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

Hydrologist Forecaster 13

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INTRODUCTION

This position is located in one of thirteen River Forecast Centers (RFC). The RFC provides hydrologic/hydrometliorologic 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. The RFC serves as a major interface with water management agencies and other interests concerned with hydrologic forecast issues.

The complexity of the center's operation along with the diversity of hydrologic phenomena within each RFC area of responsibility requires senior-level forecasters who are thoroughly familiar with all aspects of operational hydrology and have one or more areas of in-depth expertise in a facet of hydrologic science that is critical to the RFC's operation.

The forecast staff at the RFC is made up of Hydrologic Forecasters, whose grades range from entry level up to the senior level (i. e., this position), and three HAS Forecasters. At the Senior Hydrologic Forecaster level, the incumbent has thorough knowledge of all forecasting procedures and operations of the RFC. He/she is also expected to have expertise in one or more specialty areas such as, but not limited to; flash flood hydrology, Extended Streamflow Prediction (ESP), computer systems, hydrometeorologic data systems, or advanced hydrologic modeling techniques; and uses this expertise to develop new RFC procedures. Though not mandatory, there is a general expectation that Senior Hydrologic Forecasters will have developed sufficient meteorological background to qualify as a hydrometeorologist.

DUTIES

The Senior Hydrologic Forecaster on duty serves as the lead hydrologic forecaster for the day-today operations of the center. The incumbent also possesses in-depth expertise in one or more specialty areas of the RFC forecast program and serves as program leader and technical specialist in those areas. This expertise is applied towards the procedure development needs of the RFC, which include development of hydrologic and hydrometeorologic procedures and associated application software. These activities are critical to the enhancement, implementation, and maintenance of forecast system technology at the RFC. Some duties of this position change emphasis on a seasonal basis. The Senior Hydrologic Forecaster assists with the RFC's HAS functions and works HAS shifts as required and when qualified. Specific duties include:

1. Performance of lead hydrologic forecaster duties for routine daily forecast operations and other short-range forecast operations that are conducted before and during high water and flood episodes. Short-range forecasts include stage forecasts, discharge forecasts, daily forecasts of inflow volume for reservoirs, and river velocity forecasts. The incumbent apportions the hydrologic forecast work among him/herself and other Hydrologic Forecasters in the RFC and provides instructions and advice as necessary. This work includes the following functions:

- Analyze incoming real-time hydrologic data for consistency and process into on-site operational hydrologic modeling system.

- Execute modeling system and use hydrologic expertise to interactively analyze output and make necessary adjustments in order to prepare final guidance products.

- Use observed real-time data to adjust state variables in models to improve future runoff and river simulations.

- Working with HAS forecasters, incorporate assimilated fields of high resolution WSR-88D-based precipitation estimates and meteorological forecast information into the RFC's operational forecast system as appropriate.

- Provide on-the-job advice and training on daily forecast operations to Hydrologic Forecasters, Hydrologic Interns, and HAS Forecasters.

2. Performance of long-range water resources forecast operations. Long range forecasts include, but are not limited to, spring snowmelt flood outlooks, reservoir inflow forecasts, river volume forecasts, and minimum flow forecasts.

- Analyze observed hydrologic data for consistency and process into long-range modeling system.

- Incorporate advanced observations from various data sources such as satellite, aircraft, and ground-based snowpack estimates.

- Execute long-range modeling system and use hydrologic expertise to analyze statistical output. Make necessary interpretations of output in order to prepare final forecast and guidance products. Compose necessary text to accompany these numerical products.

- Execute procedures to adjust certain model state variables such as snow water equivalent to improve subsequent simulations.

- Provide on-the-job advice and training on long-range forecast operations to Hydrologic Forecasters, Hydrologic Interns, and HAS Forecasters.

3. Performance of special non-real-time procedure development activities under the overall direction of the Hydrologist-In-Charge (HIC) and technical oversight of the Development and Operations Hydrologist (DOH). Emphasis for these activities will be placed on the one or more specialty areas in which the incumbent has in-depth expertise. With regard to these specialty areas, the incumbent will also provide background information, help, and training to Hydrologic Forecasters and HAS Forecasters who are working on related procedure development projects. The Senior Hydrologic Forecaster may describe results of his/her projects in publications such as NOAA Technical Memoranda or scientific journals. Such projects include, but are not limited to:

- Derivation and implementation of new operational procedures for inclusion in the RFC's hydrologic modeling system. If one of the Senior Hydrologic Forecaster's areas of expertise relates to a component of the RFC's hydrologic modeling system, the procedures developed reflect the operational application of the latest level of understanding in that area.

