U.S. DEPARTMENT of COMMERCE Office of the Secretary
Office of Human Resources Management

Meteorologist (Science and Operations Officer) 13

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I. INTRODUCTION

This position is that of a Science and Operations Officer at the National Weather Service (NWS), Weather Forecast Office (WFO). The incumbent serves as the WFO technical director and as the principal and senior scientific advisor to the WFO Meteorologist-in-Charge (MIC) and WFO staff. The position's primary focus is on the assurance of the technical integrity of all hydrometeorological products and services provided by the WFO. The incumbent is fully responsible for initiating, planning, coordinating, and overseeing the transfer of new and emerging scientific technologies and techniques from the research community to the operational weather forecast and warning environment. This is accomplished through three primary SOO activity areas: leadership of technology transfer and scientific development efforts; the evaluation and improvement of the technical and scientific merits of WFO operational products and forecast techniques; and, the evaluation and professional development and enrichment of WFO staff.

II. MAJOR DUTIES AND RESPONSIBILITIES

1. Technology Transfer/Development Activities:

- Collaborates with the WFO Meteorologist-in-Charge (MIC) and regional staff in determining the need for local WFO studies to be undertaken by WFO staff, such as algorithm development projects, hydrometeorological studies to develop or modify WFO warning and forecast procedures and techniques for the mesoscale environment, and risk reduction analyses. Develops, leads, and conducts local studies and guides and advises WFO staff during their participation. Identifies and formulates hypotheses for these specific study efforts, assigns projects to staff, and evaluates study results for potential application at the WFO. Coordinates the conduct and results of such studies with regional staff to ensure consistency, economy of effort, the avoidance of any duplicative efforts, and for the wider applicability of results.

- Coordinates and consults with scientists in the NWS, NOAA, other agencies, academia and the private sector, to identify and/or develop opportunities for enhanced forecast procedures and techniques to be used at the WFO. Integrates new scientific/technological advances and techniques into WFO operational procedures and operations.

- Assesses current and future WFO staff training needs necessary to integrate emerging advances in the science and technology used by the WFO in its operations. Develops plans, strategies, methods and materials to meet these training needs, and implements these on a local basis.

- Trains WFO staff or arranges for and facilitates necessary WFO staff training and professional development activities to enhance staff proficiency in mesoscale and synoptic operational forecasting and related subjects. Ensures appropriate training documentation and certification.

2. Evaluation and Improvement Activities.

- Evaluates the technical and scientific adequacy of all WFO hydrometeorological products and services by conducting a product verification effort targeted to improving the scientific basis of products produced. Devises local evaluation methodologies and develops evaluation reports. Identifies scientific shortcomings, recommends improvement actions to the MIC, and devises plans for implementing those corrective actions.

- Manages the WFO participation in nationwide evaluation programs. Ensures accurate verification data and analyses and facilitates the development of local verification procedures designed to assist national and local programs, developmental efforts, and new technology implementation.

- Systematically monitors and evaluates NEXRAD products and the effectiveness and applicability of algorithms developed for local use with NEXRAD output. Collaborates with the NEXRAD OSF staff to refine radar products and algorithms to maximize their local use and applications.

3. Performs the function of Senior Forecaster on shift duty approximately 25% of the time.

- During an assigned shift, the incumbent is responsible for the quality and timeliness of all warning, forecast, and service products prepared and issued by the WFO operational staff. Reviews, develops, and/or approves public, aviation and other weather forecasts, information and products prepared by shift staff before issuance.

- Exercises judgment on behalf of the Meteorologist-in-Charge (MIC) as to the need for additional staff during the shift or in preparation for the upcoming shift. Handles general office administrative matters which may occur on shift. Exercises call-back authority and authorizes expenditures of funds for overtime for additional or augmenting WFO staff, as appropriate.

- Supervises and/or provides hydrologic service products for assigned WFO area, including forecasts and warnings of floods and river stage for the public and numerous users dealing with water resources and/or land management, transportation, emergency management, river and flood plain control, etc.

