in various aircraft accidents.
- Researched data for aviation case preparation reports, utilizing various sources of data, including aviation forecasts, surface and upper air observations, and the interpretation of satellite and NEXRAD data.
- Submitted findings for their use in court.

Computer Sciences Corporation

December 2011-December 2012, Senior Meteorologist

- Developed requirements for AWIPS II and visited NWS Forecast offices to obtain their input.
- Provided various recommendations and methodologies in training NWS forecasters on AWIPS.
- Assisted in writing proposals for future NOAA awards.

Booz Allen Hamilton, McLean, VA

March 2008–November 2012, Senior Consultant &

Weather Subject Matter Expert (SME) for Booz Allen

- **Supported the Next Generation Air Transportation System (NextGen) program For the Federal Aviation Administration (FAA)**

- Developed weather documentations for NextGen weather by writing various sections, providing input, and making modifications.
- Worked with the NWS and FAA in writing and editing various 4D Weather Data Cube documents. This included defining the 4D Weather Single Authoritative Source (SAS) concepts, and the weather elements that will be input to the 4D Weather Data cube.
- Prepared an Aviation Weather class that was given to FAA engineers. This class discussed basic aviation weather and the affect weather hazards have on the various stages of flight. Finally, a section was presented on how the NextGen Weather program mitigated these hazards. This class was also given to JPDO and BAH personnel.
- **Federal Emergency Management Agency (FEMA) supporting the Catastrophic Planning group.**
 - Developed a Space Weather Hazard Analysis presentation and report. It discussed:
 - The hazards associated with space weather events.
 - The effect on the health and welfare of the American public.
 - Recommendations on potential next steps that should be done to mitigate space weather hazards.

Federal Aviation Administration (FAA), Air Traffic Organization and Planning (ATOP),

Dr. Nierow was the Assistant Chief Meteorologist /System Engineer (January 1998 to December 2007) for the FAA.

- By utilizing system engineering principles and practices, transferred applied meteorological research from various agencies into FAA operations. Developed oceanic and en-route convective forecast products that several agencies have evaluated. These products have demonstrated improvement in the forecasting of en-route and oceanic thunderstorms for FAA/Airline personnel and NWS meteorologists. These products have also provided direct benefits to several government agencies by enhancing collaborative decision-making and situational awareness between meteorologists, controllers, and pilots. Received outstanding ratings for developing an oceanic lightning product that is operational and being used for aircraft flight operations.
- Served as a Subject Matter Expert to the FAA on meteorology and weather systems. Employed meteorological expertise and system engineering theory while supporting the FAA with their work on architecture engineering. Developed and modified the System Capabilities document for weather systems. Authored several papers defining the capabilities for convective weather for terminal, en-route, and oceanic domains and presented these papers at AMS conferences.
- As FAA team lead for the Lightning Technical Evaluation Committee (TEC), provided scientific input to the group in awarding the enhanced lightning contract to a vendor. Collaborated with the FAA Research and Requirements Divisions and other agencies (NWS, Department of Defense, and NASA) to determine which vendor met and exceeded FAA and other agencies' lightning requirements.
- Participated on a Space Weather Technical committee. Contributed to writing various documents (ConOps) defining the requirements for space weather information and how they will be incorporated into the operational decision-making process.
- Since engineers and scientists who develop and test FAA Weather Systems have very little or no weather knowledge, Dr. Nierow initiated and created Aviation Weather Courses (basic and advanced) for FAA technical and non-technical personnel. The basic course focused on fronts/jet streams, thunderstorms, and aviation hazards. The advanced course discussed FAA weather systems, meteorological weather research and how weather impacts the National Airspace System (NAS). It was intended for scientists and engineers. Both of these courses have been converted into interactive resources through the online FAA training courses. In recognition for the development of these on-line training

weather courses, he received several commendations and cash awards. He also presented both “live” courses to over 500 FAA employees since the fall of 1998 to FAA Headquarters, FAA Centers, and Regions.

- Assisted in the development of the System Engineering Manual (e.g., requirements management, functional analysis, etc.), which described the proper application of SE elements within the FAA.

