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

Meteorologist 13 (Hydrometeorological Analysis and Support Forecaster)

GS-1315-13 or GS-1340-13

INTRODUCTION

This position is located in one of thirteen River Forecast Centers (RFC). The RFC provides hydrologic/hydrometeorologic forecast and guidance products along with other forms of support to NWS offices in its area of responsibility, and to non-NWS users concerned with the management and control of water. Emphasis on hydrometeorology is being increased at each RFC and other NWS offices to capitalize on the interrelated aspects of operational hydrology and meteorology in order to better forecast hydrologic events spanning a variety of time scales. The goal of this emphasis is to mitigate the effects of dangerous flood events and improve the management of valuable water resources.

The complexity of the center's mission and operation; its large area of responsibility covering several states, one or more major river basins, and several WFO areas; the use of state of the art hydrometeorological technologies such as WSR-88D; and the interdependencies between the fields of meteorology and hydrology require individuals who perform new hydrometeorological functions to enhance and expand on the traditional hydrologic forecast operations of each RFC.

The forecast staff at the RFC is made up of Hydrologic Forecasters whose grades range from entry level up to the senior level along with three HAS Forecasters. The Senior HAS Forecaster performs the lead RFC role in the area of integrating hydrometeorological information and forecasts into the daily operations of the center.

DUTIES

The incumbent is one of three RFC forecasters responsible for the Hydrometeorological Analysis and Support (HAS) function of the RFC who also serves as the senior individual performing this function in the center. The incumbent leads the effort to facilitate effective utilization of large volumes of hydrometeorological information and forecast products in order to capitalize on the technological improvements, scientific advances, and the WFO field office structure in the modernized NWS. In addition to performing operational HAS duties, the incumbent is responsible for serving as the program leader for the RFC's HAS activities. The Senior HAS Forecaster also guides and initiates the implementation of new hydrometeorological operations and procedures at the RFC and ensures that the other HAS forecasters are proficient at using them on a routine basis. Complementing the hydrologic support effort of other RFC staff, HAS Forecasters have the primary role in providing hydrometeorological support to the WFOs within an RFC's area of responsibility. HAS Forecasters interact and coordinate with the national centers, other RFCS, and WFOs to provide hydrometeorological data and forecasts for input to hydrologic forecast models. They provide hydrometeorological guidance products for the RFC service area. HAS Forecasters also support hydrometeorological training activities for the serviced WFOS, as well as for other RFC staff. Under the direction and oversight of the Hydrologist In Charge (HIC) and Development and operations Hydrologist (DOH), the Senior HAS Forecaster uses his/her hydrometeorological knowledge and experience to develop, implement, and maintain means by which these support, interaction, and training functions are accomplished.

Specific duties include:

1. Overall program leadership for the HAS activities conducted at the RFC.

o Monitor the process by which HAS functions are performed by other personnel, identify problem areas where procedural modifications will benefit RFC operations, and specify necessary improvements.

o Provide guidance and direction on procedures that must be followed when performing daily HAS functions.

2. Analysis and assimilation of real-time hydrometeorological data using operational hydrometeorological expertise in conjunction with advanced processing techniques, data sources, and equipment to:

o Perform interactive quality control and mosaicing of WSR-88D-based precipitation fields for use in operational forecast system.

o Override the use of WSR-88D-based estimates, as necessary, based on the analysis of data from ground-based sensors and satellites.

o Perform subsequent re-analysis of portions of the mosaiced fields or analysis of gage-only data to provide alternative precipitation estimates.

3. Assimilation and quality control of hydrometeorological forecasts for input to the RFC operational forecast system, including the following:

o Perform mosaicing of Quantitative Precipitation Forecasts (QPF) for the RFC area of responsibility.

o Perform mosaicing of temperature forecasts for the RFC area of responsibility.

o Perform mosaicking of forecasts for other hydrometeorological variables (e.g., wind, humidity), when advanced modeling technologies are implemented which require this input.

4. Production of forecast and guidance products for the RFC area of responsibility using meteorological and hydrological expertise to:

o Analyze potential for future flooding in the RFC area and to generate flood potential discussion products describing the general implications of the river forecasts produced by the RFC and the potential for various types of flooding.

o Analyze effects of observed precipitation and other hydro-meteorological phenomena on river flows and to generate daily hydrometeorological situation discussion products describing impacts of recent events on river flows, including droughts and other events that are not of sufficient magnitude to cause rivers to reach flood stage.

5. Perform operational hydrologic forecasting shifts on an occasional rotation with other hydrologic forecasters.

6. Perform hydrometeorological verification activities on QPFs and temperature forecasts used in the RFC operational forecast system.

7. Serve as a functional bridge between the RFC and operations at all WFOs in the RFC area.

o Monitor and evaluate hydrometeorological operations at the RFC and at individual WFOs to determine and recommend improvements in two-way exchanges of support between the RFC and WFOs throughout the service area.

o When necessary, participate in RFC effort to provide on-call hydrologic advice to WFO forecasters.

o Provide hydrometeorological training to RFC staff under direction of the DOH. Support cross-training for WFO staffs as recommended by the Science and operations Officers (SOO) of the WFOs in the RFC area.