4. Routinely collaborates with the MIC in assessing subordinate staff performance from a scientific and technical perspective. Formulates and/or provides input to performance ratings of subordinate staff and recommends recognition as appropriate.

5. When designated, acts for the MIC during his/her absence, with full technical, managerial, and administrative responsibility for WFO programs, products, and services.

III. FACTOR LEVELS

Factor 1 – Knowledge Required by the Position

- Mastery of advanced theoretical meteorology, including the dynamics of the atmosphere, mesoscale meteorology, and the application of computer methods of numerical weather analysis and prediction.

- Mastery of applied meteorology, equivalent to several years of forecasting experience in the more challenging of forecast situations or environments.

- Knowledge of the principles and theories of hydrology and the hydrologic characteristics of rivers, streams, and drainage basins in the forecast area sufficient to enable incumbent to perform the hydrologic service program duties assigned to the WFO.

- Detailed knowledge of applied research methods and data management techniques to enable the incumbent to define and participate in local development efforts and to incorporate the latest advances into the WFO forecast and warning programs. Knowledge of computer science principles to implement or modify applications software is required.

- Thorough knowledge of training principles and methods and skill in the application of presentation techniques and various instructional media, including computer-based instruction.

- In-depth knowledge of NWS operational procedures and instructions, and real-time guidance products pertinent to the production of weather forecasts and services, river and flood forecasts, and other special purpose products.

- Thorough knowledge of operational characteristics of complex electronic and electro-mechanical equipment utilized in data acquisition, communications, and service programs assigned to the WFO. This includes the meteorological skills necessary to properly utilize sophisticated Doppler weather surveillance radar equipment and to interpret and apply its output in a real-time operational environment.

- Knowledge of statistical methods and standard techniques used in assessing forecast and warning accuracy.

- A highly advanced level of knowledge of aviation meteorology for the production of specialized aviation forecasts and advisories for the aviation community, for guidance of National Weather Service and FAA pilot briefers, and for special users, such as balloonists, soaring clubs, crop dusters, meteorological staffs at FAA ARTCC (CWSU), etc.

- Proven skill in public speaking and in technical writing, and ability in applying tact and diplomacy to public contact situations.

- (If appropriate) Advanced knowledge of marine meteorology and/or tropical meteorology with special emphasis on hurricanes and/or coastal flooding.

- (As appropriate) Advanced knowledge of meteorological principles pertaining to other assigned special programs, such as agricultural, and fire weather, to provide forecast products and expert advice and guidance/performance to specialized users.

Factor 2 – Supervisory Controls

The incumbent operates under the general guidance/supervision of the MIC. However, the incumbent plans and acccomplishes most tasks in an independent fashion, with wide latitude for the exercise of professional judgment and delegated authorities. The operational forecasting work can be reviewed only after the fact for its effectiveness and/or consistency with all of the efforts of the WFO and surrounding NWS offices. The incumbent operates with an extraordinary degree of freedom in the evaluative and developmental work he/she performs. The incumbent is solely responsible for the results of evaluative, improvement and developmental work.

Factor 3 - Guidelines

Existing guidelines provide only a broad framework for conducting assigned functions. The majority of assignments for this position will have little precedent or guidelines as the application of new technology will place the incumbent at the cutting edge of many aspects of the science. The incumbent must exercise originality, creativity, and judgment to devise the best approaches for new areas of development and/or application. Only general guidance is available from regional science advisors or national headquarters development scientists.

Operational forecasting work has equally as general guidelines, which provide definition of format of forecasts, forecast and warning language which will be universally accepted and understood, conditions for warnings versus advisories, etc. Numerical and graphic guidance are currently applicable in terms of assessing synoptic scale weather systems, but their use is rapidly expanding to mesoscale systems.

The incumbent's professional expertise is the primary tool for accomplishing the work. He/she is expected to be frequently faced with new and unusual and non-standard situations, where the application of sound judgment is essential. Opportunities for techniques and services improvement and development activities abound.