- Development of new or enhanced operational procedures to improve management of hydrometeorological data and flow of service to WFOs and outside water management agencies. If one of the Senior Hydrologic Forecaster's areas of expertise relates to data or computer systems, the procedures developed reflect the operational application of the latest level of knowledge in that area.

- Calibration of operational hydrologic modeling system for new forecast points.

- Recalibration of modeling system for existing forecast points.

- Provide on-the-job advice and training to Hydrologic Forecasters, Hydrologic Interns, and HAS Forecasters with regard to their procedure development projects.

4. Participation in the RFC effort to increase interaction and cooperative support between RFC and WFO personnel. Use knowledge acquired from personnel at colocated WFOs to develop improvements in RFC service operations for all WFOs in the RFC area.

- Provide hydrologic advice and support to WFO forecasters when required.

KNOWLEDGE REQUIRED

Incumbent has knowledge of hydrology acquired through education or a combination of education and on-the-job experience. Knowledge of theoretical and applied hydrologic/hydraulic principles as they apply to operational hydrologic forecasting is also necessary. The incumbent also has acquired expertise in one or more specialty areas through extensive experience and training in operational hydrology. A minimal educational background is at the Bachelor of Science level or equivalent. Some basic course work in meteorology is also desirable.

If basic academic course work has not been taken as described in the hydrometeorologist qualification standards, the incumbent should receive cross-training in meteorology while on staff.

Knowledge of computer-based hydrologic modeling procedures as they apply to short- and long-term operational forecasting.

Knowledge of overall forecast operations including RFC/WFO communication systems, RFC and central computer technology, relational databases, computer-based modeling technology, and application of advanced observation systems (e.g., WSR-88D) to hydrologic forecasting.

Knowledge of RFC mission, operations, and external interfaces. Knowledge of the technical components comprising the operational forecast system is also necessary.

Knowledge of NWS/NOAA/DOC policy objectives as they apply to RFC and WFO hydrometeorologic operations.

Knowledge required to communicate effectively through writing and public speaking.

SUPERVISORY CONTROLS

The incumbent's immediate supervisor is the Hydrologist-In-Charge. The incumbent works in close coordination with all RFC staff, especially the Development and Operations Hydrologist (DOH) and the Senior HAS Forecaster. A considerable amount of originality and independent thinking is required. The incumbent's work and accomplishments in the area of specialty procedures development work are reviewed for efficiency and impact on the RFC operations.

GUIDELINES

The incumbent's performance has a significant impact on RFC operations. Guidelines used include appropriate reference materials such as operating manuals, regional, national and agency 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 diversity of hydrologic forecast problems faced by the RFC, the need to apply areas of specialized expertise towards solving unique hydrologic problems in the RFC area, and the complexity and pressures of operations during flood or high water periods places the Senior Hydrologic Forecaster in a very demanding position. The incumbent is faced with resolving the multitude of data and system problems in order to minimize their impact on the timely production of hydrologic forecasts and guidance products.

SCOPE AND EFFECT

The RFC provides forecasts and guidance products and services for major river basins in a large area of responsibility covering several 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 applications. 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 WFO and other RFC forecasters, but also include Regional and National Headquarters personnel. Interagency contacts include various Federal water management agencies, the Federal Emergency Management Agency, state and local water management agencies, and civil defense interests.

PURPOSE OF CONTACTS

WFO contacts are made to share information on hydrologic techniques and to provide hydrologic assistance to forecasters who are using RFC guidance and forecast products to produce public products. Contacts are made with other RFC Senior Hydrologists to exchange knowledge and advice on common areas of expertise. Contacts with Regional and National Headquarters are primarily for consultation on technical and operational aspects of the center's forecast system. This sometimes occurs for problem resolution in real-time forecasting and more frequently for support of non-real-time developmental activities. Contacts made with outside water management agencies concern the operational use of RFC guidance and forecast products and coordination of long-range water resources forecasts.

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 (FLSA)

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.