8. Under the direction and oversight of the HIC and DOH, lead the development and improvement of hydrometeorological operations and procedures used by the RFC and WFOS, with the goal of improving forecast accuracy and operational efficiency.

o Identify potential improvements in WFO and RFC procedures used to provide or assimilate hydrometeorological data and forecasts for use in operational hydrologic procedures. Distribute the workload involved with development of new hydrometeorological techniques among him/herself and the other HAS Forecasters.

o Participate in ongoing NWS effort to improve QPF technology. Use verification statistics to analyze QPF error tendencies and collaborates with other personnel to achieve required improvements.

KNOWLEDGE REQUIRED

This position combines the sciences of hydrology and meteorology in order to better forecast and manage water resources by focusing on the relationships between precipitation and other weather phenomena and hydrologic events. The incumbent must possess:

o Professional knowledge of either hydrology or meteorology, plus a basic knowledge of the other discipline, described as follows:

Professional Meteorology

- Knowledge of theoretical and applied meteorology, especially in the areas of radar meteorology and precipitation studies. A basic level of applied hydrology, including hydrologic modeling, is also required.

Professional Hydrology

- Knowledge of theoretical and applied hydrology, especially in the area of hydrology/hydraulic principles as they apply to hydrologic modeling and operational river forecasting. A basic knowledge of applied meteorology is also required.

The incumbent may be qualified as a hydrometeorologist through formal education or a combination of education and on-the-job experience. A minimal educational background is at the Bachelor's level or equivalent.

o Knowledge of WFO operations and an understanding of the complexity of hydrologic characteristics at WFO boundaries.

o Knowledge of current QPF technology and its associated application to hydrologic forecasting.

o Knowledge of NWS/NOAA/DOC policies and objectives as they apply to RFC operations and WFO hydrometeorological operations.

o Ability to communicate effectively through writing and public speaking is required. Text guidance products are issued two or more times per day and can be lengthy during periods of significant hydrologic activity.

SUPERVISORY CONTROLS

The incumbent's immediate supervisor is the HIC. The incumbent works in close coordination with all RFC staff, especially the DOH and Senior Hydrologic Forecasters. The incumbent's work and accomplishments are reviewed for accomplishment and impact on the RFC mission and operations.

GUIDELINES

The incumbent's performance has a significant impact on RFC operations. Guidelines used include appropriate reference materials such as operating manuals, regional or national directives, policies, agreements, plans, and other such documents. The incumbent relies on technical experience and training as well as general knowledge of WFO/RFC operations, objectives and interface requirements.

COMPLEXITY

The coupling of hydrologic and meteorological principles as they apply to hydrometeorological operations requires a high degree of adaptability. The diversity of forecast problems faced by the RFC and the complexity and pressures of RFC operations place the HAS Forecaster in a very demanding position. The incumbent is considered professionally knowledgeable in both the hydrological and meteorological disciplines. In addition, the incumbent is faced with resolving the multitude of data and system problems in order to minimize their impact on operational activities.

SCOPE AND EFFECT

The RFC provides forecasts and guidance products and services for major river basins in a large area of responsibility covering several states and WFO areas. The population densities over these river basins in each respective RFC may range from very low (i.e., wilderness areas) to very high (i.e., dense urban areas). River flows directly affect the nation's well-being and economy in numerous ways. The water supplies for towns and cities as well as agricultural interests are directly affected by river flows. Flooding impacts the lives of millions of Americans each year, and in some cases, results in permanent changes to the landscape. Therefore, RFC forecast efforts directly affect a variety of economic interests and public safety concerns. This highlights the need for accurate and timely production of river and flood forecasts to meet many different purposes.

The quality of performance in this position has a vital effect on the effectiveness of guidance and forecast products for flood, streamflow and water resource management. Effective execution of the outlined duties also

impacts the efficiency with which hydrometeorological operations are conducted at numerous WFOs in the RFC area.

PERSONAL CONTACTS

Contacts involve operational field personnel such as other RFC staff members, WFO forecasters, and WFO managers; but may also include Regional Headquarters, Office of Hydrology, and National Center personnel. Interagency contacts include various Federal water management agencies, Federal Emergency Management Agency, state and local water management agencies, and civil defense interests.

PURPOSE OF CONTACTS

WFO contacts are made to provide hydrometeorological assistance to forecasters that use RFC forecasts and guidance products to produce public products, and to achieve consistency in the application of RFC forecasts and guidance and forecast products among all WFOs in the RFC area. WFO contacts are also made to coordinate development and improvement of techniques and procedures to enhance the flow of hydrometeorological support between the two offices.

Contacts with other RFC personnel are made to coordinate operational and developmental activities. Contacts with Regional Headquarters personnel are made regarding hydrometeorological support activities between the RFCs and WFOs within the region. Contacts with National Centers and the office of Hydrology are made concerning real-time operational problems and regarding technological improvements in operational procedures and in the data sets used in the performance of hydrometeorological operations.

Contacts with emergency management agencies and water managers concern the operational use of RFC guidance and forecast products during flood events that affect large, multiple-WFO areas. Contacts with water managers are also made with regard to the content of flood potential discussions and drought statements.

PHYSICAL DEMANDS

The work is generally sedentary. However, long arduous work periods may be required when flood conditions threaten or occur. During flood events the duty may result in extended periods of stressful activity. Shift work nominally covering 16-hour operations may move to 24-hour operations during flood events or seasonal periods of flood threat.

WORK ENVIRONMENT

The work environment is an office with added specialized computer and communications equipment.

FAIR LABOR STANDARDS ACT

This position is exempt from the Fair Labor Standards Act in that it meets the criteria for professional positions as defined in 5 CFR 551.206.