General comment: While working at the NWS and FAA, I utilized system engineering practices and advanced meteorology principles to transfer applied meteorological research for NWS and FAA operational personnel.

- Developed oceanic and en-route convective forecast products that several agencies have evaluated. These products have demonstrated improvement in the forecasting of en-route and oceanic thunderstorms for FAA/Airline personnel and NWS meteorologists. These products have also provided direct benefits to several government agencies by enhancing collaborative decision-making and situational awareness between meteorologists, controllers, and pilots
- Provided NWS forecasters with the latest advances in research meteorology and was responsible for incorporating the research results into forecast operations.

Modeling

- Tested, validated, and made enhancements to the algorithms that are used in the vertical boundary layers of mesoscale and microscale models to predict temperature, moisture, and wind profiles. This effort led to numerous awards for improving the freezing rain/snow forecasts for east coast winter storms.
- Utilized subjective techniques and objective (weather model) research results from NWS scientists and other sources and applied them to operational forecasting. Directed computer personnel and operational meteorologists in testing, evaluating, and implementing NWS' automated model and man-made forecast verification programs.
- Developed and utilized algorithms to test and validate regional and climate prediction models.
- My Ph.D. thesis was entitled: A Comparison of NMC models (1977) on Precipitation Forecasts for East Coast Cyclogenesis. I used my own version of several NCEP's operational models and was able to modify and run them again to analyze differences in model forecasts. Some of my findings and recommendations from this research were incorporated into the operational models to improve forecasting east coast cyclogenesis.

Forecasting

- **Forecaster at the NWS NCEP Heavy Precipitation Branch.**
- Issued forecasts of accumulating (quantitative) precipitation, heavy rain, heavy snow, and areas with the potential for flash flooding. The Quantitative Precipitation Forecast (QPF) products were primarily directed to the NWS forecast offices to aid them in their local forecasts. The heavy snow forecast products, serve as a coordinating mechanism for the NWS winter storm watch and warning program.
- With access to NCEP model forecast data, WSR-88D/Doppler radar data, and satellite estimates, I employed this data for use in preparation of all precipitation forecasts. In addition, meteorological reasoning discussions were regularly written and issued with the forecast packages to explain and support the forecasts.
- **Forecaster at the NWS Washington Forecast Office.**

- Composed operational forecast products employing numerical model forecasts for the Aviation, Marine, and Public programs. Provided the public with weather watches and warnings (e.g., severe weather, flash floods, and aviation hazards).
- Developed programs to enhance the forecast accuracy of severe weather, winter storms, aviation forecasts, and flash floods. In particular I developed programs to determine the type of precipitation (rain, snow, sleet, and freezing rain) that will affect the highways. Also, produced forecast algorithms to enhance the prediction of the onset as well as the end of precipitation (frozen and non- frozen).

Training

- Developed the official "NEXRAD Training Radar" document that was utilized in every NWS Forecast Office. Coordinated this effort with the research centers of the federal government and the NWS forecasters. The document provided technical expertise on the structure and development of severe storms, Doppler radar concepts, forecasting techniques, and the limitations and advantages of all the NEXRAD algorithms.
- Planned and conducted all aspects of training, which pertained to operational forecasting, severe thunderstorms radar interpretation, numerical weather prediction models, and satellite meteorology.
- Developed courses and exams for NWS meteorologists in employing the latest techniques in aviation forecasting, utilizing radar and satellite meteorology, and understanding how to use weather models for forecasting. Initiated and conducted weather classes (from hurricanes to winter storms) for children (elementary to high school). Judged several high school science fairs and taught a basic weather class for the NWS Observer Program.
- Prepared various training courses on the latest NWS techniques in forecasting severe and aviation weather for NWS Eastern Region Forecast Offices. These courses were also presented to the students and faculty at the University of Wisconsin, Madison, WI.

Air pollution

- At New York University, I completed fifteen credits of air pollution meteorology.

Oceanography

- M.S., Meteorology and Oceanography, New York University, New York, NY. 1973
- Tested and validated NCEP's hurricane and oceanographic models. In particular, worked with NCEP personnel on improving ocean wave forecasts from NOAA models.