Factor 4 - Complexity

The work is of a high order, of magnitude of complexity, which requires a masterful and diverse background of combined experience in operational forecasting, training and professional development, computer techniques, forecast techniques research and development, high interpersonal and communications skills, and analytical capabilities. The work itself is a highly unique blend of activities which demand a very high level of professionalism. Innovation is a key characteristic required by this position, which must be coupled with the ability to plan, develop, and accomplish assignments in a fairly rapid manner.

The responsibilities of working as a Senior Forecaster alone bear a requirement for a highly unique set of skills to match the highly complex arena of mesoscale forecasting and warning. Such demanding work also requires that the incumbent have a good understanding of the working procedures, needs, jargon, and problems of various types of users in order to understand how scientific advances may help the overall public forecast and warning suite of products.

Factor 5 – Scope and Effect

Accurate, useful, effective, and timely forecasts and warnings are essential to the safety of the public and can prevent the loss of life and property in extreme events such as tornadoes and flash floods. Products issued by the WFO provide day-to-day guidance to the public and specialized users, and can have a significant impact on the area's economy.

The quality of the incumbent's performance in the development of local techniques which will enhance forecast accuracy and reliability has a direct and major impact on the effectiveness, usefulness and enhancement of NWS programs in the WFO area and on the ability of local community leaders and citizens served to take action to forestall or mitigate significant weather threats of damage and/or injury to life and property.

Factor 6 – Personal Contacts

External contacts include state and local officials with responsibilities for dealing with community response to weather threats and natural disasters. This may include elected officials such as mayors, governors, agency

heads, etc. Contacts are established and maintained with research scientists in the university/academic community, and with researchers in professional atmospheric science organizations, such as UCAR/NCAR, the AMS, etc.

Intra-agency contacts are: (1) with employees in the WFO, (2) with employees at nearby NWS offices, (3) with regional or headquarters staff, (4) with meteorologists at National Centers (Hurricane, Severe Storm, NMC), and, (5) with RFC hydrologists.

Contacts with other agencies include the FAA, FEMA, State emergency management, environmental and air pollution agencies, NASA, Corps of Engineers, agricultural agencies, community action, other special purpose groups and cooperative storm spotters, the Coast Guard, the EPA, and the Forestry Service.

Contacts are made with the general public, citizens groups, civic organizations, the mass news media, and other specialized users.

Factor 7 – Purpose of Contacts

To provide weather and hydrologic information to the general public and to warn the public and "action agencies" of the imminent threat of natural disasters of a meteorological or hydrological nature.

Intra-agency contacts are to coordinate and to consult on local research projects and developmental efforts.

Contacts with state and local officials are to assist and advise them in the event of severe weather events in order to institute precaution for the safeguarding of life and property.

Press, radio and TV contacts are to coordinate the routine dissemination of public and marine forecast and forecast weather conditions.

Contacts with other agencies are to provide specialized support for aviation (FAA), fire weather (USFS, BLM, or State Forestry) air pollution (EPA and state agencies), and others, as well as collaboration with researchers and other scientists.

Factor 8 – Physical Demands

The work is generally sedentary, although there carrying of bulky projectors and other informational materials is occasionally required, along with some light travel. Routine duties require meeting tight deadlines.

Additionally, rotating shift work is occasionally required with the WFO in operation 24 hours a day, seven days a week. During periods of threatening weather or rapidly changing weather conditions, the increase in workload and the necessity for rapid dissemination of weather warnings and updates requires periods of acute mental alertness and produces considerable mental stress. Adverse weather conditions often require the incumbent to work hours longer than the usual shift, adding to mental and physical stress.

Factor 9 – Work Environment

The work environment most closely resembles that of an office
with added specialized equipment.

FAIR LABOR STANDARDS ACT (FLSA)

The determination has been made that the duties of this position reflect professional responsibilities; therefore, this position is EXEMPT under the Fair Labor Standards Act.
